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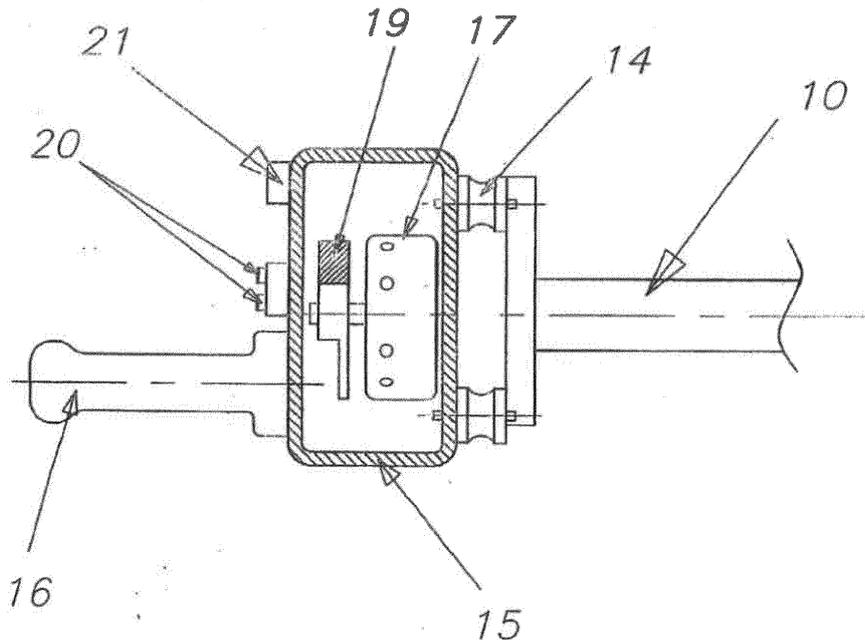
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**17580-000 Cidade de Pompéia - SP (BR)**

(54) **BODYBUILDING STATION WITH VIBRATORS**

(57) "STRENGTH STATION WITH VIBRATORS", in which the arm of the station that receives lever to the hands, or roll to the legs, is provided of a device of vibration, composed by a receptacle assembled in the arm by elastic cushions which still has in its interior an electrical

engine in which axis is attached to a flywheel with unbalanced weight, being the engine controlled by keys of increasing or reduction of rotation, and a display with indication of the rotation and being assembled, in the receptacle the lever or the roll, in one receptacle prolonged axially.



**FIG. 4**

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## Description

**[0001]** This report is about a patent of invention of a strength station with vibrators.

**[0002]** As it is known by the experts about the topic, the gyms have strength stations to train different muscle groups of limbs and body. They are usually associated to a tower, where there is a pile of weights, which can be selected by the user, and that are raised and lowered in the interior of the tower, through a steel cable or belt by physical effort of the user himself.

**[0003]** Usually, the station is located next to the tower, and can have a seat for the user and a handle bar with lever to exercise arms or levers with soft rollers to exercise legs. The handle bars move pulley, which tractions the steel cable, which on its turn passes through detour pulleys and gets to the center of the tower, from where it goes down vertically to fasten itself to the weight selector, which clamps selectively one or more weights.

**[0004]** The exercise is made in repetitions of muscular contraction and distention, with intervals between these repetitions, allowing the blood circulation to reestablish the rest state of the muscles.

**[0005]** It is known that the bigger the blood and lymphatic circulation gotten with the muscles of the user, smaller the interval of time he will need between one set and other of a strength workout.

**[0006]** It is also known that the vibrations and oscillations realized with the muscles of the user activates the circulation, improving the muscles, the blood vessels and lymphatic, and also articulations and bones.

**[0007]** Another aspect that is known by the experts about this subject is the fact that the circulation is increased by the micro-pumping of blood and lymph into the vessel and the re-calcification of the bones is associated to the existence of controlled impacts, which a controlled vibration begins to provide.

**[0008]** This way, the feeling of the user is that the load increases with the variation of the frequency of the vibrations. One vibration, from frequencies 25Hz to 59Hz is benefic to the muscles, to the blood and lymphatic vessels, to the articulations and bones.

**[0009]** This way, it follows that exercises combined with vibration allow the continuity of a series of movements without relaxation, because the blood circulation gets facilitated, and so the treatment on the station will have its time reduced.

**[0010]** Strength stations that use, instead of weight tower, pneumatic, hydraulic or electrical systems can be equipped with the device of this invention, combining isokinetics exercises with vibration.

**[0011]** One of the goals of this invention is to provide a strength station that when combined to the vibrators, allows the faster and more intense occurrence of blood irrigation of the muscles, during the contraction and distention exercises of these in the gymnastic station, and eccentric. In the internal part of these receptacles are assembled command keys to increase or reduce the ro-

tation of the engine and a display to indicate the rotation of the engine, in turns by second.

**[0012]** Next, the current invention will be described with reference to the Figs. attached, in which:

Fig. 1 represents, as example, one view in perspective of a conventional strength station to development of the shoulders (deltoids);

Fig. 2 represents, as example, a view in elevation of a conventional strength station with an extension seat;

Fig. 3 represents a lateral view of an arm of station with maniple to the superior limb;

Fig. 4 represents the view in vertical section of a vibratory device connected to one arm of the station;

Fig. 5 represents a frontal view of an adequate strength station to inferior limb, in particular one extension seat;

Fig. 6 represents a longitudinal vertical section of a cylinder to extension seat with the vibratory device connected.

**[0013]** According to these Figs., one conventional strength station consists in one seat or saddle 1, with back 2, attached to a base 3, that connects to tower 4 in which they are guided vertically, one plurality of weights 5 which are piled, and move vertically by a steel cable 6 or belt. The quantity of weight 5 necessary to a determined exercise can be selected by one hook 7 or electromechanical system. One steel cable or a belt 6 provided from the pile of weight 5 goes up vertically and through pulleys 8 getting to pulleys 9 of the axis or arms 10 with lever 11, see Fig. 1, or arms 12 with cylinders 13, see Fig. 2, to be put in action using the legs. Other kinds of arms, with its pulleys to traction the steel cable can be part of other gymnastic station, such as chest press, pectoral, triceps, biceps, adductor, abductor, abdominal and many others.

**[0014]** This invention consists essentially in the assembly, in the extremity of each arm 10 (see Figs. 3 and 4), through elastic cushion 14, of a device formed by a receptacle 15, with lever 16 external and internally provided of an electrical engine 17 in which axis is attached to a flywheel 19 with unbalanced weight.

**[0015]** In the external part of this receptacle 15 can be assembled electrical keys 20 of increasing or reduction of the rotation of the engine 17 with a display 21 to indicate the rotation of the engine, in turns by second.

**[0016]** To leg exercises, the flywheel with eccentric weight 22 is assembled in the center of the roll 23 using bearing 24, as shown on Figs. 5 and 6 all this set supported by a long axis 25 of the engine, which serves as a nucleus yet to a axial projection 26 of the receptacle

27, but the axial projection 26 still can be a nucleus to roll 23, made of padded material.

[0017] As it can be seen on Fig. 5, the receptacle 27 is assembled to arm 12 of the strength station, through cushions 28. The keys 20 of variation of the rotation of the engine 17, and also the display 21 start to be assembled in a more accessible place to the user, as example, to tower 4.

[0018] The cushions 14 or 28 are sized to transmit the strength of the user to the lever 16 or roll 23, in a low frequency, to the respective arms 10 or 12 and isolate the same from high frequency that unbalanced weights 19 or 22 transmit to receptacles 15 or 27. Under these conditions, the levers 16 and the roll 23 will vibrate, under effect of the fast turn of the unbalanced weights, transmitting this vibration to the muscles involved in effort to lift the weights 5.

[0019] The vibration can be controlled by the higher or lower rotation of the electrical engine 17, and its effect is to sum up and subtract variable strengths to the strength normally practiced to lift weights 5.

[0020] So, the sensation of the user is that the load increases according to the frequency of the vibrations, and through keys 20 and display reading 21, the user can change dynamically the strength, to more, in the band between minimal and maximal frequency. This way, the exercises realized in combination with the vibrations allow a continuity of the series of movement without pause because the blood flow gets facilitated, and on this way the exercise in the station will have its time reduced.

extremity of each arm (10), through elastic cushions (14), of a device formed by a receptacle (15), with lever (16) external and internally provided of an electrical engine (17) in which axis is attached to a flywheel (19) with unbalanced weight.

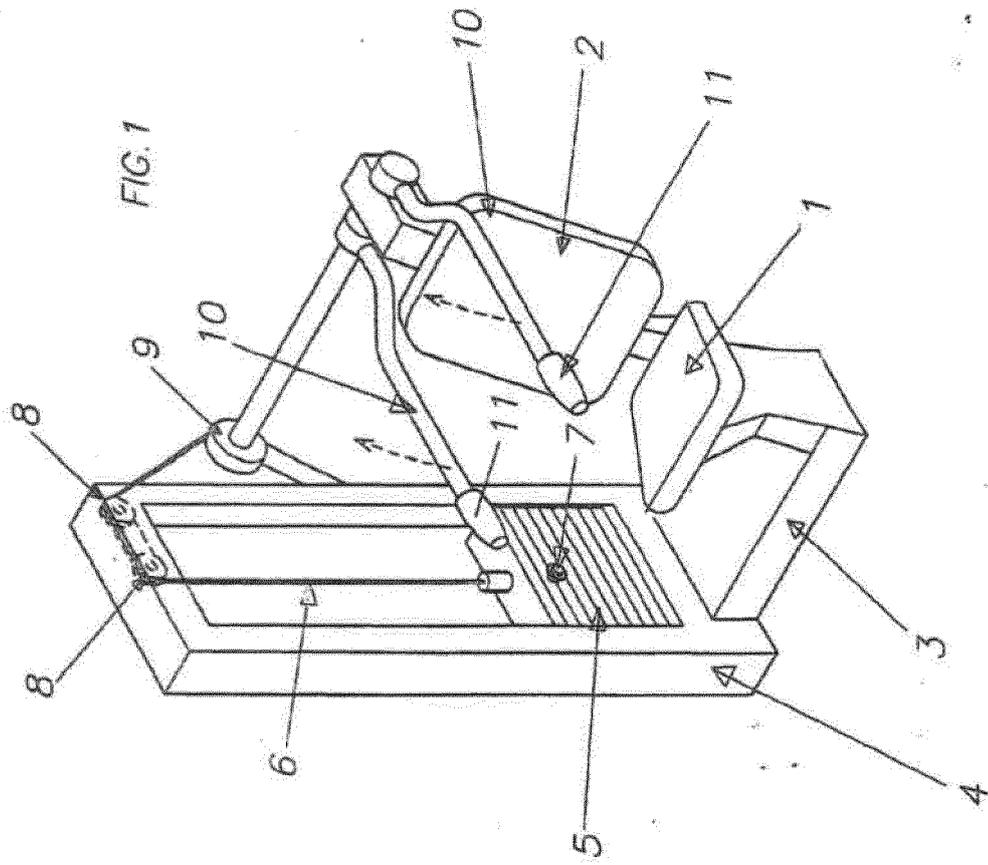
3. STRENGTH STATION WITH VIBRATORS, according to claim 1, **characterized by** the fact of having a constructive form elongated to the receptacle (27), to use in roll, in which this receptacle has a projection (26) axial to the roll (23), with flywheel (22) to the center, assembled in bearings (24) and set in motion by axis (25) long of the engine (17), being the receptacle (27) assembled to the arm (12) of the station through elastic cushions (28).

4. STRENGTH STATION WITH VIBRATORS, according to claims 1 or 2 or 3, **characterized by** the fact that the cushions (14, 28) are sized to transmit the strength of the user to the levers (16, 23), in a low frequency to the respective arms (10,12) and isolate them from the high frequency of unbalanced weights (19, 22) transmit to the receptacle.

5. STRENGTH STATION WITH VIBRATORS, according to claim 1 or 2, **characterized by** the fact that the key set (20) to control the rotation of the engine and a display (21) with indicator of the rotation is assembled in a place directly accessible to the user.

## Claims

1. STRENGTH STATION WITH VIBRATORS, which consists of, basically, a cushion seat with back, fixed to a base, coupled to a tower, in which are guided in the vertical, a plurality of weights that are piled, and move vertically by a steel cable or belt provided starting in the weight pile that follows up in the vertical and deviate by pulleys getting to the pulleys of the axis of supporting arms of legs and feet, according to the kind of gym station, such as supine, pectoral, triceps, biceps, adductor, abductor, abdominal and many others; **characterized by** the fact that in the extremity of each arm (10, 12) is connected, through elastic cushions (14, 28) in a device formed by a receptacle (15,27) with an external lever (16, 23) and provided internally of a electrical engine (17), in which axis is attached to a flywheel (19) with unbalanced weight; and in the external part of this receptacle (15, 27) are assembled command keys (20) to increase or reduction of the rotation of the engine (17) and a display (21) to indicate the rotation of the engine (17), in turns by second.
2. STRENGTH STATION WITH VIBRATORS, according to claim 1, **characterized by** the fact that in the



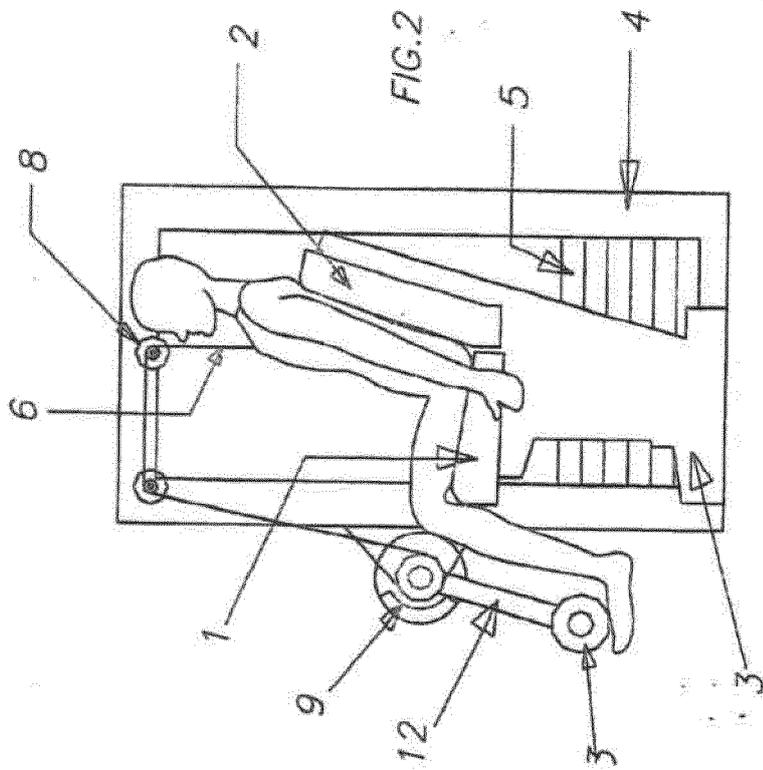
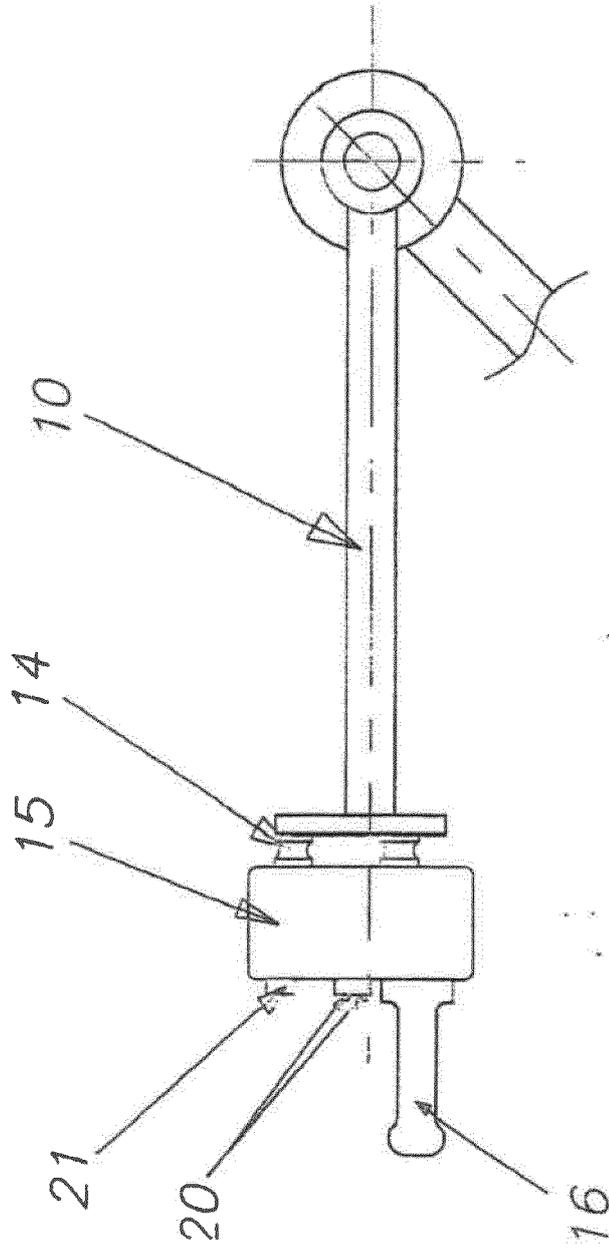
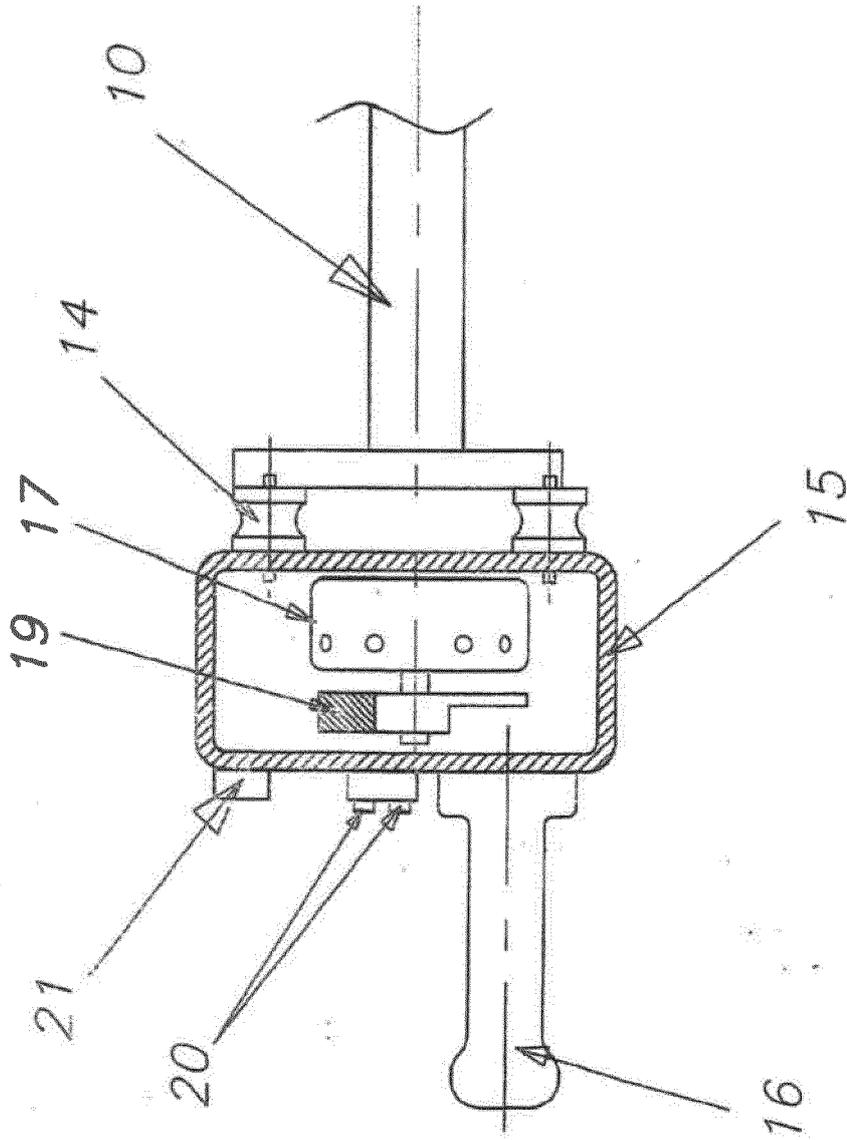
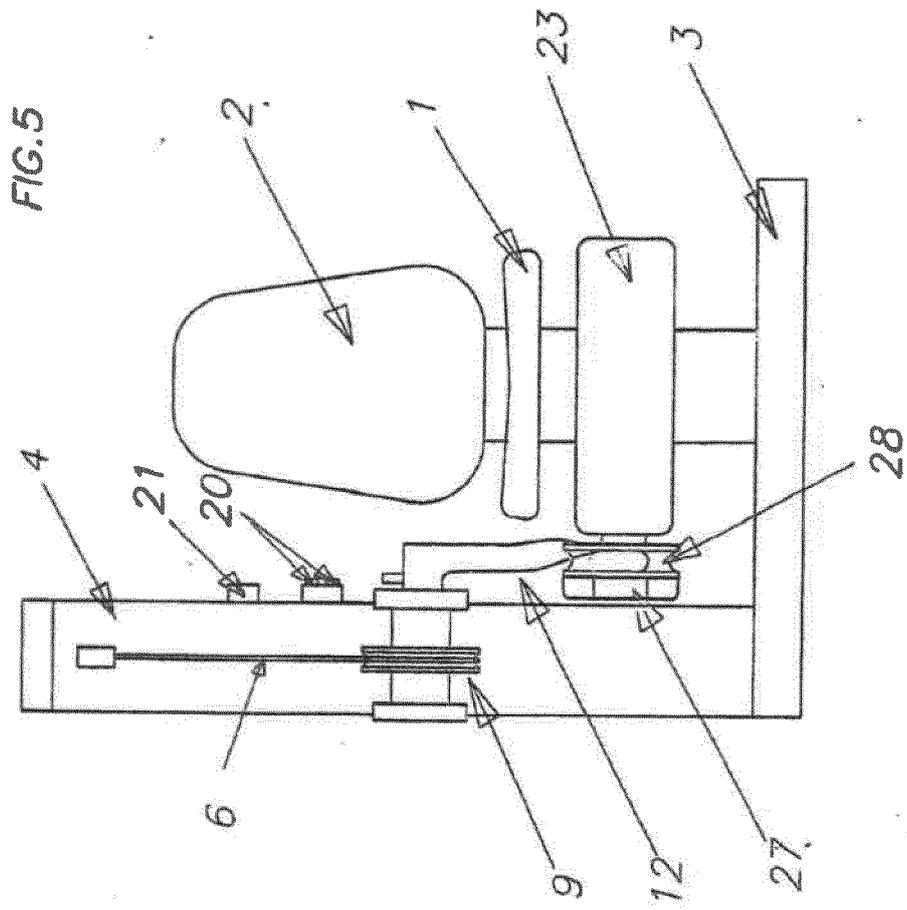
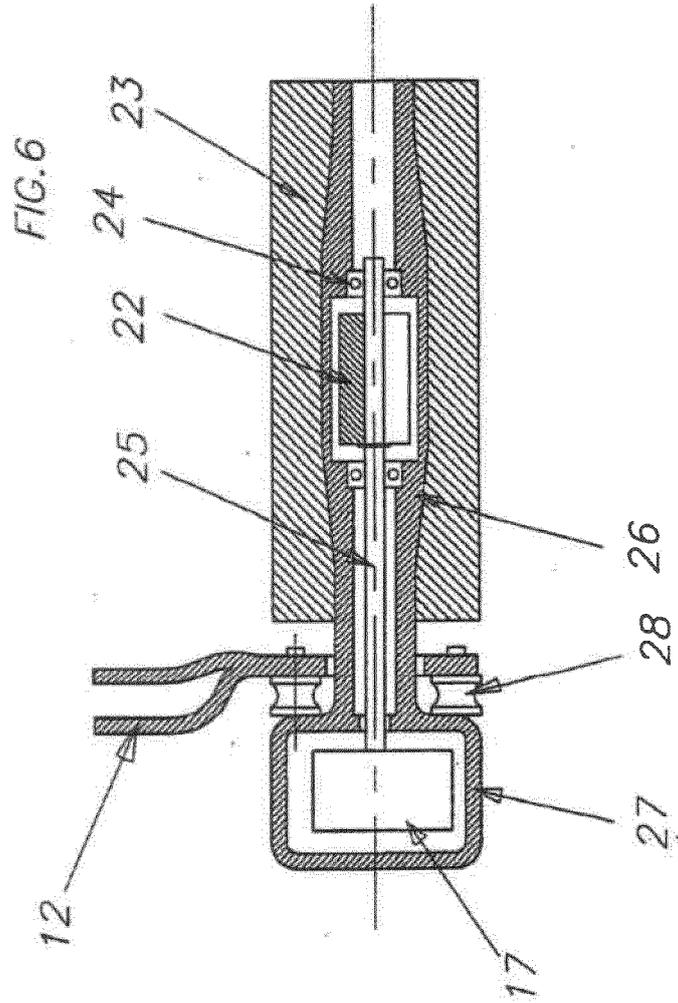


FIG.3









INTERNATIONAL SEARCH REPORT

International application No.  
PCT/BR2011/000174

<p>A. CLASSIFICATION OF SUBJECT MATTER <b>A63B 21/00 (2006.01), A63B 24/00 (2006.01), A61H 1/00 (2006.01)</b></p> <p>According to International Patent Classification (IPC) or to both national classification and IPC</p>														
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) <b>IPC (2011.01): A63B A61H 1/00</b></p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched <b>SINPI</b></p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) <b>EPODOC</b></p>														
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</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>A</td> <td>GB 2452100 A (YEH DON-LON [TW]) 25 February 2009 (2009-02-25)</td> <td>1 a 5</td> </tr> <tr> <td>A</td> <td>----- US 7682287 B1 (CHI HUA FITNESS CO LTD [TW]) 23 March 2010 (2010-03-23)</td> <td>1 a 5</td> </tr> <tr> <td>A</td> <td>----- US 2009221407 A1 03 September 2009 (2009-09-03) -----</td> <td>1 a 5</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	GB 2452100 A (YEH DON-LON [TW]) 25 February 2009 (2009-02-25)	1 a 5	A	----- US 7682287 B1 (CHI HUA FITNESS CO LTD [TW]) 23 March 2010 (2010-03-23)	1 a 5	A	----- US 2009221407 A1 03 September 2009 (2009-09-03) -----	1 a 5
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<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>“A” document defining the general state of the art which is not considered to be of particular relevance</td> <td>“T” 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</td> </tr> <tr> <td>“E” earlier application or patent but published on or after the international filing date</td> <td>“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</td> </tr> <tr> <td>“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)</td> <td>“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</td> </tr> <tr> <td>“O” document referring to an oral disclosure, use, exhibition or other means</td> <td>“&amp;” document member of the same patent family</td> </tr> <tr> <td>“P” document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			“A” document defining the general state of the art which is not considered to be of particular relevance	“T” 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	“E” earlier application or patent but published on or after the international filing date	“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	“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)	“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	“O” document referring to an oral disclosure, use, exhibition or other means	“&” document member of the same patent family	“P” document published prior to the international filing date but later than the priority date claimed			
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<p>Date of the actual completion of the international search 12 July 2011 (12.07.11)</p>		<p>Date of mailing of the international search report 10 August 2011 (10.08.11)</p>												
<p>Name and mailing address of the ISA/ BR</p> <p>Facsimile No. </p>		<p>Authorized officer <b>Sheila Montelro Elias</b></p> <p>Telephone No.</p>												

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Information on patent family members

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GB 2452100 A	2009-02-25	GB 0721887 D0 GB 2452100 B	2007-12-19 2009-09-30
----- US 7682287 B1 -----	----- 2010-03-23 -----	----- NONE -----	----- ----- -----
----- US 2009221407 A1 -----	----- 2009-09-03 -----	----- US 2010261585 A1 -----	----- 2010-10-14 -----