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(54) **Device for exercising a person's back and neck**

(57) Device for training a persons back and neck, comprising a seat for the person; a first pressure body, movable with respect to the seat, and arranged for at least during movement, exerting a controllable force to the persons back; a second pressure body, movable with respect to the seat independently from the first pressure

body, and arranged for at least during movement, exerting a controllable force to the persons head, wherein the first pressure body is rotatable about a first axis of rotation; and the second pressure body is rotatable about the second axis of rotation, wherein the mutual position of the first and/or second axis of rotation with respect to the seat is adjustable.

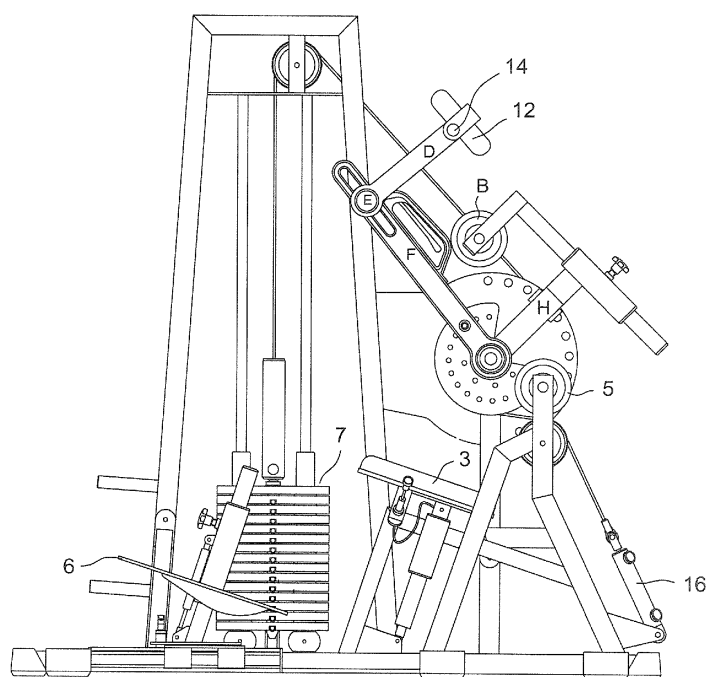


Figure 4

Description

[0001] The present invention relates to a device for exercising the functioning of a persons spine.

[0002] Exercise devices are well known in the art. An example is the "Lower Back Revival System" commercialised by the present applicant. This device forms an aid for exercising the extensor muscles of a persons (lower) back. The device comprises a seat for the person, and a fastening device for the lower part of the persons body with respect to the seat, formed by a combination of a knee-casque, and a pelvis roll, both embodied comprising a cushion. The fastening device ensures that the person to be trained solely uses his back when a weight lifting exercise is to be performed.

[0003] The patent application US 2009/054929) describes a device for preventing and curing pains in the back according to the preamble of the present invention, as will be set out in more detail below.

[0004] The patent application US 2011/0275500 describes a rehabilitation device, according to a part of the preamble of the present invention, but lacking the controllable force.

[0005] Although the above described devices have fulfilled a certain need, a need was felt for further improvement, in particular for exercising the upper part of the spinal column, the shoulders and neck. It is therefore a goal of the present invention, to provide an exercise device that enables not only exercising the lower back, but also the upper part of the spine, and/or to provide a useful alternative to the existing exercise device.

[0006] The invention thereto proposes a device for exercising a persons back and/or neck or entire spine) comprising a seat for the person, a first pressure body, movable with respect to the seat, and arranged for at least during movement, exerting a controllable force to the persons back, a second pressure body, movable with respect to the seat independently from the first pressure body, and arranged for at least during movement, exerting a controllable force to the persons head. The device may as well comprise a fastening device for the lower part of the persons body with respect to the seat.

[0007] The seat may be a pillow or a cushion, offering a support from below for the person, and the fastening device may for example be formed by a combination of a knee-casque, and a pelvis roll, both embodied comprising a cushion.

[0008] The first and second pressure body may be embodied as a roll or other adequate form, and be provided with cushions as well. The independency between the movements of the first and the second pressure body makes the device suitable for exerting a different pressure on the persons back and neck/head, and thus to exercise both parts of the spinal column each in an effective, independent way.

[0009] In order to enable use of the device by various, and in particular different persons, in an embodiment, the first pressure body is rotatable about a first axis of

rotation; and the second pressure body is rotatable about the second axis of rotation, wherein the mutual position of the first and/or second axis of rotation with respect to the seat is adjustable. In this way, the axis of rotation of the first and/or the second pressure body may be adjusted so that they correlate well with selected points in the persons spine.

[0010] A compact and save construction can be obtained when the axis of rotation are parallel, in particular coincident. Such construction offers the further advantage that a natural movement of the person is supported by the exercise device.

[0011] In order to enlarge the comfort for the person, the second pressure body is configured for following the movement of the head of the person. This can be arranged by a hingedly suspended pressure body for instance, or by a pressure body coupled to a (steel) chord. The pressure body may be embodied as a cap or (part of) a helmet.

[0012] For setting the device to the exercising needs of a specific client, the controllable force exerted by the first and/or second pressure body may be adjustable. This can be a manual and/or electronical adjustment

[0013] The force exerted by at least one of the first or second pressure body may be independent on a speed or position of said pressure body, like a force on the pressure body resulting from gravity acting upon a weight, or dependent on a position of said pressure body, like a force on the pressure body resulting from a spring, or even be dependent on a speed of (rotational) movement of said pressure body, like a reaction-force generated by a hydraulic damper on a (rotational) speed.

[0014] It may even be controllable by means of an electric actuator, and be adjustable according to a predetermined curve, for instance electronically. The curve may be a function of a position or speed of the pressure body. In order to determine a suitable curve for a person, sensors for measuring a force exerted on the first or second pressure body may be present, with which a first exercise for measuring can be performed. The device may further comprise a controller, configured for setting the curve based on values measured by the sensors.

[0015] The invention will now be elucidated into more detail with reference to the following figures. Herein:

- Figures 1a, b show a schematic view of a training device according to the state of the art;
- Figures 2a, b shows a first schematic view of a training device according to the invention;
- Figures 3a, b shows a second schematic view of a training device according to the invention;
- Figures 4, 5 and 6 show a view of training devices according to the invention, with different solutions for the generation of resistance on the second pressure body.

[0016] Figures 1a, b show a schematic view of a training device 1 according to the state of the art. In the figure,

two positions a, b of a person 2 in the same training device are depicted. The training device comprises a seat 3 for the person 2, and a fastening device, comprising a knee-casque 4 and a pelvis roll 5 for the lower part of the persons 2 body with respect to the seat 3. The device further comprises a foot rest 6. The training device 1 comprises a first pressure body, for exerting a pressure on the persons back, formed by a roll B, which is rotatable about an axis of rotation A, located above the seat 3. As becomes clear when comparing figures a, b, the axis of rotation A is positioned such that it corresponds with a selected part of the persons 2 back bone that stays in position during training. In order to do so, the position of the seat 3 can be adjusted in the direction 9 with respect to the axis of rotation A. A torque 8 is generated by a weight that causes a force in the direction of arrow 7 As visible in figures 1a, b, no pressure is exerted on the neck or head of the person 2.

[0017] Figures 2a, b show a first schematic view of a training device 11 according to the invention. This first view indicates the differences between the training device 11 according to the invention and the prior art, according to figure 1. Corresponding items are indicated with the same reference numbers. In particular, the device 11 comprises a second pressure body 12, for exerting a pressure on the persons head 13, and thereto independently from the first pressure body (not depicted) rotatable around the same or a second axis of rotation G. For the convenience of the person 2, the second pressure body 12 is coupled to the axis of rotation by means of a first leg F, which is by an axis of rotation E coupled to a second leg D, to which the second pressure body 12 is rotatably coupled about axis of rotation 14. This construction allows a rotation C of the persons head and improves the comfort the person experiences, when a pressure 15 is exerted on his head 13.

[0018] Figures 3a, b show a second schematic view of a training device 11 from figure 2, now with the first and the second pressure devices B and 12 visible. It becomes clear from figure 3 that the pressure or load exerted by pressure devices B and 12 is independently adjustable. In the example, the axis of rotation A from figure 1 is the same as the axis of rotation G of figure 2, but this is not a necessary setting.

[0019] Figure 4 shows a detailed view of the training device according to the invention. Figure 4 shows a stack of weights 7 that is used to generate a force. Additionally, an absorber 16 for generating a load is shown. The absorber is a hydraulic absorber, with an adjustable trespass for fluid, that can be used to set the desired load.

[0020] Figure 5 shows an alternative embodiment of the training device from figure 4, wherein an adjustable weight 16' is applied instead of shock absorber 16.

[0021] Figure 6 shows yet an alternative embodiment of the training device from figures 4 and 5, wherein a spring 16" is used instead of shock absorber 16.

[0022] The scope of protection of the present invention is not limited to the examples given above, but specified

in the following claims.

Claims

1. Device for training a persons back and neck, comprising:
 - A seat for the person;
 - A first pressure body, movable with respect to the seat, and arranged for at least during movement, exerting a controllable force to the persons back;
 - A second pressure body, movable with respect to the seat independently from the first pressure body, and arranged for at least during movement, exerting a controllable force to the persons head, wherein:
 - the first pressure body is rotatable about a first axis of rotation; and
 - the second pressure body is rotatable about the second axis of rotation, wherein
 - the mutual position of the first and/or second axis of rotation with respect to the seat is adjustable.
2. Device according to claim 1, wherein the axis of rotation are parallel, in particular coincident.
3. Device according to any of the preceding claims, wherein the second pressure body is configured for following the movement of the head of the person.
4. Device according to claim 3, wherein the controllable force exerted by the first and/or second pressure body is adjustable.
5. Device according to any of the preceding claims, wherein the force exerted by at least one of the first or second pressure body is independent on a speed or position of said pressure body, like a force on the pressure body resulting from gravity acting upon a weight.
6. Device according to any of the preceding claims, wherein the force exerted by at least one of the first or second pressure body is dependent on a position of said pressure body, like a force on the pressure body resulting from a spring.
7. Device according to any of the preceding claims, wherein the force exerted by at least one of the first or second pressure body is dependent on a speed of (rotational) movement of said pressure body, like a reaction-force generated by a hydraulic damper on a (rotational) speed.
8. Device according to any of the preceding claims,

wherein the force exerted by at least the first or second pressure body is controllable by means of an electric actuator.

9. Device according to any of the preceding claims, wherein the force exerted by the first and / or the second pressure body is adjustable according to a predetermined curve. 5
10. Device according to claim 9, wherein the adjustable curve is electronically adjustable. 10
11. Device according to claim 10, wherein the curve is a function of a position or speed of the pressure body. 15
12. Device according to any of the preceding claims, comprising sensors for measuring a force exerted on the first or second pressure body.
13. Device according to any of claims 9, 10, 11 or 12, comprising a controller, configured for setting the curve based on values measured by the sensors. 20

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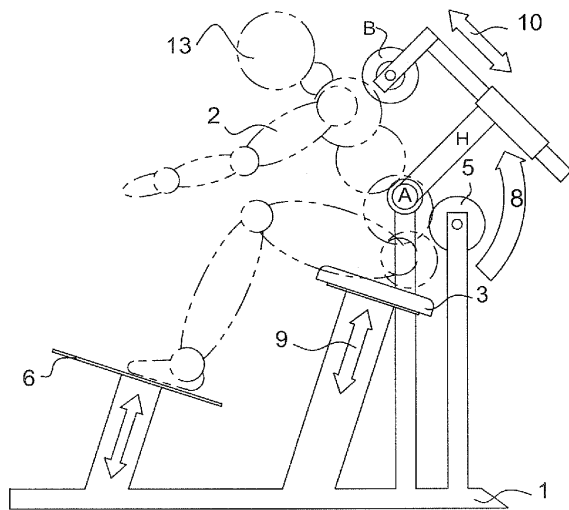


Figure 1a

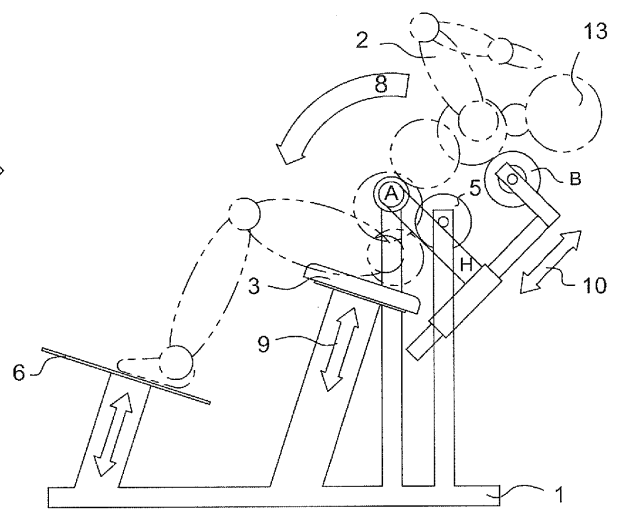


Figure 1b

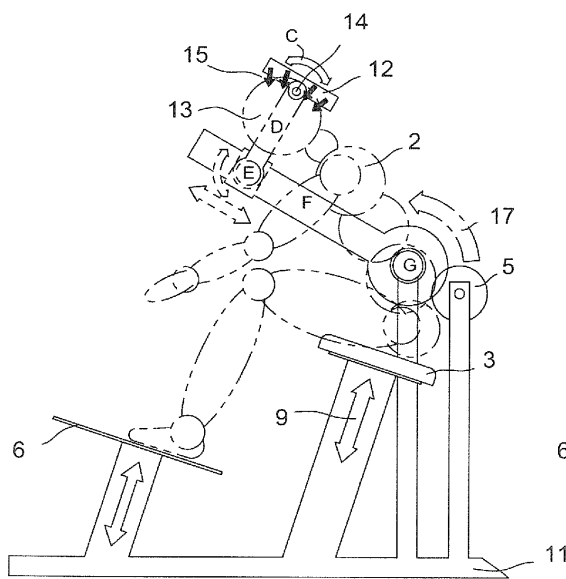


Figure 2a

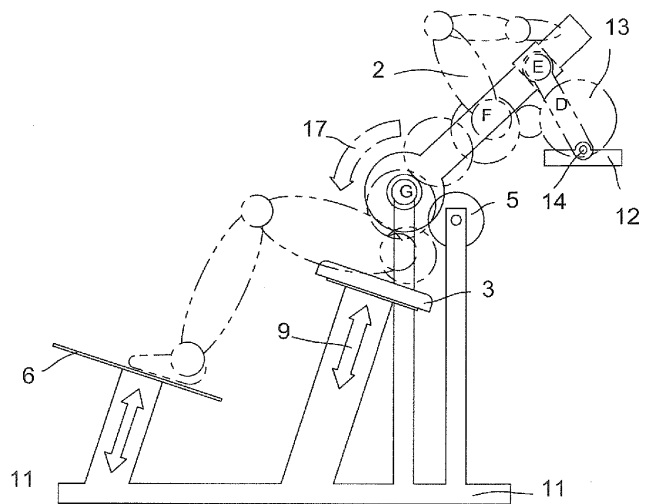


Figure 2b

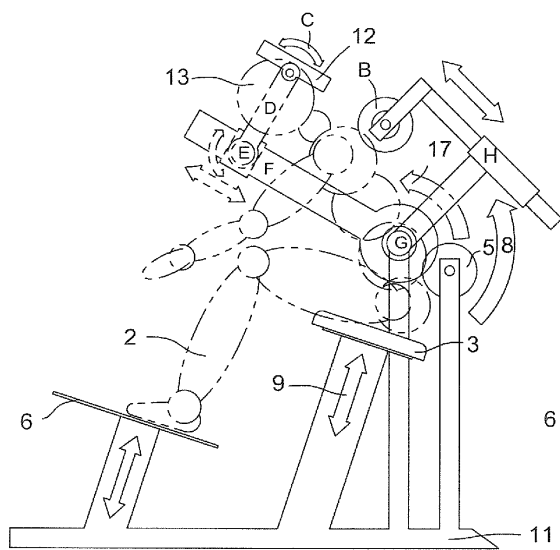


Figure 3a

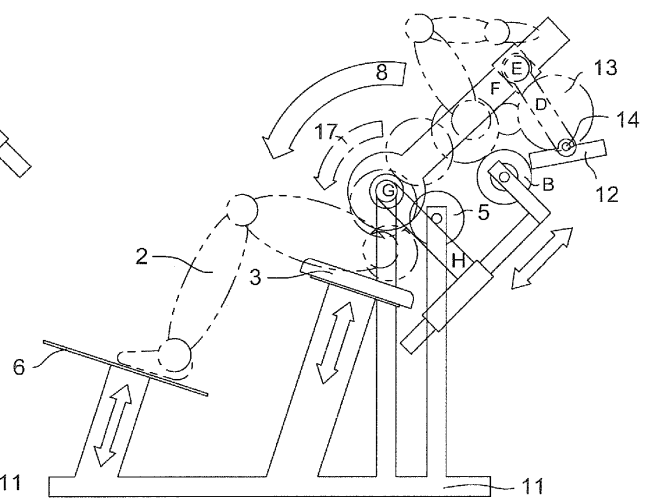


Figure 3b

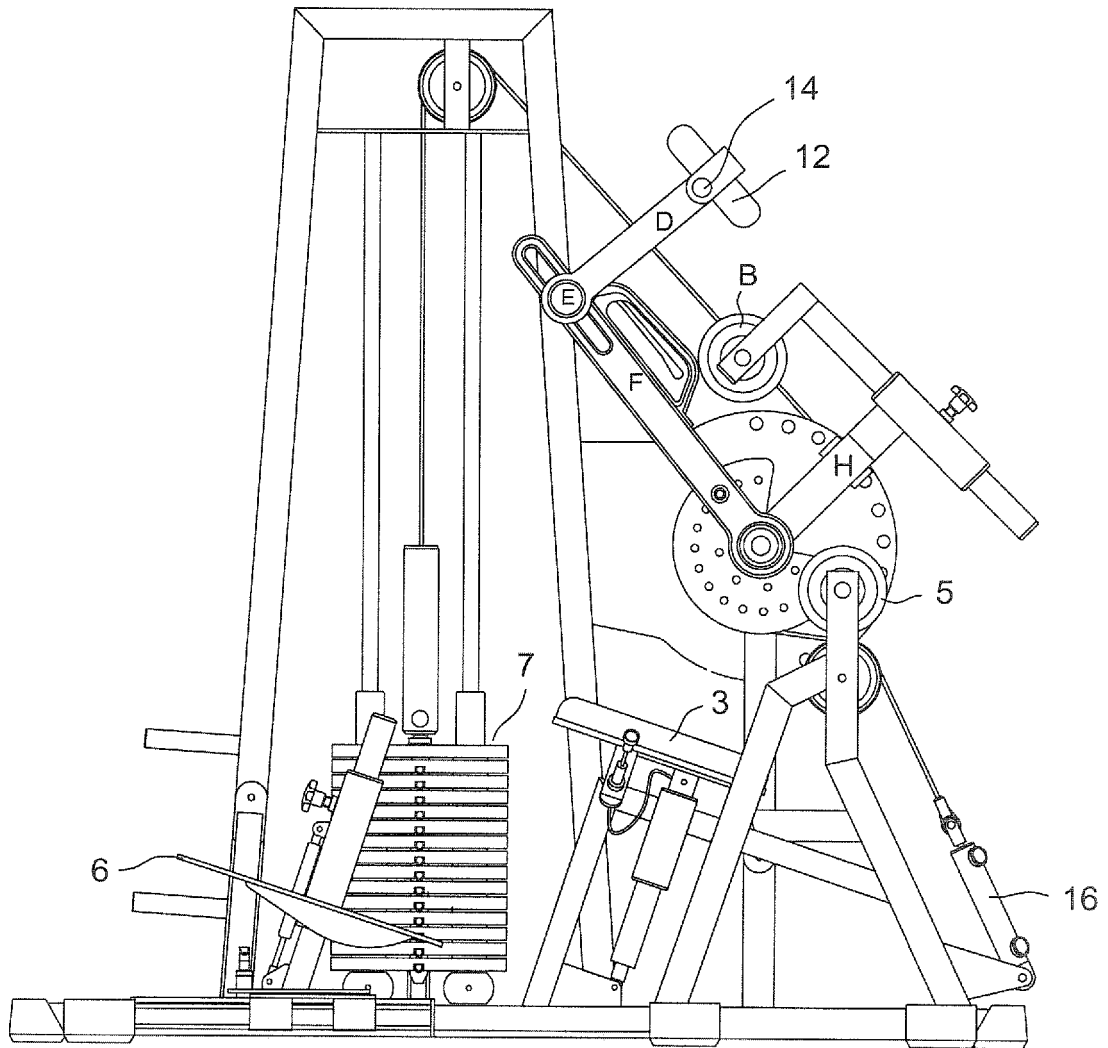


Figure 4

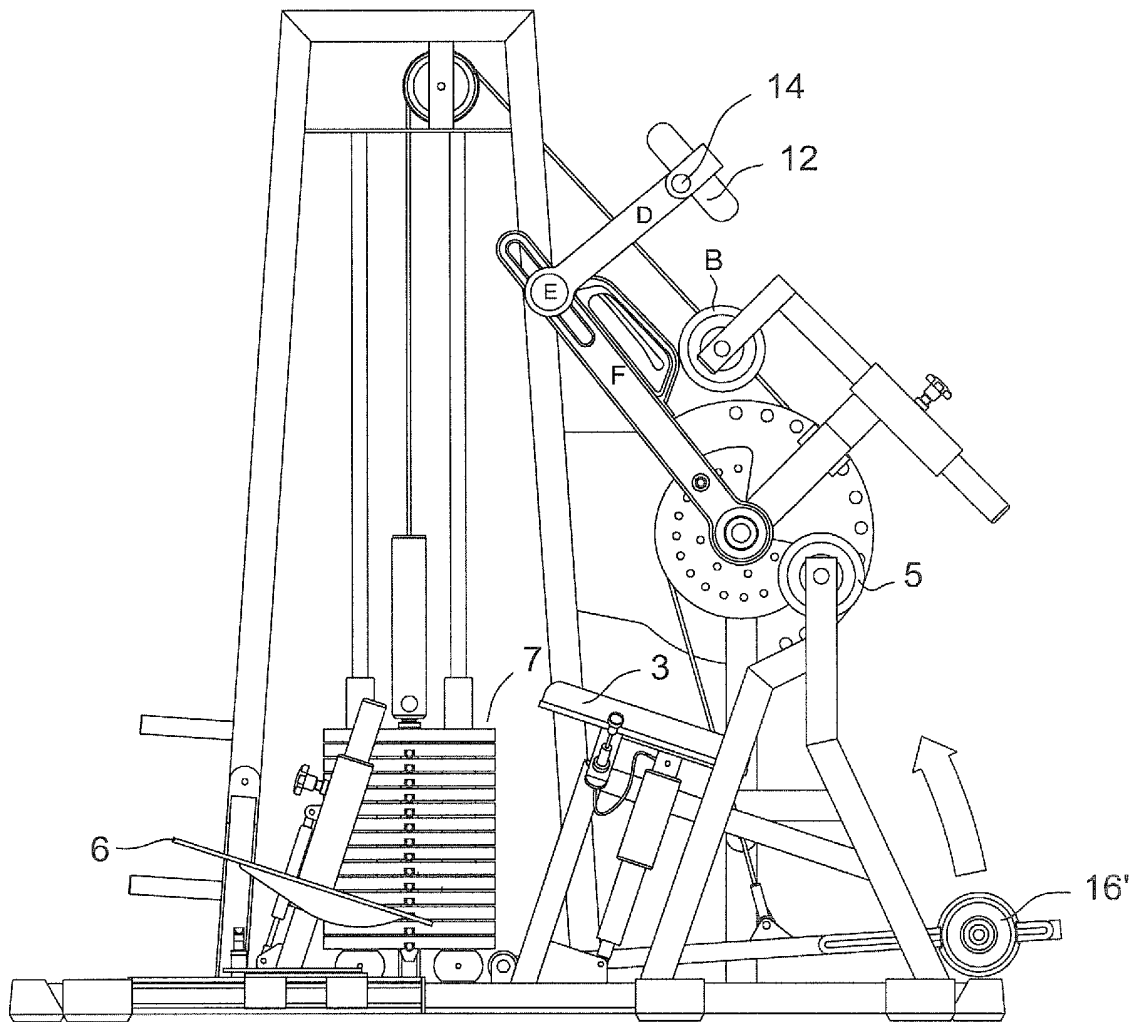


Figure 5

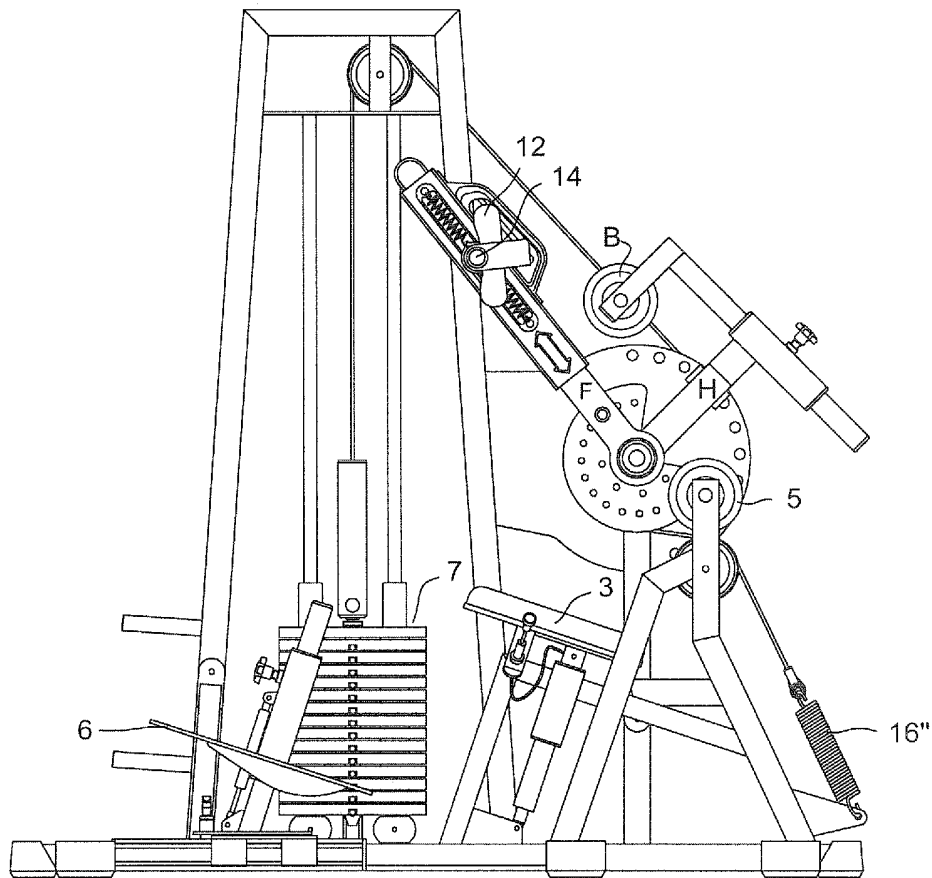


Figure 6



EUROPEAN SEARCH REPORT

Application Number
EP 13 15 9458

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2008/126116 A1 (CAMMAX S A [SM]; PARISE GIORGIO [IT]) 23 October 2008 (2008-10-23) * the whole document *	1-13	INV. A63B23/02 A63B23/025
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			TECHNICAL FIELDS SEARCHED (IPC)
			A63B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 27 August 2013	Examiner Millward, Richard
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 15 9458

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27-08-2013

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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