



US 20110034304A1

(19) **United States**(12) **Patent Application Publication**
Kuo(10) **Pub. No.: US 2011/0034304 A1**(43) **Pub. Date: Feb. 10, 2011**(54) **WEIGHT LIFTING EXERCISING DEVICE****Publication Classification**(75) Inventor: **Hai Pin Kuo, Tainan (TW)**(51) **Int. Cl.****A63B 21/08**

(2006.01)

A63B 21/062

(2006.01)

(52) **U.S. Cl. 482/97; 482/99**

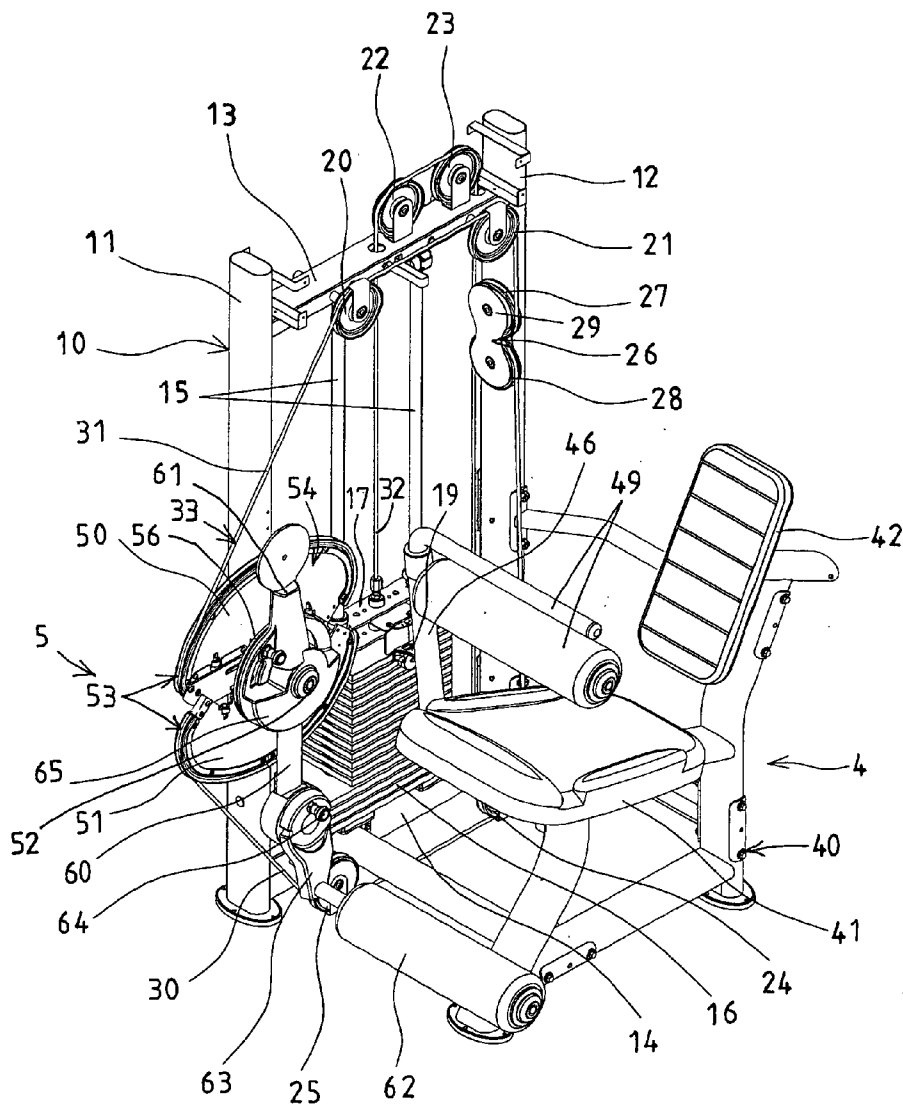
(57)

ABSTRACT

Correspondence Address:

CHARLES E. BAXLEY, ESQUIRE
90 JOHN STREET, SUITE 403
NEW YORK, NY 10038 (US)(73) Assignee: **Sports Art Industrial Co., Ltd.**(21) Appl. No.: **12/462,512**(22) Filed: **Aug. 5, 2009**

A weight lifting exercising device includes a number of weight plates slidably attached to a frame with a weight guide rod, two cam members pivotally attached to the frame, two cables coupled between the cam members and the weight plates for moving the selected number of the weight plates up and down along the weight guide rod, and an operating device engaged with the cam members for rotating either of the cam members to actuate either of the cables to move the weight plates up and down along the weight guide rod and for allowing the user to lift and to exercise the weight members either by pulling or pushing a force transfer member and for training or exercising the lower or the upper muscle groups of the users.



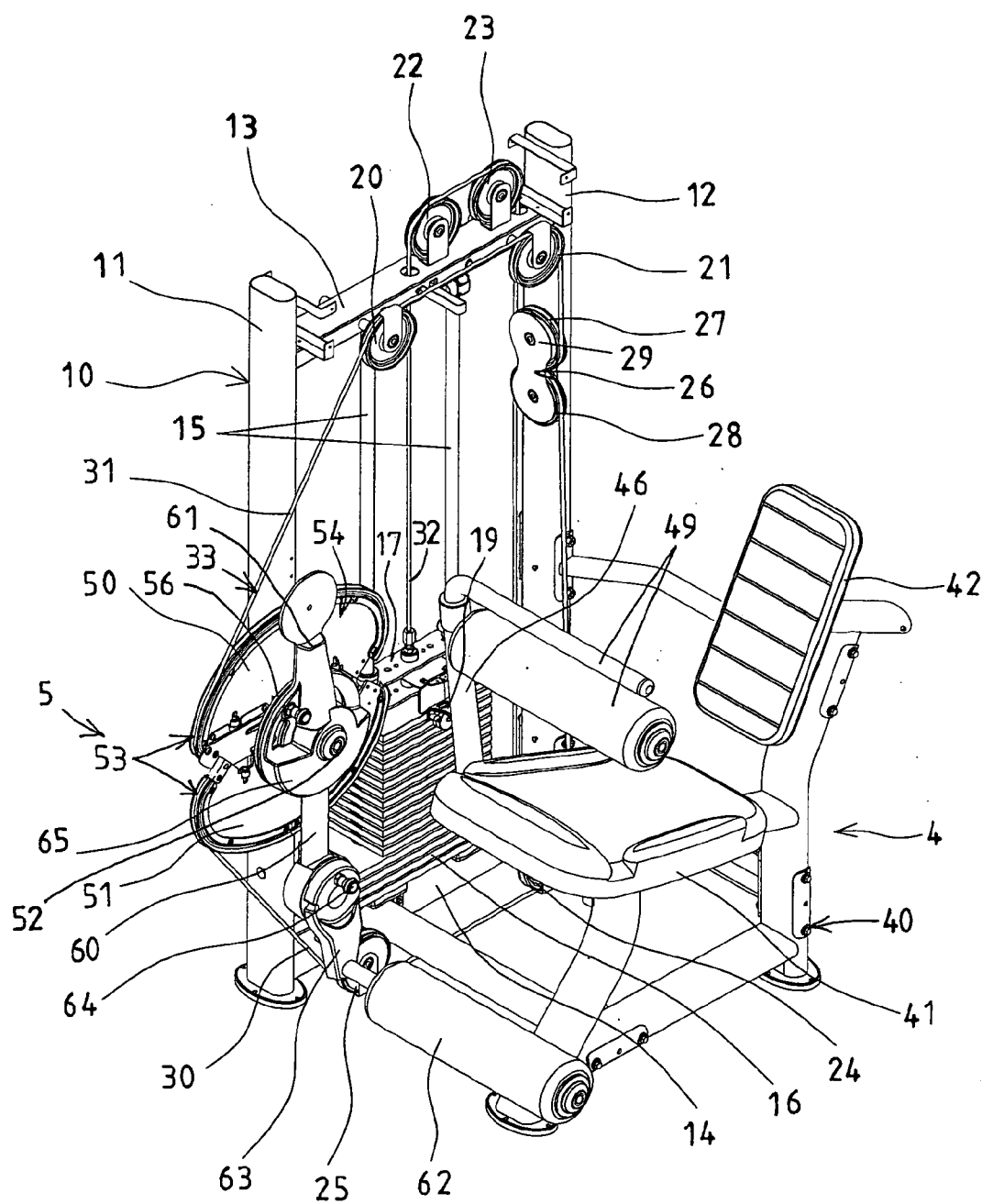


FIG. 1

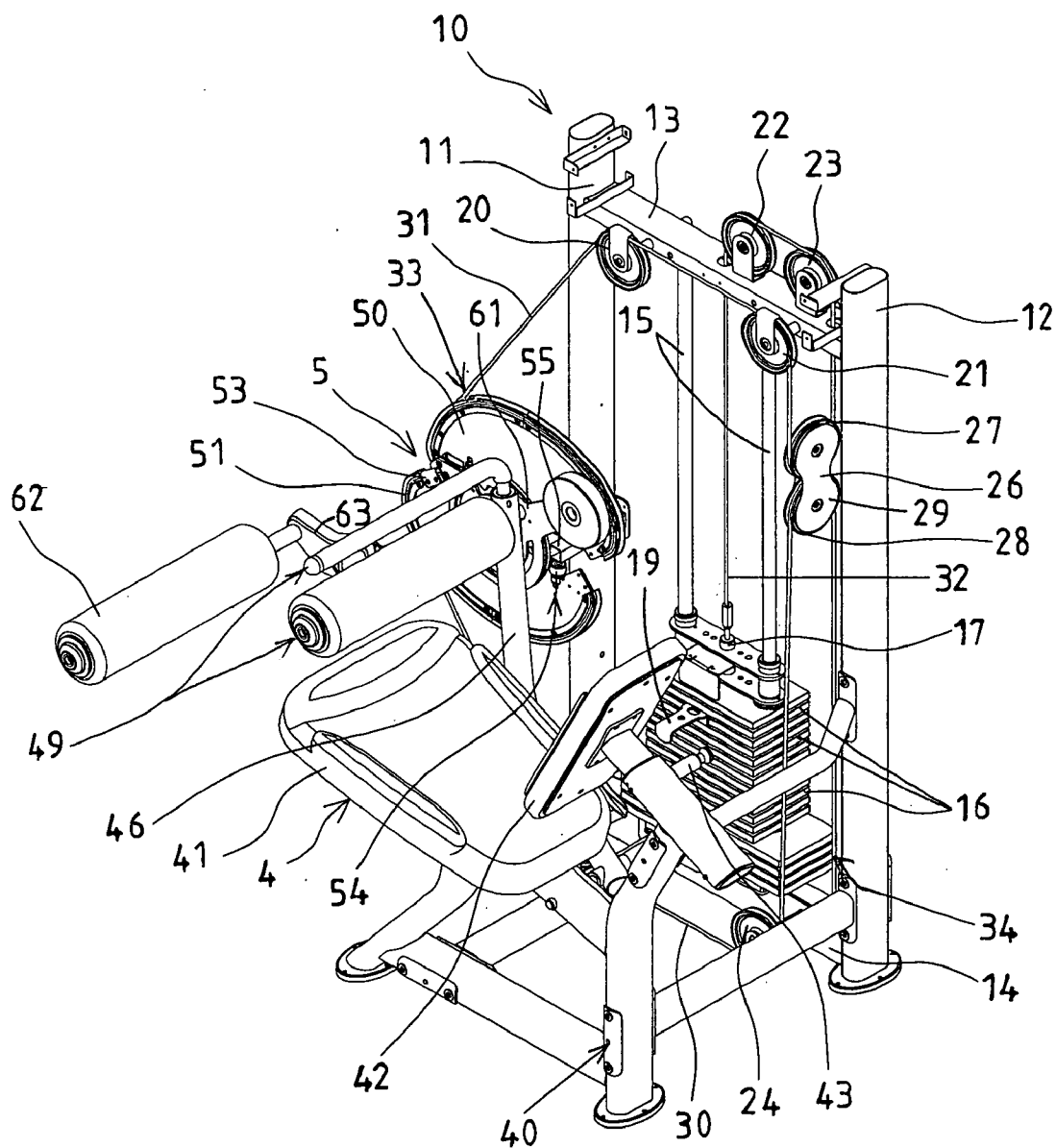


FIG. 2

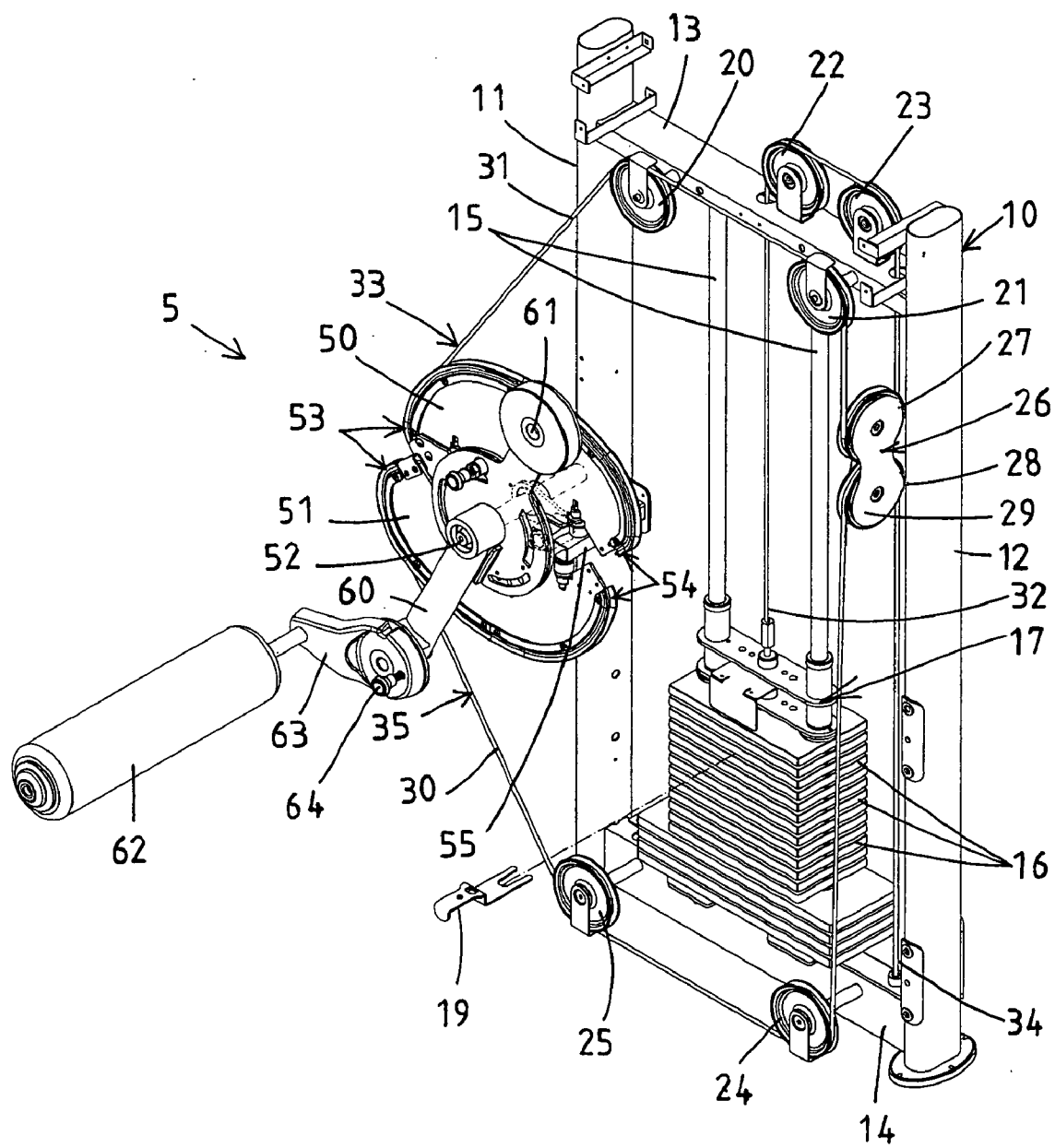


FIG. 3

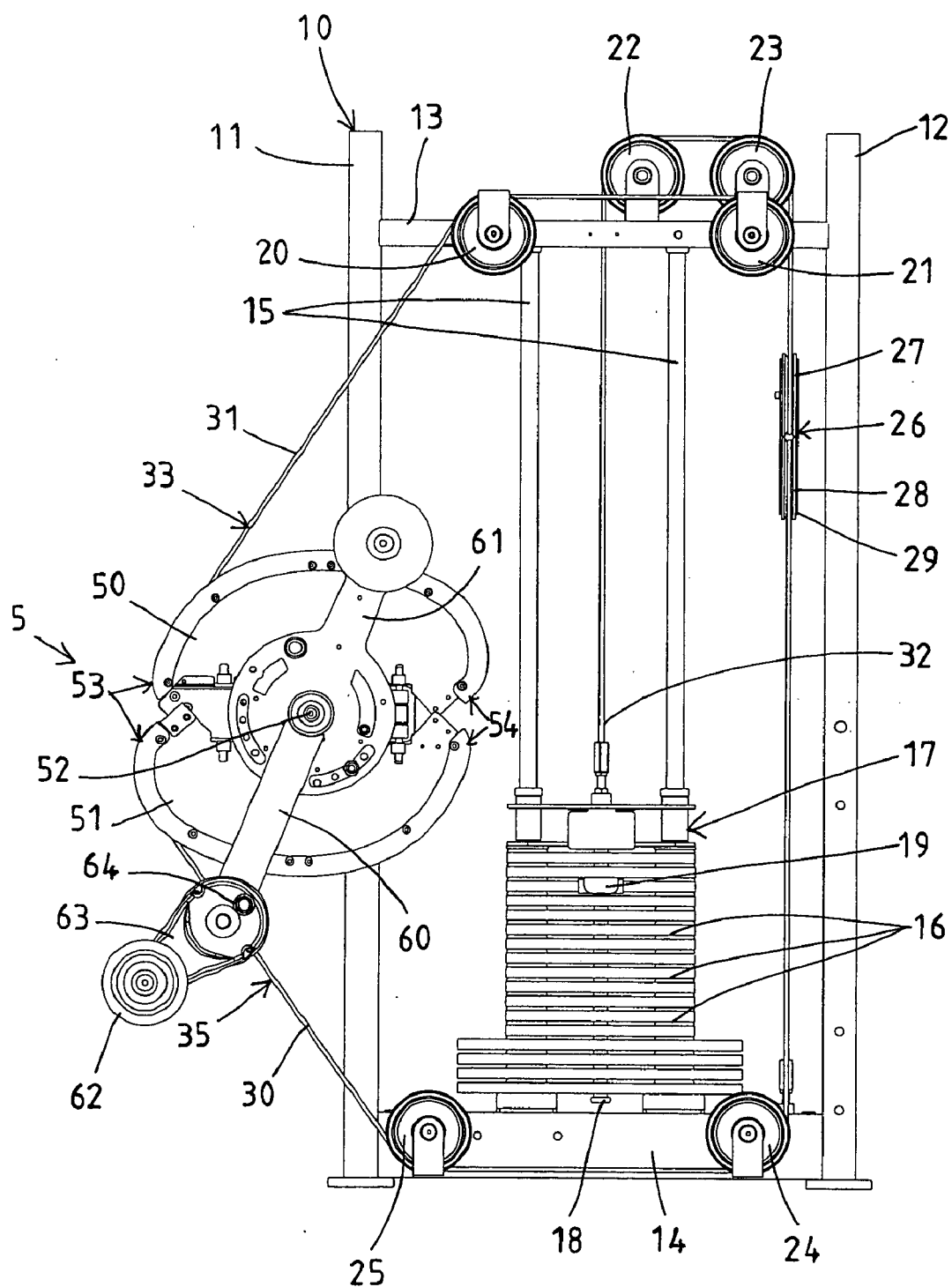


FIG. 4

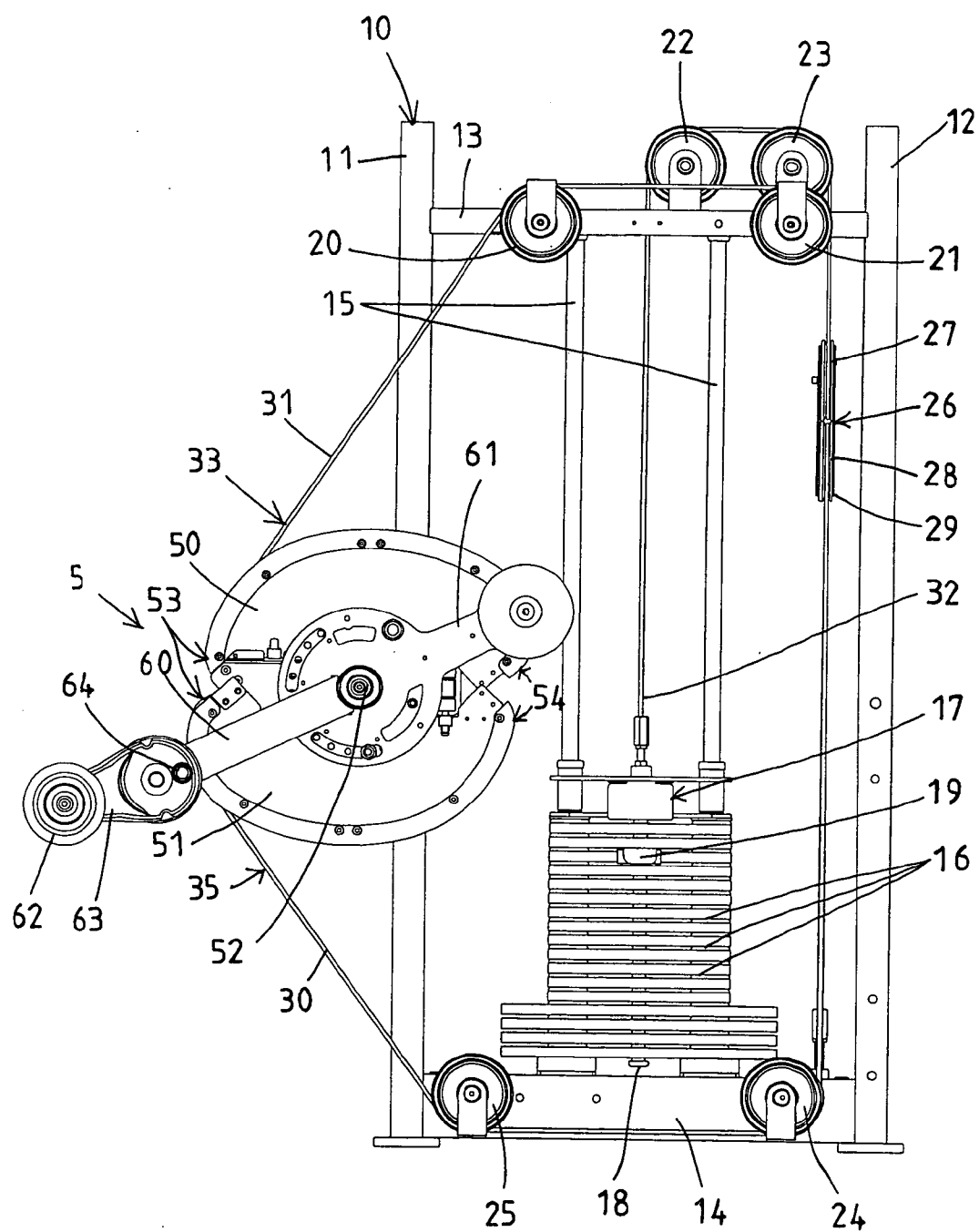


FIG. 5



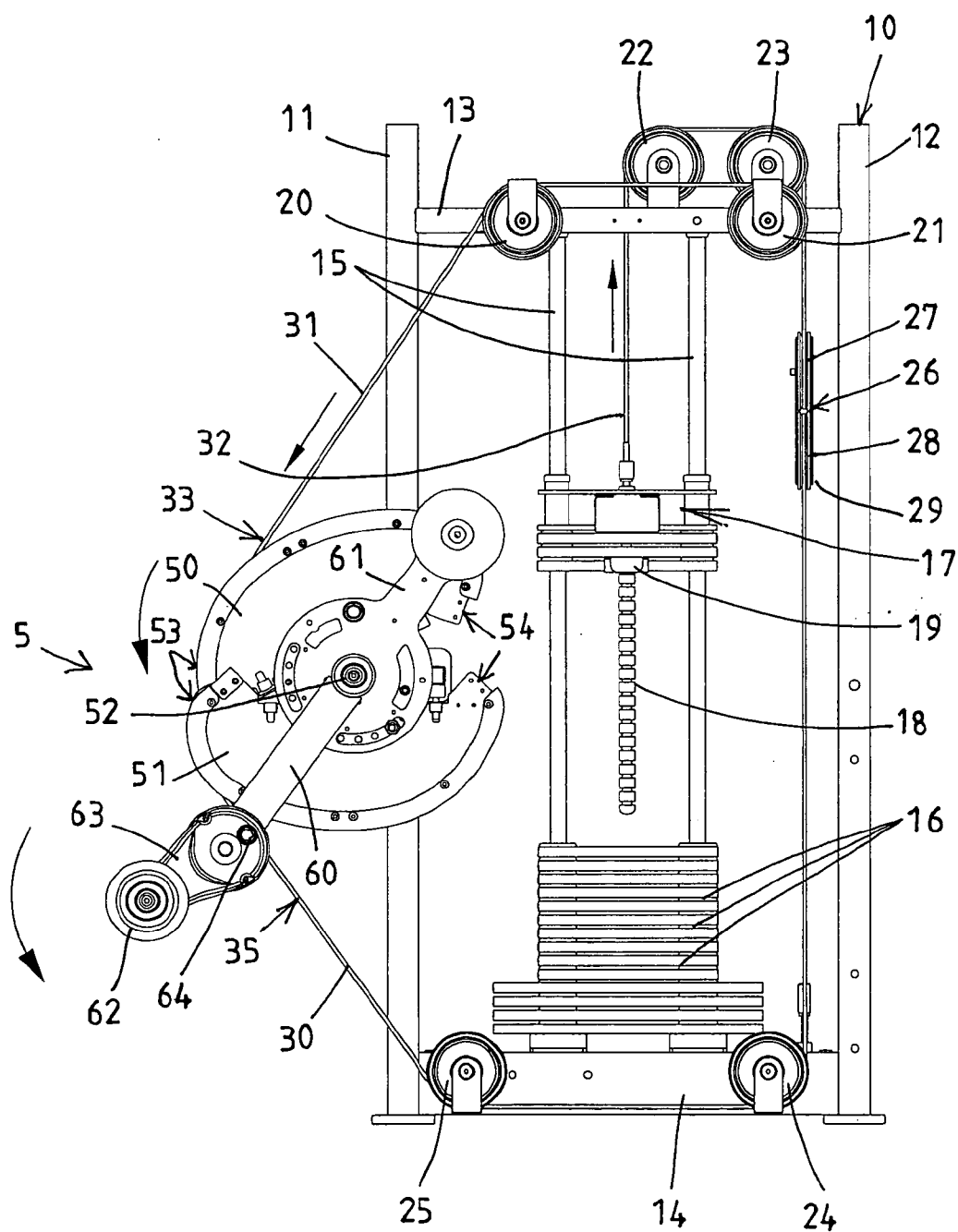


FIG. 7

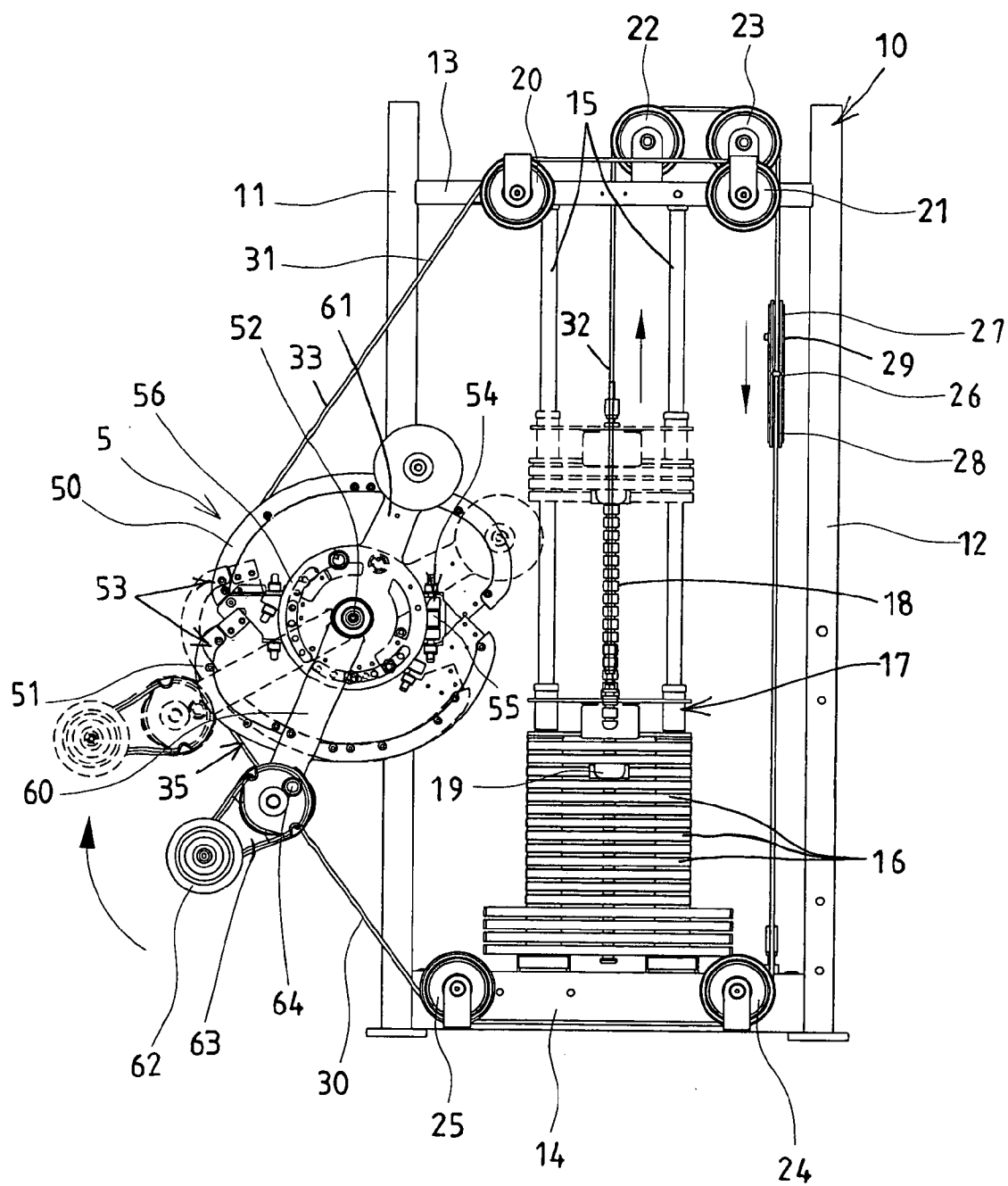


FIG. 8

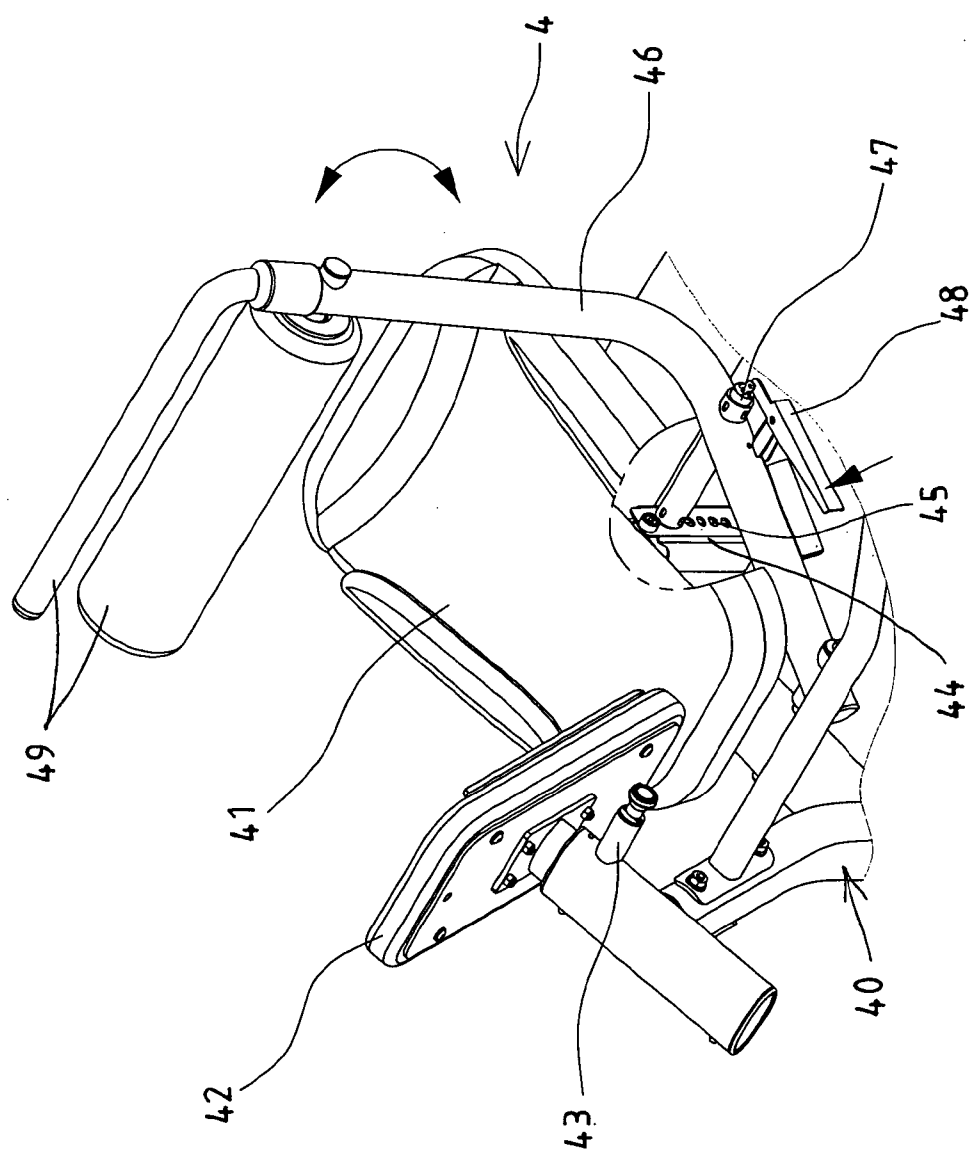


FIG. 10

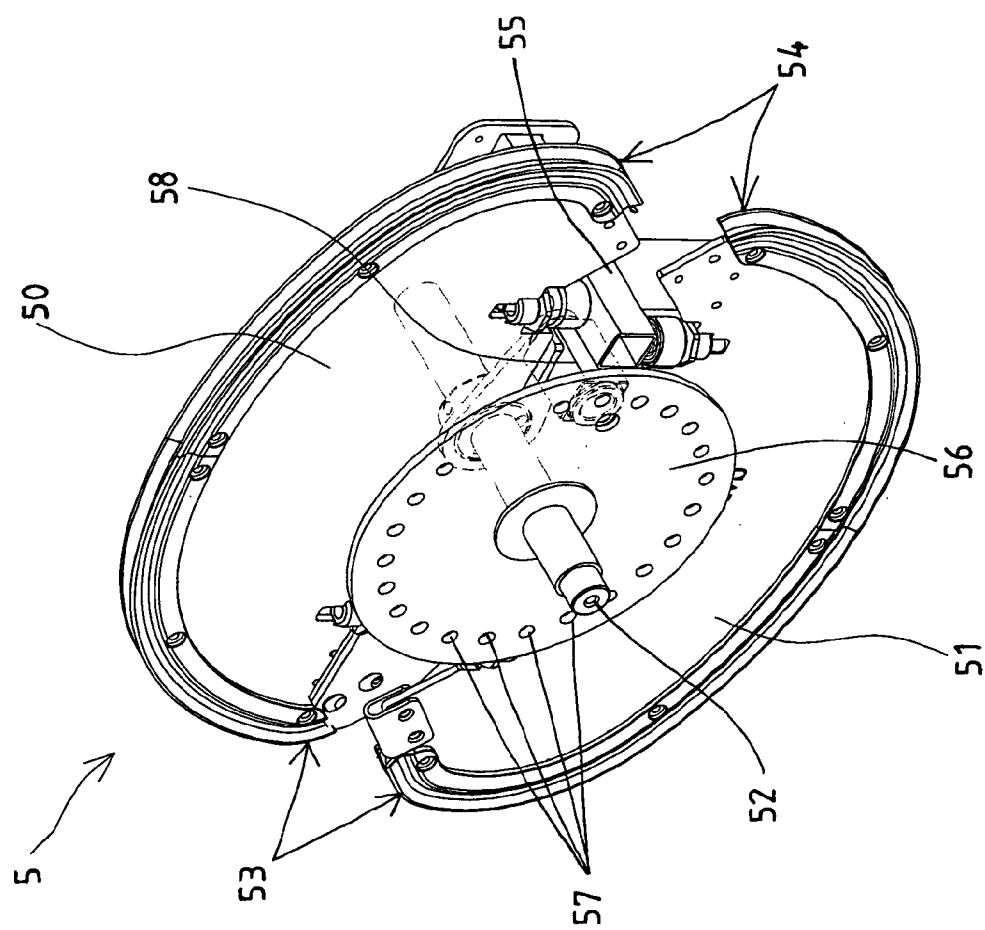


FIG. 11

FIG. 12

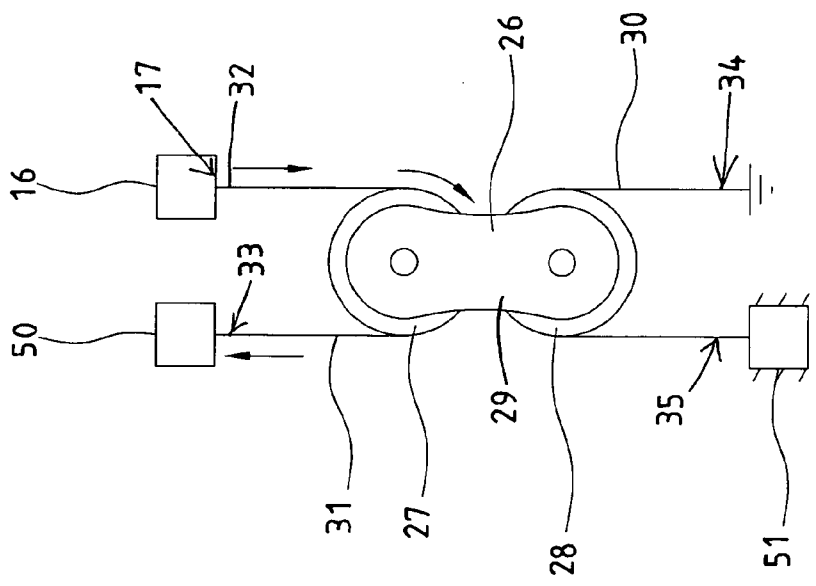


FIG. 13

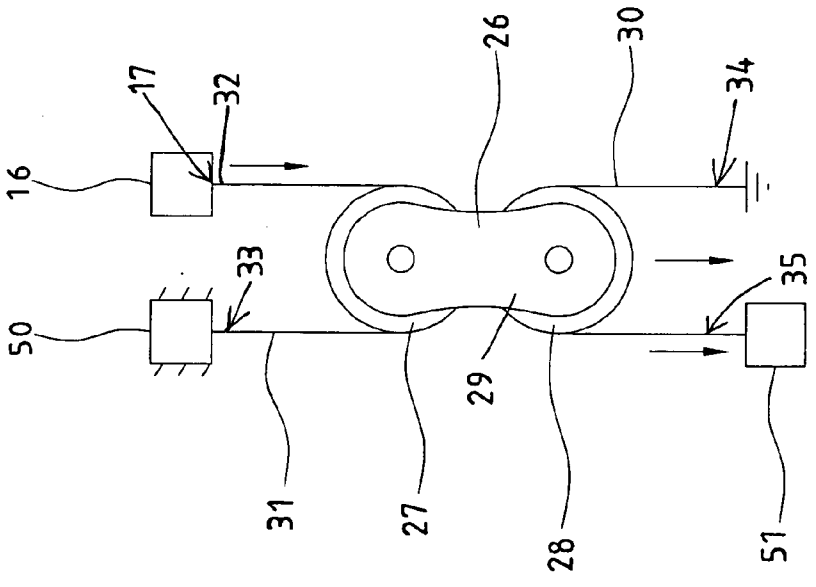


FIG. 14

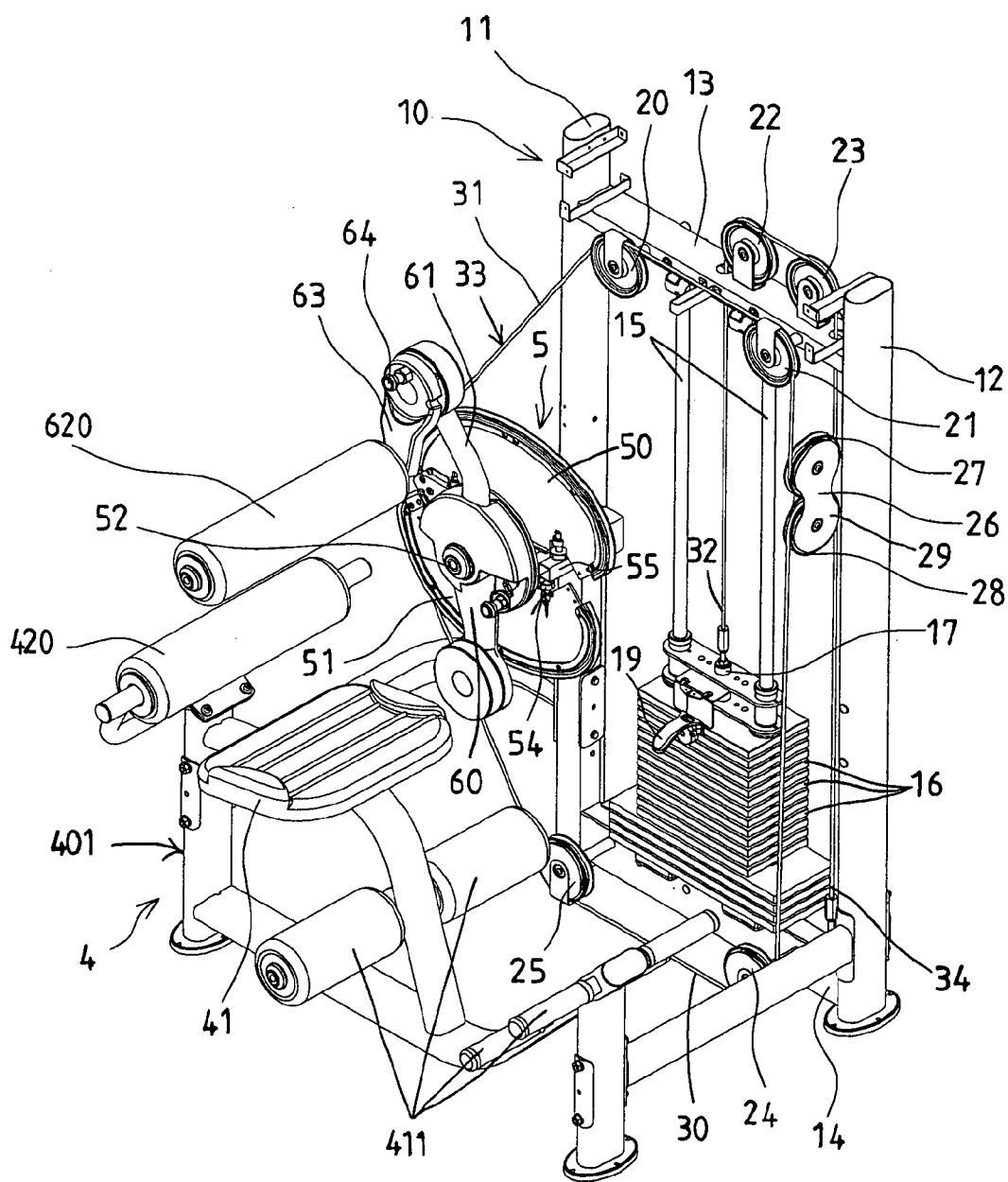


FIG. 15

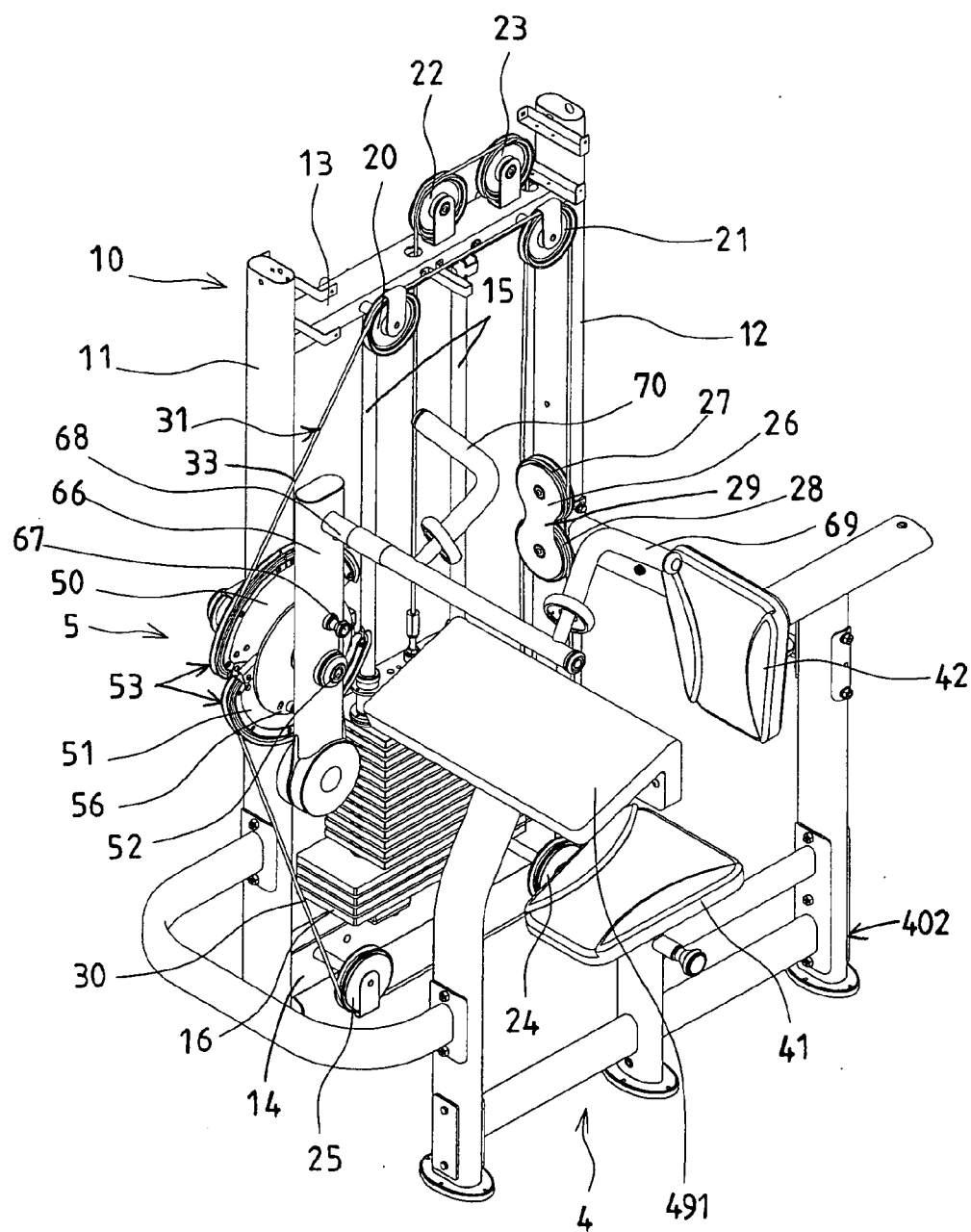


FIG. 16

WEIGHT LIFTING EXERCISING DEVICE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a weight lifting exercising device, and more particularly to a weight lifting exercising device including a structure for allowing the user to lift and to exercise the weight members either by pulling or pushing handle bar or foot pedal or foot actuating member and for training or exercising the lower or the upper muscle groups of the users.

[0003] 2. Description of the Prior Art

[0004] Typical weight lifting exercising devices comprise a number of weight plates stacked or disposed in a frame, a bench or chair or the like for supporting the user thereon, and a force transfer member, such as a handle bar, a foot pedal or a foot actuating member coupled to the weight plates with one or more cables for lifting the weight plates and for exercising the lower or the upper muscle groups of the users.

[0005] For example, U.S. Pat. No. 4,349,192 to Lambert, Jr. et al. discloses one of the typical counterbalanced weight systems comprising a number of weight plates slidably attached or disposed on four parallel weight rods, and a handle coupled to the weight plates for lifting or operating the weight plates and for exercising purposes.

[0006] However, the handle may only be moved or pulled or pushed in one direction in order to lift or to elevate the weight plates, but the handle may not be moved or pulled or pushed in the opposite direction to lift the weight plates.

[0007] U.S. Pat. No. 4,511,137 to Jones discloses another typical compound weight lifting exercising machine also comprising a number of weight plates slidably attached or disposed on a pair of weight guide rods, and a force transfer member, such as a foot pedal or a foot actuating member coupled to the weight plates with one or more cables or sprocket chains for lifting the weight plates and for exercising the lower muscle groups of the users.

[0008] However, similarly, the force transfer member or the foot pedal may only be moved or stepped in one direction in order to lift the weight plates, but may not be moved in the opposite direction to lift the weight plates.

[0009] U.S. Pat. No. 4,648,594 to Schleffendorf discloses a further typical body training device also comprising a number of weight plates slidably attached or disposed on a pair of weight guide tubes, and a force transfer member, such as a handle bar or handle member coupled to the weight plates with one or more cables for lifting the weight plates and for exercising the lower muscle groups of the users.

[0010] However, similarly, the force transfer member or the handle member may only be moved or pulled in one direction relative to the weight guide tubes in order to lift or elevate the weight plates, but may not be moved in the opposite direction to lift the weight plates.

[0011] U.S. Pat. No. 4,691,916 to Voris discloses a still further typical exercise apparatus also comprising a number of weight plates slidably attached or disposed on a pair of weight guide rods, and a force transfer member, such as a handle or a press bar coupled to the weight plates with a trolley system for lifting the weight plates and for exercising the lower or the upper muscle groups of the users.

[0012] However, similarly, the force transfer member or the press bar may only be moved or pulled in one direction in order to lift the weight plates, but may not be moved in the opposite direction to lift the weight plates.

[0013] U.S. Pat. No. 5,217,422 to Domzalski discloses a still further typical compact exercise apparatus also comprising a number of weight plates slidably attached or disposed on a pair of weight guide bars, and a force transfer member, such as an exercise bar coupled to the weight plates with one or more drive cables for lifting the weight plates and for exercising the upper muscle groups of the users.

[0014] However, similarly, the force transfer member or the exercise bar may only be moved or pulled in one direction in order to lift the weight plates, but may not be moved in the opposite direction to lift the weight plates.

[0015] The present invention has arisen to mitigate and/or obviate the afore-described disadvantages of the conventional weight lifting exercising devices.

SUMMARY OF THE INVENTION

[0016] The primary objective of the present invention is to provide a weight lifting exercising device including a structure for allowing the user to lift and to exercise the weight members either by pulling or pushing handle bar or foot pedal or foot actuating member and for training or exercising the lower or the upper muscle groups of the users.

[0017] In accordance with one aspect of the invention, there is provided a weight lifting exercising device comprising a frame including at least one weight guide rod, a number of weight plates slidably attached onto the weight guide rod and movable up and down along the weight guide rod, a first cam member and a second cam member pivotally attached to the frame with a spindle, a first cable selectively coupling the first cam member to a selected number of the weight plates for selectively moving the selected number of the weight plates up and down along the weight guide rod, a second cable selectively coupling the second cam member to a selected number of the weight plates for selectively moving the selected number of the weight plates up and down along the weight guide rod, and an operating device engaged with the first cam member and the second cam member for selectively rotating either of the first or the second cam member relative to the frame in opposite rotational directions, and for actuating either of the first or the second cable to move the weight plates up and down along the weight guide rod.

[0018] The operating device includes a rotary member rotatably attached to the spindle, and an actuating member attached to the rotary member and engageable with either of the first or the second cam member for rotating either of the first or the second cam member relative to the frame when the rotary member is rotated relative to the frame.

[0019] The operating device includes a force transfer member attached to the rotary member for rotating the rotary member relative to the frame.

[0020] The operating device includes a crank attached to the rotary member, and the force transfer member is attached to the crank for rotating the rotary member relative to the frame. For example, the force transfer member is adjustably attached to the crank with a shank and a latch device.

[0021] The operating device includes an anchor attached to the frame and engageable with either of the first or the second cam members for limiting the first or the second cam members to rotate relative to the frame.

[0022] The frame includes a carriage slidably attached to the weight guide rod and movable up and down along the weight guide rod and engageable with the selected number of the weight plates and for carrying the selected number of the weight plates up and down along the weight guide rod.

[0023] The frame includes a floating pulley assembly having two pulleys rotatably coupled together and engaged with the first and the second cables respectively. The floating pulley assembly includes at least one bar for rotatably coupling the first and the second pulleys together.

[0024] The frame includes an upper beam and a lower beam, a first wheel and a second wheel attached to the upper beam, and a third wheel attached to the lower beam, the first cable is engaged with the first wheel and then engaged with a first of the pulleys of the floating pulley assembly and then engaged with the second wheel, and includes a first end coupled to the weight plates and a second end coupled to the first cam member, the second cable is engaged with the third wheel and then engaged with a second of the pulleys of the floating pulley assembly, and the second cable includes a first end coupled to the frame and a second end coupled to the second cam member.

[0025] The frame includes a chair having a seat cushion disposed on a seat base for suitably supporting a user, and the chair may include a seat back adjustably attached to the seat base with an adjusting device.

[0026] The chair includes a track attached to the seat base and having a number of orifices formed therein, an arm attached to the seat base and having a support member for supporting an upper portion of the user. The arm is adjustably attached to the seat base with a latch device.

[0027] Further objectives and advantages of the present invention will become apparent from a careful reading of the detailed description provided hereinbelow, with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] FIG. 1 is a front perspective view of a weight lifting exercising device in accordance with the present invention;

[0029] FIG. 2 is a rear perspective view of the weight lifting exercising device;

[0030] FIG. 3 is a partial exploded view of the weight lifting exercising device, in which the chair has been removed for showing the detailed structure of the weight lifting exercising device;

[0031] FIG. 4 is a side plan schematic view of the weight lifting exercising device;

[0032] FIGS. 5, 6, 7, 8, 9 are side plan schematic views similar to FIG. 4 illustrating the exercising operation of the weight lifting exercising device;

[0033] FIG. 10 is a partial perspective view illustrating the chair of the weight lifting exercising device;

[0034] FIG. 11 is another partial perspective view illustrating the actuating device of the weight lifting exercising device;

[0035] FIG. 12 is a plan schematic view illustrating the operation of the weight lifting exercising device;

[0036] FIGS. 13, 14 are enlarged partial plan schematic views illustrating the operation of the weight lifting exercising device;

[0037] FIG. 15 is a rear perspective view similar to FIG. 2 illustrating the other arrangement of the weight lifting exercising device; and

[0038] FIG. 16 is a front perspective view similar to FIG. 1 illustrating the further arrangement of the weight lifting exercising device.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0039] Referring to the drawings, and initially to FIGS. 1-9, a weight lifting exercising device in accordance with the present invention comprises a frame 10 including two side frame posts 11, 12 disposed parallel to each other and extended upwardly from such as the ground, an upper beam 13 and a lower beam 14 disposed or attached or coupled between the side frame posts 11, 12, one or more (such as two) weight guide rods 15 attached or mounted between the upper and the lower beams 13, 14 and preferably disposed parallel to the side frame posts 11, 12, a number of weight plates 16 slidably attached or mounted onto the weight guide rods 15 and movable up and down along the weight guide rods 15, and a carriage 17 slidably attached or mounted onto the weight guide rods 15 and movable up and down along the weight guide rods 15 for engaging with the weight plates 16 and for carrying one or more of the weight plates 16 up and down along the weight guide rods 15.

[0040] For example, the carriage 17 includes a weight selector post 18 attached to the carriage 17 for engaging with or into the weight plates 16 and for coupling to one or more of the weight plates 16 with a latch 19 which may couple and anchor or secure one or more of the weight plates 16 to the weight selector post 18 of the carriage 17 for allowing the selected number of the weight plates 16 to be carried and moved up and down along the weight guide rods 15 by the carriage 17. The above-described structure including the frame 10 and the weight plates 16 and the carriage 17 and the weight selector post 18, and the coupling of the weight plates 16 to the carriage 17 with the latch 19 is typical and will not be described in further details.

[0041] One or more (such as two) rollers or wheels 20, 21 are rotatably attached or mounted onto the upper beam 13, such as attached to the side portion of the upper beam 13, and one or more (such as two) further rollers or wheels 22, 23 are rotatably attached or mounted onto the upper beam 13, such as attached to the upper portion of the upper beam 13, and one or more (such as two) further rollers or wheels 24, 25 are rotatably attached or mounted onto the lower beam 14, such as attached to the side portion of the lower beam 14, and a floating pulley assembly 26 includes two pulleys 27, 28 pivotally or rotatably coupled together with one or more (such as two) plates or bars 29, and two cables 30, 31 are engaged with or around the wheels 20-25 and the pulleys 27, 28 of the floating pulley assembly 26.

[0042] For example, one of the cables 31 is engaged with or around the wheels 20, 21, and then engaged with or around one of the pulleys 27 of the floating pulley assembly 26, and then engaged with or around the wheels 22, 23, and includes one end 32 coupled to the selected number of the weight plates 16 and/or the carriage 17, and includes the other end 33 to be actuated or pulled or operated by the user in order to pull or elevate the weight plates 16 and the carriage 17, as shown in FIGS. 7, 9 and 12-14, when the other end 33 of the cable 31 is pulled or moved away from the wheels 20, 21, the other end 33 of the cable 30 is provided for coupling to an actuating device which will be described in further details hereinafter.

[0043] The other cables 30 is engaged with or around the wheels 24, 25, and then engaged with or around the other

pulley 28 of the floating pulley assembly 26, and then engaged with or attached or mounted or secured to the frame 10, such as attached or secured to the lower beam 14, and includes the other end 35 to be actuated or pulled or operated by the user in order to pull or elevate the weight plates 16 and the carriage 17, as shown in FIGS. 6, 8 and 12-14, when the other end 35 of the cable 30 is pulled or moved away from the wheels 24, 25, the other end 35 of the cable 30 is also provided for coupling to an actuating device which will be described in further details hereinafter.

[0044] As shown in FIGS. 1-2 and 10, a chair 4 includes a seat base 40, a saddle or seat cushion 41 disposed or attached or mounted onto the seat base 40 for supporting the user thereon, a seat back 42 slidably and adjustably attached or mounted onto the seat base 40 with a latch or fastener or adjusting device 43 for suitably supporting the back portion of the user, a beam or track 44 attached or mounted onto the seat base 40 and having a number of orifices 45 formed therein (FIG. 10), an arm 46 adjustably attached or mounted onto the seat base 40 with a fastener or latch device 47 which is adjustably engaged with the orifices 45 of the track 44 for adjustably attaching or mounting the arm 46 onto the seat base 40, a hand grip 48 attached or mounted to the latch device 47 for actuating or operating the latch device 47, and a support member 49 attached or mounted onto the arm 46 for suitably supporting the upper portion of the user.

[0045] As shown in FIGS. 1-9 and 11, an actuating device 5 is attached or mounted onto the frame 10 and coupled to the cables 30, 31 for actuating or operating the cables 30, 31, and includes two cam members 50, 51 pivotally or rotatably coupled or attached or mounted onto the frame 10 with a spindle 52, the cam members 50, 51 include one end 53 coupled to the other or free ends 35, 33 of the cables 30, 31 respectively for actuating or operating or pulling the cables 30, 31 when the cam members 50, 51 are rotated relative to the frame 10 with the spindle 52 respectively, and include the other end 54 for engaging with a stop or anchor 55 which is attached or mounted onto the frame 10 and for limiting the cam members 50, 51 to rotate relative to the frame 10.

[0046] A rotary member 56 is also pivotally or rotatably coupled or attached or mounted onto the frame 10 with the spindle 52, and includes a number of apertures 57 formed in the outer peripheral portion thereof for adjustably attaching or mounting an actuating member 58 to the rotary member 56, in which the actuating member 58 is engageable with either of the cam members 50, 51 for rotating either of the cam members 50, 51 relative to the frame 10 respectively, and thus for pulling or actuating or operating the cables 30, 31 to pull or to elevate the weight plates 16 and the carriage 17. An operating device 6 including one or more (such as two) cranks 60, 61 attached or mounted onto the rotary member 56 for rotating the rotary member 56 relative to the frame 10 to actuate or operate the cam members 50, 51 to pull or actuate or operate the cables 30, 31 respectively.

[0047] A force transfer member 62, such as a handle bar, a foot pedal or a foot actuating member 62 is adjustably attached or mounted to the rotary member 56 or mounted to either of the cranks 60 with a shank 63 and a fastener or latch device 64 which is adjustably engaged with the crank 60 (FIGS. 3-5) for adjustably attaching or mounting the force transfer member 62 onto the crank 60. A cover 65 (FIG. 1) may be provided and attached or mounted onto the rotary member 56 and/or the cranks 60, 61 for covering and shielding the rotary member 56 and a portion of the cranks 60, 61.

The force transfer member 62 is provided for being engaged with the legs or feet of the user and for allowing the cranks 60, 61 and the rotary member 56 to be rotated or actuated or operated relative to the frame 10 by the user in order to actuate or operate either of the cam members 50, 51 to pull the cables 30, 31 and to elevate the weight plates 16 and the carriage 17.

[0048] In operation, as shown in FIGS. 6 and 8, when the force transfer member 62 is actuated or operated or moved or rotated relative to the frame 10 clockwise by the user, the cam member 51 may also be actuated or operated or moved or rotated relative to the frame 10 clockwise by the crank 60 and the rotary member 56 and the actuating member 58 in order to actuate or pull the cable 30 and to elevate the weight plates 16 and the carriage 17 (FIGS. 12, 14), at this moment, the other cam member 50 has not been and may not be rotated relative to the frame 10 by the crank 60. As shown in FIGS. 7, 9, and 12-13, the other cam member 50 may also be actuated or operated or moved or rotated relative to the frame 10 counterclockwise by the crank 60 and the rotary member 56 and the actuating member 58 in order to actuate or pull the cable 31 and to elevate the weight plates 16 and the carriage 17.

[0049] Accordingly, the force transfer member 62 may be actuated or rotated relative to the frame 10 in either direction by the user to elevate the weight plates 16 and the carriage 17 and to train or exercise the lower or the upper muscle groups of the users. The force transfer member 62 and the crank 60 and the rotary member 56 and the actuating member 58 may be formed or may act as an operating device 6 to actuate or operate or move or rotate either of the cam members 50, 51 relative to the frame 10 in order to actuate or pull the cable 31 and to elevate the weight plates 16 and the carriage 17.

[0050] As shown in FIG. 15, the force transfer member 620 may be selected from a handle bar 620 and adjustably attached or mounted onto the other crank 61 with the shank 63 and the fastener or latch device 64, and a saddle or seat cushion 41 and/or a back cushion 420 may be disposed or attached or mounted onto the seat base 401 for supporting the back portion of the user, and one or more foot engaging members 411 may be disposed or attached or mounted onto the seat base 401 for anchoring or engaging with the feet of the user, and for allowing the user to push or pull the force transfer member or handle bar 620 to actuate or operate either of the cam members 50, 51 to pull the cables 30, 31 and to elevate the weight plates 16 and the carriage 17.

[0051] As shown in FIG. 16, the actuating device 5 may further include a stem 66 adjustably attached or mounted onto the rotary member 56 with a fastener or latch device 67, and a lever 68 extended or attached or mounted onto the stem 66, and one or more (such as two) force transfer members 69, 70, such as handles 69, 70 may be disposed or attached or mounted onto the lever 68 or the stem 66 for being grasped or held by the user, and a table 491 may be disposed or attached or mounted onto the seat base 402 for supporting the upper portion or the arms of the user, and for allowing the user to grasp or hold the handles 69, 70 to train or exercise the upper muscle groups of the users.

[0052] It is to be noted that the arrangement or the coupling of the cables 30, 31 to the weight plates 16 and the carriage 17 with the wheels 20-25 and the pulleys 27, 28 of the floating pulley assembly 26 and the cam members 50, 51 and the crank 60 and the force transfer member 62 allows either of the cam members 50, 51 to be actuated or operated or moved or rotated relative to the frame 10 to pull the cables 30, 31 and to elevate the weight plates 16 and the carriage 17, and the force

transfer members **62**, **620**, **69**, **70** may be selected from a handle bar **620**, two handles **69**, **70**, or a foot pedal or a foot actuating member **62** and for allowing the user to suitably train or exercise either the lower or the upper muscle groups of the users.

[0053] Accordingly, the weight lifting exercising device in accordance with the present invention includes a structure for allowing the user to lift and to exercise the weight members either by pulling or pushing handle bar or foot pedal or foot actuating member and for training or exercising the lower or the upper muscle groups of the users.

[0054] Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that numerous changes in the detailed construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

1. A weight lifting exercising device comprising:

a frame including at least one weight guide rod,
a plurality of weight plates slidably attached onto said at least one weight guide rod and movable up and down along said at least one weight guide rod,
a first cam member and a second cam member pivotally attached to said frame with a spindle,
a first cable selectively coupling said first cam member to a selected number of said weight plates for selectively moving the selected number of said weight plates up and down along said at least one weight guide rod,
a second cable selectively coupling said second cam member to a selected number of said weight plates for selectively moving the selected number of said weight plates up and down along said at least one weight guide rod, and

an operating device engaged with said first cam member and said second cam member for selectively rotating either of said first or said second cam member relative to said frame, and for actuating either of said first or said second cable to move said weight plates up and down along said at least one weight guide rod, said operating device including a rotary member rotatably attached to said spindle, and an actuating member attached to said rotary member and engageable with either of said first or said second cam member for rotating either of said first or said second cam member relative to said frame when said rotary member is rotated relative to said frame, a force transfer member attached to said rotary member for rotating said rotary member relative to said frame, a crank attached to said rotary member, and said force transfer member being adjustably attached to said crank with a shank and a latch device for rotating said rotary member relative to said frame.

2-5. (canceled)

6. The weight lifting exercising device as claimed in claim **1**, wherein said operating device includes an anchor attached to said frame and engageable with either of said first or said second cam members for limiting said first or said second cam members to rotate relative to said frame.

7. The weight lifting exercising device as claimed in claim **1**, wherein said frame includes a carriage slidably attached to said at least one weight guide rod and movable up and down along said at least one weight guide rod and engageable with

the selected number of said weight plates and for carrying the selected number of said weight plates up and down along said at least one weight guide rod.

8. The weight lifting exercising device as claimed in claim **1**, wherein said frame includes a floating pulley assembly having two pulleys engaged with said first and said second cables respectively.

9. A weight lifting exercising device comprising:

a frame including at least one weight guide rod, and including a floating pulley assembly having two pulleys,
a plurality of weight plates slidably attached onto said at least one weight guide rod and movable up and down along said at least one weight guide rod,
a first cam member and a second cam member pivotally attached to said frame with a spindle,
a first cable selectively coupling said first cam member to a selected number of said weight plates for selectively moving the selected number of said weight plates up and down along said at least one weight guide rod,
a second cable selectively coupling said second cam member to a selected number of said weight plates for selectively moving the selected number of said weight plates up and down along said at least one weight guide rod, and said pulleys of said floating pulley assembly of said frame being engaged with said first and said second cables respectively, and

an operating device engaged with said first cam member and said second cam member for selectively rotating either of said first or said second cam member relative to said frame, and for actuating either of said first or said second cable to move said weight plates up and down along said at least one weight guide rod, and

said frame including an upper beam and a lower beam, a first wheel and a second wheel attached to said upper beam, and a third wheel attached to said lower beam, said first cable being engaged with said first wheel and then engaged with a first of said pulleys of said floating pulley assembly and then engaged with said second wheel, and including a first end coupled to said weight plates and a second end coupled to said first cam member, said second cable being engaged with said third wheel and then engaged with a second of said pulleys of said floating pulley assembly, and including a first end coupled to said frame and a second end coupled to said second cam member.

10. The weight lifting exercising device as claimed in claim **8**, wherein said floating pulley assembly includes at least one bar for rotatably coupling said first and said second pulleys together.

11. The weight lifting exercising device as claimed in claim **1**, wherein said frame includes a chair having a seat cushion disposed on a seat base for supporting a user.

12. The weight lifting exercising device as claimed in claim **11**, wherein said chair includes a seat back adjustably attached to said seat base with an adjusting device.

13. The weight lifting exercising device as claimed in claim **11**, wherein said chair includes a track attached to said seat base and having a plurality of orifices formed therein, an arm attached to said seat base and having a support member for supporting an upper portion of the user.

14. The weight lifting exercising device as claimed in claim **13**, wherein said arm is adjustably attached to said seat base with a latch device.

* * * * *