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(54) **EXERCISE MACHINE WITH UPRIGHT AND RECUMBENT CYCLING MODES**

(57) An exercise machine includes a frame member and a seat connected to the frame member at a first end where the frame member includes a base at a second end. The exercise machine further includes a crank assembly connected to the frame member between the first end and the second end. A leg member is pivotally attached to a mid-region of the frame member and selectively movable between a first angular position that orients the frame member in an upright orientation and a second angular position that orients the frame member in a recumbent orientation. The leg member includes a foot that is spaced closer to the base of the frame member when the leg member is in the upright orientation than when the leg member is in the recumbent orientation.

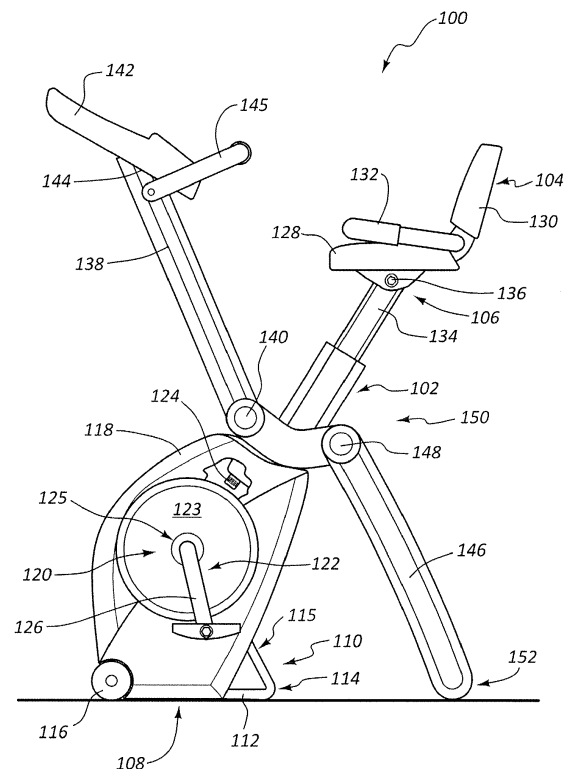


FIG. 1

Description

[0001] The present invention relates to an exercise machine.

[0002] Aerobic exercise is a popular form of exercise that improves one's cardiovascular health by reducing blood pressure and providing other benefits to the human body. Aerobic exercise generally involves low intensity physical exertion over a long duration of time. Generally, the human body can adequately supply enough oxygen to meet the body's demands at the intensity levels involved with aerobic exercise. Popular forms of aerobic exercise include running, jogging, swimming, and cycling among others activities. In contrast, anaerobic exercise often involves high intensity exercises over a short duration of time. Popular forms of anaerobic exercise include strength training and short distance running.

[0003] Many choose to perform aerobic exercises indoors, such as in a gym or their home. Often, a user will use an aerobic exercise machine to have an aerobic workout indoors. One such type of aerobic exercise machine is an elliptical exercise machine, which often includes foot supports that move in fixed reciprocating directions when moved by the feet of a user. Often, the foot supports are mechanically linked to arm levers that can be held by the user during the workout. The arm levers and foot supports move together and collectively provide resistance against the user's motion during the user's workout. Other popular exercise machines that allow a user to perform aerobic exercises indoors include treadmills, rowing machines, and stepper machines, to name a few.

[0004] Another popular form of aerobic exercise is cycling. Cycling is typically done on stationary bikes indoors or on moving bikes outside that travel off road or on streets. With a traditional upright bicycle, the user rests his or her body weight entirely on a small portion of the bike's seat, handles, and pedals. With an upright bike, the user typically leans forward as he or she pedals. Another form of cycling is recumbent cycling. With a recumbent bicycle, the user is often reclined in a seat with a back support which distributes the user's weight over a larger area, including the user's back.

[0005] One type of cycling is disclosed in U.S. Patent No. 6,497,426 issued to James L. Vanpelt, et al. In this reference, a bicycle provides a frame having forward and rear frame portions that selectively attach and detach from each other in upright and recumbent positions. In the upright position, cranks are connected to a gear box that is adapted to drive a typical chain sprocket. In the recumbent position, the cranks are removed from the rear gear box and are attached to a forward gear box. A drive shaft is positioned between the gear boxes so that the bicycle rider may power the bicycle from the forward gear box. The bicycle may also be configured to be used as a tandem with a second set of cranks attached to the rear gear box. Other types of cycling devices are disclosed in U.S. Patent No. 6,648,353 to Pedro Pablo Cabal and

U.S. Patent Publication No. 2013/0260964 issued to Benjamin Chia.

[0006] In the preferred embodiment of the present invention, an exercise machine includes a frame member and a seat connected to the frame member at a first end where the frame member includes a base at a second end. The exercise machine further includes a crank assembly connected to the frame member between the first end and the second end. A leg member is pivotally attached to a mid-region of the frame member and selectively movable between a first angular position that orients the frame member in an upright orientation and a second angular position that orients the frame member in a recumbent orientation. The leg member includes a foot that is spaced closer to the base of the frame member when the leg member is in the upright orientation than when the leg member is in the recumbent orientation.

[0007] In one aspect of the invention, which can be combined with any other aspect of the invention, the base further comprises an upright base surface.

[0008] In one aspect of the invention, which can be combined with any other aspect of the invention, the base further comprises a recumbent base surface adjacent to the upright base surface.

[0009] In one aspect of the invention, which can be combined with any other aspect of the invention, the exercise machine pivots about the base during a transition between the upright orientation and the recumbent orientation such that the exercise machine rests on the upright base surface when the frame member is in the upright orientation and the exercise machine rests on the recumbent base surface when the frame member is in the recumbent orientation.

[0010] In one aspect of the invention, which can be combined with any other aspect of the invention, the foot is adjacent the base when the leg member is pivoted into a storage position.

[0011] In one aspect of the invention, which can be combined with any other aspect of the invention, the foot is slidably connected to a track.

[0012] In one aspect of the invention, which can be combined with any other aspect of the invention, the foot is a free end.

[0013] In one aspect of the invention, which can be combined with any other aspect of the invention, the seat is pivotally connected to the frame member.

[0014] In one aspect of the invention, which can be combined with any other aspect of the invention, a console member is pivotally attached to the frame member.

[0015] In one aspect of the invention, which can be combined with any other aspect of the invention, the console member further comprises a handle.

[0016] In one aspect of the invention, which can be combined with any other aspect of the invention, the handle support is pivotally attached to the console member.

[0017] In one aspect of the invention, which can be combined with any other aspect of the invention, the console member is rotated to be adjacent the seat when the

frame member is in a storage position.

[0018] In one aspect of the invention, which can be combined with any other aspect of the invention, the console member is integrally formed with the leg member.

[0019] In one aspect of the invention, which can be combined with any other aspect of the invention, the console member abuts the against a positioning surface of the base when the frame member is in the recumbent orientation.

[0020] In one aspect of the invention, which can be combined with any other aspect of the invention, the crank assembly is connected to a rotary resistance mechanism.

[0021] In one aspect of the invention, which can be combined with any other aspect of the invention, the rotary resistance mechanism comprises a flywheel.

[0022] In one aspect of the invention, which can be combined with any other aspect of the invention, the rotary resistance mechanism comprises a magnetic unit positioned proximate the flywheel position to impose a magnetic force that resists movement of the flywheel.

[0023] In one aspect of the invention, which can be combined with any other aspect of the invention, the seat is extended a greater distance from the base when the frame member is in the recumbent orientation.

[0024] In one aspect of the invention, which can be combined with any other aspect of the invention, the exercise machine further includes a locking mechanism positioned to lock the exercise machine in either of the upright orientation or the recumbent orientation.

[0025] In one aspect of the invention, which can be combined with any other aspect of the invention, the exercise machine further includes a linkage that passively orients the seat in either of the upright orientation or the recumbent orientation.

[0026] In one aspect of the invention, which can be combined with any other aspect of the invention, an exercise machine includes a frame.

[0027] In one aspect of the invention, which can be combined with any other aspect of the invention, a seat is connected to the frame member at a first end.

[0028] In one aspect of the invention, which can be combined with any other aspect of the invention, the seat is pivotally connected to the frame member.

[0029] In one aspect of the invention, which can be combined with any other aspect of the invention, the frame member comprises a base at a second end.

[0030] In one aspect of the invention, which can be combined with any other aspect of the invention, the base further comprises an upright base surface.

[0031] In one aspect of the invention, which can be combined with any other aspect of the invention, the base further comprises a recumbent surface. This and any other of the aspects of the invention detailed above may be combined with any other aspect of the invention detailed herein.

[0032] In one aspect of the invention, which can be combined with any other aspect of the invention, a crank

assembly is connected to the frame member between the first end and the second end.

[0033] In one aspect of the invention, which can be combined with any other aspect of the invention, a leg member is pivotally attached to a mid-region of the frame member and selectively movable between a first angular position that orients the frame member in an upright orientation and a second angular position that orients the frame member in a recumbent orientation.

[0034] In one aspect of the invention, which can be combined with any other aspect of the invention, the leg member includes a foot that is spaced closer to the base of the frame member when the leg member is in the upright orientation than when the leg member is in the recumbent orientation.

[0035] In one aspect of the invention, which can be combined with any other aspect of the invention, the seat is extended a greater distance from the base when the frame member is in the recumbent orientation.

[0036] In one aspect of the invention, which can be combined with any other aspect of the invention, the exercise machine pivots about the base during a transition between the upright orientation and the recumbent orientation such that the exercise machine rests on the upright base surface when the frame member is in the upright orientation and the exercise machine rests on the recumbent base surface when the frame member is in the recumbent orientation.

[0037] In one aspect of the invention, which can be combined with any other aspect of the invention, a console member is pivotally attached to the frame member.

[0038] In one aspect of the invention, which can be combined with any other aspect of the invention, the console member further comprises a handle.

[0039] In one aspect of the invention, which can be combined with any other aspect of the invention, the handle support is pivotally attached to the console member.

[0040] In one aspect of the invention, which can be combined with any other aspect of the invention, an exercise machine includes a frame.

[0041] In one aspect of the invention, which can be combined with any other aspect of the invention, a seat is connected to the frame member at a first end.

[0042] In one aspect of the invention, which can be combined with any other aspect of the invention, the seat is pivotally connected to the frame member.

[0043] In one aspect of the invention, which can be combined with any other aspect of the invention, the frame member comprises a base at a second end.

[0044] In one aspect of the invention, which can be combined with any other aspect of the invention, the base further comprises an upright surface.

[0045] In one aspect of the invention, which can be combined with any other aspect of the invention, the base further comprises a recumbent surface.

[0046] In one aspect of the invention, which can be combined with any other aspect of the invention, a crank assembly is connected to the frame member between

the first end and the second end.

[0047] In one aspect of the invention, which can be combined with any other aspect of the invention, a leg member is pivotally attached to a mid-region of the frame member and selectively movable between a first angular position that orients the frame member in an upright orientation and a second angular position that orients the frame member in a recumbent orientation.

[0048] In one aspect of the invention, which can be combined with any other aspect of the invention, a flywheel is connected to the frame member.

[0049] In one aspect of the invention, which can be combined with any other aspect of the invention, a magnetic unit is positioned proximate the flywheel position to impose a magnetic force that resists the movement of the flywheel.

[0050] In one aspect of the invention, which can be combined with any other aspect of the invention, the leg member includes a foot that is spaced closer to the base of the frame member when the leg member is in the upright orientation than when the leg member is in the recumbent orientation.

[0051] In one aspect of the invention, which can be combined with any other aspect of the invention, the seat is extended a greater distance from the base when the frame member is in the recumbent orientation.

[0052] In one aspect of the invention, which can be combined with any other aspect of the invention, the exercise machine pivots about the base during a transition between the upright orientation and the recumbent orientation such that the exercise machine rests on the upright base surface when the frame member is in the upright orientation and the exercise machine rests on the recumbent base surface when the frame member is in the recumbent orientation.

[0053] Viewed from a further aspect the present invention provides an exercise machine comprising:

a frame member having a first end and a second end, wherein a base is disposed on the first end of the frame member;

the base further including an upright base surface and a recumbent base surface adjacent to the upright base surface;

a seat pivotally connected to the second end of the frame member;

a crank assembly connected to the frame member between the first end and the second end;

a leg member pivotally attached to the frame member, wherein the leg member is selectively movable between a first angular position that orients the frame member in an upright orientation and a second angular position that orients the frame member in a recumbent orientation; and

a foot on the leg member opposite the pivotal attachment, wherein the foot is spaced closer to the base of the frame member when the leg member is in the upright orientation than when the leg member is in

the recumbent orientation;

wherein the seat is extended a greater distance from the base when the frame member is in the recumbent orientation; and wherein the exercise machine pivots about the base during a transition between the upright orientation and the recumbent orientation such that the exercise machine rests on the upright base surface when the frame member is in the upright orientation and the exercise machine rests on the recumbent base surface when the frame member is in the recumbent orientation.

[0054] Preferably the exercise machine further comprises a console member pivotally attached to the frame member and a handle pivotally attached to the console member.

[0055] Viewed from a yet further aspect the present invention provides an exercise machine comprising:

a frame member having a first end and a second end, wherein a base is disposed on the first end of the frame member;

the base further including an upright base surface and a recumbent base surface adjacent to the upright base surface;

a seat pivotally connected to the second end of the frame member;

a crank assembly connected to the frame member between the first end and the second end;

a leg member pivotally attached to the frame member, wherein the leg member is selectively movable between a first angular position that orients the frame member in an upright orientation and a second angular position that orients the frame member in a recumbent orientation;

a flywheel connected to the frame member; and a magnetic unit positioned proximate the flywheel to impose a magnetic force that resists movement of the flywheel;

wherein the leg member includes a foot that is spaced closer to the base of the frame member when the leg member is in the upright orientation than when the leg member is in the recumbent orientation; wherein the seat is extended a greater distance from the base when the frame member is in the recumbent orientation;

wherein the exercise machine pivots about the base during a transition between the upright orientation and the recumbent orientation such that the exercise machine rests on the upright base surface when the frame member is in the upright orientation and the exercise machine rests on the recumbent base surface when the frame member is in the recumbent orientation.

[0056] The accompanying drawings illustrate various embodiments of the present apparatus and are a part of the specification. The illustrated embodiments are mere-

ly examples of the present apparatus and do not limit the scope thereof.

FIG. 1 illustrates a side view of an example of an exercise machine in an upright cycling mode accordance with the present disclosure.

FIG. 2 illustrates a side view of an example of an exercise machine in a recumbent cycling mode accordance with the present disclosure.

FIG. 3 illustrates a side view of an example of an exercise machine in a storage mode accordance with the present disclosure.

FIG. 4 illustrates a side view of an example of an exercise machine in an upright cycling mode accordance with the present disclosure.

FIG. 5 illustrates a side view of an example of an exercise machine in a recumbent mode accordance with the present disclosure.

FIG. 6 illustrates a side view of an example of an exercise machine in an upright cycling mode accordance with the present disclosure.

FIG. 7 illustrates a side view of an example of an exercise machine in a recumbent mode accordance with the present disclosure.

FIG. 8 illustrates a side view of an example of an exercise machine in a recumbent cycling mode accordance with the present disclosure.

FIG. 9 illustrates a side view of an example of an exercise machine in a storage mode accordance with the present disclosure.

FIG. 10 illustrates a side view of an example of an exercise machine in an upright mode accordance with the present disclosure.

FIG. 11 illustrates a perspective view of an example of an exercise machine in an upright mode accordance with the present disclosure.

FIG. 12 illustrates a perspective view of an example of an exercise machine in an upright mode accordance with the present disclosure.

FIG. 13 illustrates a perspective view of an example of an exercise machine in an upright mode accordance with the present disclosure.

FIG. 14 illustrates a side view of an example of an exercise machine in an upright mode accordance with the present disclosure.

FIG. 15 illustrates a side view of an example of an exercise machine in an upright mode accordance with the present disclosure.

FIG. 16 illustrates a perspective view of an example of an exercise machine in an upright mode accordance with the present disclosure.

[0057] Throughout the drawings, identical reference numbers designate similar, but not necessarily identical, elements.

[0058] For purposes of this disclosure, the term "aligned" means parallel, substantially parallel, or forming an angle of less than 35.0 degrees. For purposes of

this disclosure, the term "transverse" means perpendicular, substantially perpendicular, or forming an angle between 55.0 and 125.0 degrees.

[0059] Particularly, with reference to the figures, FIG. 1 depicts an example of an exercise machine 100. The exercise machine 100 includes a frame member 102 with a seat 104 connected at a first end 106 of the frame member 102. The frame member 102 also includes a base 108 at a second end 110. The base 108 comprises an upright base surface 112 and a recumbent base surface 114. In the example of FIG. 1, the exercise machine 100 is resting on the upright base surface 112. In this example, the base 108 comprises a triangular geometry 115 where a side of the triangular geometry is the upright base surface 112 and a corner of the triangular geometry is the recumbent base surface 114. A wheel 116 is also incorporated into the base 108 to assist in moving the exercise machine 100.

[0060] At least a portion of the frame member 102 is covered by an outer covering 118, which hides at least some of the internal components of the exercise machine 100. In this example, a rotary resistance mechanism 120 is housed in the outer covering 118 and is attached to a crank assembly 122. In this example, the rotary resistance mechanism 120 includes a flywheel 123 and a magnetic unit 124 positioned proximate the flywheel 123 that resists the movement of the flywheel 123. The crank assembly 122 includes a crank axle 125 connected to a first crank arm 126 and a second crank arm (not shown).

[0061] In this example, the seat 104 includes a padded region 128, a back support 130, a handle 132, and support rod 134. The seat 104 is pivotally connected to the frame member 102 at a seat pivot connection 136.

[0062] Also, a console member 138 is attached to the frame member 102 at a member pivot connection 140. A console 142 is attached to the console member 138 at a console pivot connection 144. A handle 145 is attached to the console member 138 just below the console 142.

[0063] A leg member 146 is pivotally attached to the frame member 102 at a leg pivot connection 148, which is located in a mid-region 150 of the frame member 102 between the crank assembly 122 and the seat 104. The leg member 146 includes a foot 152 that contacts the floor or another type of support surface on which the exercise machine 100 rests. In this example, the foot is positioned in a first angular position that orients the frame member in an upright orientation. In the example illustrated in FIG. 1, the foot 152 is a free end.

[0064] FIG. 2 depicts an example of the exercise machine 200 in a recumbent orientation. In this example, the frame member 202 is connected to the seat 204 at one end and a base 206 at the other end. The leg member 208 is connected to the frame member 202 and is positioned in a recumbent angular position that orients the frame member 202 in a recumbent position. In the recumbent orientation, the seat 204 is tilted forward about the seat pivot connection 210 and the seat 204 is moved to a lower height above the floor or other support surface.

The console member 212 is rotated forward about the member pivot connection 214 such that the distance between the seat 204 and the console 216 is increased. Further, the orientation of the exercise machine 200 is angled such that the exercise machine 200 is resting on the recumbent base surface 218 of the base 206.

[0065] FIG. 3 depicts an example of the exercise machine 300 in a storage orientation. In this example, the leg member 302 is moved up against the base 304 such that the foot 306 is adjacent the base 304. The length of the leg member 302 slightly rocks the upright base surface 308 off the floor such that the weight of the exercise machine 300 is supported with the wheel 310 and the leg member's foot 306. The console member 312 is rotated rearwardly about the member pivot connection 313 such that the distance between the seat 314 and the console 316 is shortened. In this example, the seat 314 is adjacent to the console 316.

[0066] FIG. 4 depicts an example of an exercise machine 400 in an upright orientation. In this example, a frame member 402 is connected to a seat 404 at a first end and to a base 406 at a second end. The base 406 is pivotally attached to the frame member 402 at a base pivot connection 408. The leg member 410 is attached to the track 412 at a first end and to the frame member 402 at a second end. The track 412 is slidably connected to the base 406. The seat 404 is connected to a telescoping section 414 of the frame member 402 at a seat pivot connection 416. The console member 418 is pivotally attached to the frame member 402 at a member pivot connection 420. The console member 418 comprises a bend to position the console 422 at a desirable position.

[0067] FIG. 5 depicts an example of an exercise machine 500 in a recumbent orientation. The frame member 502 is rotated with respect to the base 504 and the track 506 is has moved with respect to the base 504 such that the track orients the foot 508 of the leg member 510 in a recumbent orientation. Thus, the frame member 502 is oriented in a recumbent orientation. The telescoping section 512 of the frame member is extended to move the seat 514 a farther distance away from the crank assembly 516. The console member 518 is rotated rearwardly towards the seat 514, and the seat 514 is rotated forward towards the console 520.

[0068] FIG. 6 is an example of an exercise machine 600 in an upright orientation. In this example, the exercise machine 600 comprises a frame member 602 with a seat 604 connected at a first end and a base 606 connected at a second end. A crank assembly 608 is connected to the frame member 602 between the base 606 and the seat 604. A rotary resistance mechanism 610 is also connected to the frame member 602 between the base 606 and the seat 604. The frame member 602 comprises a telescoping section 614 that can move the seat with respect to the crank assembly 608. The foot 616 of the leg member 618 is a free end.

[0069] FIG. 7 is an example of an exercise machine 700 in a recumbent orientation. In this example, the leg

member 702 is rotated away from the base 704 such that the leg member 702 is in a recumbent orientation. The console member 706 is rotated towards the seat 708.

[0070] FIG. 8 is an example of an exercise machine 800 in a recumbent orientation. In this example, the console member 802 has an articulated joint 804 that allows that console 806 to be positioned in desired locations. The underside 808 of the console member 802 rests on a positioning surface 810 of the base 812. The leg member 814 is integrally formed with the console member 802. The positioning surface 810 prevents the leg member 814 from moving farther away from the base 812. Thus, in this example, the exercise machine 800 is locked in the recumbent orientation when the underside 808 is adjacent to the positioning surface 810 of the base 812.

[0071] FIG. 9 is an example of an exercise machine 900 in a storage orientation. In this example, the length of the leg member 902 raises the upright base surface 904 of the base 906 off of the floor thereby loading the exercise machine's weight between a wheel 908 attached to the base 906 and the foot 910 of the leg member 902. In this example, the leg member 902 is adjacent a storage surface 912 of the base 906. The articulated joint 914 allows the console 916 to be positioned over the seat 918 in the storage position.

[0072] FIG. 10 is an example of an exercise machine 1000 in an upright orientation. In this example, the exercise machine 1000 includes a frame member 1002 and a seat 1004 connected to the frame member 1002 at a first end 1006. The frame member 1002 comprises a base 1008 at a second end 1010. A crank assembly 1012 is connected to the frame member 1002 between the first end 1006 and the second end 1010.

[0073] A leg member 1014 is pivotally attached to a mid-region 1016 of the frame member 1002 and selectively movable between a first angular position that orients the frame member 1002 in an upright orientation and a second angular position that orients the frame member in a recumbent orientation. The leg member 1014 includes a foot 1018 that is spaced closer to the base 1008 of the frame member 1002 when the leg member is in the upright orientation than when the leg member 1014 is in the recumbent orientation.

[0074] FIG. 11 depicts an example of an exercise machine 1100 in an upright orientation. In this example, the exercise machine 1100 includes a seat 1102 connected to a frame member 1104. A crank assembly 1106 is connected to the frame member 1104 proximate another end. A base 1108 is connected to the frame member 1104. In this example, the base 1108 comprises a cylindrical rod 1110 oriented transversely to the frame member 1104. The cylindrical rod 1110 has an outer surface that can roll as the exercise machine 1100 transitions from an upright orientation to a recumbent orientation or vice versa.

[0075] To move the example of FIG. 11, a pin 1112 is inserted into one of multiple holes formed in a telescoping section of the frame member 1104. The console 1114

comprises a first handle 1116, a second handle 1118, and a display 1120. Further, control inputs 1122 are incorporated into either of the first or second handles 1116, 1118.

[0076] The frame member 1104 is disposed between of first structural element 1124 and a second structural element 1126 of the leg member 1128. In such an example, the exercise machine's weight is balanced. The first and second structural elements 1124, 1126 are connected to the frame member 1104 with a pivot rod 1130.

[0077] FIG. 12 depicts another example of an exercise machine 1200 in an upright orientation. In this example, the base 1202 includes a cylindrical rod 1204 in addition to a flat section 1206 of a housing 1208 that covers and/or supports a portion of the flywheel 1210. In this example, the console 1212 is connected to the console member 1214 through a pivot rod 1216. In such an example, the console 1212 can be angularly positioned based on the exercise machine's exercise mode, but also to accommodate the varying heights and other characteristics of the user. In this example, the console 1212 is connected to the console member 1214 with a first upright handle 1218 and a second upright handle 1220. The first and second upright handles 1218, 1220 are positioned to be a convenient reach away from the user when the exercise machine 1200 is in the upright orientation. Also, a pair of recumbent handles 1222 are incorporated into the seat 1224. The recumbent handles 1222 are positioned to be a convenient reach away from the user when the exercise machine 1200 is in the upright orientation.

[0078] FIG. 13 is an example of the exercise machine 1200 depicted in FIG. 12 in a recumbent orientation. In this example, the console 1212 is rotated forward about the pivot rod 1216. The flat section 1206 of the housing 1208 is lifted off of the support surface about the cylindrical rod 1204 of the base 1202.

[0079] FIGS 14 and 15 depict an example of an exercise machine 1400. In FIG. 14, the exercise machine 1400 is in the recumbent orientation, and in FIG. 15, the exercise machine 1400 is in the recumbent orientation. The frame member 1402 is connected to the leg member 1404 at a first pivot joint 1406. Additionally, a linkage 1408 is connected to the leg member 1404 at a first end 1410 and to the seat 1412 at a second end 1414. The linkage 1408 pivotally connected to both the leg member 1404 and the seat 1412. As the leg member 1404 and the frame member 1402 move with respect to each other, the linkage 1408 is also moved. As the linkage 1408, the linkages causes the orientation of the seat 1412 to move. For example, as the exercise machine 1400 moves into the recumbent orientation, the linkage 1408 pivots downward at the first end 1410. However, the second end 1414 of the linkage 1408 stays connected to the seat 1412 and urges the rear side of the seat upward orienting the seat into a recumbent orientation. Similarly, as the exercise machine 1400 transitions into the upright orientation, the first end 1410 of the linkage 1408 pivots upwards and the second end 1414 of the linkage 1408 applies a down-

ward force on the rear side of the seat 1412. Thus, the linkage 1408 cause the seat 1412 to rotate about the first pivot joint 1406 into an upright orientation.

[0080] The exercise machine 1400 also includes a locking mechanism 1416 that locks the exercise machine 1400 into the upright orientation, the recumbent orientation, or other orientations between the upright and recumbent orientation. In this example, the locking mechanism includes plate 1418 with multiple openings 1420 defined therein. In this example, the plate 1418 is fixed to the frame member 1402 as the exercise machine 1400 transitions between exercise orientations. However, the leg member 1404 moves respect to the plate 1418 as the exercise machine 1400 transitions from one orientation to another. In one example, when the exercise machine is in the recumbent orientation, at least one of the openings in the plate 1418 aligns with another opening in the leg member 1404 or at least aligns with a feature of the leg member 1404. A pin (not shown) can be inserted into both the openings in the plate 1418 and the leg member 1404, thereby locking the exercise machine 1400 into the recumbent orientation. In those examples, where the plate openings align with a feature of the leg member 1404 in the recumbent orientation, the pin can lock the plate opening with the feature thereby securing the exercise machine 1400 in the recumbent orientation. Similarly, when the exercise machine 1400 is transitioned into the upright orientation, another opening in the plate 1418 aligns with another opening in the leg member 1404 or at least aligns with another feature of the leg member. As the pin is inserted through the plate member's opening, the pin locks the plate 1418 with the leg member 1404 securing the exercise machine in the upright orientation.

[0081] FIG. 16 depicts an example of an exercise machine 1600. In this example, the exercise machine 1600 includes a housing 1602 that is connected to a cylindrical rod 1604 of the base 1606. In this example, as the exercise machine 1600 transitions between the different exercise modes, the weight to the exercise machine 1600 is loaded to the cylindrical rod 1604.

[0082] While the examples above have been described with various members, angles, connection points, and components, any appropriate type and orientation of the members, angles, connection points, components, and so forth may be used in accordance with the principles described herein. Thus, the embodiments above manifest just some of the examples of the invention and do exclusively depict all possible embodiments of the invention.

INDUSTRIAL APPLICABILITY

[0083] In general, the invention disclosed herein may provide the user with an exercise machine that has multiple exercise modes. A first exercise mode may be an upright cycling mode and a second exercise mode may be a recumbent cycling mode. In other examples, the

exercise machine may include additional exercise modes that are intended to cause the user to perform different types of workouts. The different exercise modes may work out different types of muscles groups. Additionally, the exercise machine may include a storage mode.

[0084] In the upright cycling mode, the seat is positioned relative to the pedals such that the user is caused to sit upright during the performance of a cycling exercise. The relative position of the seat with the pedals may allow the user to lean forward in a comfortable convenient manner. Thus, in examples where the seat includes a back rest, the user is positioned such that the user's back does not typically (though it may during some periods) rest on the back rest. In such examples, the user's weight is supported by just the exercise machine on the padded region of the seat region, the pedals, and the handles. In the upright orientation, the user may primarily assume a vertical orientation.

[0085] In the recumbent cycling mode, the seat is positioned relative to the pedals such that the user is caused to have a reclined position during the performance of a cycling exercise. The user may conveniently load a portion of his or her body weight against a back support of the exercise machine's seat while in the recumbent position. Thus, in such examples, the user is positioned so that his or her weight is supported by the padded region of the seat region, the pedals, the handles, and the back rest of the seat. In the recumbent orientation, the user may primarily assume a horizontal orientation.

[0086] In the storage mode, the components of the exercise machine may be brought together in a compact space. For example, the leg members may be brought adjacent the base, and the console member may be brought closer to the seat. In some examples, the weight of the exercise machine is shifted to a wheel in the storage mode for easier handling. When in the storage mode, the exercise machine is more compact than when in the recumbent or upright cycling modes.

[0087] The exercise machine may include a frame member. Multiple components of the exercise machine may be pivotally attached to the frame member such that the components can fold towards or away from the frame member. In the storage orientation, many of the components may be folded back towards to the frame member. In the upright position, some of the components may be folded away from the frame member at incremental and/or preset distances. In some examples, the components are folded out a greater distance when in the recumbent orientation. In some cases, the exercise machine resembles an "x" shape where members of the exercise machine diverge outward from a mid-region of a frame member when in one of the upright cycling or recumbent cycling modes.

[0088] A seat may be attached to a first side of the frame member and a base may be attached to a second side of the frame member. The base may be attached to the frame member's second end or the base may be integrally formed with the base member. The base may

include multiple surfaces, the exercise machine may rest on one of the base's surfaces based on the current exercise mode of the exercise machine. For example, the exercise machine may rest on the upright base surface when the exercise machine is in the upright cycling mode. Similarly, the exercise machine may rest on the recumbent base surface when the exercise machine is in the recumbent cycling mode. In such examples, the exercise machine may shift it's center of gravity based on the current exercise mode of the machine. In some cases, the upright base surface and the recumbent base surface are contiguous to each other, but are positioned at different angles. Thus, to transition from one exercise mode to another, the exercise machine may rock from the upright base surface to the recumbent base surface or vice versa.

[0089] In other examples, the upright base surface and the recumbent base surface are formed on a curved or rounded surface. For example, the base may comprise a rounded end where a first arc segment of the base forms the upright base surface and a second arc segment forms a recumbent base surface. In yet other examples, the base may comprise a wheel such that the upright base surface and the recumbent base surface are portions of the wheel's outer surface and vary as the exercise machine is moved from place to place. In some examples, the base includes a triangular geometry where sides and/or corners of the triangular geometry form the upright and recumbent base surfaces.

[0090] In the storage mode, the exercise machine may lift a portion of the base surfaces off of the floor to reduce friction between the floor and exercise machine. In some situations when the exercise machine is transitioned into the storage mode, the weight of the exercise machine is transferred, in part, to a wheel, a glider surface, or another type of friction reducing element attached to the base to accommodate moving the exercise machine.

[0091] The base may include any appropriate construction that allows the base to support at least a portion of the exercise machine's weight at different angles. In an example, at least one of the upright base surface and the recumbent base surface is flat and the exercise machine is rotated onto the flat surface when in the corresponding exercise mode. In some examples, a portion of the base comprises a triangular geometry. In such an example, one side of the triangular geometry is the upright base surface and another side is the recumbent base surface. In other examples, one of the sides of the triangular geometry is either of the upright base surface or the recumbent base surface while a corner of the triangular geometry is the other of the upright base surface or the recumbent base surface.

[0092] The position of a leg member may determine the orientation and/or mode of the exercise machine. The leg member may be pivotally attached to a mid-region of the leg member between the base and the seat. In some examples, where the foot of the leg member is a free end, the leg member may pivot towards or away from the

base of the exercise machine to determine the exercise machine's orientation. In some examples, the exercise machine is in a recumbent orientation when the leg member is rotated away from the base. In some cases, the exercise machine is in an upright orientation when the leg member is positioned closer to the base than if the exercise machine had been in the recumbent orientation. Further, the exercise machine may be in a storage orientation when the leg member is positioned adjacent the base. In such examples, the free end (i.e. foot) of the leg member can support the weight of the exercise machine plus the user operating the exercise machine at different angles. For example, the foot of the leg member may be shaped to assume the weight of the exercise machine and the user when the leg is fully rotated away from the base as well as shaped to assume the weight of the exercise machine and the user when the leg is partially rotated out into the upright position.

[0093] In alternative examples to an exercise machine having a foot on a free end of the leg member, the foot may be guided by a track. In some examples, the track may be rigidly secured to the exercise machine and the foot is movably connected to the track. In such an example, the movement of the leg member may be controlled by an actuator that causes the foot to move along the track. In other examples, the track may be movable with respect to the exercise machine and the foot of the leg member may be attached to the track. In such an example, the track may be caused to move such that the leg member moves as the foot travels with the track.

[0094] A crank assembly may be attached to the leg member between the base and the seat. In some examples, the crank assembly is directly attached to the leg member and in other examples, the crank assembly is coupled to a machine component that is attached to the leg member. The crank assembly may include a crank axle, a first crank arm connected to the crank axle, and a second crank arm connected to the crank axle. A first pedal may be attached to the first crank arm, and a second pedal may be attached to a second crank arm.

[0095] The angular relationship between the crank assembly and the seat may determine whether the user can operate the exercise machine as an upright bicycle or a recumbent bicycle. For example, if the angular relationship between the seat and the crank assembly is primarily horizontal, the user may be in a reclined position and thus use the exercise machine as a recumbent bicycle. Similarly, if the angular relationship between the seat and the crank assembly is primarily vertical, the user may be in an upright position and thus use the exercise machine as an upright bicycle.

[0096] The crank assembly may be connected to a resistance mechanism. In some examples, a transmission connects the crank axle to the resistance mechanism. Thus, as the crank assembly rotates, the transmission transfers a resistive force from the resistance mechanism to the crank assembly. The resistance mechanism may include a flywheel that is proximate a magnetic unit which

resists the movement of the flywheel. In examples where the magnetic unit exhibits a consistent magnetic field, the amount of resistance applied to the flywheel may be changed by moving the magnetic unit towards or away from the flywheel. For example, the resistance applied to the flywheel may be increased by moving the magnetic unit closer to the flywheel. In other examples, the resistance applied to the flywheel may be decreased by moving the magnetic unit closer to the flywheel. In some cases, the magnetic unit may emit a variable amount of magnetic resistance by applying a varying amount of electrical power to the magnetic unit. While this example has been described with reference to a resistance mechanism that includes a flywheel and a magnetic unit, any appropriate type of resistance unit may be used in accordance with the principles described herein. A non-exhaustive list of resistance mechanisms that may be used include an air resistance mechanism, a fan, a hydraulic mechanism, a pneumatic mechanism, another type of resistance mechanism, or combinations thereof.

[0097] The seat may be movable with respect to the exercise machine's frame. In some examples, the seat's support rod may telescope with respect to a portion of the frame. In other examples, the support rod may be slidably attached to a portion of the frame. In some examples, the seat is brought to an upright position when the exercise machine is in the upright cycling mode, and the seat may be in a lower, recumbent position when the exercise machine is in the recumbent position. However, in some examples, the seat is extended a greater distance away from the base when the frame member is in the recumbent orientation.

[0098] While the examples above have been described with a discrete upright orientation, a discrete recumbent orientation, and a discrete storage orientation for the seat, leg member, and the frame member, in some examples, the seat, leg member, and frame member may be positioned anywhere along a continuum. For example, in some examples, the seat is positioned at a maximum height for the upright position, and the seat is positioned at a minimum elevation for a recumbent position. However, the seat may be adjusted to accommodate the different heights of the users. Further, the user may desire to position the seat at a height that is between the maximum and minimum positions (i.e. half way between the maximum and minimum positions).

[0099] The exercise machine may include a console member that connects the console to the frame member. In some examples, the console member is selectively adjustable between multiple positions corresponding to different exercise modes of the exercise machine and a storage mode of the exercise machine. In some examples, the console is elevated to a height that is convenient for the user to view while performing an exercise with the exercise machine. The console member may be oriented differently depending on the exercise mode. In some examples, the console member may be rotated forward in a recumbent orientation. In yet other examples, the con-

sole member may be rotated upward and/or rearward when the exercise machine is in the recumbent orientation. Further, the console member may be rotated all the way to the seat to be in the storage orientation.

[0100] In one example, the console member and the leg member are integrally formed with one another. In such an example, the leg member moves as the console member moves. Thus, the action that causes the leg member to move also causes the console member to move and vice versa. In such an embodiment, the position of the leg member may be controlled by controlling the position of the console member. In one particular example where the leg member and the console member are integrally formed with one another, the base of the exercise machine is shaped to locate the leg member in the recumbent orientation as the console member is pivoted to rest against a positioning side of the base member. In the similar example, the console member is moved into the desired storage position as the leg member is positioned to be adjacent to a different side of the base.

[0101] In other examples, the leg member and the console member are each attached independently to the frame member. For example, the console member may be attached to the frame member at a member pivot connection, and the leg member may be attached to the frame member at an independent leg pivot connection. In other examples, the console member, the leg member, another type of member, or combinations thereof may include articulated joints. Such articulated joints may be used to position the console, the foot, the seat, or another component of the exercise machine in the appropriate position corresponding to the desired exercise mode. In some examples, the articulated joints may be used to make the exercise machine more compact in the storage orientation.

[0102] The console may be moved manually or by an actuator. In those embodiments where the console is move by an actuator, the user may control the actuator through the console, a mobile device, an input mechanism incorporated into the exercise machine, another type of mechanism, or combinations thereof. The console may be pivotally connected to the console member such that the console tilt angle is adjustable. The console member may also be moved manually or with an actuator. In some examples, the console member is hinged to the frame member. In yet other examples, the console member may telescopically move with respect to the frame member.

[0103] The console assembly may further include a pair of handles that the user may grip during the performance of an exercise. For example, the user may grip the handles attached to the console assembly when the user is in the upright position. A pair of handles incorporated into the seat may be within a convenient arms reach for the user while performing an exercise in the recumbent cycling mode. While the examples above have described the handles/arm supports that the user can used during the performance of different exercises in the exercise

machine's different exercise modes, the user may grip any of the handles/arm supports within a convenient reach of the user and/or desirable by the user.

[0104] The console may include a display screen that indicates at least one operating parameter of the exercise machine or a physiological parameter of the user during the workout. For example, the display screen may depict the settings of the resistance mechanism, the speed at which the user is operating the exercise machine, the current exercise mode of the exercise machine, the estimated calories of the user's workout, the user's heart rate, the time of day, the time duration of the workout, other operating parameters, other physiological parameters of the user, or combinations thereof. In some examples, the calories burned estimate may be based on information gathered from the exercise machine's operating parameters. In some cases, at least some of the information used to determine the calorie burn is based on a user profile that contains personal information about the user, such as height, weight, age, gender, health conditions, body composition, other types of personal information, or combinations thereof. The personal information may inputted into the console of the exercise machine. However, in other examples, the console may be in communication with a remote device that contains the user profile. For example, the console may be in wireless communication with a personal computer, a mobile device, a datacenter, a website, a network device, another type of device, or combinations thereof that contain at least one item of personal information about the user.

[0105] In some examples, the console may be in communication with a remote device that operates a fitness tracking program. In such an example, some of the personal information may be received from the fitness tracking program. Also, in some cases, the console may send information about the user's workout to the fitness tracking program. Such workout information may include the type and duration of the exercise, the resistance settings, the estimated number of calories burned, other types of information, or combinations thereof.

[0106] The console may also include at least one input mechanism for inputting information into the console. For example, the user may control the operating parameters of the exercise machine with the console. In some cases, the user can control the resistance settings of through the console. Also, the user may be able to raise and lower the seat through commands inputted through the console. Additionally, in some examples, the user can control the position of the console member through the console and/or control the console tilt angle through the console. The input mechanism of the console may include a button, lever, dial, touch screen, key board, microphone, another type of input mechanism, camera, or combinations thereof. In some examples, the user may command the exercise machine to change from one exercise mode to another. In such an example, the exercise machine may change the seat position, the console tilt angle, the console member position, any other positions to put the

exercise machine in the desired exercise mode or storage mode without further input from the user.

Claims

1. An exercise machine comprising:

a frame member having a first end and a second end;
a base at a first end of the frame member;
a seat connected to the second end of the frame member;
a crank assembly connected to the frame member between the first end and the second end; and
a leg member pivotally attached to the frame member, wherein the leg member is selectively movable between a first angular position that orients the frame member in an upright orientation and a second angular position that orients the frame member in a recumbent orientation; and
a foot on the leg member opposite the pivotal attachment, wherein the foot is spaced closer to the base of the frame member when the leg member is in the upright orientation than when the leg member is in the recumbent orientation.

2. The exercise machine of claim 1, wherein the base further comprises:

an upright base surface; and
a recumbent base surface adjacent to the upright base surface;

wherein the exercise machine pivots about the base during a transition between the upright orientation and the recumbent orientation such that the exercise machine rests on the upright base surface when the frame member is in the upright orientation and the exercise machine rests on the recumbent base surface when the frame member is in the recumbent orientation.

3. The exercise machine of claim 1 or 2, wherein the foot is adjacent the base when the leg member is pivoted into a storage position.

4. The exercise machine of any preceding claim, wherein the foot is slidably connected to a track.

5. The exercise machine of any preceding claim, wherein the seat is pivotally connected to the frame member.

6. The exercise machine of any preceding claim, further comprising a console member pivotally attached to

the frame member.

7. The exercise machine of claim 6, further comprising a handle pivotally attached to the console member.

8. The exercise machine of claim 6 or 7, wherein the console member is rotated to be adjacent the seat when the frame member is in a storage position.

9. The exercise machine of claim 6, 7 or 8, wherein the console member is integrally formed with the leg member.

10. The exercise machine of claim 9, wherein the console member abuts against a positioning surface of the base when the frame member is in the recumbent orientation.

11. The exercise machine of any preceding claim, wherein the crank assembly is connected to a rotary resistance mechanism.

12. The exercise machine of claim 11, wherein the rotary resistance mechanism comprises:

a flywheel; and
a magnetic unit positioned proximate the flywheel to impose a magnetic force that resists movement of the flywheel.

13. The exercise machine of any preceding claim, wherein the seat is extended a greater distance from the base when the frame member is in the recumbent orientation.

14. The exercise machine of any preceding claim, further comprising a locking mechanism positioned to lock the exercise machine in either of the upright orientation or the recumbent orientation.

15. The exercise machine of any preceding claim, further comprising a linkage that passively orients the seat in either of the upright orientation or the recumbent orientation.

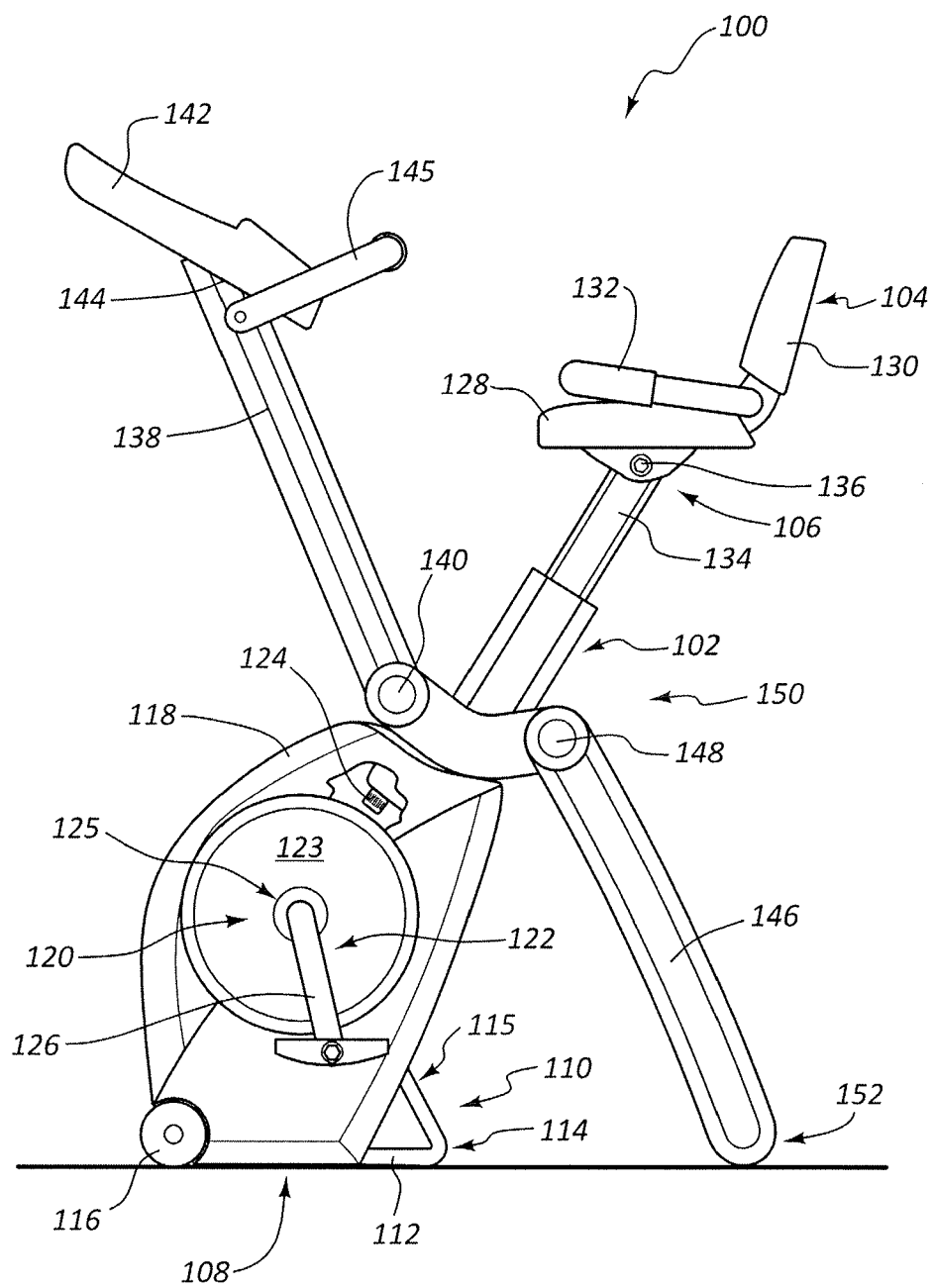
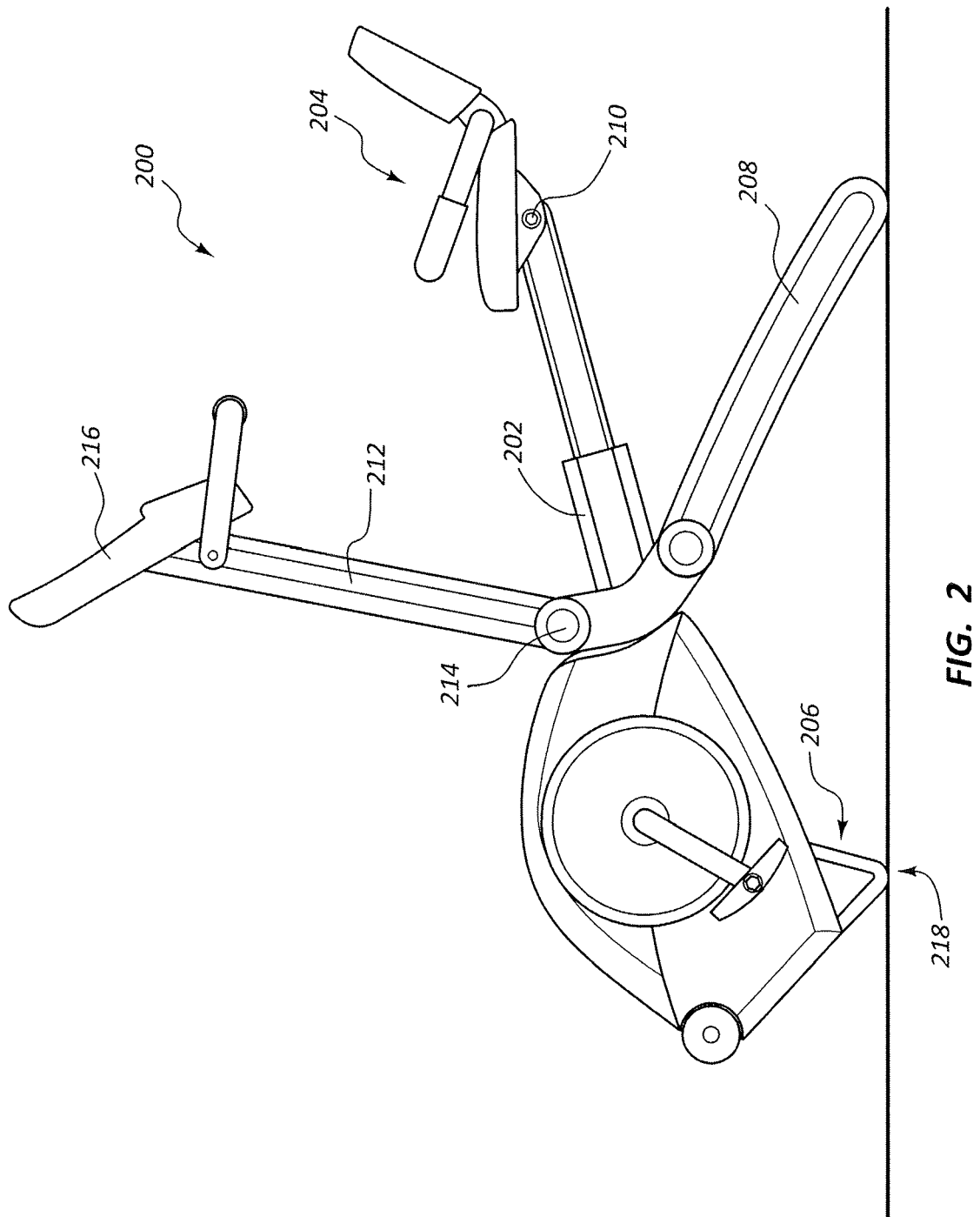


FIG. 1



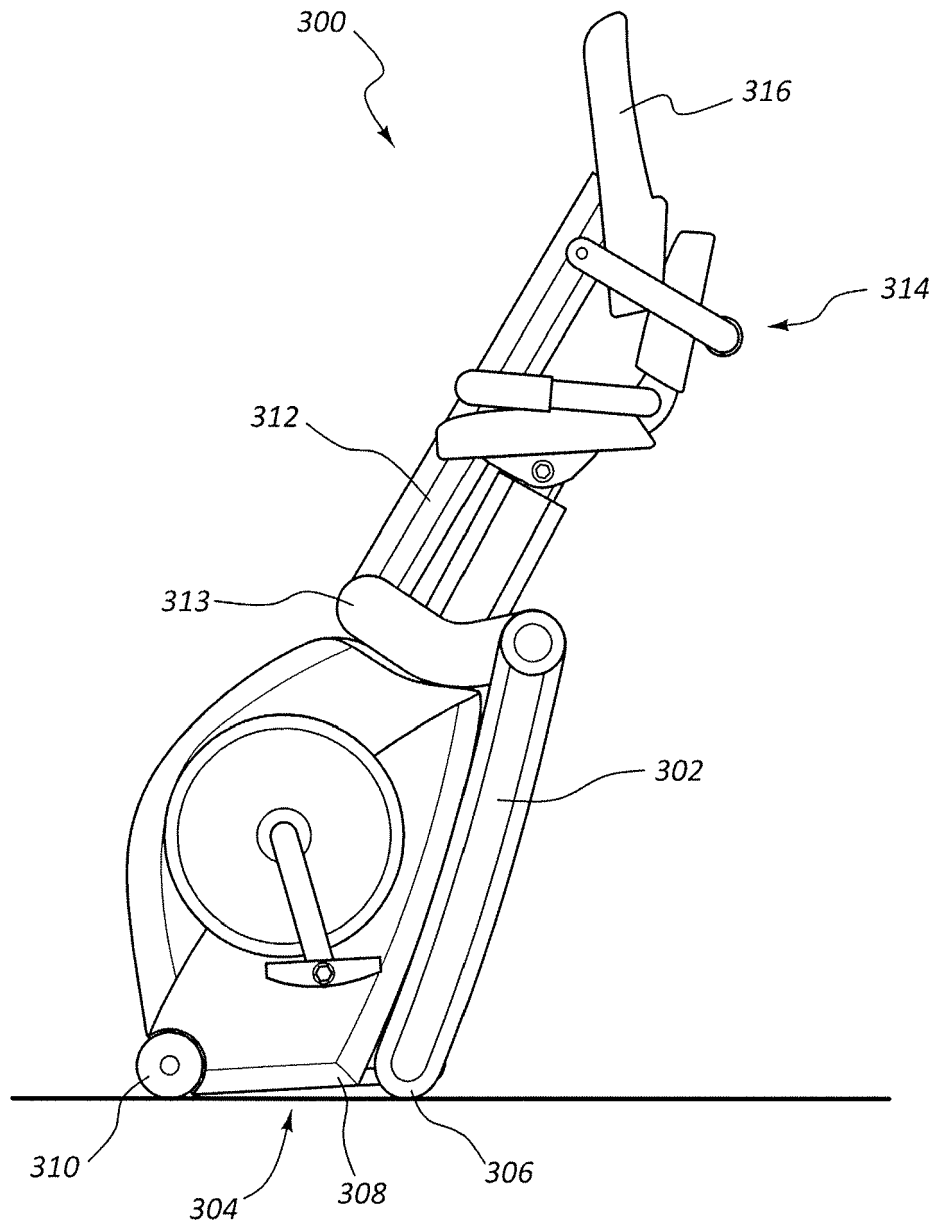


FIG. 3

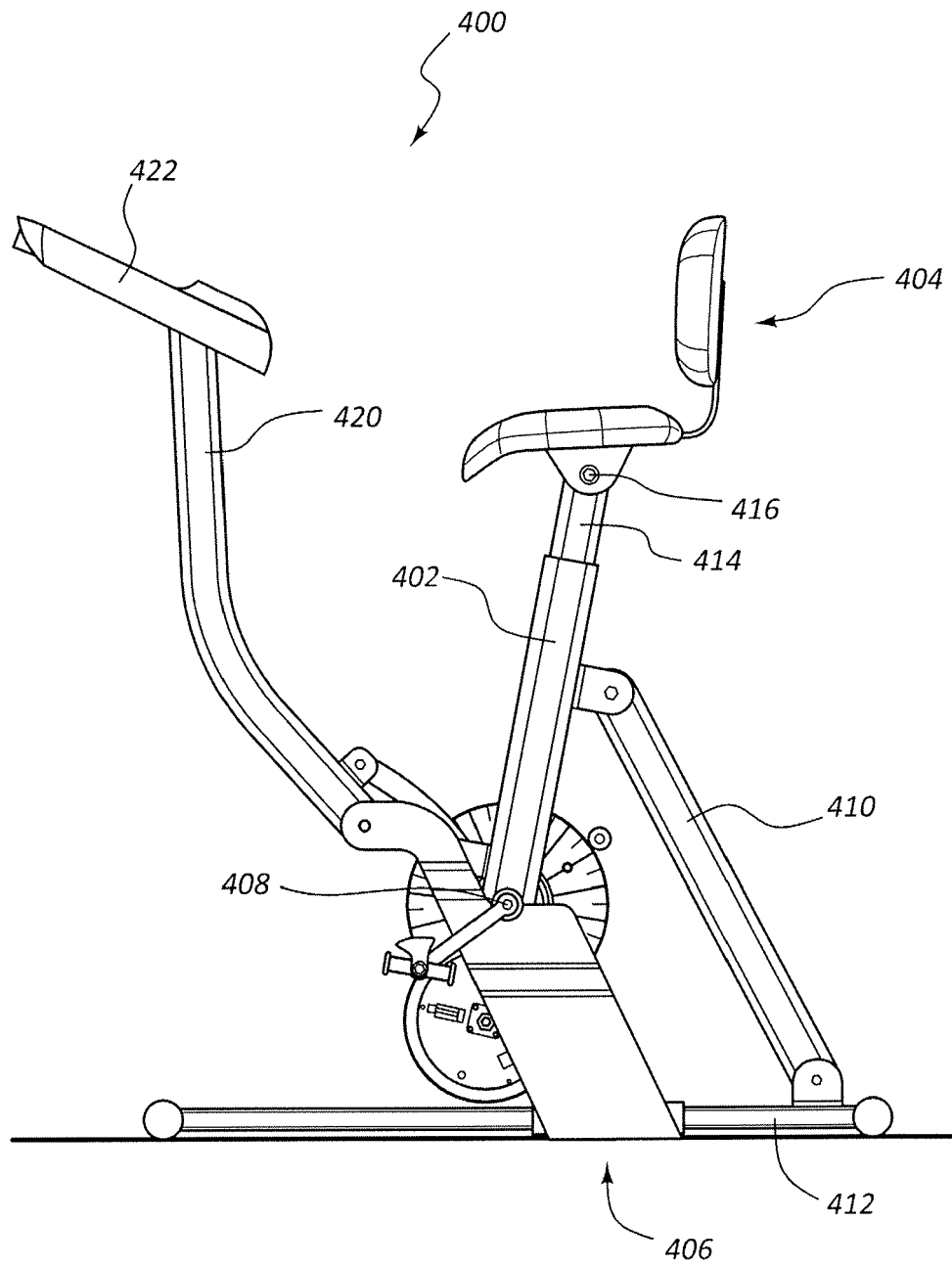


FIG. 4

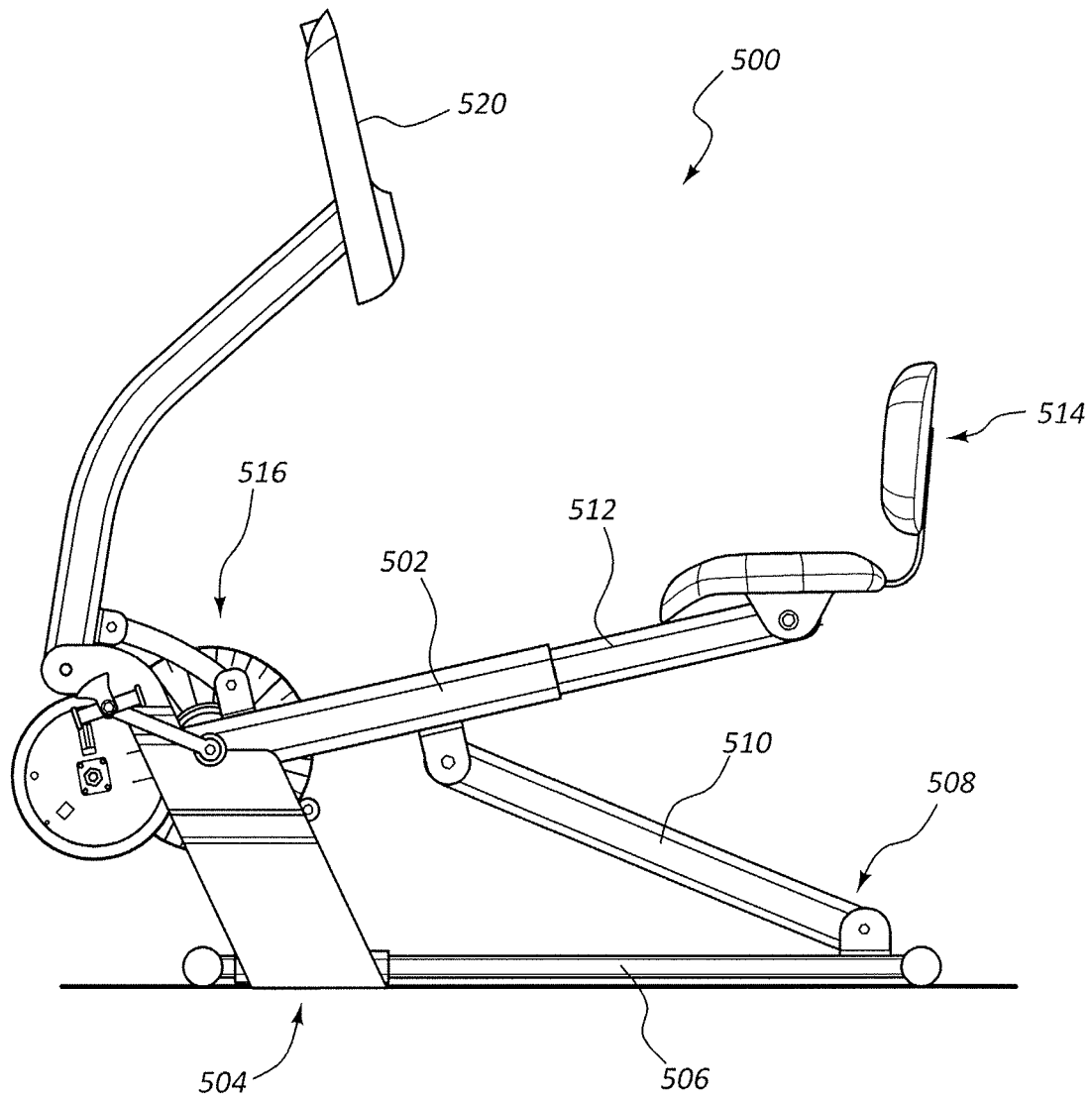


FIG. 5

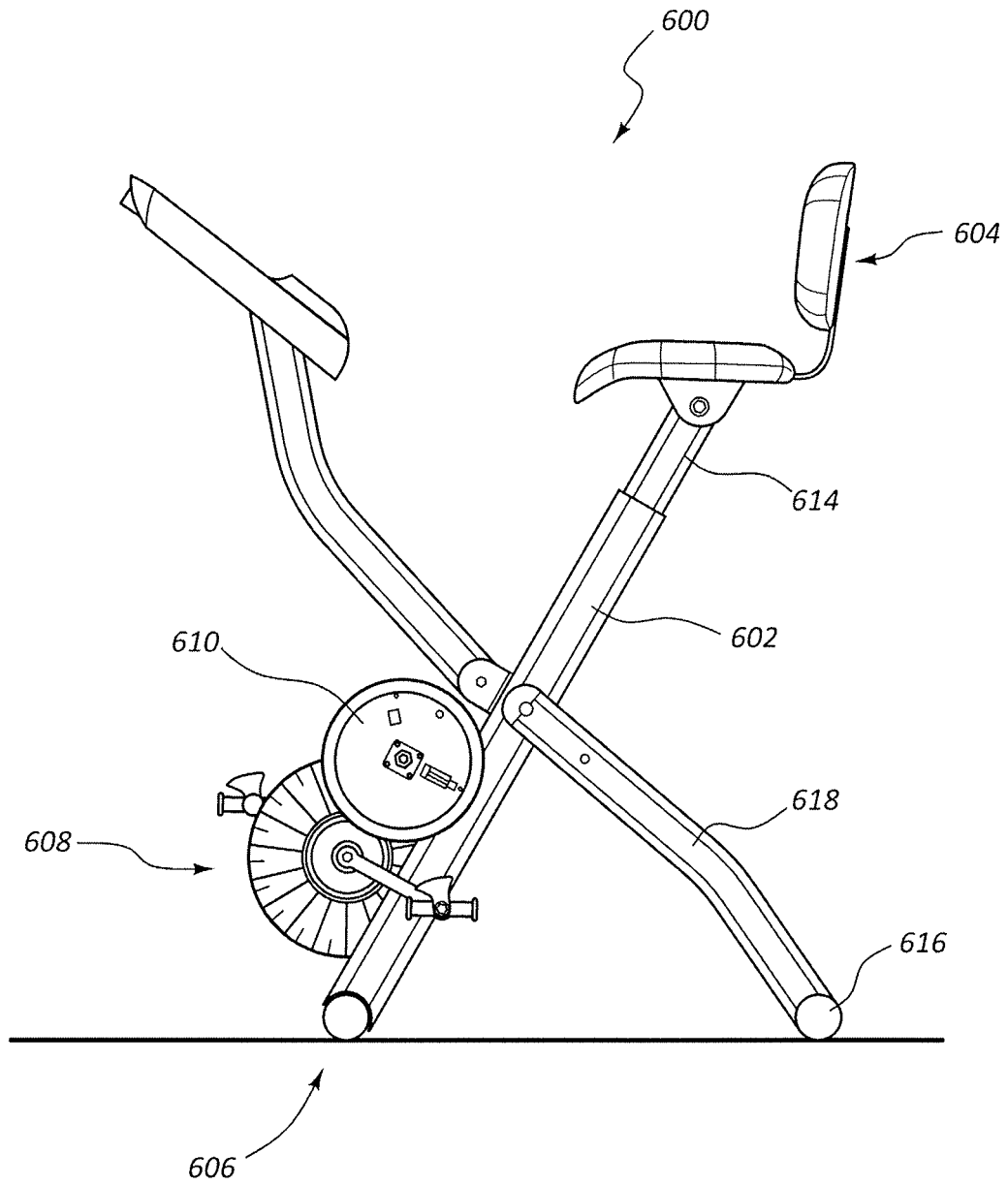


FIG. 6

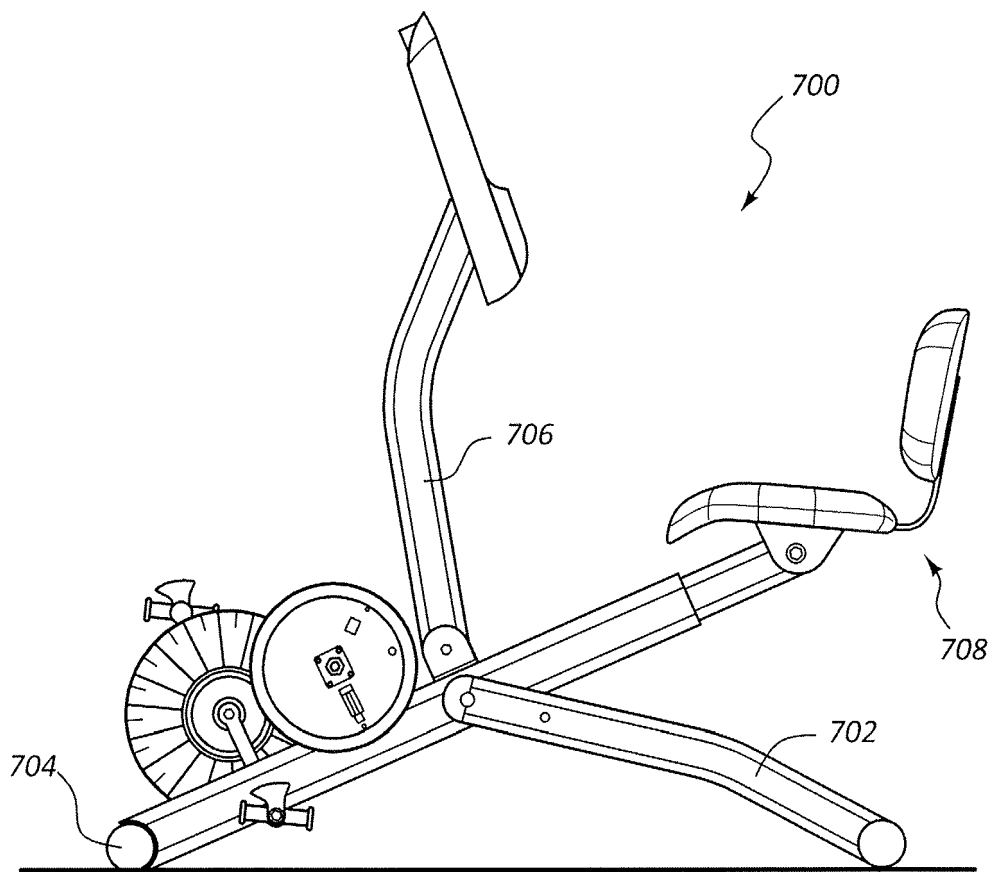


FIG. 7

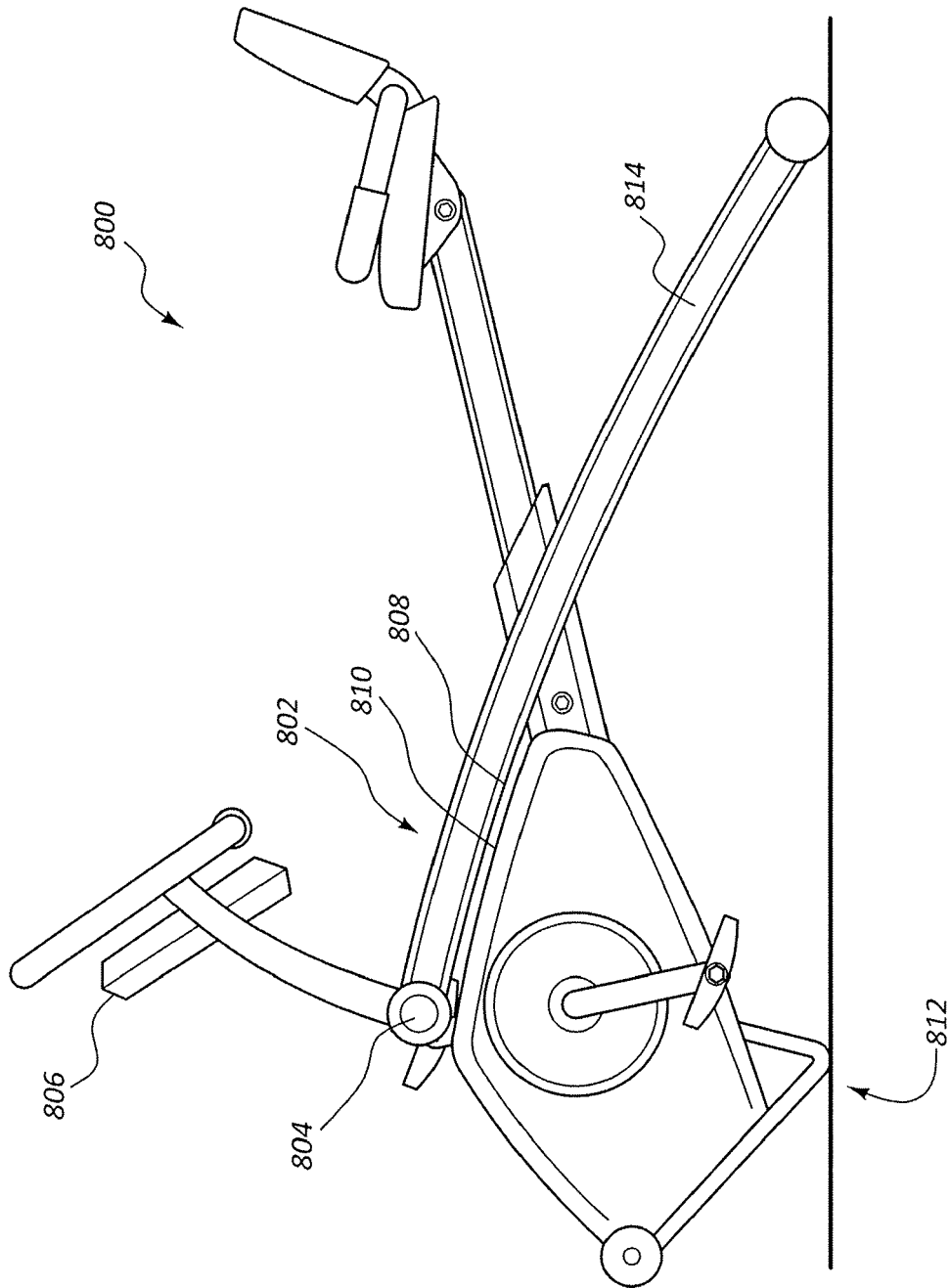


FIG. 8

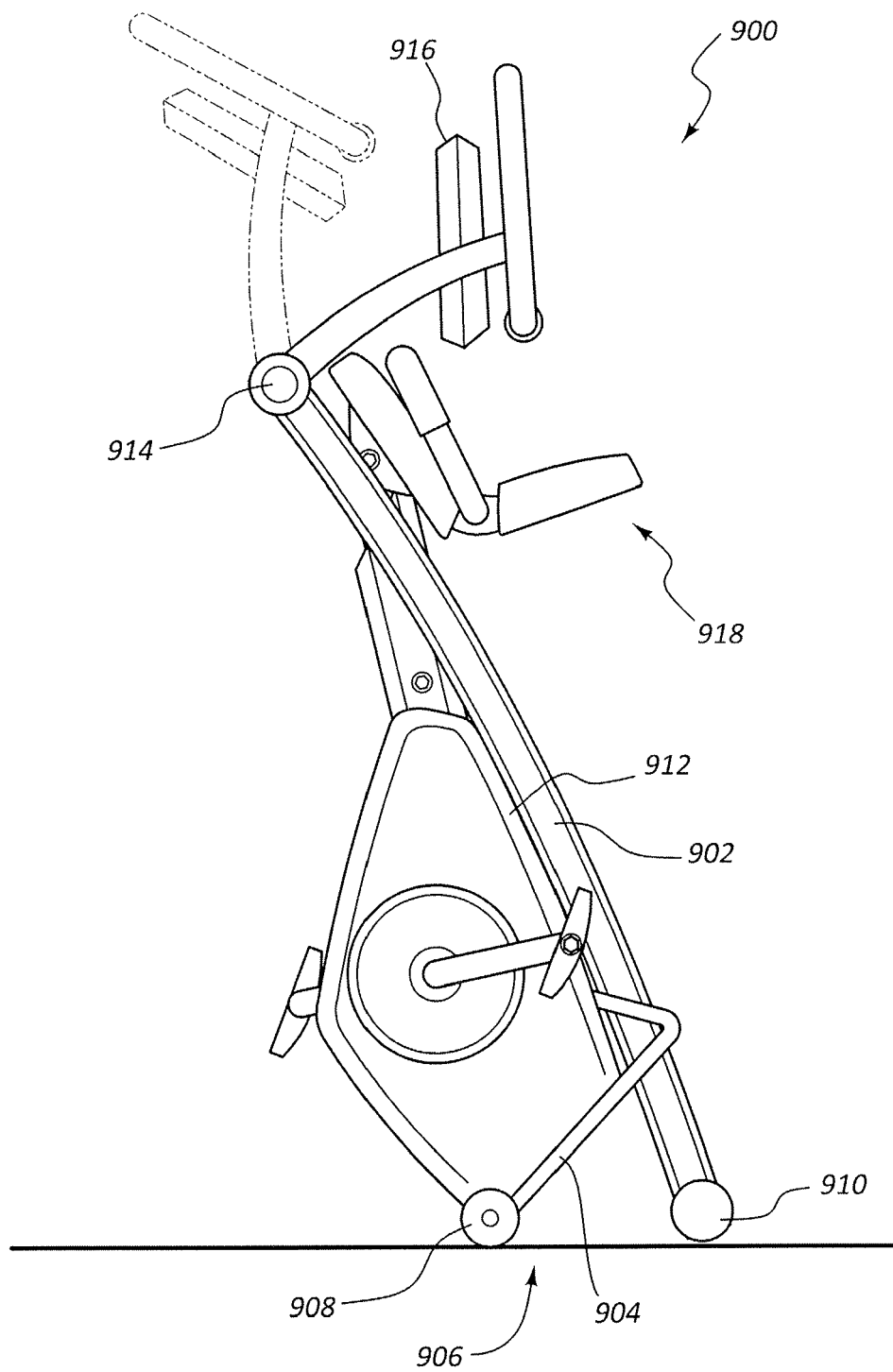


FIG. 9

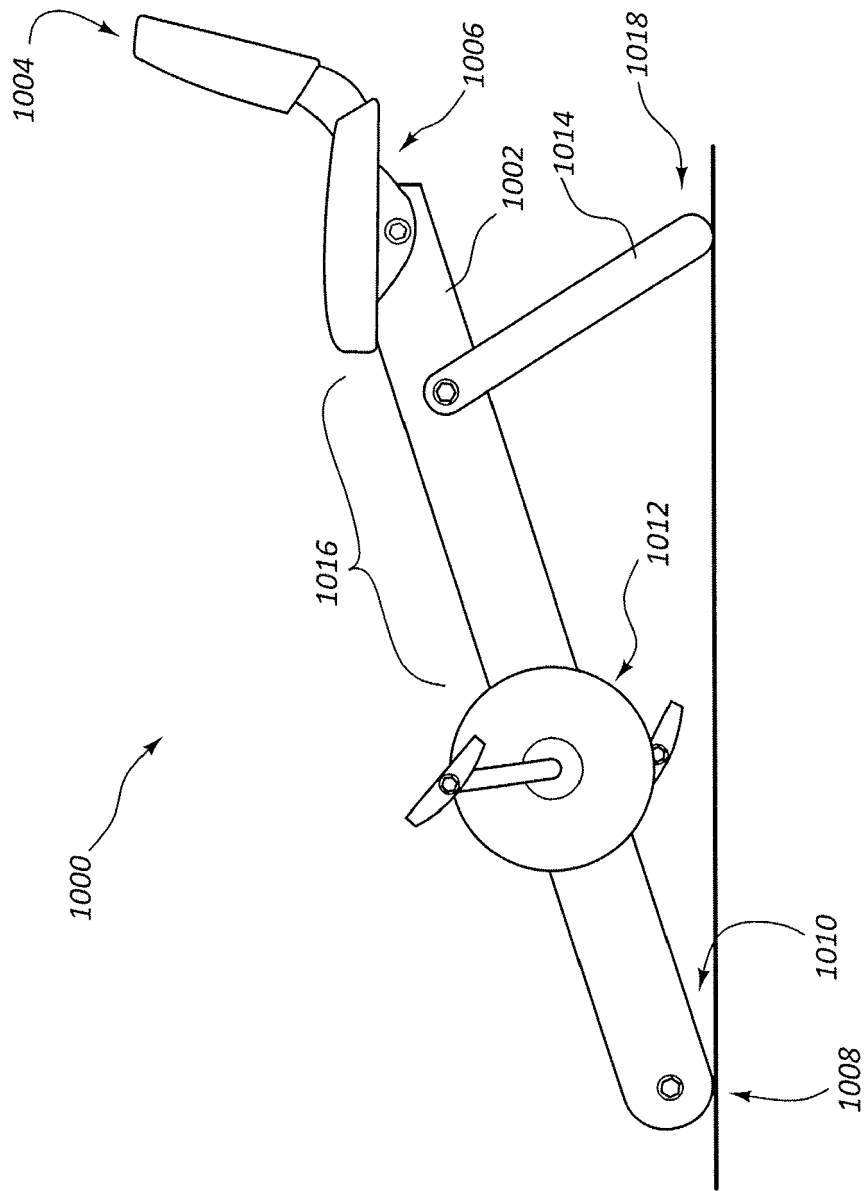


FIG. 10

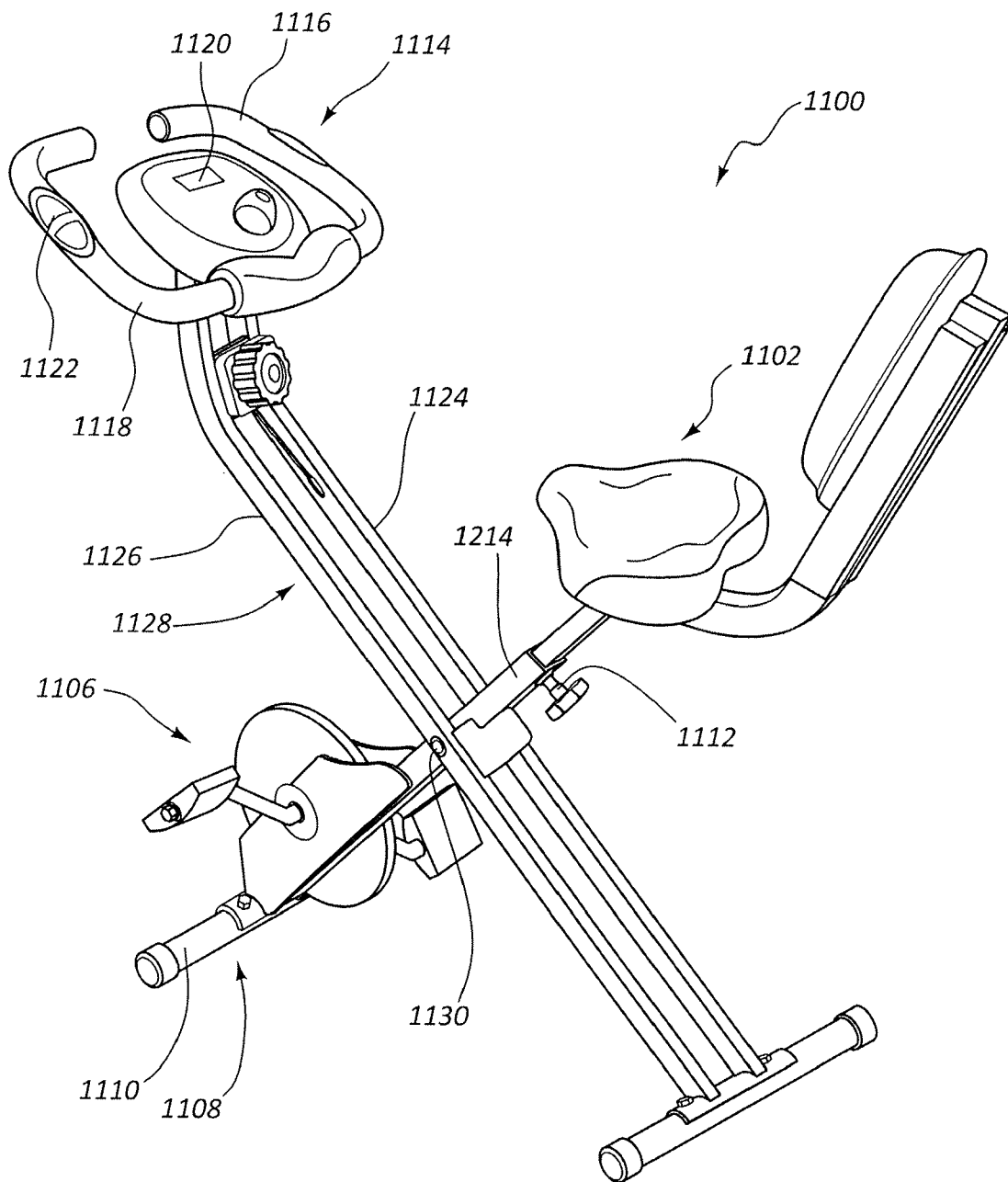


FIG. 11

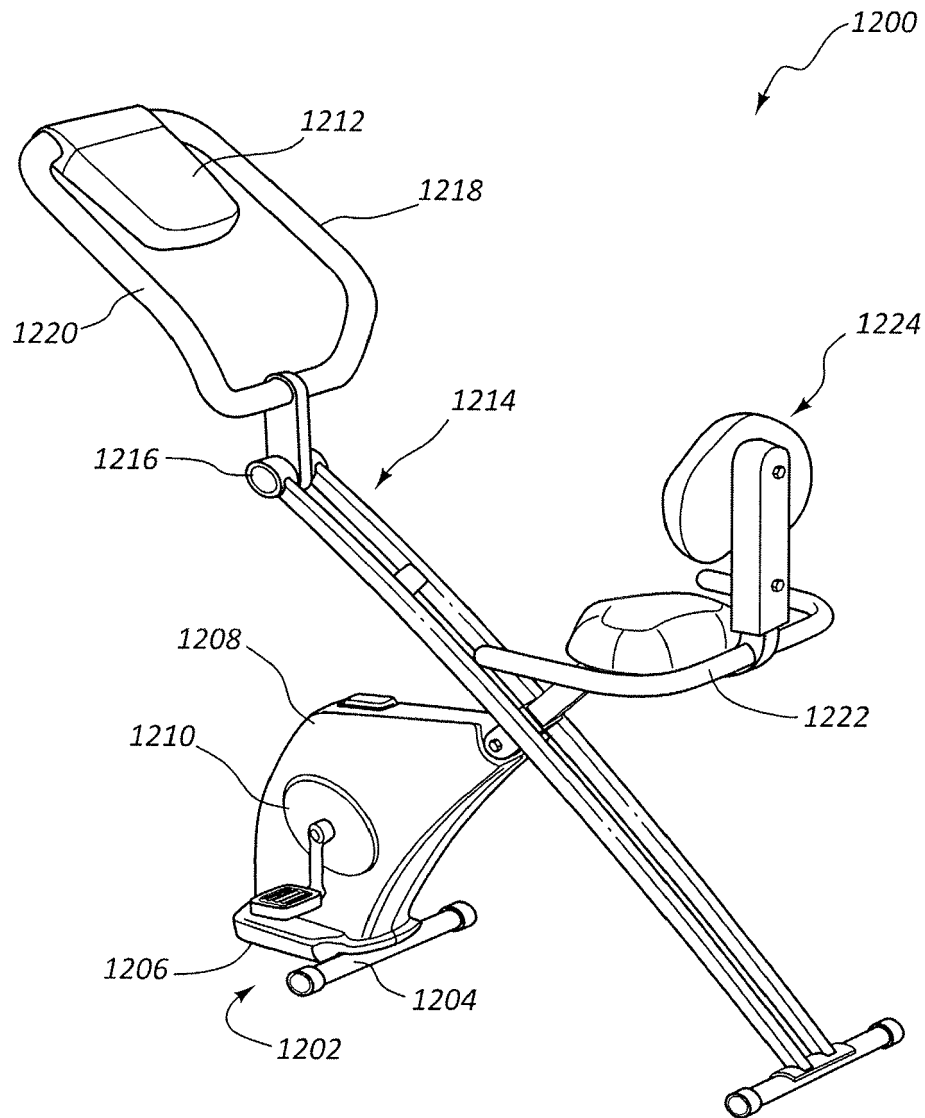


FIG. 12

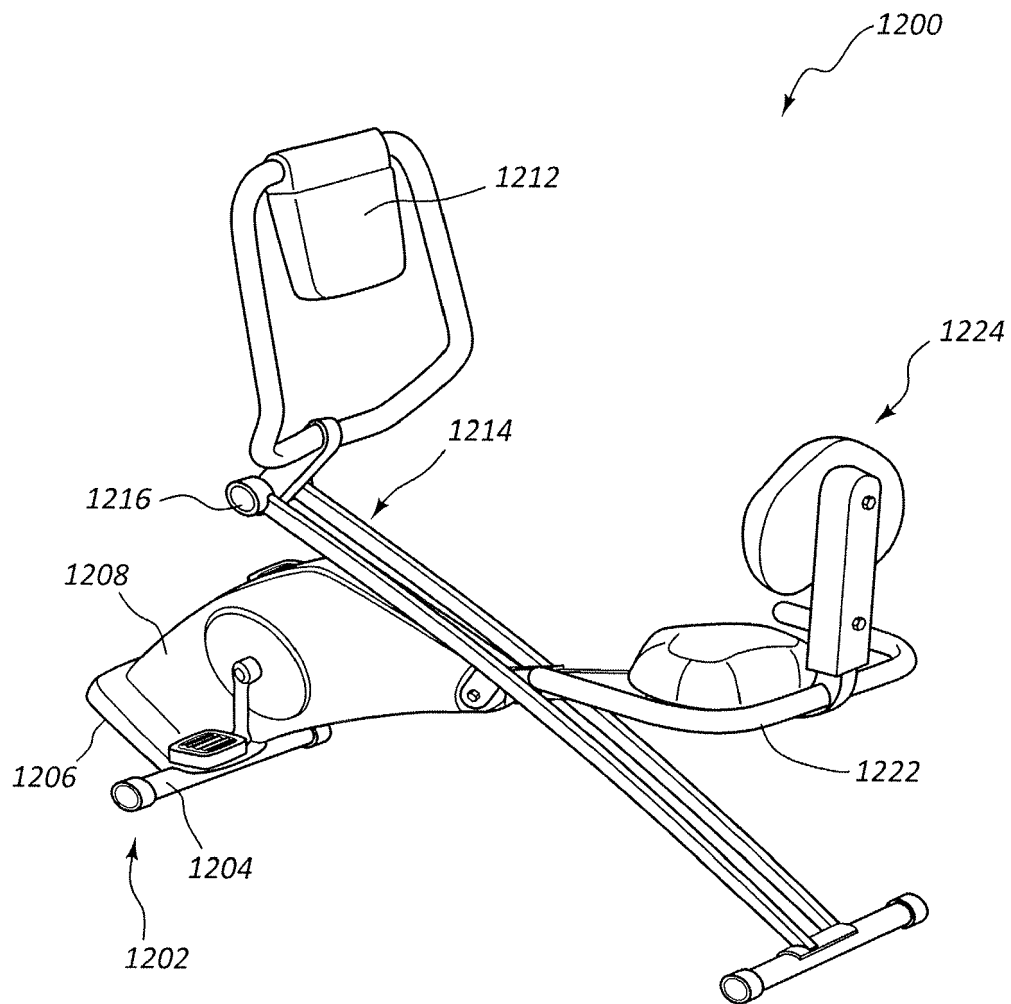


FIG. 13

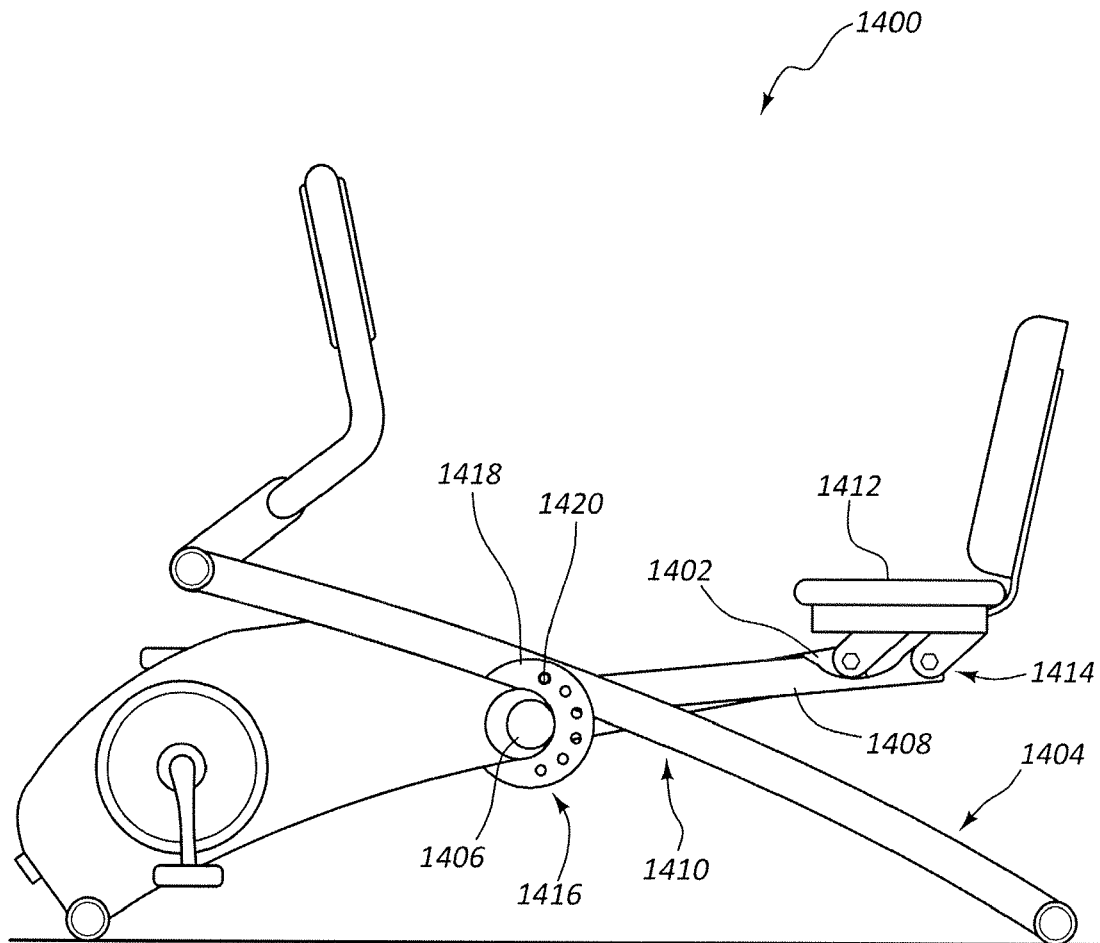


FIG. 14

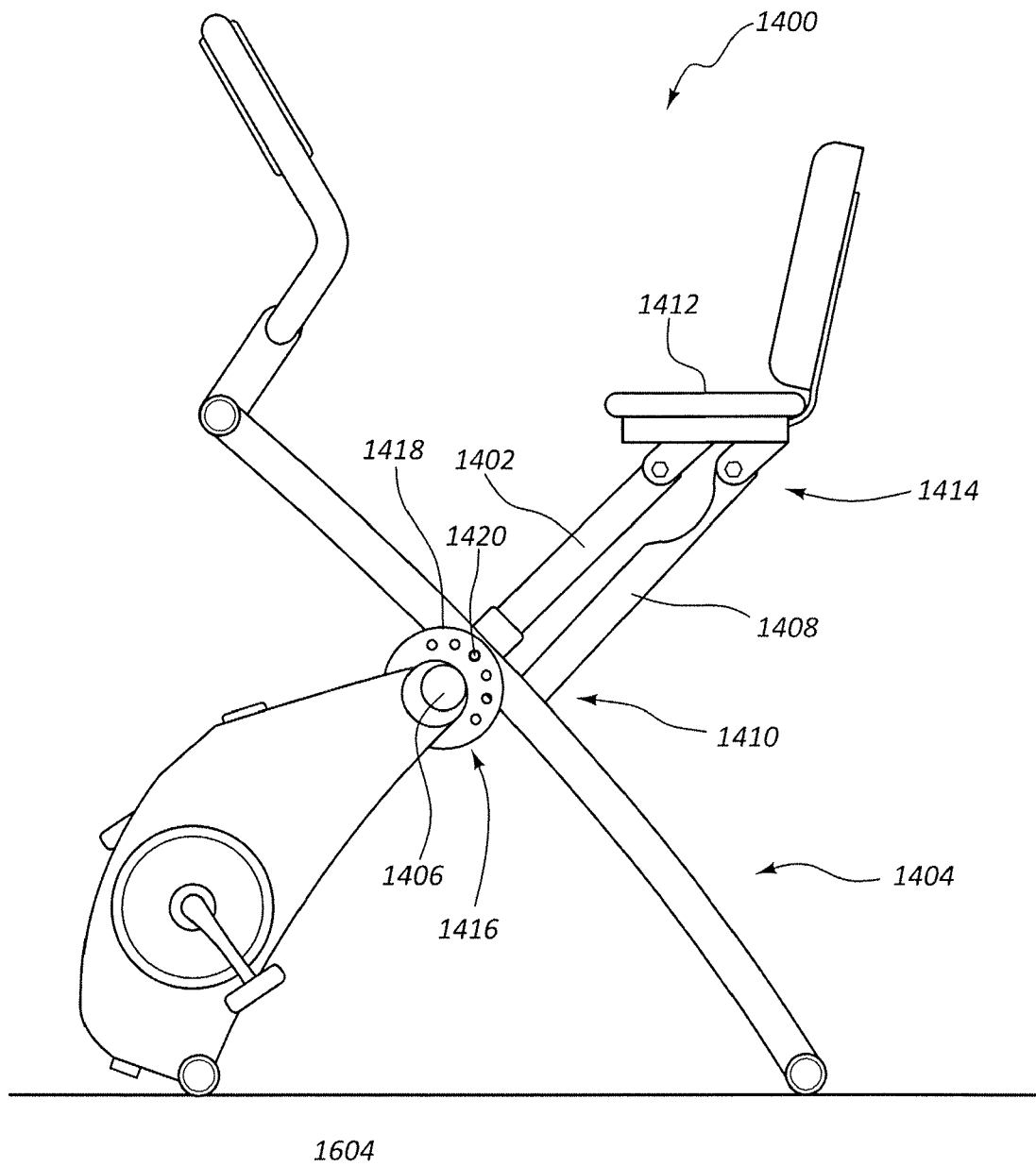


FIG. 15

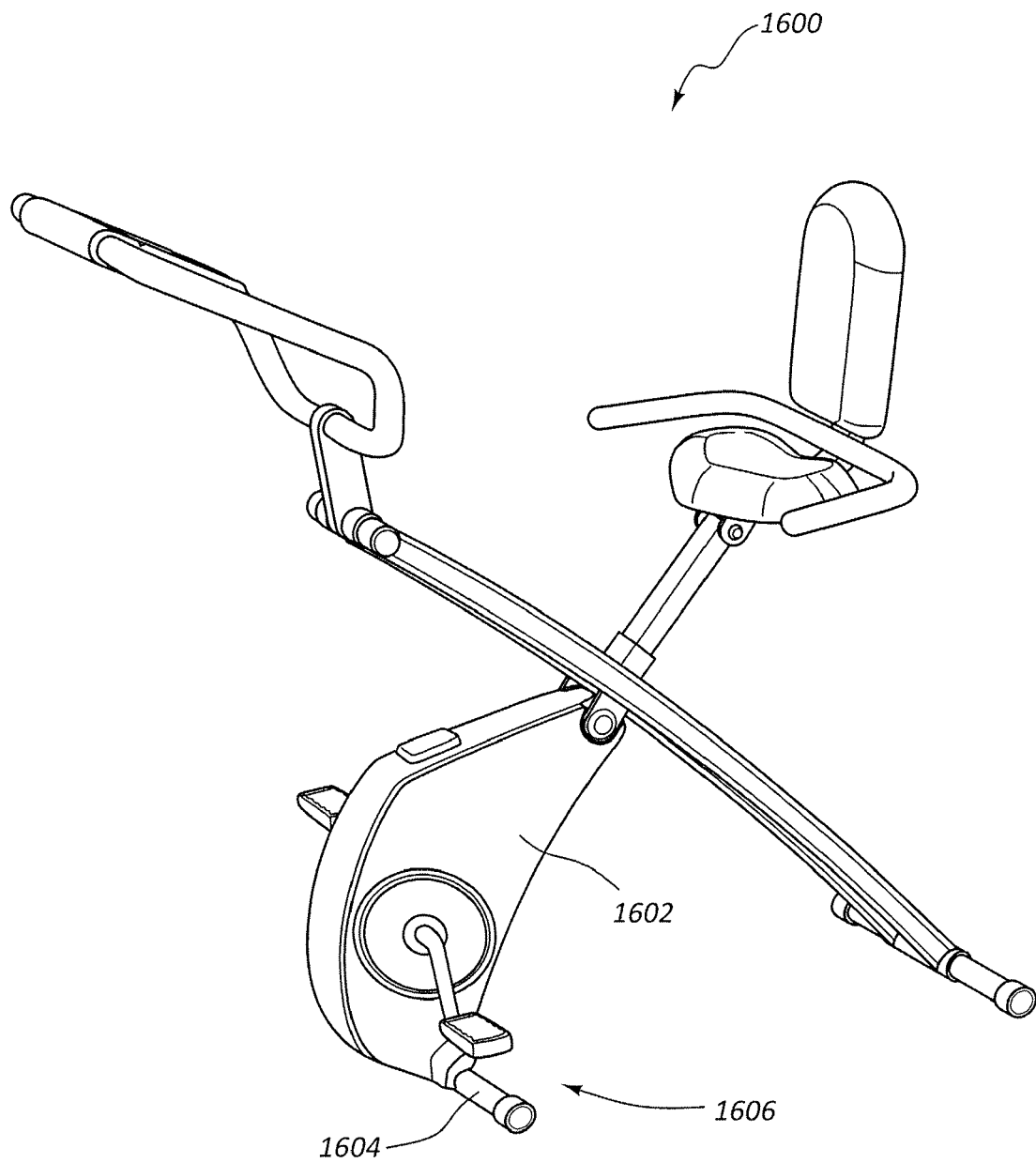


FIG. 16



EUROPEAN SEARCH REPORT

Application Number
EP 16 16 8501

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			A63B
Place of search		Date of completion of the search	Examiner
Munich		23 September 2016	Borrás González, E
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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5 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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23-09-2016

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