



(11)

EP 2 656 881 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
30.10.2013 Bulletin 2013/44

(51) Int Cl.:
A63B 22/02 (2006.01)

(21) Application number: **12165647.4**

(22) Date of filing: **26.04.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(72) Inventor: **Wang, Leao**
411 Taiping City, Taichung Hsien (TW)

(74) Representative: **2K Patentanwälte Blasberg Kewitz & Reichel Partnerschaft**
Schumannstrasse 27
60325 Frankfurt am Main (DE)

(71) Applicant: **Wang, Leao**
Taichung Hsien 411 (TW)

(54) Rotary type adjustable cushioning mechanism of a treadmill

(57) There is disclosed a rotary type adjustable cushioning mechanism of a treadmill (10), comprising a cushioning unit (20) being interposed the base frame (11) and the running board such that an expected and proper cushioning effect is created after the running board is subject to a force. The cushioning unit (20) consists of two regulating mechanisms (22) and a resilient element (30). Each of the regulating mechanisms includes a scale displaying disc, an adjustment knob, a transmission gear set, a position-adjusting threaded bolt, an elastic cushioning element, a coupled compression lever, and a coupled bracket pivotably attached to the running board. The resilient element (30) is pivotably connected between both of the coupled brackets. When the adjustment knob is turned, the elastic cushioning element (20) can move up and down on the position-adjusting threaded bolt, thereby changing the compression force between the elastic cushioning element and the coupled compression lever. As a result, the cushioning force acting on the running board can be effectively adjusted.

ioning element, a coupled compression lever, and a coupled bracket pivotably attached to the running board. The resilient element (30) is pivotably connected between both of the coupled brackets. When the adjustment knob is turned, the elastic cushioning element (20) can move up and down on the position-adjusting threaded bolt, thereby changing the compression force between the elastic cushioning element and the coupled compression lever. As a result, the cushioning force acting on the running board can be effectively adjusted.

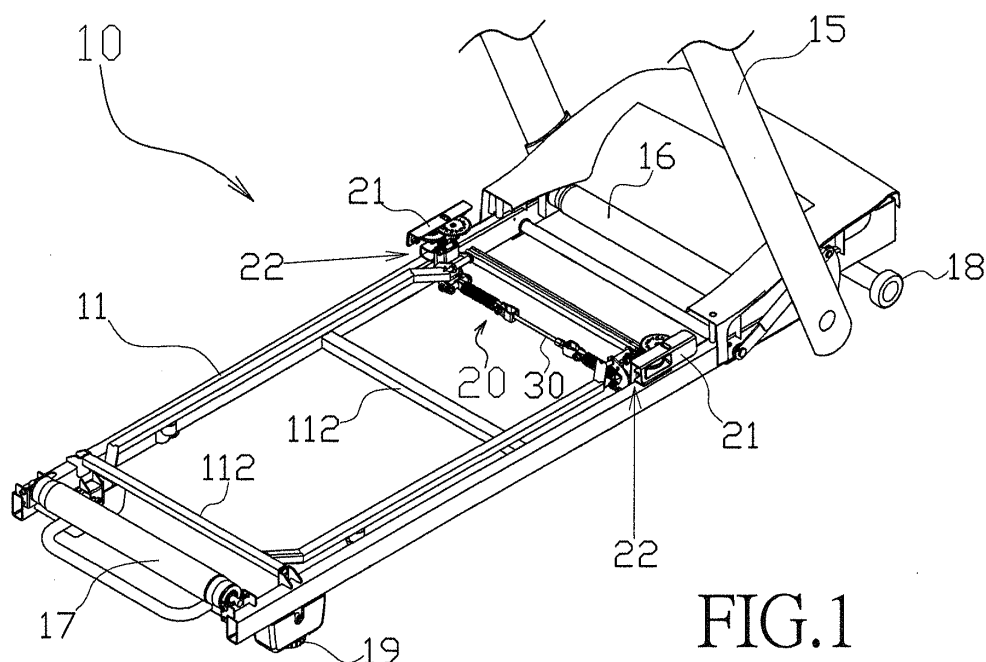


FIG.1

Description

BACKGROUND OF THE INVENTION

FIELDS OF THE INVENTION

[0001] The invention relates to a rotary type adjustable cushioning mechanism of a treadmill, and more particularly, to a structure that can conduct a fine adjustment of the cushioning force of the running board when subject to a force. In this way, the operator can easily obtain the exercise comfort and the exercise effect, thereby meeting his personal use habits.

DESCRIPTION OF THE RELATED ART

[0002] With respect to the basic design for cushioning the running board of a conventional treadmill after being subject to a force, it is general to provide a few rubber pads at the contact surface between the periphery of the running board and the base frame. In this way, the operator will directly obtain only a fixed, soft/hard cushioning force. This simple design has advantages in the economic aspect and the convenient application. However, when we get to the bottom of its genuine benefits, it is not difficult to find that the conventional solutions are not entirely able to meet the actual needs of the users. After all, each user has significant differences in individual needs and physical conditions. As a result, the invention is intended to provide a more user-friendly and more practical cushioning design to meet the actual needs such that the user can be protected against excessive sports injuries during the exercise sessions. Moreover, it is necessary to provide a more comfortable product for the users in order to maintain or even improve the willingness in use of the products.

SUMMARY OF THE INVENTION

[0003] A primary object of the invention is to provide a rotary type adjustable cushioning mechanism of a treadmill in which a fine adjustment of the cushioning force can be easily done. Meanwhile, the reactive force of the running board acting on the operator can be adjusted by himself at any time, thereby obtaining a proper exercise comfort and achieving an optimal exercise effect.

[0004] According to the invention, a rotary type adjustable cushioning mechanism of a treadmill comprises a cushioning unit being interposed the base frame and the running board such that an expected and proper cushioning effect is created after the running board is subject to a force. The cushioning unit consists of two regulating mechanisms and a resilient element. Each of the regulating mechanisms includes a scale displaying disc, an adjustment knob, a transmission gear set, a position-adjusting threaded bolt, an elastic cushioning element, a coupled compression lever, and a coupled bracket pivotably attached to the running board. The resilient ele-

ment is pivotably connected between both of the coupled brackets. When the adjustment knob is turned, the elastic cushioning element can move up and down on the position-adjusting threaded bolt, thereby changing the compression force between the elastic cushioning element and the coupled compression lever. As a result, the cushioning force acting on the running board can be effectively adjusted.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The accomplishment of this and other objects of the invention will become apparent from the following description and its accompanying drawings of which:

FIG. 1 is a perspective view of the cushioning mechanism assembled to a treadmill according to the invention;

FIG. 2 is a partial side view of the invention;

FIG. 3 is a side view of the regulating mechanism according to FIG. 2;

FIG. 4 is a partial side view of the regulating mechanism according to FIG. 2 after adjustment;

FIG. 5 is a side view of the regulating mechanism according to FIG. 4; and

FIG. 6 is a perspective view of an installation example of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0006] The present invention will now be described in more detail hereinafter with reference to the accompanying drawings that show various embodiments of the invention.

[0007] Referring to FIGS. 1, 2, 3 and 6, a treadmill 10 includes a base frame 11, a running board 12, a continuous moving belt 13, an electronic console 14 with a handrail frame 15 at both side thereof, a front roller 16, and a rear roller 17, a front roller support 18, and a rear ground-touching support 19. The running board 12 is encircled by the continuous moving belt 13 while the continuous moving belt 13 positioned around the front roller 16 and the rear roller 17 to conduct a in-place rotation. A cushioning unit 20 is interposed the base frame 11 and the running board 12 such that an expected and proper cushioning effect is created after the running board 12 is subject to a force. The cushioning unit 20 consists of two regulating mechanisms 22 and a resilient element 30. Each of the regulating mechanisms 22 includes a scale displaying disc 221, an adjustment knob 222, a transmission gear set 223, a position-adjusting threaded bolt 224, an elastic cushioning element 225, a coupled compression lever 226, and a coupled bracket 227 pivotably at-

tached to the running board 12. The resilient element 30 is pivotably connected between both of the coupled brackets 227.

[0008] As shown in FIGS. 4 and 5, when the adjustment knob 222 is turned, the position-adjusting threaded bolt 224 conducts an in-place rotation through the transmission gear set 223. In this way, the elastic cushioning element 225 can move up and down on the position-adjusting threaded bolt 224, thereby changing the compression force between the elastic cushioning element 225 and the coupled compression lever 226. As a result, the cushioning force acting on the running board 12 can be effectively adjusted.

[0009] The coupled compression lever 226 is inclined in a certain manner. When the elastic cushioning element 225 is located at different height, the compression force acting on the coupled compression lever 226 is also different before being subject to a force. In other words, the elastic cushioning element 225 is different compressed. In this way, the cushioning effect can be either soft or hard when the force acting on the above-mentioned components is changed.

[0010] When the running board 12 is compressed, the coupled bracket 227 pivotably coupled with the running board 12 will sink due to the application of force. At that time, the resilient element 30 will be pulled in an extended position such that the coupled compression lever 226 pivotably connected to the coupled bracket 227 is pushed toward the elastic cushioning element 225 to create the compression and the cushioning effect. When the external force is removed, all components subject to the force will return to their original position due to the resilience of the resilient element 30.

[0011] In order to make visible the mounting position of the related components, the continuous moving belt 13, the running board 12 and the trim strip 111 of the base frame are deliberately removed from the FIG. 1. Likewise, the rear roller 17, the trim strip 111 and the cross strips 112 of the base frame as well as the continuous moving belt 13 are removed from the FIGS. 2 and 4.

[0012] As shown in FIGS. 1 and 6, a window cover 21 is fitted to the top of the regulating mechanisms 22 at the base frame 11 so that the scale value on the scale displaying disc 221 is visible for the operator.

[0013] Alternatively, the regulating mechanisms 22 of the invention can be electrically driven (not shown) so that the operator may control the cushioning force more easily. The electrically driven mechanism is a conventional and easy design so that no further descriptions thereto are given hereinafter.

[0014] In summary there is disclosed a rotary type adjustable cushioning mechanism of a treadmill 10, comprising a cushioning unit 20 being interposed the base frame 11 and the running board such that an expected and proper cushioning effect is created after the running board is subject to a force. The cushioning unit 20 consists of two regulating mechanisms 22 and a resilient element 30. Each of the regulating mechanisms includes

a scale displaying disc, an adjustment knob, a transmission gear set, a position-adjusting threaded bolt, an elastic cushioning element, a coupled compression lever, and a coupled bracket pivotably attached to the running board. The resilient element 30 is pivotably connected between both of the coupled brackets. When the adjustment knob is turned, the elastic cushioning element 20 can move up and down on the position-adjusting threaded bolt, thereby changing the compression force between the elastic cushioning element and the coupled compression lever. As a result, the cushioning force acting on the running board can be effectively adjusted.

[0015] Many changes and modifications in the above-described embodiments of the invention can, of course, be carried out without departing from the scope thereof. Accordingly, to promote the progress in science and the useful arts, the invention is disclosed and is intended to be limited only by the scope of the appended claims.

Claims

1. A rotary type adjustable cushioning mechanism of a treadmill (10), the treadmill including a base frame (11), a running board (12), a continuous moving belt (13), an electronic console (14) with a handrail frame (15) at both side thereof, a front roller (16), and a rear roller (17), a front roller support (18), and a rear ground-touching support (19), a cushioning unit (20) being interposed the base frame and the running board such that an expected and proper cushioning effect is created after the running board is subject to a force; wherein the cushioning unit (20) consists of two regulating mechanisms (22) and a resilient element (21); and wherein each of the regulating mechanisms (22) includes a scale displaying disc (221), an adjustment knob (222), a transmission gear set (223), a position-adjusting threaded bolt (224), an elastic cushioning element (225), a coupled compression lever (226), and a coupled bracket (227) pivotably attached to the running board, and the resilient element (30) is pivotably connected between both of the coupled brackets; whereby, when the adjustment knob (222) is turned, the position-adjusting threaded bolt (224) conducts an in-place rotation through the transmission gear set so that the elastic cushioning element (225) can move up and down on the position-adjusting threaded bolt and the cushioning force acting on the running board (12) can be effectively adjusted.
2. The rotary type adjustable cushioning mechanism of a treadmill (10) as recited in claim 1, wherein a window cover (21) is fitted to the top of the regulating mechanisms at the base frame (11).

3. The rotary type adjustable cushioning mechanism of a treadmill as recited in claim 1, wherein the regulating mechanism is an electrically driven mechanism.

5

10

15

20

25

30

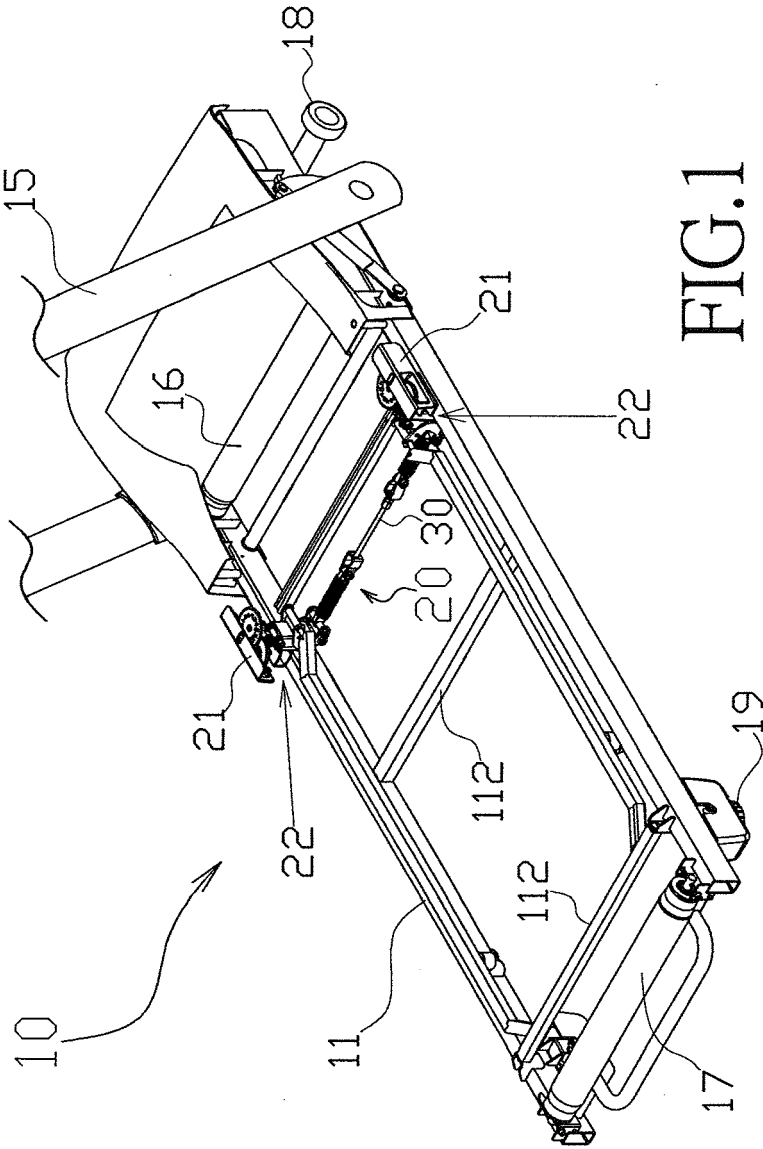
35

40

45

50

55



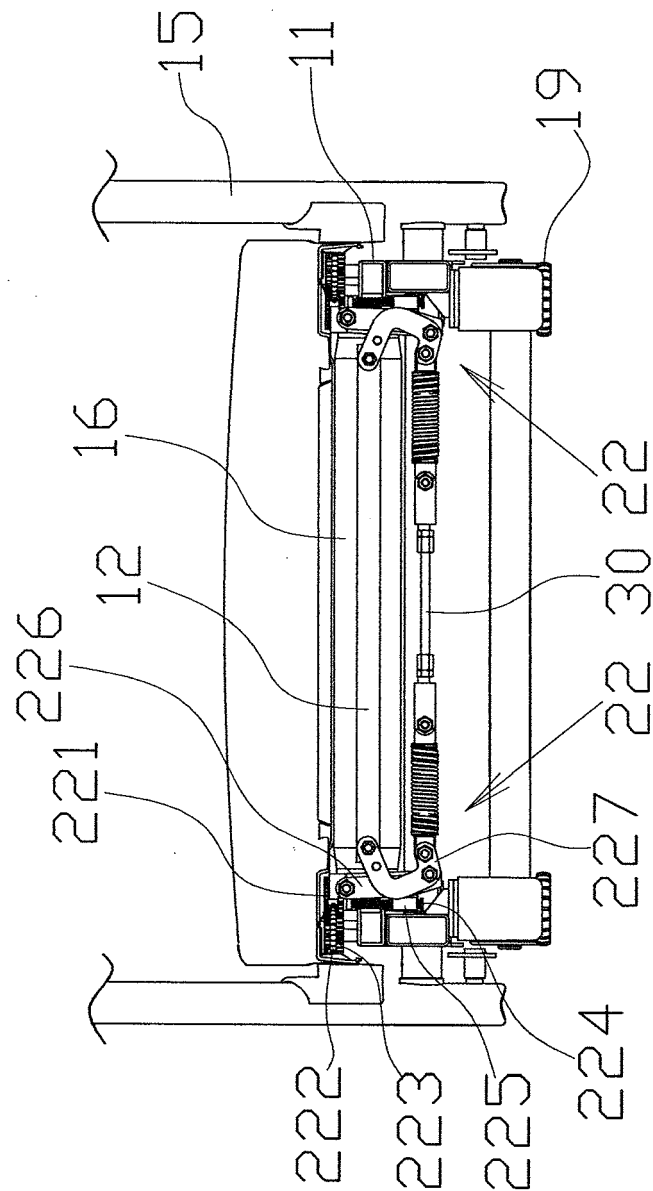


FIG.2

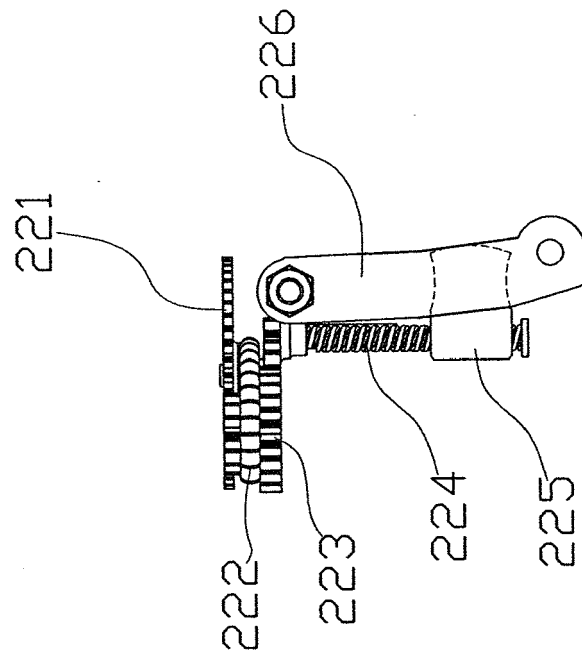


FIG.3

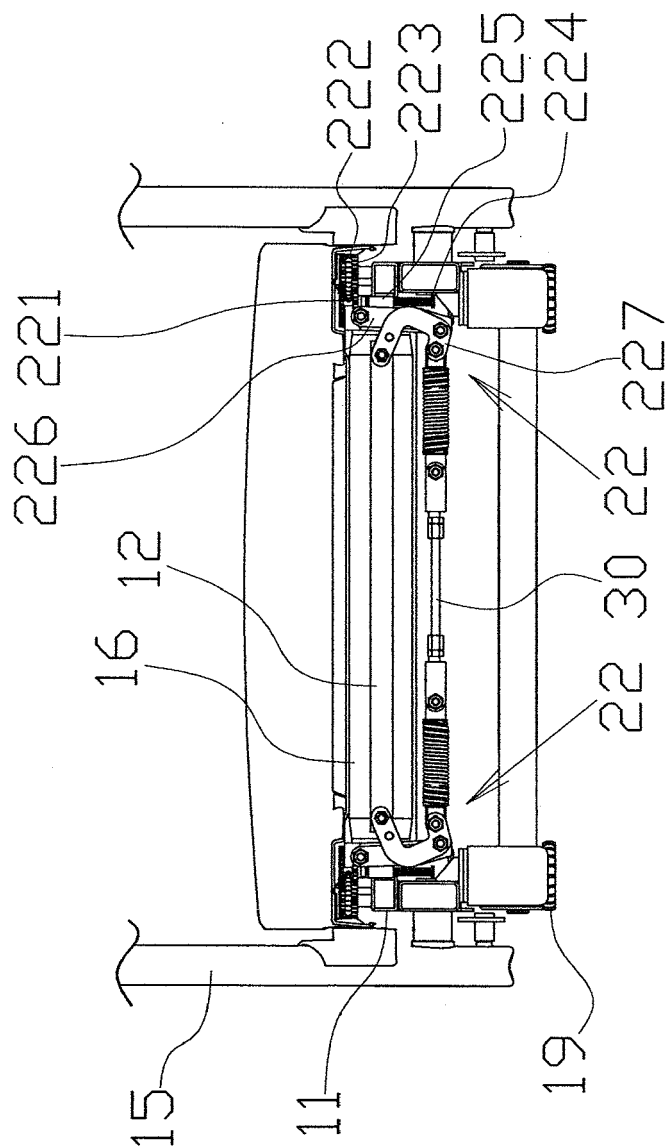


FIG.4

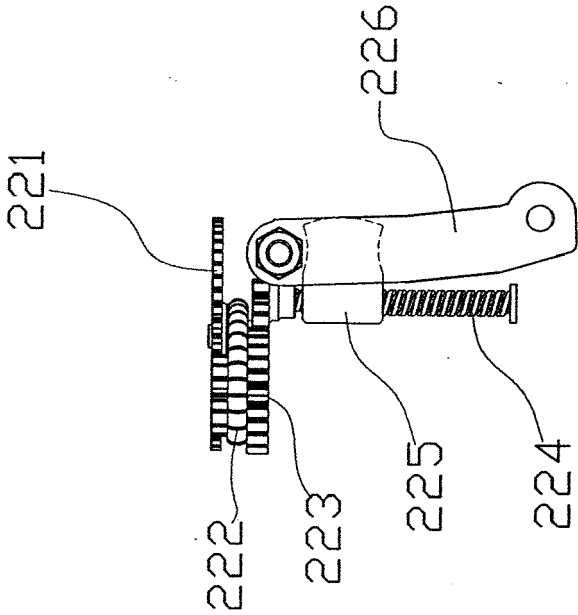
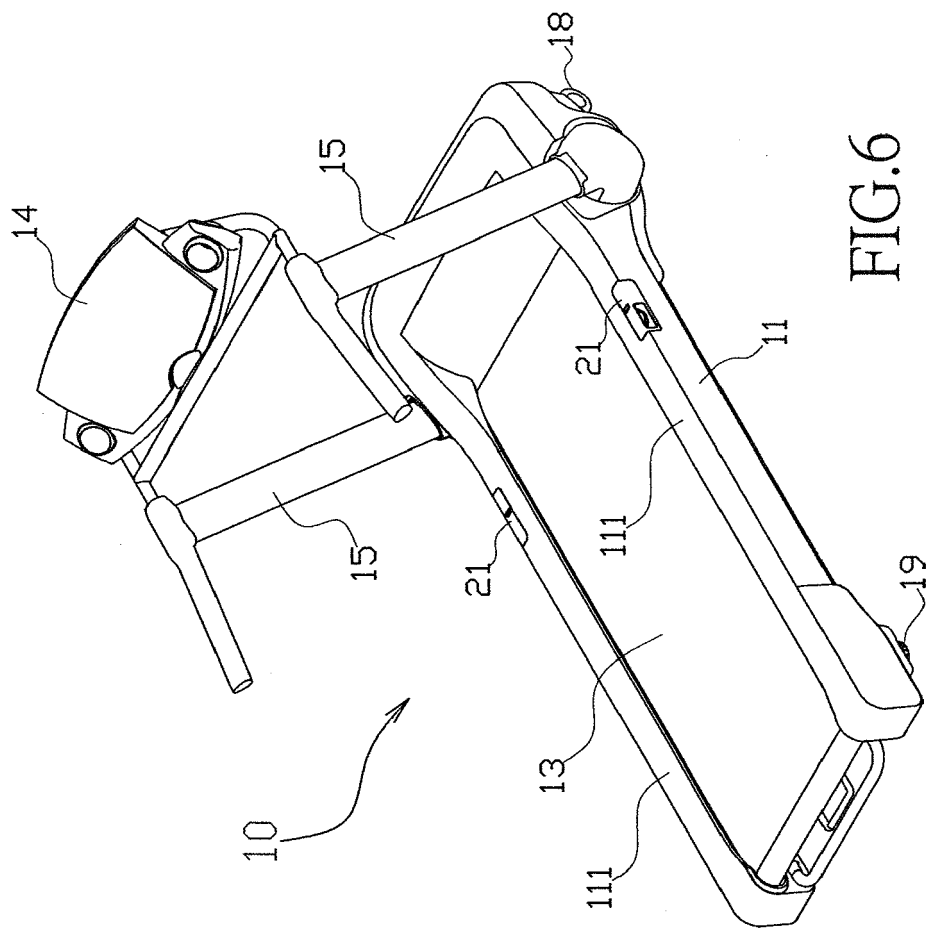


FIG. 5





EUROPEAN SEARCH REPORT

Application Number
EP 12 16 5647

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 976 061 A (MOON DANIEL R [US] ET AL) 2 November 1999 (1999-11-02) * column 3, lines 13-67 - column 6, lines 32-68; figures 3-5 *	1-3	INV. A63B22/02
A	US 2009/181829 A1 (WU SHEN YI [TW]) 16 July 2009 (2009-07-16) * paragraphs [0020] - [0028]; figures *	1-3	
A	US 7 163 493 B1 (KUO HAI PIN [TW]) 16 January 2007 (2007-01-16) * column 2, lines 44-67 - columns 3,4; figures *	1-3	
A	EP 1 743 677 A1 (BRUNSWICK CORP [US]) 17 January 2007 (2007-01-17) * paragraphs [0022] - [0032]; figures *	1-3	
			TECHNICAL FIELDS SEARCHED (IPC)
			A63B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 8 October 2012	Examiner Teissier, Sara
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			

1
EPO FORM 1503 03.82 (P04C01)

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

EP 12 16 5647

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-10-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5976061	A	02-11-1999	NONE
US 2009181829	A1	16-07-2009	NONE
US 7163493	B1	16-01-2007	EP 1815887 A1 08-08-2007 US 7163493 B1 16-01-2007
EP 1743677	A1	17-01-2007	CA 2550791 A1 15-01-2007 CN 1895701 A 17-01-2007 EP 1743677 A1 17-01-2007 US 2007015636 A1 18-01-2007 US 2012149533 A1 14-06-2012