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(54) **The Springy Treadmill for Rehabilitation and fitness Training**

(57) The springy treadmill for rehabilitation and fitness training is the object of this invention.

The treadmill for rehabilitation and fitness training is the essence of this invention, composed of the treadmill belt (5) made as an endless belt, stretched on the rollers (4), lifting gear consisting of a lifting and absorbing gaiter (15), a compressor, gaiter (15) supplying cables (14) and a system pressure regulating unit. Another important feature is adding to the treadmill a vibration generator (12),

allowing for using vibration exercise elements. It is also important that in the internal side of the belt (5) a wedge shaped crest (6) is made that works with the roller's (4) groove, and the belt (1) moves along the skid plate (7) placed on slip washer (8). It is also advantageous that the slip washer (8) is made of graphite tape. It is also important that the unit is also made in alternative version, it can be placed in the underpressure capsule, so practising person, or lower part of his/her body is underpressure effected.

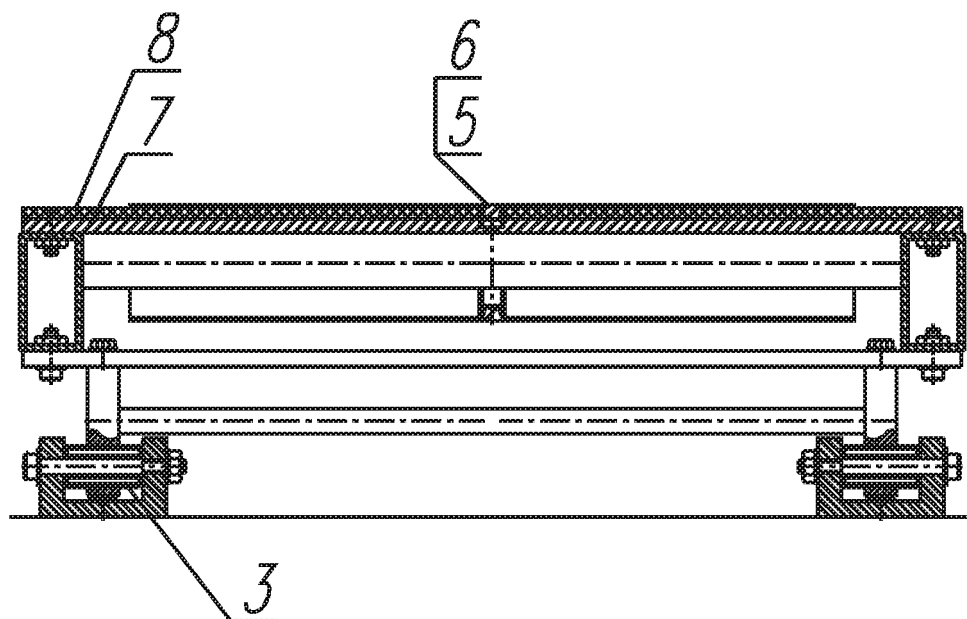


Fig. 2

Description

[0001] The springy treadmill for rehabilitation and fitness training is the subject of this invention.

[0002] The most commonly observed equipment for rehabilitation and fitness training it is different kinds of treadmill fitted with endless belts.

[0003] Typical exercise machine of this type is described in American patent specification US5984838. Described unit is composed of a carrying frame supported from one side by anti-slip feet and on the other it is equipped with wheels that allow for easy unit moving. Frame end positioned rolls have been spread under an endless belt run with the muscle force of the exercising person. The treadmill is fitted with a rail that for supporting the exercising person.

[0004] As the basic fault of this type of treadmills is big rigidity required for proper equipment work, but that results in vibration transmission to a practising person's joints. This triggers the exercising person's bone structure overload off. One of the examples of partial solution to this problem is described in American patent specification US5989161. In order to solve that problem the treadmill is supported on its base on one swinging side with pivots and on another side with pipe shock absorbers, absorbing vibrations.

[0005] Another problem to be solved is the treadmill lead angle adjustment's problem. This effects training load adjustment as it allows for walking up or down simulation, or a walk on flat surface alternatively. Usually, lead angle adjustment is implemented with a screw lifting gear fitted in the treadmill system, hand driven or for more expensive model, el. position control servo-mechanism driven.

[0006] The springy treadmill for rehabilitation and fitness training that is the object of this invention is composed of a driven treadmill belt made as an endless belt, stretched on rollers, lifting gear for training load adjustment, characterized by the fact that the lifting gear consists of a lifting and absorbing gaiter, a compressor, gaiter supplying cables and a pressure regulating system in the system. An important feature is adding to the treadmill a vibration generator allowing for using vibration exercise elements. It is also important that in the internal side of the belt a wedge shaped crest is made that works with the roller's groove, and the belt moves along the skid plate on slip washer. Positively the slip washer is made of graphite tape. It is also important that the fact that the unit is also made in alternative version, it can be placed in the underpressure capsule, so practising person, or lower part of his/her body is underpressure effected.

[0007] The springy treadmill for rehabilitation and fitness training is depicted in the drawing where fig. 1 shows basic elements of treadmill gear in lifted position, side view, while fig. 2 shows the same view in horizontal position. Fig. 3 shows cross section in diagrammatic form, whereas fig. 4 shows gear view from the top. The treadmill exercise machine is composed of frame 1 where ba-

sic treadmill working elements are fitted on, including the treadmill belt 5, made as an endless belt, stretched on the rollers 4 altogether with a driving unit, made up of el. motor 16 with r.p.m reduction gear 6, belt transmission gear including tooth gears 10, and tooth belt 13. One of tooth gears 10 is fitted on the r.p.m reduction gear axis 6, while another one on the axis 9 of one of the rollers 4. Frame 1 is fixed to the unit's base / foundation, on one side with swinging joints 2 containing rubber and metal elements 3 to deaden vibrations, and on another side it is supported with at least one lifting and absorbing gaiter 15, used for treadmill belt inclination level / grade adjustment, allowing for bigger load practising - "walking up" or climbing and "walking down". Next treadmill system is vertical vibration generating system. As treadmill belt 5 cannot transfer load generated by feet of the practising person, it is supported from the bottom with the skid plate 7 equipped with graphite slip washers 8. In order to avoid typical fault observed in this kind of equipment i.e. to avoid treadmill belt 5 and rollers 4 slipping, there is a wedge shaped crest 6 made in the internal side of the belt 5 that works with the roller's groove 4. Frame 1 has a vibration generator 12 fixed, composed of electric motor with non-symmetrically placed rotating mass fixed to axis. The lifting and absorbing gaiter 15 of the frame 1 is powered by a compressor, unseen in the drawings via the cable 14. Another version of the whole unit allows for placing the exercise machine in the underpressure capsule, so practising person, or lower part of his/her body is underpressure effected, and that allows for better exercise effectiveness and cellulites curing.

Claims

1. The springy treadmill for rehabilitation and fitness training, composed of a driven treadmill belt made as an endless belt, stretched on rollers, lifting gear for training load adjustment and a rail allowing for training load adjustment, **characterized by** the fact that the lifting gear consists of a lifting and absorbing gaiter (15), a compressor, gaiter (15) supplying cables (14) and a pressure regulating system in the system.
2. The treadmill acc. to Claim 1, **characterized by** the fact that it is equipped with a vibration generator (12) allowing for using vibration exercise elements.
3. The treadmill acc. to Claim 1, **characterized by** the fact that the internal side of the belt (5) has a wedge shaped crest (6) made that works with the roller's (4) groove and the belt (5) moves along the skid plate (7) on slip washer (8).
4. The treadmill acc. to Claim 1, **characterized by** the fact that positively the slip washer (8) is made of graphite tape.

5. The treadmill acc. to Claim 1, **characterized by** the fact that the unit is also made in alternative version, it can be placed in the underpressure capsule, so practising person, or lower part of his/her body is underpressure effected.

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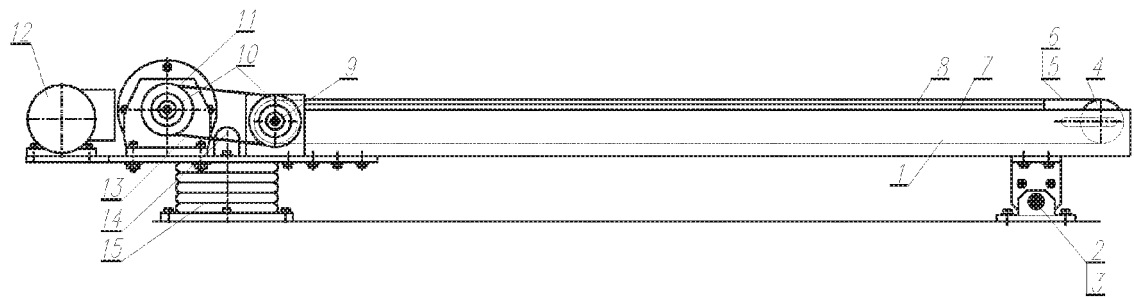


Fig. 1

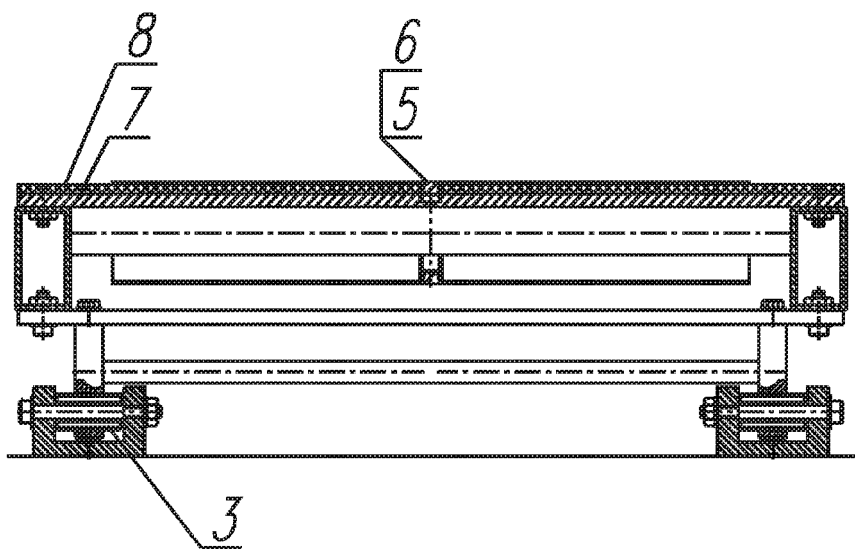


Fig. 2

**PARTIAL EUROPEAN SEARCH REPORT**

Application Number

which under Rule 63 of the European Patent Convention EP 09 17 1909 shall be considered, for the purposes of subsequent proceedings, as the European search report

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 01/58534 A1 (MILLENNIAL FITNESS LLC [US]; IUND NEAL A [US]; RICHARDSON KARY D [US];) 16 August 2001 (2001-08-16) * the whole document *	1-5	INV. A63B22/02
X	US 5 518 471 A (HETTINGER RONALD K [US] ET AL) 21 May 1996 (1996-05-21) * the whole document *	1-5	ADD. A61H23/02
X	US 4 913 396 A (DALEBOUT WILLIAM T [US] ET AL DALEBOUT WILLIAM T [US] ET AL) 3 April 1990 (1990-04-03) * the whole document *	1-5	
X	US 5 827 155 A (JENSEN JON F [US] ET AL) 27 October 1998 (1998-10-27) * the whole document *	1-5	
X	US 5 100 127 A (MELNICK DENNIS M [US] ET AL) 31 March 1992 (1992-03-31) * the whole document *	1-5	
			TECHNICAL FIELDS SEARCHED (IPC)
			A63B
INCOMPLETE SEARCH			
The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims. Claims searched completely : Claims searched incompletely : Claims not searched : Reason for the limitation of the search: see sheet C			
Place of search		Date of completion of the search	Examiner
The Hague		14 December 2009	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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EPO FORM 1503 03.82 (P04E07)



**INCOMPLETE SEARCH
SHEET C**

Application Number

EP 09 17 1909

Claim(s) searched incompletely:
1-5

Reason for the limitation of the search:

Claim 1 (and indeed also those dependent thereon) is not clear. The terminology used is not known in the art, and the description gives no information which could be used to clarify these terms.

The following have no clear meaning:

a rail allowing for training load adjustment (not further described in the application)

the lifting gear consists of

a lifting and absorbing gaiter (the exact meaning intended by "gaiter" is unclear)

As a result, the claim has been interpreted as including a lifting gear (inclination angle adjustment means) , the lifting gear being powered by pressurised fluid.

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

EP 09 17 1909

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.

14-12-2009

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0158534	A1	16-08-2001	AU 3807201 A	20-08-2001
US 5518471	A	21-05-1996	NONE	
US 4913396	A	03-04-1990	NONE	
US 5827155	A	27-10-1998	NONE	
US 5100127	A	31-03-1992	NONE	

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 5984838 A [0003]
- US 5989161 A [0004]