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AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

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(54) Title: EXERCISE MACHINE

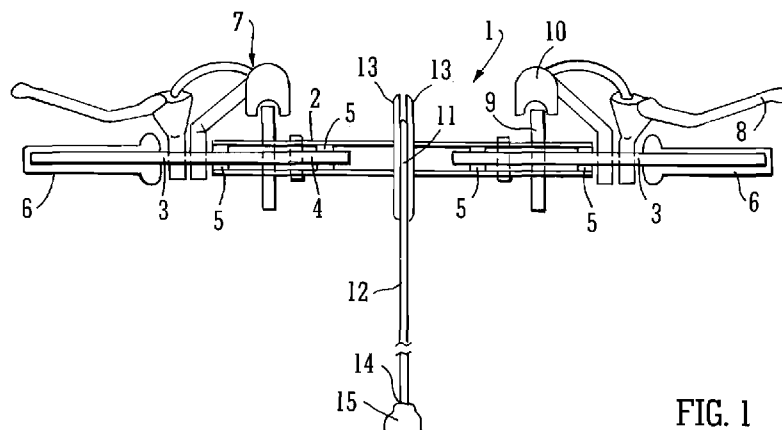


FIG. 1

(57) Abstract: An exercise machine comprising a load member having a torsional resistance, two gripping members, each being rotatably attached to said load member; and hand-operable connection means disposed on each gripping member and connectable to said load member. Said connection means are each configured to releasably lock one of said gripping members to said load member such that each gripping member has a locked configuration relative to said load member and an unlocked configuration relative to said load member. In said locked configuration of one of said gripping members, rotation of said one gripping member causes rotation of said load member against said torsional resistance, and in said unlocked configuration of one of said gripping members, said one gripping member can rotate relative to said load member.



WO 2012/114094 A1

## Exercise Machine

**[0001]** This invention relates to an exercise machine, in particular an exercise machine for exercising the forearms and hands of the user.

### BACKGROUND

**[0002]** Exercising the forearm can be useful in rehabilitation following injury or in the building of strength for resistance to fatigue. For endurance cyclists and motorcyclists in particular, this can be very important. A condition called arm pump can develop through overuse of the forearm in sports such as motocross. The condition exists due to the coordination required between the wrist muscles and the hands to control the bike under strenuous and/or endured conditions. Resistance to the onset of arm pump or building up of strength in the forearm is therefore desired by high-performance competing athletes.

**[0003]** Some exercise machines exist for training the forearm of the user. CA2464984 and US2002/0137599 each disclose apparatus for providing a workout for the forearms and handgrip. These types of device, known in the art as 'brick on a stick' are simple apparatus where the user can rotate a stick to lift a weight which is attached to a string tied around the stick. However, this type of device does not simultaneously train the hands and coordination of the user.

**[0004]** Other exercise machines exist for training the handgrip of the user. An example of such is shown in US4798377 where coil springs are disposed on a handlebar apparatus in an arrangement similar to a bicycle handle bar. The coil springs are attached to a handlebar and a handle such that the user can squeeze the handle towards the handlebar to exercise their hands. However, this type of device does not simultaneously train the forearms and coordination of the user.

**[0005]** A complicated arrangement for building up hand and wrist strength is shown in US7156778. This document shows a motocross exerciser having a handlebar assembly and a rotatable throttle grip and brake levers under tension. The user can build strength by gripping the brake levers or twisting the throttle grip to simulate stresses felt during motocross racing. The device permits simultaneous training of the hand grip and the forearm but does not provide coordinated training for the muscle groups in the forearm and hands which are susceptible to fatigue or injury.

**[0006]** The present invention seeks to provide an alternative apparatus for coordinated training of muscle groups in the hands and forearm.

**BRIEF SUMMARY OF THE DISCLOSURE**

**[0007]** In accordance with a first aspect of the present invention, there is provided an exercise machine comprising:

a load member having a torsional resistance;  
two gripping members, each being rotatably attached to said load member; and  
hand-operable connection means disposed on each gripping member and connectable to said load member; wherein  
said connection means are each configured to releasably lock one of said gripping members to said load member such that each gripping member has a locked configuration relative to said load member and an unlocked configuration relative to said load member;

wherein in said locked configuration of one of said gripping members, rotation of said one gripping member causes rotation of said load member against said torsional resistance, and in said unlocked configuration of one of said gripping members, said one gripping member can rotate relative to said load member.

**[0008]** In one preferable embodiment, said load member has contact elements placed at each end thereof, said contact elements being configured to engage with said hand-operable connection means to permit said locking. Said hand-operable connection means preferably comprises a brake lever and a braking means engageable with said contact elements. Each of said contact elements preferably comprises a disc and each of said braking means comprises a calliper.

**[0009]** Preferably, said load member further comprises a pulley wheel having a tether disposed therein, wherein a first end of the tether is attached to a spindle of the pulley wheel and a second end of the tether is attached to a resistive force so as to provide said torsional resistance. Said resistive force preferably comprises one or more weights subject to gravity.

**[0010]** In one preferable embodiment, said gripping members are further rotatably attached to a frame, said frame comprising support members to position said gripping members at a height suitable for a user. Said support members are preferably in contact with a floor, a wall or a ceiling.

**[0011]** In a further or alternative preferable embodiment, each of the gripping members comprises a hand grip for facilitating improved grip of the gripping member.

**[0012]** In accordance with a second aspect of the present invention, there is provided a

method of operating the exercise machine of the first aspect of the present invention, comprising the steps of:

- A. operating a first of said hand-operable connection means to lock a first of said gripping members to said load member;
- B. if a second of said gripping members is in its locked configuration, operating a second of said hand-operable connection means to unlock said second gripping member from said load member;
- C. rotating said first gripping member in its locked configuration from a first position to a second position;
- D. operating said second said hand-operable connection means to lock said second gripping member to said load member;
- E. operating said first hand-operable connection means to unlock said first gripping member from said load member;
- F. rotating said first gripping member in its unlocked configuration from said second position to said first position;

wherein the steps A to F may be repeated.

**[0013]** In preferable embodiment, the method further comprises the steps of:

G. rotating the second gripping member in its locked configuration from a third position to a fourth position; and

H. rotating said second gripping member in its unlocked configuration from said fourth position to said third position;

wherein step G is performed after step E and prior to step A if repeating said method, and step H is performed between steps B and D.

## **BRIEF INTRODUCTION OF THE DRAWINGS**

**[0014]** Embodiments of the present invention are further described hereinafter, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a sectional view of an exercise machine; and

Figure 2 is a sectional view of an exercise machine supported by a frame.

**DETAILED DESCRIPTION OF AN EXAMPLE**

**[0015]** In Figure 1, an exercise machine 1 for training a user's forearm and hand muscles, and coordination, is shown having a load member 2 and two gripping members 3. The load member has a torsional resistance to rotational motion of the load member. The gripping members 3 each have an extension 4 that extends in one direction into the load member 2 and is supported therein by one or more bearings 5 such that the gripping member 3 may rotate relative to the load member 2. In the embodiment shown in the Figures, the other end of each gripping member 3 features a hand grip 6 for facilitating improved grip of the gripping member 3. Each hand grip 6 is fixed to one of the gripping members 3 such that rotation of the hand grip 6 causes rotation of the respective gripping member 3. Each gripping member 3 is supplied with a hand-operable connection means 7 which is capable of locking the gripping members 3 on which it is disposed to the load member 2.

**[0016]** The connection means 7 shown in figure 1 is a disc brake apparatus featuring a brake lever 8, a disc 9 and a calliper 10. It is appreciated that this could be a standard bicycle disc brake apparatus. However, it is also conceived that equivalent locking systems could be used such as drum brakes, callipers that grip directly onto the load member or a ratchet mechanism featuring a gear and pawl, and other such means for locking. As described above, each connection means 7 is capable of releasably locking one of the gripping members 3 to the load member 2. Through this, the user is able to selectively lock each gripping member 3 to the load member 2 in order to rotate the load member 2 against the torsional resistance by rotation of the gripping member 3.

**[0017]** The load member 2 is shown as a tubular section although other sections are within the scope of the invention. It has a contact element at each end for engagement with the connection means 7. In the specific embodiment shown, the contact element is the disc 9 which is fixed to the load member 2. The load member 2 has a pulley wheel 11 configured to house a tether, such as a reel of cable or wire 12 (described hereinafter as wire 12). Sides 13 of the pulley wheel 11 ensure that the rolled wire 12 is kept uniform and does not tangle when it is rolled or unrolled from the pulley wheel 11. A first end of the wire 12 is attached (not shown) to the load member at a spindle of pulley wheel 11. A second end 14 of the wire 12 is attached to a load 15. The load 15 can be weights that are subject to gravity, as shown in figure 1, or could be a spring attached between the end 14 of the wire and a fixed body or some other resistive element of mechanism. The action of placing the load 14 on the wire 12 and the arrangement of the wire 12 on the pulley wheel 11 creates a torque about the load member 2 when at least a small section of the wire 12 is rolled onto the spindle 11. It is this torque or torsional resistance that is used for exercise.

**[0018]** Figure 2 shows the exercise machine mounted in a frame 20. The frame has support

members 21 that position the handgrips at a suitable height for a user from a floor where the user is standing. The frame shown is specific to the floor but it is appreciated that an equivalent frame for supporting the machine from a wall or ceiling is within the scope of the invention. The support members are rotatably attached to the gripping means 3, thereby allowing the load member to rotate freely. The attachment of the support member 21 to the gripping means 3 is facilitated by use of bearings in a collar 22 fitted around the gripping means. In alternative embodiments, the frame may be rotatably mounted to the load member 2 or some other part of the exercise machine 1.

**[0019]** In one embodiment, the user may ready the load 15 by placing weights, or similar, on the end of the wire 12. At this stage, the wire 12 is fully extended from the pulley wheel 11 and there is equal resistance to turning the pulley wheel 11 and therefore the load member 2 in either direction. Once loaded, the apparatus is ready to be used. The user may then take grip of each hand grip 6. At this time both hand-operable connection means are released such that the user can rotate the gripping members 3 freely about the load member 2 without working against the resistance.

**[0020]** To begin the exercise, the user operates one of the connection means 7. In the embodiment shown in the Figures, operating the connection means 7 equates to pulling on the brake lever 8. The brake 7 is then activated and the calliper 10 locks to the disc 9, thereby locking one of the gripping members 3 to the load member 2. The user could lock both gripping means 3 to the load member 2 and rotate the load member to provide a wrist specific exercise. However this is not the intended mode of operation.

**[0021]** Ideally, the user would begin the exercise by locking the gripping means 3 on a first side to the load member 2 by pulling the brake lever 8. It should be noted at this stage that preferably, the user will only pull the brake lever 8 with two of the four fingers. Ideally, the third and fourth fingers of each hand will remain on the hand grip to ensure a tight grip. This leaves the index (first) finger and second finger free to pull the brake lever 8. This directly relates to the technique that is well advised in motocross, where, should the rider let go of the handle, they risk not being able to re-grab the handle when riding over uneven ground. Other configurations of the fingers used to activate the brake can be used to strengthen each of the user's fingers.

**[0022]** When one gripping member 3 is locked relative to the load member 2, the user can rotate the hand grip 6 in either direction, working against the resistance provided by the load 15 and coiling up the wire 12 on the pulley wheel 11. When they have rotated the hand grip 6 to its maximum capacity, the user activates the connection means 7, or brake, on the other (second) gripping member 3. This enables the user to hold the load 15 in place while releasing the brake 7 on the first side. While holding the load 15 in position using the second gripping member 3, the user can reset, or return, the first gripping member 3 in the opposite direction to the rotation

used to lift the load 15. Subsequent reactivation of the brake 7 of the first gripping member 3 therefore allows the release of the brake 7 of the second gripping member 3 and repetition of the process performed so far allows the user to lift the weight 15 further and coil more wire 12 on the pulley wheel 11.

**[0023]** The present invention however permits the coordination of both hands to lift the weight 15 using rotation of both gripping members 3. This is performed by rotating the second hand grip 6 in a way similar to that described for the first hand grip 6 above when the second gripping member 3 is locked to the load member 2. By alternating the locking between the gripping members, the user can rotate each gripping member 3 while it is locked to the load member 2 thereby lifting the load 15 while simultaneously returning the other gripping member 3 to the start position ready to lock and rotate that member.

**[0024]** The starting position may be in flexion or extension of the wrist or anywhere therebetween. The starting position directly affects the muscle groups that are targeted by the exercise. If the user's starting position is near to extension, the rotation will take the wrist towards flexion, thereby primarily activating the muscle groups on the under side of the forearm such as the flexor carpi radialis or the brachioradialis for example. Conversely, if the user's starting position is near to flexion, wrist extension muscles, such as the extensor carpi ulnaris for example, are activated. Throughout the exercises, the user's hand muscles for retaining a strong grip are worked. Also the finger muscles are worked to maintain the grip and pull the brake lever.

**[0025]** The user may therefore lift the weight 15 by rotating the load member 2 through the connection means 7 in either direction. Once the load 15 has been lifted and the wire 12 coiled to its maximum, or user desired position, the user can either release the brakes 7 and allow the weight 15 to fall or can work in an opposite direction to the lifting direction to lower the weight 15. In this method, the muscles used for lifting are now used for lowering and the user therefore gets a full workout. Once the coil wire 12 has been completely unwound, the user can continue locked rotation of the gripping members 3 in the direction that lowered the weight 15 and the coil will be wound in the opposite direction. In this scenario, lowering muscle groups are used to lift the weight 15.

**[0026]** This described method for using the apparatus permits coordination of the muscle groups. For example, the wrist muscles must work at the same time as the handgrip muscles and possibly the fingers to pull the brake lever. This is highly relevant to motocross riders and the like who must be able to perform these tasks simultaneously.

**[0027]** The present invention could therefore be described as relating to a device 1 for strengthening grip and combating arm pump where fitness is essential for bicycle and motorcycle users, but can be used for general arm strength. In one embodiment, the device 1

comprises handle bars 3, bearings 5, brakes 7 and pulleys 11 with frame 20 and weights 15, uses working brakes 7 to lock 10 onto the centre bar (load member 2) with fixed pulley to rotate the wheel 11 with pulley rope or wire 12 connected to weights 15 that may be selected from a stack system or simply attached to the pulley wire 12. The two handle bars 3 run independently to the centre bar 2 with attached pulley 11. To rotate the centre bar 2 the brakes 7 are applied locking the handle bar 3 to the centre pulley bar 2 and by rotating the wrist with brake 7 applied the centre pulley bar 2 rotates thus lifting the attached weight 15. This action is then replicated using the other hand and turning the pulley 11 until the weight 15 reaches the top, on reaching the top the user may simply release the brakes 7 gently or reverse the process letting the weight 15 return to the start position. The machine 1 uses brake levers 8 and disc brakes 9,10 preferably to lock the outer handle bars 3 to the centre pulley bar 2 although other clamping systems may be used. The machine can be either free-standing or mounted to a wall. The machine can also be used without a frame if required with a free swinging weight. The weight 15 may be selected by the individual according to their strength.

**[0028]** In one embodiment, the methodology for using the forearm exercise machine could therefore be said to comprise the steps of:

- Selecting the weight desired depending on strength of user.
- Gripping the levers with both hands as you would to ride a bicycle or motorcycle.
- Applying the brake on one hand and rotate turning the pulley wheel and tube, thus lifting the weight.
- Applying the brake on the opposite side and releasing the brake first used, then rotating the gripping member 3 with the brake applied lifting the weight towards the top.
- Repeating this process until the weight reaches the top and either reverse the process or gently release the brakes lowering the weight to the bottom.
- Repeating this process to give forearms and finger grip a full workout.

**[0029]** Throughout the description and claims of this specification, the words “comprise” and “contain” and variations of them mean “including but not limited to”, and they are not intended to (and do not) exclude other moieties, additives, components, integers or steps. Throughout the description and claims of this specification, the singular encompasses the plural unless the context otherwise requires. In particular, where the indefinite article is used, the specification is to be understood as contemplating plurality as well as singularity, unless the context requires otherwise.

**[0030]** Features, integers, characteristics, compounds, chemical moieties or groups described in conjunction with a particular aspect, embodiment or example of the invention are to be

understood to be applicable to any other aspect, embodiment or example described herein unless incompatible therewith. All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive. The invention is not restricted to the details of any foregoing embodiments. The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

**[0031]** The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

**CLAIMS**

1. An exercise machine comprising:
  - a load member having a torsional resistance;
  - two gripping members, each being rotatably attached to said load member; and
  - hand-operable connection means disposed on each gripping member and connectable to said load member; wherein
  - said connection means are each configured to releasably lock one of said gripping members to said load member such that each gripping member has a locked configuration relative to said load member and an unlocked configuration relative to said load member;

wherein in said locked configuration of one of said gripping members, rotation of said one gripping member causes rotation of said load member against said torsional resistance, and in said unlocked configuration of one of said gripping members, said one gripping member can rotate relative to said load member.
2. An exercise machine as claimed in claim 1 wherein said load member has contact elements placed at each end thereof, said contact elements being configured to engage with said hand-operable connection means to permit said locking.
3. An exercise machine as claimed in claim 2 wherein said hand-operable connection means comprises a brake lever and a braking means engageable with said contact elements.
4. An exercise machine as claimed in claim 3 wherein each of said contact elements comprises a disc and each of said braking means comprises a calliper.
5. An exercise machine as claimed in any preceding claim wherein said load member further comprises a pulley wheel having a tether disposed therein, wherein a first end of the tether is attached to a spindle of the pulley wheel and a second end of the tether is attached to a resistive force so as to provide said torsional resistance.
6. An exercise machine as claimed in claim 5 wherein said resistive force comprises one or more weights subject to gravity.
7. An exercise machine as claimed in any preceding claim wherein said gripping members are further rotatably attached to a frame, said frame comprising support members to position said gripping members at a height suitable for a user.
8. An exercise machine as claimed in claim 7 wherein said support members are in

contact with a floor, a wall or a ceiling.

9. An exercise machine according to any preceding claim, wherein each of the gripping members comprises a hand grip for facilitating improved grip of the gripping member.
10. A method of operating the exercise machine of any of claims 1 to 9, comprising the steps of:
  - A. operating a first of said hand-operable connection means to lock a first of said gripping members to said load member;
  - B. if a second of said gripping members is in its locked configuration, operating a second of said hand-operable connection means to unlock said second gripping member from said load member;
  - C. rotating said first gripping member in its locked configuration from a first position to a second position;
  - D. operating said second said hand-operable connection means to lock said second gripping member to said load member;
  - E. operating said first hand-operable connection means to unlock said first gripping member from said load member;
  - F. rotating said first gripping member in its unlocked configuration from said second position to said first position;

wherein the steps A to F may be repeated.

11. A method as claimed in claim 10, further comprising the steps of:
  - G. rotating the second gripping member in its locked configuration from a third position to a fourth position; and
  - H. rotating said second gripping member in its unlocked configuration from said fourth position to said third position;

wherein step G is performed after step E and prior to step A if repeating said method, and step H is performed between steps B and D.

12. An exercise machine substantially as hereinbefore described with reference to the accompanying figures.

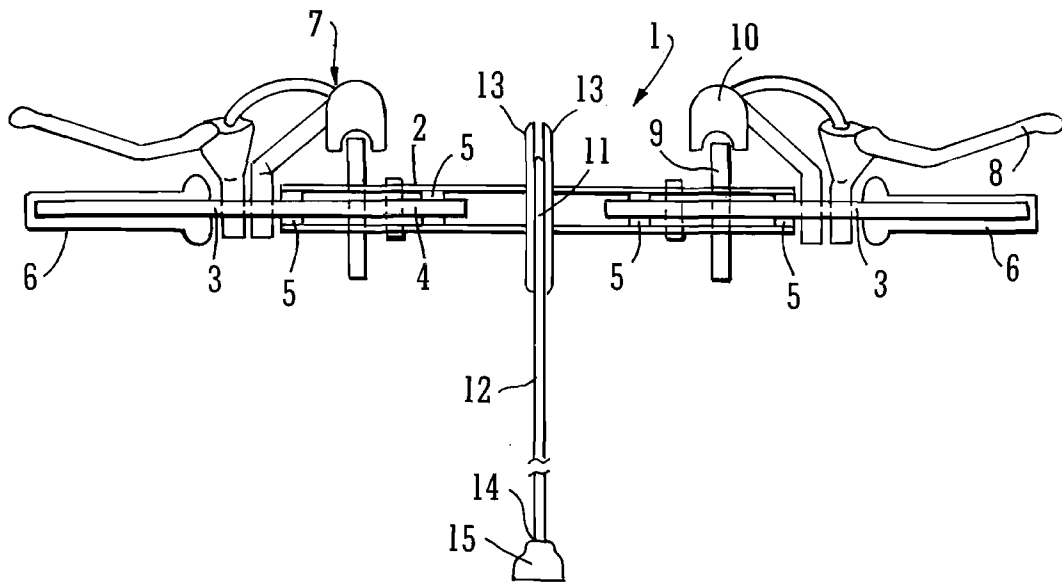


FIG. 1

2/2

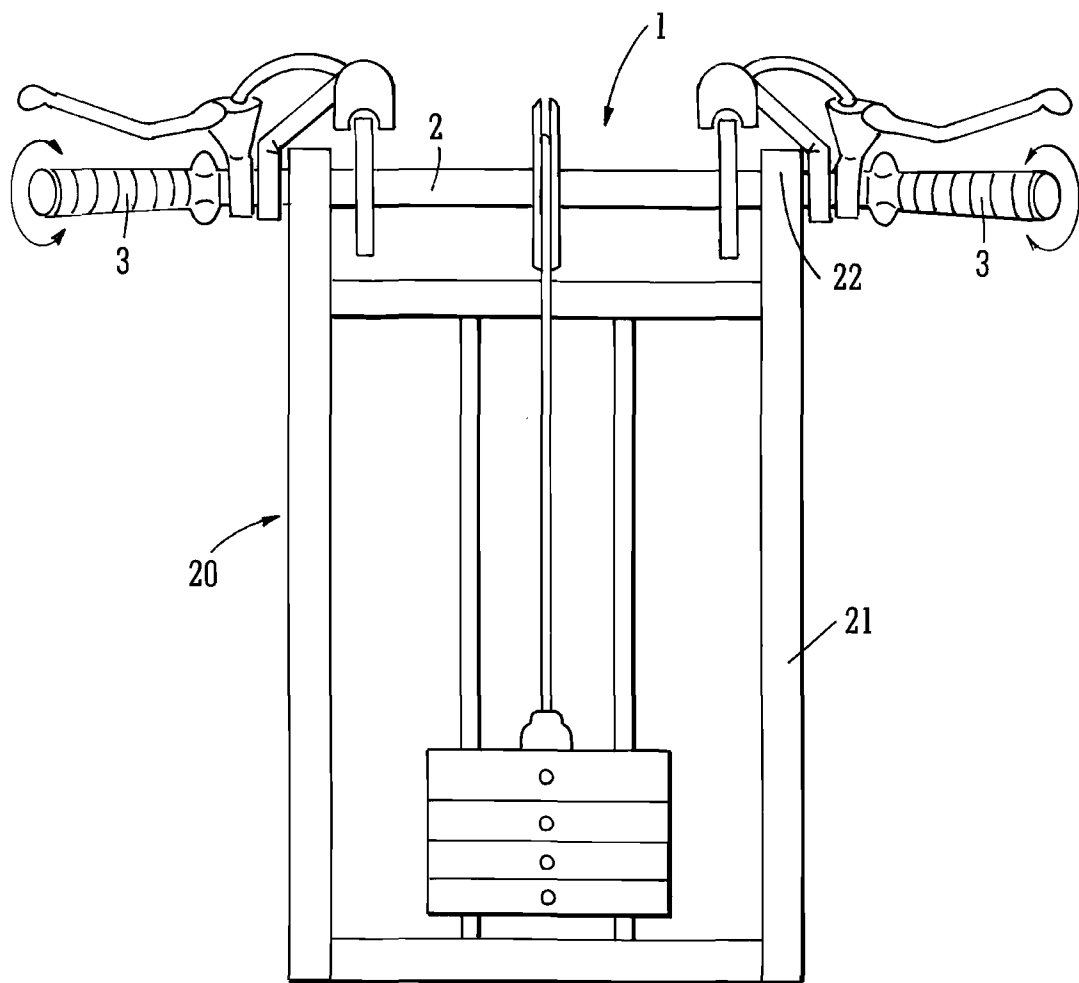


FIG. 2

# INTERNATIONAL SEARCH REPORT

International application No PCT/GB2012/050384
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**A. CLASSIFICATION OF SUBJECT MATTER**

INV. A63B21/045 A63B21/06 A63B21/062 A63B21/072 A63B23/14  
A63B23/16 A63B21/015

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7 753 827 B1 (EMICK DANIEL W [US]) 13 July 2010 (2010-07-13)	1,2,5-11
Y	column 5, lines 10-67 - column 6, lines 15-48; figures 1,7,8,10 -----	3
X	US 5 967 949 A (DAVENPORT MICHAEL D [US]) 19 October 1999 (1999-10-19) column 1, lines 60-67 - column 2, lines 1-65; figures -----	1,2,7-11
X	US 4 591 151 A (HENSLEY VIRGIL [US]) 27 May 1986 (1986-05-27) column 3, lines 38-68 - column 4, lines 1-47; figures 4,5 -----	1,2,10, 11
X	US 2003/134716 A1 (YU HUI-NAN [TW]) 17 July 2003 (2003-07-17) paragraphs [0016] - [0023] -----	1,2,10, 11
	-/--	

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"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)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

22 May 2012

Date of mailing of the international search report

31/05/2012

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
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Fax: (+31-70) 340-3016

Authorized officer

Teissier, Sara

**INTERNATIONAL SEARCH REPORT**

International application No PCT/GB2012/050384
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	US 5 634 871 A (FROELICH SR THOMAS E [US] ET AL) 3 June 1997 (1997-06-03) column 4, lines 9-67 - column 5, lines 1-67 column 6, lines 1-8; figures 1-5 -----	3  1

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB2012/050384

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: 12  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box II.2

Claims Nos.: 12

See Article 17(2)(b)PCT: Claim 12 is not clear (Article 6 PCT), as it only contains references to the drawings. According to Rule 6.2 PCT, a claim should not contain such references except where is absolutely necessary, which is not the case here thus

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2) declaration be overcome.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/GB2012/050384
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7753827	B1	13-07-2010	NONE
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US 5967949	A	19-10-1999	NONE
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US 4591151	A	27-05-1986	NONE
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US 2003134716	A1	17-07-2003	TW 515317 U 21-12-2002
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