(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 788 816 A1

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 158(3) EPC

(43) Date of publication:
13.08.1997 Bulletin 1997/33

(21) Application number: **96914214.0**

(22) Date of filing: **24.05.1996**

(51) Int. Cl.[6]: **A63B 23/035**

(86) International application number:
PCT/ES96/00115

(87) International publication number:
WO 96/38206 (05.12.1996 Gazette 1996/53)

(84) Designated Contracting States:
DE FR GB IT

(30) Priority: **30.05.1995 ES 9501443 U**

(71) Applicant: **Quesada De La Cuesta, Oscar Luis**
28529 Rivas Vaciamadrid (ES)

(72) Inventor: **Quesada De La Cuesta, Oscar Luis**
28529 Rivas Vaciamadrid (ES)

(54) GYMNASTIC AND REHABILITATION APPARATUS

(57) The gymnastic and rehabilitation apparatus operates as follows: one hand holds one end of a rope which passes over a pulley, and the other end of the rope supports the foot on the same body side as the hand. The same applies to the other body side. The user wears a harness to which are attached two ropes which, via pulleys, are connected to a movable counterweight which relieves weight from the user's body. The pulleys which support the feet and the hands are mounted on a roller bearing system about a round tube, and inside which the rope attached to the harness may slide. The counterweight may be provided with an electromechanical system which can eliminate part of the weight in the counterweight, and consequently the user can control more easily the operations of getting on the apparatus and coming down from the apparatus. In order to avoid any uncontrolled swinging of the apparatus, a pair of free ropes may be included as a vertical necklace, on which ropes rings can run. With the disclosed apparatus, the user literally floats in the space and is substantially free to move in any desired position. By selecting the level of difficulty of the motions, the apparatus can be used by users of all ages, to play with, or to use it for gymnastics and rehabilitation purposes.

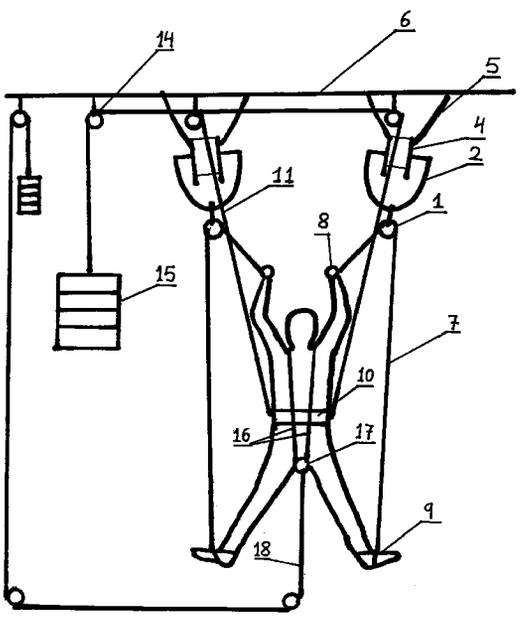

FIG. 1

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Description

There are many different gimnastic apparatus these days, most of them complicated and expensive in a way that they can only be acquired by big budget and wide macro gyms.

This gimnastic and rehabilitation apparatus has been made from a very simple idea, it is not expensive at all, and is also susceptible to be installed in your own house as well, only requirement needed is that the roof must have an specific height.

This apparatus can be also used in rehabilitation, for it is possible to exercise low and up extremities as well, with perfect coordination between them, since it is foreseen that every movements do influence on opposite and with same intensity on leg and hand the same side.

Esentialy it is shaped by a pair of pulleys nail to a high surface on which ropes with appropiate handles to be used by hands and feet slip; one rope goes to each body's extremities in a way that, once the body is hung by these ropes, traction made by one extreme, hand or foot, becomes in another one for the opposite extreme, alowing the user to perform, in the air, different positions: erect, inverse, horizontal or bowing.

To eliminate any possible disturbs when exercising because ropes could tangle up when body is rotating, the pulleys where the ropes move are mounted on a rotating engine system that rotates a tube with a bearing; this allows ropes to rotate over its own diametrical axis.

Also, in order that exercises can be gradually more or less harder, there is a movable counterweight, which hangs from an auxiliar pulley, and has on one of its extremes a joint to a harness to be used by the user, therefore exercises can always be balanced by relieving or adding weight from the user's body. This movable counterweight has also an electric mechanical machine system which can be easily controlled by the user while exercising, allowing him to relieve or add weight at any moment. This system is made by part of the counterweight attached to a second rope which slips on a bobbin moved by an electric engine, when it is set on, a number of dumbbells lift, remaining less weight on counterweight, and becoming harder the exercises to be done.

Lastly, in order to avoid any uncontrolled swinging of the user's body on the apparatus, a pair of free ropes may be included as a vertical necklace, on which ropes rings can slip.

Following, you may find an example of a description in detail of the gymnastic and reahabilitation apparatus construction, according to attached outline. It may have some variations in details, provided that basic mechanisms can not be changed.

Outline goes as follows:

Fig. 1: General view the of apparatus, user on exercise initial position.

Fig. 2: Detail on pulleys' fastening.

Fig. 3: Detail on outline of the electromechanical graduation weight system on counterweight.

According to this example, the gymnastic and rehabilitation apparatus that is recommended, is made by two pulleys (1), mounted over two arcs (2), they are accoplated to a central tube (4) by bearings (3), and are fastened by straps (5) to a height surface (6), which can be a room's roof or an appropiate structure.

Two ropes slips over these pulleys (7), and on each one's extremes (8) there are handles to fasten user's hands, while in the other side there are pedals or couplings to fasten user's feet (9), in a way that hand down traction (8) will raise the correspondant foot (9) and viceverse, therefore you can find several variations of feet and hands movements, as well as body positions depending on tractions made over the extremes (8 and 9) on each one of the ropes (7).

The user wears a harness (10), on which belt are diametricaly set another two ropes extremes (11) and two laterals (14) in order to fasten to its free extreme a counterweight system (15) according to user's weight; this way both weights will be balanced and exercises can become harder or easier.

This system allows the user to perform several exercises on positions such as erect, opposite, bowing, even horizontal, and to avoid any body swinging that may disturb when exercicing, it may be included a pair of ropes (16) located over the user's shoulders and groins that slips through a pair or necklaces (17) joined to a straps (18) by mean of a pair of pulleys jointed to another counterweight. This way, though body may be down head, erect or horizontal, necklaces will always be on the lowest position near by floor.

The counterweight (15) is made by a number of slip dumbbells over a rope on which they are fasten (12), and some of these dumbbells (15) are fasten to a second rope (19) which passes through a pulley (20) and rolls over an integral bobbin of an electrical engine axis (21). This engine can be set on by the user with a hand control accoplated to hand's handle (8), so user can relieve part of the weight (15) from the counter weight when needed, adding more difficulty to exercises.

The instalation of this apparatus is easy, not only in gyms but in our own houses, only limitation can come from the roof's height, in order to avoid beats on head on some positions.

It is evident that auxiliary elements unwritten here can be added to the apparatus, such as a way to help user to reach the apparatus and start exercising, for example a simple chair, a stair or a rotatory element over a lateral mast that right after using could be easily dismissed.

As a rehabilitation apparatus, there is no doubt that it can have mayor applications, because of its very special structure all exercises made by hands are automatically connected to legs, for each side rope goes to hand and foot of each side of the user.

Form, materials and standards could become modified when needed, provided that essential ideas can not be changed.

Claims

1. Gymnastic and rehabilitation apparatus, designed as follows: two ropes at each side of the user, pass through a pair of pulleys that hang from a higher surface, allowing their free extremes fasten to their correspondant fastening to be done by user's hands and feet, foreseeing that pulleys have to be fasten to a central tube and an arc conected to the tube by a bearing, in order to allow pulleys to rotate over a diametrical axis.

2. Gymnastic and rehabilitation apparatus, according to claim number one, foresees an harness for the user, from which two ropes go to a pair of central pulleys and two lateral pulleys, ropes have on their extremes a counterweight system that balances user's weight as wished.

3. Gymnastic and rehabilitation apparatus, according to claims number one and two, has a counterweight system made by a certain number of slip dumbbells fasten to a rope, the remaining are jointed by another rope to a pulley and a bobbin that rotates thanks to an electrical motor, handled from one hand's fastening, in order to lift these slip dimbbells and be able to variate the counterweight when needed.

4. Gymnastic and rehabilitation apparatus, according to claims number one, two and three, sets over the user's body two free ropes that go through groins and shoulders, on which a necklace slips, jointed to a counterweight via pulleys on floor and on high surface, in order to avoid body's swinging in any position.

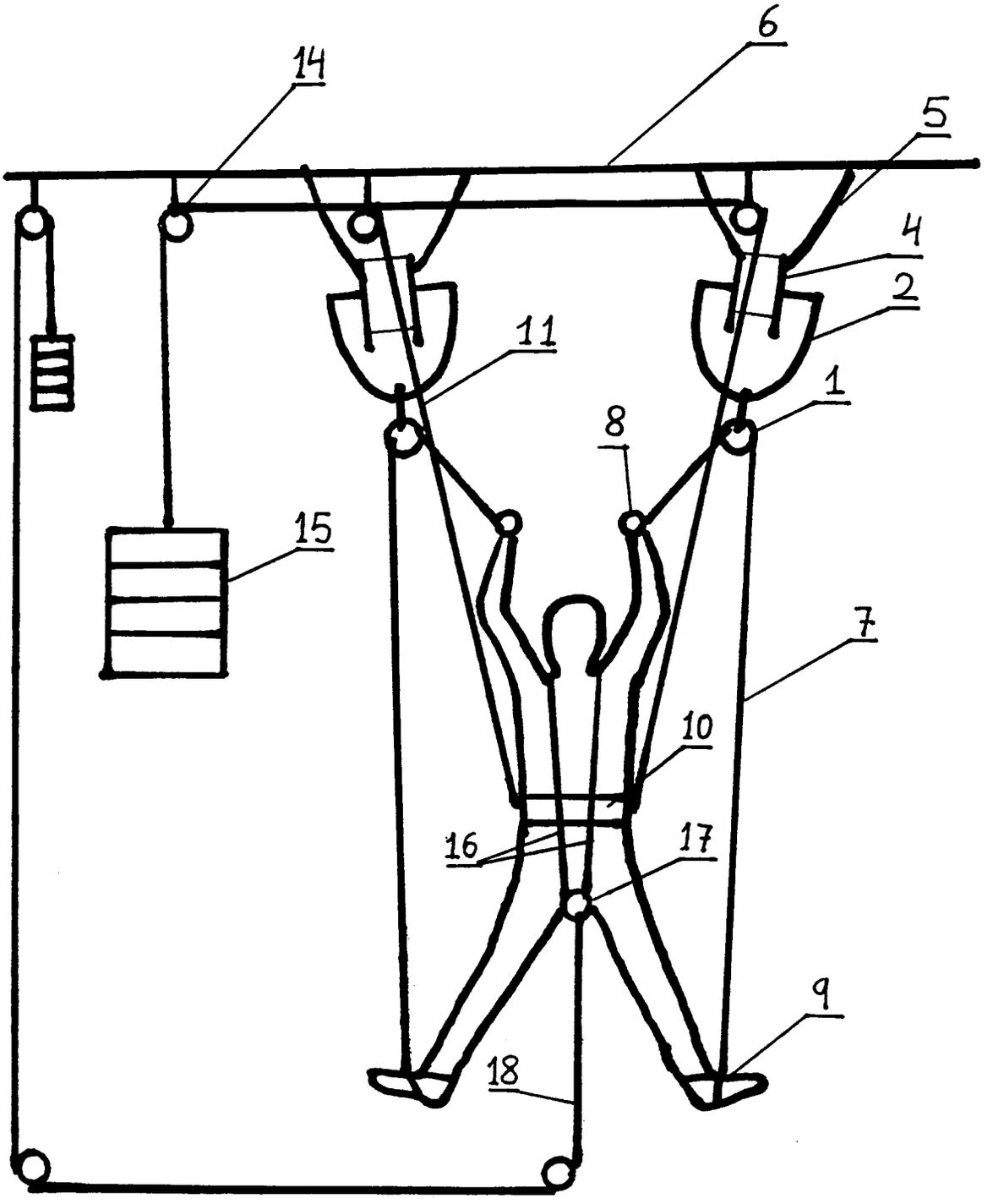

FIG. 1

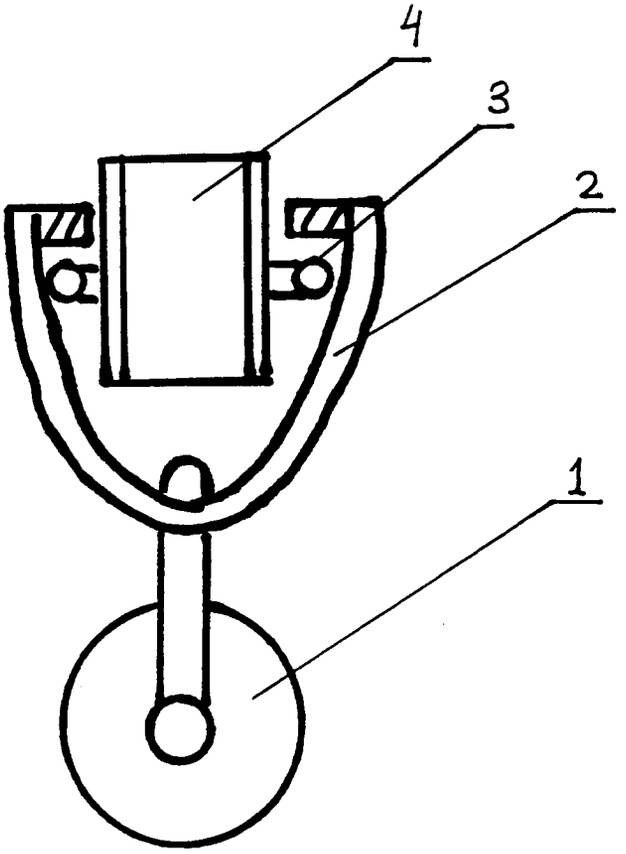

FIG:. 2

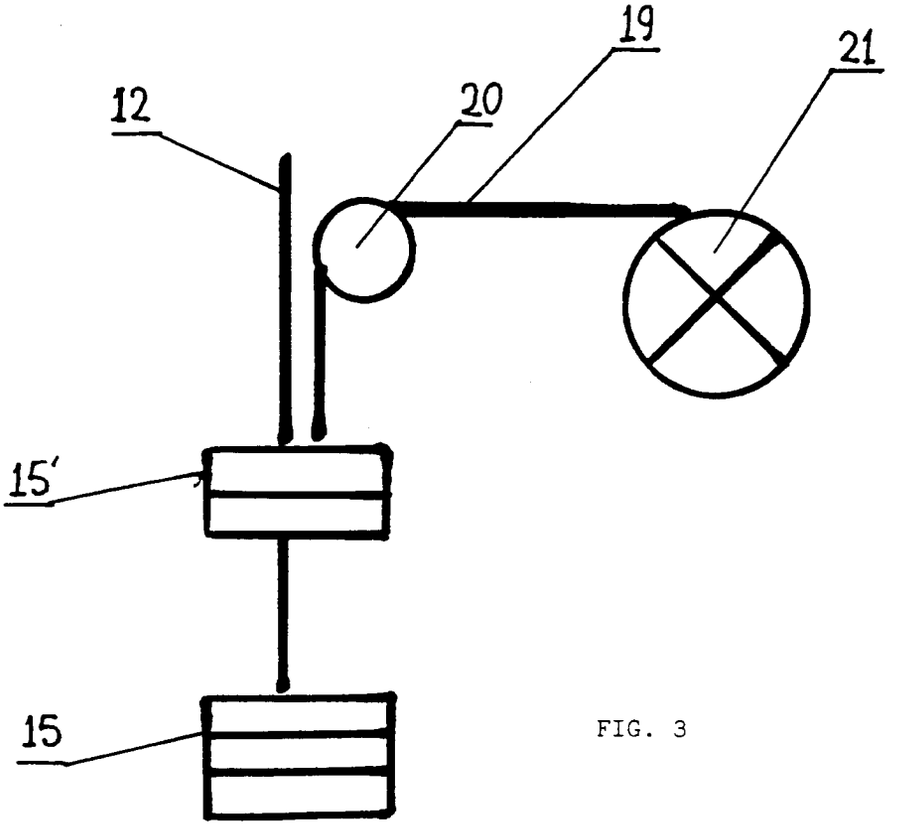

FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 96/00115

A. CLASSIFICATION OF SUBJECT MATTER

IPC^6: A63B 23/035

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)

IPC^6: A63B 7/00, A63B 17+, A63B 21+, A63B 23+

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)

.EPODOC,PAJ,WPIL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4205839 A (BEST) 3 June 1980 (03.06.80) see the whole document	1
A	US 1374697 A (WERNDLI) 12 April 1921 (12.04.21) see page 1, lines 20-77 see page 2, lines 26-111; figures 4-7	1
A	US 2716027 A (GEHRI) 23 August 1955 (23.08.55) see the whole document	1
A	US 4125257 A (LEW) 14 November 1978 (14.11.78) see abstract; figures 5, 13 see column 4, line 41 - column 5, line 4 see column 5, line 64 - column 6, line 5	

☐ 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 document 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	Date of mailing of the international search report
16 September 1996 (16.09.96)	3 October 1996 (03.10.96)
Name and mailing address of the ISA/ S.P.T.O. Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)