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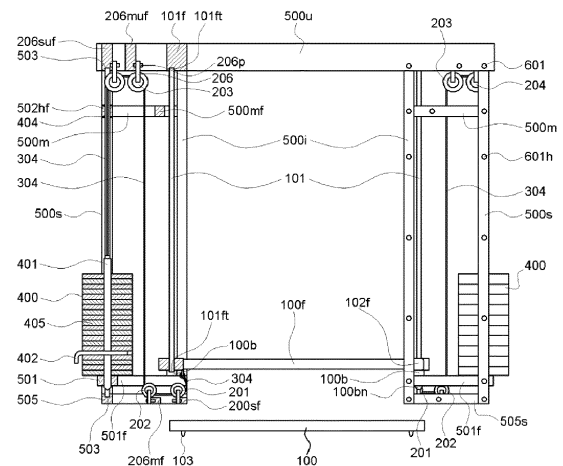
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(54) **WEIGHT TRAINING MACHINE**

(57) A weight training machine according to the present invention is a machine for conducting a dead lift or a bent over row while selecting and increasing/decreasing the weight, the machine comprising: a pair of body units, on which weight plates are stacked in the upward/downward direction, and which are provided on both sides of an operating unit, respectively; an operating unit, which is provided between the pair of body units, and which can move in the upward/downward direction; and a cable pulley unit for connecting the body units and the operating unit to each other such that, as the operating unit is moved in the upward/downward direction, the weight plates can be moved in the upward/downward direction, wherein, as the user operates the operating unit in the upward/downward direction and thereby moves the cable of the pair of cable pulley units, the user accordingly moves the weight plates on the body units, which are connected to the cable, thereby conducting weight training. The present invention, as described above, advantageously can provide a weight training machine, which is the purpose of the present invention, configured such that, when the exerciser wants to conduct a dead lift, a bent over row, etc., during weight training, the weight can be easily increased/decreased, and the basic postures can be easily learned, thereby reducing injuries.

Fig. 4



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**Description**

## Technical Field

**[0001]** The present invention relates to a weight training machine, and more particularly, to a weight training machine in which weight plates capable of increasing or decreasing weight and an operation bar configured to perform movement by pulling a cable are connected to each other via a cable, thus enabling a user to perform exercises, including a deadlift, bent-over row, and the like during weight training.

## Background Art

**[0002]** Generally, exercise machines are divided into exercise machines for upper body training and exercise machines for lower body training, and these exercise machines include weights, weight of which is appropriately adjustable according to a user, to allow a user to perform upper body or lower body muscular exercise.

**[0003]** For example, a lower body exercise machine is a fitness machine that strengthens calf muscles and thigh muscles of the lower body of a user, and an upper body exercise machine is a fitness machine that strengthens back and shoulder muscles or arm muscles of a user.

**[0004]** As such, to do a deadlift, a bent-over row, and the like during weight training, a weight bar may be used by inserting barbells and weight discs thereinto according to a user.

**[0005]** FIG. 1 is a view illustrating a conventional exercise method.

**[0006]** Referring to FIG. 1, to increase or decrease the weight of a weight bar, when barbells or weight discs are removed therefrom or inserted thereinto, it is inconvenient for a user to sustain the weight of the barbells or the weight discs.

**[0007]** In addition, when a user exercises, cases of basic posture imbalance frequently occur, and thus a user may be injured. In addition, when performing deadlift, bent-over row, and the like using a weight training machine, it is difficult to express tensile strength as weight values, and, even though tensile strength is expressed as weight values, weight cannot be freely increased or decreased due to limitations thereof.

## Disclosure

## Technical Problem

**[0008]** Therefore, the present invention has been made in view of the above problems, and it is one object of the present invention to provide a weight training machine in which weight may be easily increased or decreased when an exerciser perform exercises including deadlift, bent-over row, and the like during weight training, and basic postures may be easily learned, thus reducing injuries.

## Technical Solution

**[0009]** In accordance with one aspect of the present invention, provided is a weight training machine allowing weight to be increased or decreased by exerciser's selection and configured to perform weight training including a deadlift or bent-over row, the weight training machine including: a pair of body parts respectively installed at opposite sides of an operation bar, each body part including weight plates vertically stacked; the operation bar installed between the pair of body parts to be vertically movable; and a pair of cable pulley parts connecting the pair of body parts and the operation part to each other to enable the weight plates to be moved upward or downward according to upward or downward movement of the operation part, wherein, when a user operates the operation bar upward or downward, cables of the pair of cable pulley parts are moved and, accordingly, the weight plates of each body part connected to the cable are moved upward or downward, thus enabling weight training.

**[0010]** In addition, the operation part includes a machine fixing operation bar provided between the body parts and having a rod shape; bar rings installed at lower portions of opposite sides of the machine fixing operation bar to allow the cables of the pair of cable pulley parts to be respectively connected thereto; a pair of bar rail columns vertically installed at opposite sides of the machine fixing operation bar to allow the machine fixing operation bar to be moved upward or downward; and column coupling parts coupled to opposite sides of the machine fixing operation bar, each column coupling part being provided with column transfer holes allowing the pair of bar rail columns to be inserted therethrough, wherein one side and another side of the machine fixing operation bar are respectively connected to the cables of the pair of cable pulley parts, between the pair of body parts, to be movable upward or downward and, simultaneously, to enable the weight plates of each body part connected to the cable to be moved upward or downward. In addition, the column coupling part includes a pair of column couplers allowing the respective column transfer holes through which the bar rail columns are inserted to be separated; a hinge coupled to an outer side surface of one side of each column coupler; bolts passing through another side of the pair of column couplers; and a nut coupled to one end of each bolt, wherein, according to coupling between the bolts and the nuts, formation of a separation gap between an inner circumferential surface of the column transfer hole and an outer circumferential surface of the bar rail column is enabled, and a position at which the column couplers are coupled to the bar rail columns is adjustable.

**[0011]** In addition, the body part includes weight plates each having a rod hole vertically passing therethrough at a center thereof, a plate holder groove at a side surface thereof, and column holes passing therethrough at opposite sides thereof to allow a pair of plate operation rail

columns to be vertically installed therethrough; a weight plate support allowing the weight plates to be stacked thereon; a first pulley installed below the column coupler; a second pulley installed between the weight plate support and the first pulley; the pair of plate operation rail columns configured to pass through the weight plate support and guide the weight plates to be moved upward or downward; a third pulley installed above the second pulley; and a fourth pulley installed above the weight plates.

**[0012]** In addition, each cable pulley part includes a fixing operation rod inserted into the rod holes of the weight plates and having rod plate fixing holes formed in a length direction of the fixing operation rod a fixing bar inserted into the plate holder groove of the weight plate and the rod plate fixing hole of the fixing operation rod to couple the weight plates to the fixing operation rod; and the cable having one end coupled to an upper portion of the fixing operation rod and another end sequentially passing through the fourth pulley, the third pulley, the second pulley, and the first pulley to be coupled to the bar ring of the machine fixing operation bar via a cable hook, wherein, when the machine fixing operation bar is moved upward or downward, the cable connected thereto moves the fixing operation rod upward or downward and, simultaneously, the weight plates coupled by the fixing bar are moved upward or downward, thus enabling weight training.

**[0013]** In addition, the operation part further includes bar supports installed at lower sides of the machine fixing operation bar such that each bar support is installed at the body part via a bar support bolt to allow the machine fixing operation bar to be mounted on upper portions thereof, wherein the bar support has bar column fixing grooves at an upper side surface thereof to allow lower ends of the bar rail columns to be inserted thereinto to fix the bar rail columns.

#### Advantageous effects

**[0014]** As is apparent from the foregoing description, the present invention advantageously provides a weight training machine in which weight may be easily increased or decreased when an exerciser performs exercises including deadlift, bent-over row, and the like during weight training, and basic postures may be easily learned, thus reducing injuries.

#### Description of Drawings

##### **[0015]**

FIG. 1 is a view illustrating a conventional exercise method.

FIG. 2 is a front view illustrating a weight training machine according to an exemplary embodiment of the present invention.

FIG. 3 is a front view illustrating a central inner side of the weight training machine according to an ex-

emplary embodiment of the present invention.

FIG. 4 is an internal and partial cross-sectional view of the weight training machine according to an exemplary embodiment of the present invention.

FIG. 5 is a side external front view of the weight training machine according to an exemplary embodiment of the present invention.

#### Best mode

**[0016]** Advantages, characteristics, and aspects of the present invention will become apparent from the accompanying drawings and the related following exemplary embodiments. However, the present invention is not limited to the embodiments set forth herein and may be embodied in many different forms. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those of ordinary skill in the art. The present invention is defined only by the scope of the claims. Throughout the specification, like reference numerals denote like elements.

**[0017]** Hereinafter, exemplary embodiments of a weight training machine will be described with reference to the accompanying drawings for explaining the same.

**[0018]** FIG. 2 is a front view illustrating a weight training machine according to an exemplary embodiment of the present invention. FIG. 3 is a front view illustrating a central inner side of the weight training machine according to an exemplary embodiment of the present invention.

FIG. 4 is an internal and partial cross-sectional view of the weight training machine according to an exemplary embodiment of the present invention. FIG. 5 is a side external front view of the weight training machine according to an exemplary embodiment of the present invention.

**[0019]** The weight training machine according to the present invention is a machine that allows weight to be increased or decreased by exerciser's selection and is configured to perform weight training including deadlift or bent-over row.

**[0020]** Referring to FIGS. 2 to 5, the weight training machine according to the present invention includes a pair of body parts, an operation part, and a pair of cable pulley parts. First, each of the pair of body parts includes weight plates 400 vertically stacked, and the body parts are installed at opposite sides of the operation part.

**[0021]** The body part includes the weight plates 400, a weight plate support 501, a first pulley 201, a second pulley 202, a pair of plate operation rail columns 502, a third pulley 203, and a fourth pulley 204.

**[0022]** Each weight plate 400 has a rod hole 403 vertically passing therethrough at a center thereof, a plate holder groove at a side surface thereof, and column holes 404 at opposite sides thereof to allow the pair of plate operation rail columns 502 to be vertically installed therethrough.

**[0023]** The weight plates 400 are stacked on the weight plate support 501.

**[0024]** The first pulley 201 is installed below a column coupler 102c.

**[0025]** The second pulley 202 is located between the weight plate support 501 and the first pulley 201.

**[0026]** The plate operation rail columns 502 are configured to pass through the weight plate support 501 and guide the weight plates 400 upward or downward.

**[0027]** The third pulley 203 is installed above the second pulley 202.

**[0028]** The fourth pulley 204 is installed above the weight plates 400.

**[0029]** The operation part is installed between the pair of body parts to enable upward or downward movement thereof.

**[0030]** The operation part includes a machine fixing operation bar 100f, bar rings 103, bar rail columns 101, and the column couplers 102c.

**[0031]** The machine fixing operation bar 100f is provided between the body parts.

**[0032]** The bar rings 103 are installed at lower portions of opposite sides of the machine fixing operation bar 100f such that a cable 304 of each cable pulley part is connected to each bar ring 103 by a cable hook 104.

**[0033]** The bar rail columns 101 are vertically installed at opposite sides of the machine fixing operation bar 100f to allow the machine fixing operation bar 100f to be moved upward or downward.

**[0034]** Column couplers 102c are coupled to opposite sides of the machine fixing operation bar 100f and each column coupler 102c is provided with column transfer holes 102ch through which the bar rail columns 101 are inserted.

**[0035]** That is, when the machine fixing operation bar 100f is moved upward or downward, the weight plates 400 of each body part connected to the cable 304 are moved upward or downward.

**[0036]** A column coupling part 102f includes a pair of column couplers 102c, hinges 102r, bolts 102p, and nuts 102n.

**[0037]** The pair of column couplers 102c allow the respective column transfer holes 102ch to be separated.

**[0038]** Each hinge 102r is coupled to an outer side surface of one side of each of the pair of column couplers 102c.

**[0039]** The bolts 102p pass through another side of the pair of column couplers 102c.

**[0040]** Each nut 102n is coupled to one end of each of the bolts 102p.

**[0041]** According to coupling between the bolts 102p and the nuts 102n, it is possible to form a separation gap between an inner circumferential surface of the column transfer hole 102ch and an outer circumferential surface of the bar rail column 101, and a position at which the column couplers 102c are coupled to the bar rail columns 101 may be adjusted. In addition, the bar rail columns 101 are detachable from the pair of column couplers 102c.

**[0042]** The operation part further includes bar supports

100b.

**[0043]** The bar supports 100b are installed at lower sides of the machine fixing operation bar 100f such that each bar support 100b is installed at the body part via a bar support bolt 100bn, to allow the machine fixing operation bar 100f to be mounted on upper portions thereof.

**[0044]** In addition, each bar support 100b has bar column fixing grooves 101ft at an upper side surface thereof to allow lower ends of the bar rail columns 101 to be inserted thereto to fix the bar rail columns 101.

**[0045]** A pair of cable pulley parts may connect the body parts and the operation part to each other to move the weight plates 400 upward or downward according to upward or downward movement of the operation part.

**[0046]** The cable pulley part includes a fixing operation rod 401, a fixing bar 402, and a cable 304.

**[0047]** The fixing operation rod 401 is inserted into the rod holes 403 of the weight plates 400 and has rod plate fixing holes 401h formed in a length direction of the fixing operation rod thereof.

**[0048]** The fixing bar 402 is inserted into the plate holder groove of the weight plate 400 and the rod plate fixing hole 401h of the fixing operation rod 401 to couple the weight plates 400 to the fixing operation rod 401.

**[0049]** The cable 304 has one end coupled to an upper portion of the fixing operation rod 401 and another end sequentially passing through the fourth pulley 204, the third pulley 203, the second pulley 202, and the first pulley 201 to be coupled to the bar ring 103 of the machine fixing operation bar 100f via the cable hook 104.

**[0050]** In this case, the first pulley 201 is provided directly below the bar ring 103.

**[0051]** When the machine fixing operation bar 100f is moved upward or downward, the cable 304 connected thereto moves the fixing operation rod 401 upward or downward and, simultaneously, the weight plates 400 coupled via the fixing bar 402 are moved upward or downward, thus enabling weight training.

**[0052]** The fixing operation rod 401 has a cable hole 407 on an upper side thereof to allow the cable 304 to be inserted thereto and a cable fixing hole 406 on an outer side thereof to allow the cable 304 inserted through the cable hole 407 to be taken out therethrough.

**[0053]** At this time, one end of the cable 304 is inserted into the cable hole 407 and taken out through the cable fixing hole 406, and then the cable 304 is tied to be connected to the fixing operation rod 401.

**[0054]** Thus, in the weight training machine of the present invention, a user operates the operation part upward or downward to move the cables 304 of a pair of cable pulley parts and, accordingly, the weight plates 400 of the body parts connected to the respective cables 304 are moved upward or downward, thus enabling weight training.

**[0055]** That is, when a user performs weight training exercises including deadlift, bent-over row, and the like during weight training, weight may be easily increased or decreased, basic postures may be easily learned, and

injuries may be reduced during weight training.

**[0056]** It will be understood by those of ordinary skill in the art to which the present invention pertains that the invention may be carried out in other specific forms without changing technical spirits or essential characteristics of the present invention. Thus, the embodiments described herein are provided only for illustrative purposes and not for purposes of limitation. The scope of the present invention is defined by the following claims rather than the detailed description, and all changes or modified forms derived from the meaning and scope of the claims, and concepts equivalent thereto should be construed as being within the scope of the present invention.

## Claims

1. A weight training machine allowing weight to be increased or decreased by exerciser's selection and configured to perform weight training including a deadlift or bent-over row, the weight training machine comprising:

a pair of body parts respectively installed at opposite sides of an operation bar, each body part comprising weight plates vertically stacked; the operation bar installed between the pair of body parts to be vertically movable; and a pair of cable pulley parts connecting the pair of body parts and the operation part to each other to enable the weight plates to be moved upward or downward according to upward or downward movement of the operation part, wherein, when a user operates the operation bar upward or downward, cables of the pair of cable pulley parts are moved and, accordingly, the weight plates of each body part connected to the cable are moved upward or downward, thus enabling weight training.

2. The weight training machine according to claim 1, wherein the operation part comprises:

a machine fixing operation bar provided between the body parts and having a rod shape; bar rings installed at lower portions of opposite sides of the machine fixing operation bar to allow the cables of the pair of cable pulley parts to be respectively connected thereto; a pair of bar rail columns vertically installed at opposite sides of the machine fixing operation bar to allow the machine fixing operation bar to be moved upward or downward; and column coupling parts coupled to opposite sides of the machine fixing operation bar, each column coupling part being provided with column transfer holes allowing the pair of bar rail columns to be inserted therethrough,

wherein one side and another side of the machine fixing operation bar are respectively connected to the cables of the pair of cable pulley parts, between the pair of body parts, to be movable upward or downward and, simultaneously, to enable the weight plates of each body part connected to the cable to be moved upward or downward.

3. The weight training machine according to claim 2, wherein the column coupling part comprises:

a pair of column couplers allowing the respective column transfer holes through which the bar rail columns are inserted to be separated; a hinge coupled to an outer side surface of one side of each column coupler; bolts passing through another side of the pair of column couplers; and a nut coupled to one end of each bolt, wherein, according to coupling between the bolts and the nuts, formation of a separation gap between an inner circumferential surface of the column transfer hole and an outer circumferential surface of the bar rail column is enabled, and a position at which the column couplers are coupled to the bar rail columns is adjustable.

4. The weight training machine according to claim 2, wherein the body part comprises:

weight plates each having a rod hole vertically passing therethrough at a center thereof, a plate holder groove at a side surface thereof, and column holes passing therethrough at opposite sides thereof to allow a pair of plate operation rail columns to be vertically installed therethrough; a weight plate support allowing the weight plates to be stacked thereon; a first pulley installed below the column coupler; a second pulley installed between the weight plate support and the first pulley; the pair of plate operation rail columns configured to pass through the weight plate support and guide the weight plates to be moved upward or downward; a third pulley installed above the second pulley; and a fourth pulley installed above the weight plates.

5. The weight training machine according to claim 4, wherein each cable pulley part comprises:

a fixing operation rod inserted into the rod holes of the weight plates and having rod plate fixing holes formed in a length direction of the fixing operation rod;

a fixing bar inserted into the plate holder groove of the weight plate and the rod plate fixing hole of the fixing operation rod to couple the weight plates to the fixing operation rod; and the cable having one end coupled to an upper portion of the fixing operation rod and another end sequentially passing through the fourth pulley, the third pulley, the second pulley, and the first pulley to be coupled to the bar ring of the machine fixing operation bar via a cable hook, wherein, when the machine fixing operation bar is moved upward or downward, the cable connected thereto moves the fixing operation rod upward or downward and, simultaneously, the weight plates coupled by the fixing bar are moved upward or downward, thus enabling weight training.

6. The weight training machine according to claim 1, wherein the operation part further comprises:

bar supports installed at lower sides of the machine fixing operation bar such that each bar support is installed at the body part via a bar support bolt to allow the machine fixing operation bar to be mounted on upper portions thereof, wherein the bar support has bar column fixing grooves at an upper side surface thereof to allow lower ends of the bar rail columns to be inserted thereinto to fix the bar rail columns.

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Fig. 1

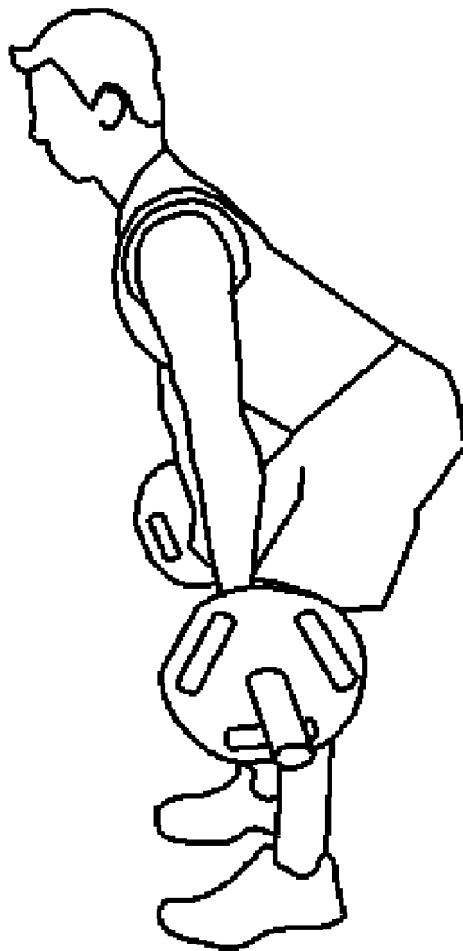


Fig. 2

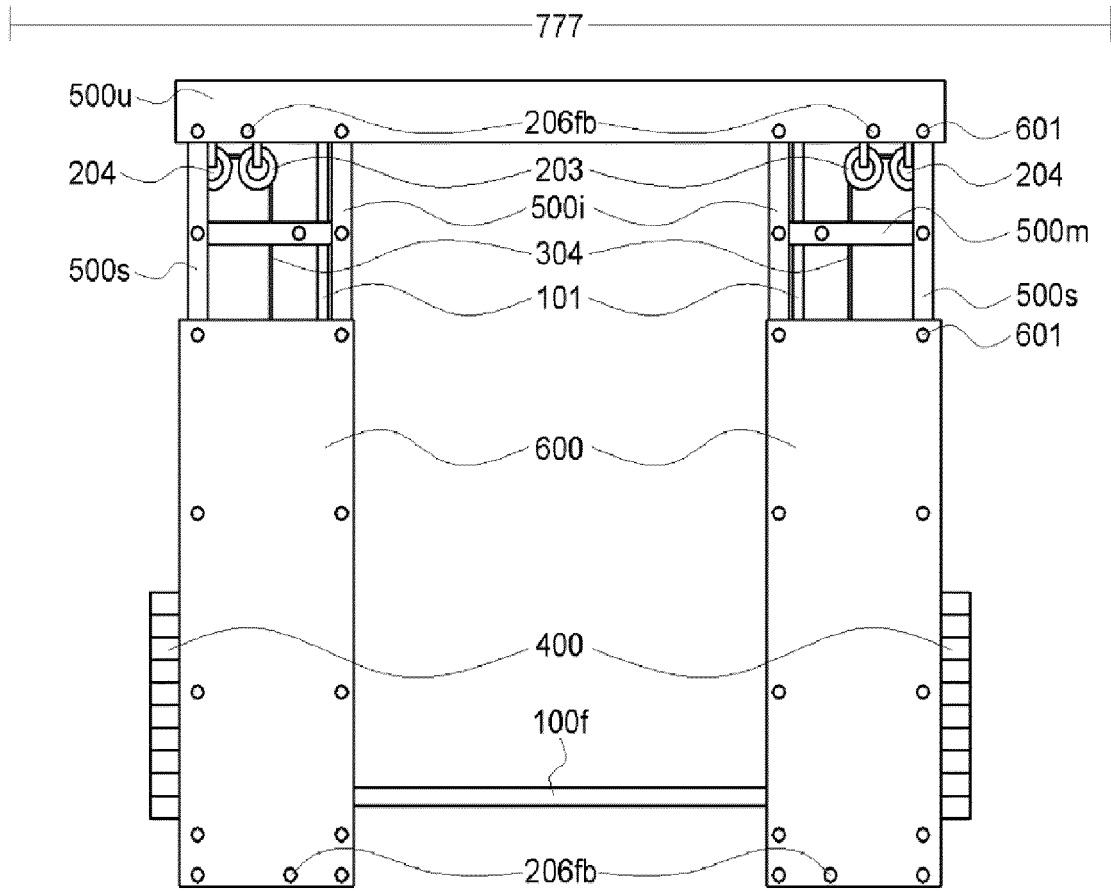


Fig. 3

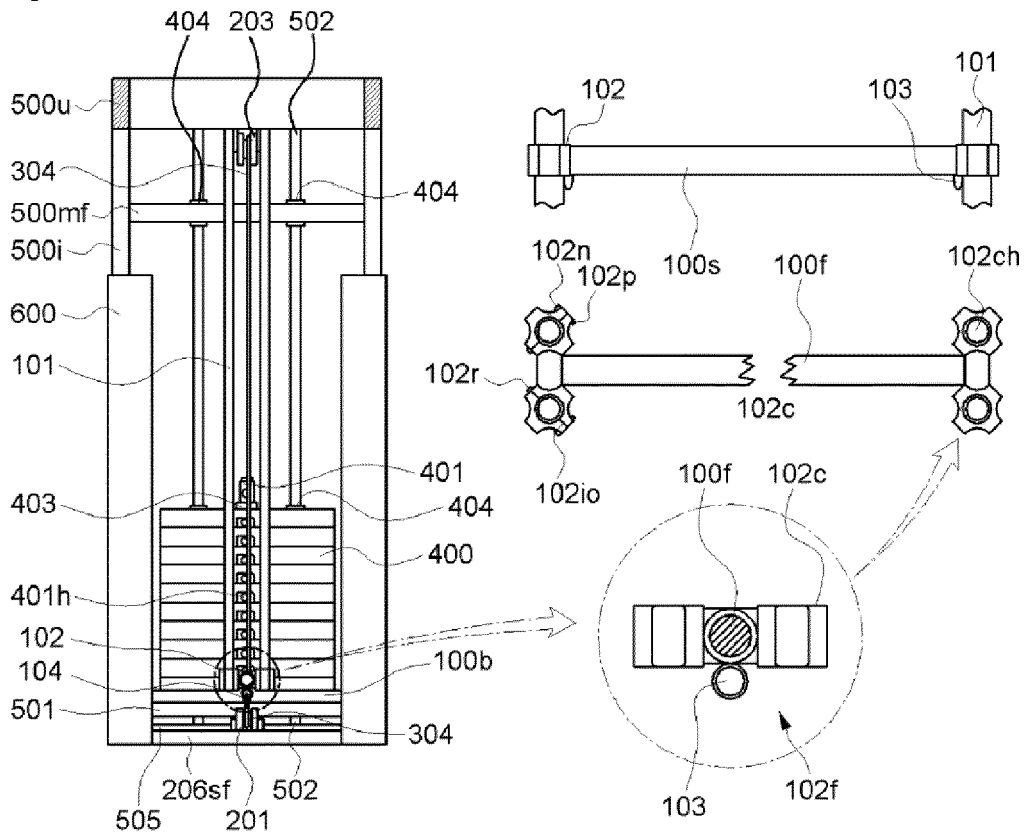
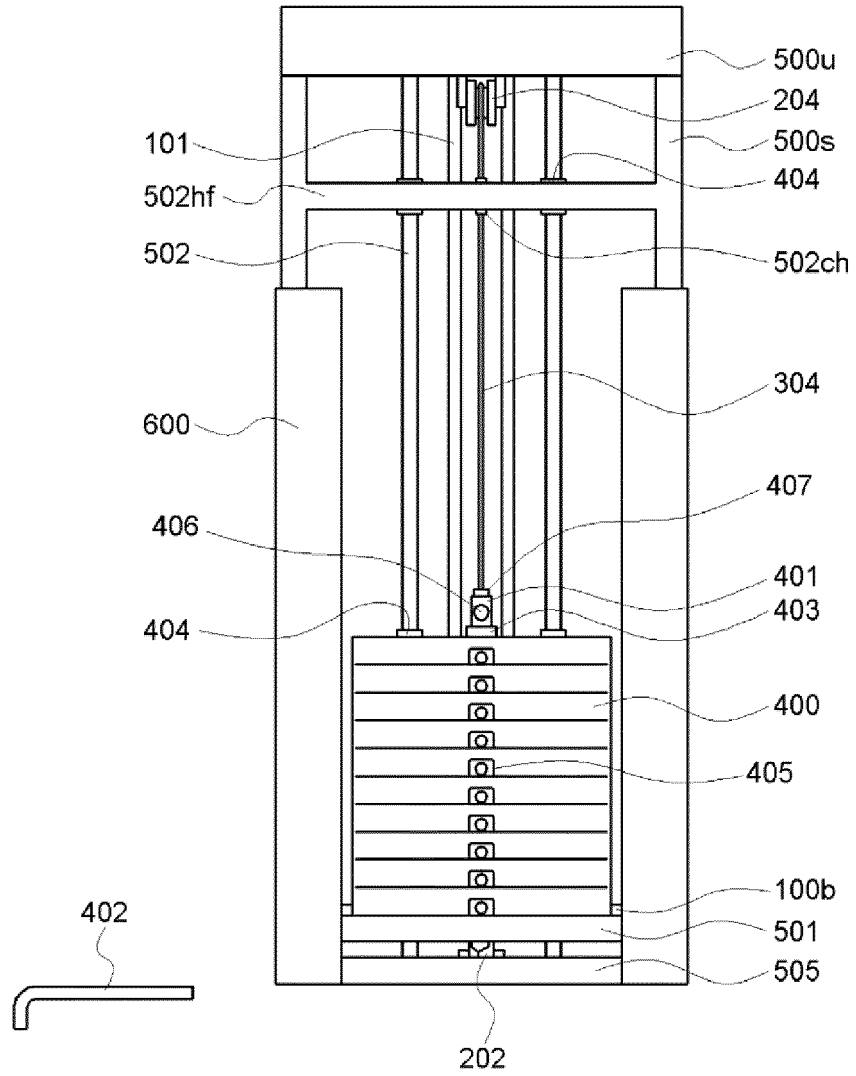





Fig. 5



INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/KR2015/007256**

5	<p><b>A. CLASSIFICATION OF SUBJECT MATTER</b>  <i>A63B 21/00(2006.01)i, A63B 21/06(2006.01)i, A63B 21/062(2006.01)i, A63B 23/00(2006.01)i, A63B 23/035(2006.01)i</i></p> <p>According to International Patent Classification (IPC) or to both national classification and IPC</p>																				
10	<p><b>B. FIELDS SEARCHED</b></p> <p>Minimum documentation searched (classification system followed by classification symbols)                  A63B 21/00; A63B 21/078; A63B 21/062; A63B 21/06; A63B 21/072; A63B 23/04; A63B 23/00; A63B 23/035</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched                  Korean Utility models and applications for Utility models: IPC as above                  Japanese Utility models and applications for Utility models: IPC as above</p>																				
15	<p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)                  eKOMPASS (KIPO internal) &amp; Keywords: weight training, deadlift, bent over row, weight plate, cable, pulley, operating bar, pillar, hinge, bolt, nut, support, ring</p>																				
20	<p><b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b></p> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>US 4856773 A (DEOLA, J. A.) 15 August 1989 See columns 9-16; claims 1-19; and figures 2, 23.</td> <td>1-6</td> </tr> <tr> <td>X</td> <td>KR 10-1518197 B1 (SEO, Jung Geun) 15 May 2015 See claims 1-3; and figure 1.</td> <td>1-6</td> </tr> <tr> <td>A</td> <td>US 3635472 A (MARCYN, W.) 18 January 1972 See column 1, line 30-column 5, line 12; claims 1-6; and figures 1-19.</td> <td>1-6</td> </tr> <tr> <td>A</td> <td>WO 2010-047554 A2 (LEE, Byung Don) 29 April 2010 See paragraphs [0001]-[0130]; claims 1-6; and figures 1-14.</td> <td>1-6</td> </tr> <tr> <td>A</td> <td>WO 2014-185718 A1 (LEE, Ki Won) 20 November 2014 See paragraphs [0001]-[0109]; claims 1-12; and figures 1-22.</td> <td>1-6</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 4856773 A (DEOLA, J. A.) 15 August 1989 See columns 9-16; claims 1-19; and figures 2, 23.	1-6	X	KR 10-1518197 B1 (SEO, Jung Geun) 15 May 2015 See claims 1-3; and figure 1.	1-6	A	US 3635472 A (MARCYN, W.) 18 January 1972 See column 1, line 30-column 5, line 12; claims 1-6; and figures 1-19.	1-6	A	WO 2010-047554 A2 (LEE, Byung Don) 29 April 2010 See paragraphs [0001]-[0130]; claims 1-6; and figures 1-14.	1-6	A	WO 2014-185718 A1 (LEE, Ki Won) 20 November 2014 See paragraphs [0001]-[0109]; claims 1-12; and figures 1-22.	1-6
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40	<p><input type="checkbox"/> Further documents are listed in the continuation of Box C.      <input checked="" type="checkbox"/> See patent family annex.</p>																				
45	<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td style="vertical-align: top;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="vertical-align: top;"> <p>"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p> </td> </tr> </table>			<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p>																
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50	<p>Date of the actual completion of the international search  <b>19 OCTOBER 2015 (19.10.2015)</b></p>		<p>Date of mailing of the international search report  <b>19 OCTOBER 2015 (19.10.2015)</b></p>																		
55	<p>Name and mailing address of the ISA/KR   Korean Intellectual Property Office                  Government Complex-Daejeon, 189 Seonsa-ro, Daejeon 302-701,                  Republic of Korea                  Facsimile No. 82-42-472-7140</p>		<p>Authorized officer                   Telephone No.</p>																		

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