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(72) Inventor: **Wu, Shu-Yao**
413 Taichung City (TW)

(74) Representative: **Strehl Schübel-Hopf & Partner**
Maximilianstrasse 54
80538 München (DE)

(71) Applicant: **Strength Master Fitness Tech Co., Ltd.**
413 Taichung City (TW)

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EPC.

(54) **Treading exerciser and method for controlling resistance of the treading exerciser**

(57) A treading exerciser includes a base 1, and a first rotary unit 2 and a second rotary unit 3 are respectively connected to the base 1. The first rotary unit 2 and the second rotary unit 3 are connected to a first link unit 4 and a second link unit 5 respectively. The first link unit 4 and the second link unit 5 are connected to each other

by a first connection portion 45. A pedal 6 is connected adjacent to the first connection portion 45 and drives the first and second link units 4, 5. The first link unit 4 is pivoted about the first pivot 131 to form up-and-down action. The second link unit 5 is pivoted about the second pivot 132 to form back-and-forth action.

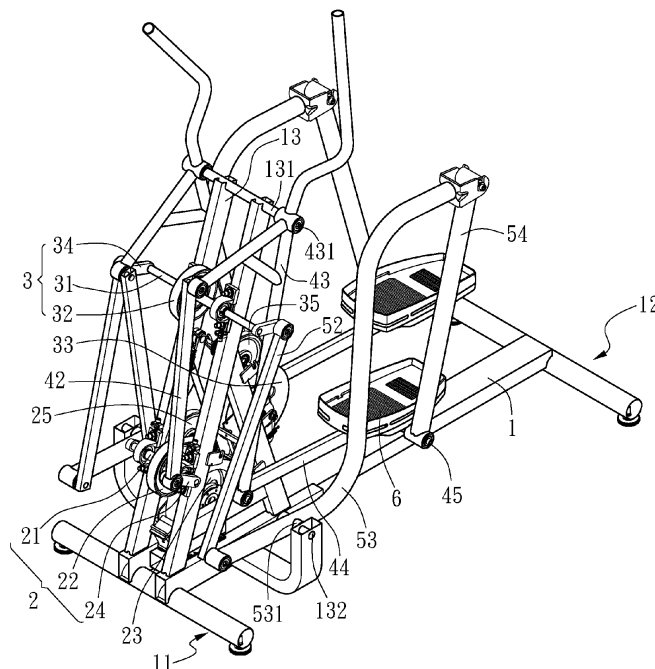


FIG. 1

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a treading exerciser, and more particularly, to a treading exerciser with changeable treading traces and a method for controlling the resistance of the treading exerciser.

BACKGROUND OF THE INVENTION

[0002] The conventional treading exerciser is disclosed in Fig. 8 and generally comprises an axle 70 and two first link units 7 are respectively and pivotably connected to the two ends of the axle 70. Each of the first link units 7 has a crank 71, a board 72 and a pivotal rod 73. A pedal 74 is connected on the top of the board 72 so that the user's foot is positioned in the pedal 74 when operating the treading exerciser. Each of the pedals 74 is connected with a second link unit 8 which is pivotably connected to the base of the treading exerciser. When the user treads the pedals 74, the cranks 71 are pivotable about the axle 70 so that the boards 72 are moved up and down. The pedals 74 are driven by the second link units 8 and move the boards 72 back and forth. The pedals 74 move along two respective oval traces.

[0003] However, the number of the links of the first and second link units 7, 8 is not plenty enough so that the degrees of freedom for the pedals 74 are restricted. In other words, the trace provided by the conventional treading exerciser is fixed and does not meet the practical needs of different users because different users have different distances between the two legs.

[0004] The present invention intends to provide a treading exerciser which provides changeable treading traces.

SUMMARY OF THE INVENTION

[0005] The present invention relates to a treading exerciser and comprises a base having a front end and a rear end. A first rotary unit and a second rotary unit are respectively connected to the base. The base further has a first pivot and a second pivot connected thereto. The first rotary unit and the second rotary unit are located on the front end of the base. A first link unit has the first end connected between the first rotary unit and a first connection portion is formed on the second end of the first link unit. The first link unit has a first pivotal portion located at the mediate portion thereof and the first pivotal portion is pivotably connected to the first pivot. A second link unit has the first end connected to the second rotary unit and the second end of the second link unit is connected to first connection portion of the first link unit. The second link unit has a second pivotal portion located at the mediate portion thereof and the second pivotal portion is pivotably connected to the second pivot.

[0006] The present invention also provides a method

for controlling the resistance of a treading exerciser which comprises a base, and a first link unit having at least one link is connected to the base. The first link unit has a V-shaped link which has a joint end and two distal ends, wherein the joint end is pivotably connected to the first pivot, and one of the two distal ends is connected to the first rotary unit. The first rotary unit is connected with a first resistance device. A second link unit is connected to the base and has at least one link. The second link unit is connected between a second rotary unit and the first link unit. The second link unit has a V-shaped link which has a joint end and two distal ends, wherein the joint end of the second link unit is pivotably connected to the second pivot. The second rotary unit has a second resistance device. The method is to change resistance of the first resistance device or the second resistance device to adjust the resistance when operating the treading exerciser.

[0007] The primary object of the present invention is to provide a treading exerciser which has two link units and one of the two link units performs up-and-down action, and the other link unit performs back-and-forth action. The two link units are pivotably connected to each other so that the tracks of the pedals of the treading exerciser are varied when different users operate the treading exerciser.

[0008] The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

Fig. 1 is a perspective view to show the treading exerciser of the present invention;

Fig. 2 is a side plan view of the treading exerciser of the present invention;

Fig. 3 is a partial enlarged view of the treading exerciser of the present invention;

Figs. 4 and 5 show the traces of the pedals of the treading exerciser of the present invention;

Fig. 6 shows another trace of the pedals of the treading exerciser of the present invention;

Fig. 7 is a side plan view of another embodiment of the treading exerciser of the present invention, and Fig. 8 shows the conventional treading exerciser.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0010] Referring to Figs. 1 and 2, the treading exerciser of the present invention comprises a base 1 which is an H-shaped base and has a front end 11 and a rear end 12. A frame 13 extends from the base 1 and is located close to the front end 11. A first rotary unit 2 and a second

rotary unit 3 are respectively connected to the frame 13. The first rotary unit 2 comprises a first driving wheel 22 and a first axle 21 extends centrally through the first driving wheel 22. Two first cranks 24 are respectively connected to the two ends of the first axle 21. A first resistance device 23 is connected to the frame 13 so as to provide resistance to the first driving wheel 22.

[0011] The second rotary unit 3 comprises a second driving wheel 32 and a second axle 31 extends centrally through the second driving wheel 32. Two second cranks 34 are respectively connected to the two ends of the second axle 31. A second resistance device 33 is connected to the frame 13 so as to provide resistance to the second driving wheel 32.

[0012] A first link unit 4 comprises multiple links and a first transmission link 42, a first pivotal link 43 and a first connection link 44. The first link unit 4 has a first end thereof connected to the first rotary unit 2 and a second end of the first link unit 4 is connected to the first crank 24. The first crank 24 is connected between the first axle 21 and the first transmission link 42, wherein the first crank 24 is rotatable about the first axle 21, and the first transmission link 42 is pivotably connected to the first crank 24. As shown in Fig. 3, the first connection link 44 has one end fixed to the first connection portion 45 and a pedal 6 is connected adjacent to the first connection portion 45. The first pivotal link 43 is an A-shaped link having a joint end and two distal ends, wherein a first pivotal portion 431 is located at the joint end which is located at the mediate portion of the first pivotal link 43. The first pivotal portion 431 is pivotably connected to the first pivot 131 on the frame 13 of the base 1. The two distal ends of the first pivotal link 43 are respectively and pivotably connected to the first transmission link 42 and the first connection link 44. When the user treads the pedal 6, the first connection link 44 pivots the first pivotal link 43 which pivots about the first pivot 131. The first transmission link 42 pushes the first crank 24 to rotate the first axle 21 so that the first link unit 4 performs the back-and-forth action.

[0013] A second link unit 5 comprises multiple links and has a first end thereof connected to the second rotary unit 3 and a second end of the second link unit 5 is connected to first connection portion 45 of the first link unit 4. The second link unit 5 comprises a second transmission link 52, a second pivotal link 53, and a second connection link 54. The second crank 34 is connected between the second transmission link 52 and the second axle 31. The second crank 34 is rotatable about the second axle 31. The second pivotal link 53 is an S-shaped link and has a second pivotal portion 531 located at the mediate portion thereof and the second pivotal portion 531 is pivotably connected to a second pivot 132 which is formed on each one of two ends of a U-shaped part which is connected to the base 1. One end of the second pivotal link 53 is pivotably connected to the second transmission link 52 and the other end of the second pivotal link 53 is pivotably connected to the top end of the second

connection link 54. The bottom end of the second connection link 54 is pivotably connected to the first connection portion 45 of the first connection link 44 as shown in Fig. 3. When the user treads the pedal 6, the first connection link 44 moves up and down to drive the second connection link 54, and the second pivotal link 53 pivots about the second pivot 132. The second transmission link 52 pushes the second crank 34 to rotate the second axle 31 so that the second link unit 5 performs the up-and-down action.

[0014] It is noted that the first connection link 44 of the first link unit 4 is pivotably connected to the second connection link 54 of the second link unit 5 by the first connection portion 45, so that the first link unit 4 and the second link unit 5 affect to each other. As shown in Figs. 4 and 5, when the user treads the pedals 6, the pedals 6 each are moved along the trace T1 as shown in the drawing by the cooperation of the first and second link units 4, 5, and the trace T1 is similar to the trace of the user's feet when jogging. The shown trace T1 is the maximum travel of the pedal 6. Nevertheless, the different users have different paces so that the trace of the pedal 6 changes according to the different paces. As shown in Fig. 6, the trace T2 shows that the pedal 6 is moved down before the maximum distance of the trace T1 is reached, the first connection link 44 is pivoted about the first pivotal link 43, so that the trace T2 differs from the trace T1. In other words, the present invention allows different users to have their own operation modes according to different paces, and the users perform as they are jogging without restriction of the fixed trace of the pedals as described in the conventional treading exerciser.

[0015] Fig. 7 shows the second embodiment of the present invention, wherein the travel distance of the first link unit 4 is changed by changing the length of any of the links of the first link unit 4. In this embodiment, taken the first transmission link 42 as an example, the first transmission link 42 is composed of an outer tube 42 and an inner tube 42B which is movably inserted into the outer tube 42. A positioning member 42C is connected to the outer tube 42A so as to position the inner tube 42B relative to the outer tube 42A, such that the length of the first transmission link 42 is adjusted and the travel of the first link unit 4 is therefore adjusted as well. Alternatively, by changing any of the pivotal positions of two links of the first link unit 4 can also adjust the travel of the first link unit 4. Taken the first pivotal link 43 as an example, by changing the pivotal positions 43A, 43B between the first transmission link 42 and the first pivotal link 43, the travel of the first link unit 4 is adjusted.

[0016] Similarly, by changing any of the links of the second link unit 5, the travel distance of the second link unit 5 is changed. In this embodiment, taken the second transmission link 52 as an example, the second transmission link 52 is composed of an outer tube 52 and an inner tube 52B which is movably inserted into the outer tube 52. A positioning member 52C is connected to the outer tube 52A so as to position the inner tube 52B rel-

ative to the outer tube 52A, such that the length of the second transmission link 52 is adjusted and the travel of the second link unit 5 is therefore adjusted as well. Alternatively, by changing any of the pivotal positions of two links of the second link unit 5 can also adjust the travel of the second link unit 5. Taken the second pivotal link 53 as an example, by changing the pivotal positions 53A, 53B between the second transmission link 52 and the second pivotal link 53, the travel of the second link unit 5 is adjusted.

[0017] The present invention further provides a method for controlling resistance of the treading exerciser, wherein the first driving wheel 22 of the first rotary unit 2 is connected to the first transmission wheel 25 by a belt, and the first transmission wheel 25 is connected to the first resistance device 23 by another belt. Similarly, the second driving wheel 32 of the second rotary unit 3 is connected to the second transmission wheel 35 by a belt, and the second transmission wheel 35 is connected to the second resistance device 33 by another belt. By this arrangement, the first resistance device 23 and the second resistance device 33 can be simultaneously or individually adjusted so as to provide different level of resistance to the users. The first resistance device 23 and the second resistance device 33 can be electro-magnetic resistance devices which use electro-magnetic members to generate magnetic force which is transformed into resistance. When the first resistance unit 23 provides the maximum resistance, the first rotary unit 2 cannot rotate due to the maximum resistance, only the second link unit 5 is pivoted about the second pivot 132 to perform up-and-down action, this mode simulates climbing action. On the contrary, when the second resistance unit 33 provides the maximum resistance, the second rotary unit 3 cannot rotate due to the maximum resistance, only the first link unit 4 is pivoted about the first pivot 131 to perform back-and-forth action, this mode simulates skiing or elliptical action. The resistance provided by the first resistance device 23 can be adjusted not to be larger than that by the second resistance device 33, so as to perform different actions to meet different requirements of the users.

[0018] While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

Claims

1. A treading exerciser comprising:

a base (1) having a front end (11) and a rear end (12), a first rotary unit (2) and a second rotary unit (3) respectively connected to the base (1), the base (1) having a first pivot (131) and a second pivot (132) connected thereto, the first rotary

unit (2) and the second rotary unit (3) located on the front end of the base (1);

a first link unit (4) having a first end connected between the first rotary unit (2) and a first connection portion (45) formed on a second end of the first link unit (4), the first link unit (4) having a first pivotal portion (431) located at a mediate portion thereof and the first pivotal portion (431) pivotably connected to the first pivot (131); and a second link unit (5) having a first end connected to the second rotary unit (3) and a second end of the second link unit (5) connected to first connection portion (45) of the first link unit (4), the second link unit (5) having a second pivotal portion (531) located at a mediate portion thereof and the second pivotal portion (531) pivotably connected to the second pivot (132).

2. The treading exerciser of claim 1, wherein a pedal (6) is connected adjacent to the first connection portion (45).

3. The treading exerciser of claim 1 or 2, wherein the first rotary unit (2) comprises a first crank (24) and a first axle (21), the first crank (24) is connected between the first axle (21) and the first link unit (4), the first crank (24) is rotatable about the first axle (21).

4. The treading exerciser of any preceding claim, wherein the second rotary unit (3) comprises a second crank (34) and a second axle (31), the second crank (34) is connected between the second axle (31) and the second link unit (5), the second crank (34) is rotatable about the second axle (31).

5. The treading exerciser of any preceding claim, wherein
a back-and-forth travel trace of the first link unit (4) is varied by changing a length of any of links of the first link unit (4) or a pivotal position between any two links of the first link unit (4), and
an up-and-down travel trace of the second link unit (5) is varied by changing a length of any of links of the second link unit (5) or a pivotal position between any two links of the second link unit (5).

6. The treading exerciser of any preceding claim, wherein
the first rotary unit (2) is connected with a first resistance device (23) for providing resistance of rotation to the first rotary unit (2), and
the second rotary unit (3) is connected with a second resistance device (33) for providing resistance of rotation to the second rotary unit (3).

7. A method for controlling resistance of the treading exerciser of claim 6 comprising the step of adjusting resistance of the first resistance device (23) or the

second resistance device (33) to change between different treading types of the treading exerciser.

8. The method of claim 7, wherein the first rotary unit (2) cannot rotate when the first resistance device (23) provides maximum resistance, and the second link unit (5) pivots about the second pivot (132) to perform up and down action. 5
9. The method of claim 7 or 8, wherein the second rotary unit (3) cannot rotate when the second resistance device (33) provides maximum resistance, and the first link unit (4) pivots about the first pivot (131) to perform back and forth action. 10
10. The method of any of claims 7 to 9, wherein the first resistance device (23) and the second resistance device (33) are adjusted simultaneously or individually. 15
11. The method of any of claims 7 to 10, wherein a resistance provided by the first resistance device (23) is not larger than that by the second resistance device (33). 20

Amended claims in accordance with Rule 137(2) EPC.

1. A treading exerciser comprising: 30
a base (1) having a front end (11) and a rear end (12), a first rotary unit (2) and a second rotary unit (3) respectively connected to the base (1), the base (1) having a first pivot (131) and a second pivot (132) connected thereto, the first rotary unit (2) and the second rotary unit (3) located on the front end of the base (1); 35
a first link unit (4) having a first end and being connected between the first rotary unit (2) and a first connection portion (45) formed on a second end of the first link unit (4), the first link unit (4) having a first pivotal portion (431) located at a mediate portion thereof, and the first pivotal portion (431) being pivotably connected to the first pivot (131); and 40
a second link unit (5) having a first end connected to the second rotary unit (3) and a second end of the second link unit (5) connected to the first connection portion (45) of the first link unit (4), 45 50

characterised in that

the second link unit (5) has a second pivotal portion (531) which is different from the first pivotal portion (431) and located at a mediate portion of a pivotal link (53) of the second link unit (5), and the second pivotal portion (531) is pivotably connected to the 55

second pivot (132), and the second link unit (5) further has a connection link (54) whose one end is pivotably connected to the pivotal link (53) and whose other end is pivotably connected to the first connection portion (45).

2. The treading exerciser of claim 1, wherein a pedal (6) is connected adjacent to the first connection portion (45).

3. The treading exerciser of claim 1 or 2, wherein the first rotary unit (2) comprises a first crank (24) and a first axle (21), the first crank (24) is connected between the first axle (21) and the first link unit (4), and the first crank (24) is rotatable about the first axle (21).

4. The treading exerciser of any preceding claim, wherein the second rotary unit (3) comprises a second crank (34) and a second axle (31), the second crank (34) is connected between the second axle (31) and the second link unit (5), and the second crank (34) is rotatable about the second axle (31).

5. The treading exerciser of any preceding claim, wherein a back-and-forth travel trace of the first link unit (4) is varied by changing a length of any of links of the first link unit (4) or a pivotal position between any two links of the first link unit (4), and/or an up-and-down travel trace of the second link unit (5) is varied by changing a length of any of links of the second link unit (5) or a pivotal position between any two links of the second link unit (5).

6. The treading exerciser of any preceding claim, wherein the first rotary unit (2) is connected with a first resistance device (23) for providing resistance of rotation to the first rotary unit (2), and the second rotary unit (3) is connected with a second resistance device (33) for providing resistance of rotation to the second rotary unit (3).

7. A method for controlling resistance of the treading exerciser of claim 6 comprising the step of adjusting resistance of the first resistance device (23) or the second resistance device (33) to change between different treading types of the treading exerciser.

8. The method of claim 7, wherein the first rotary unit (2) cannot rotate when the first resistance device (23) provides maximum resistance, and the second link unit (5) pivots about the second pivot (132) to perform up and down action.

9. The method of claim 7 or 8, wherein the second rotary unit (3) cannot rotate when the second resist-

ance device (33) provides maximum resistance, and the first link unit (4) pivots about the first pivot (131) to perform back and forth action.

10. The method of any of claims 7 to 9, wherein the first resistance device (23) and the second resistance device (33) are adjusted simultaneously or individually. 5

11. The method of any of claims 7 to 10, wherein a resistance provided by the first resistance device (23) is not larger than that by the second resistance device (33). 10

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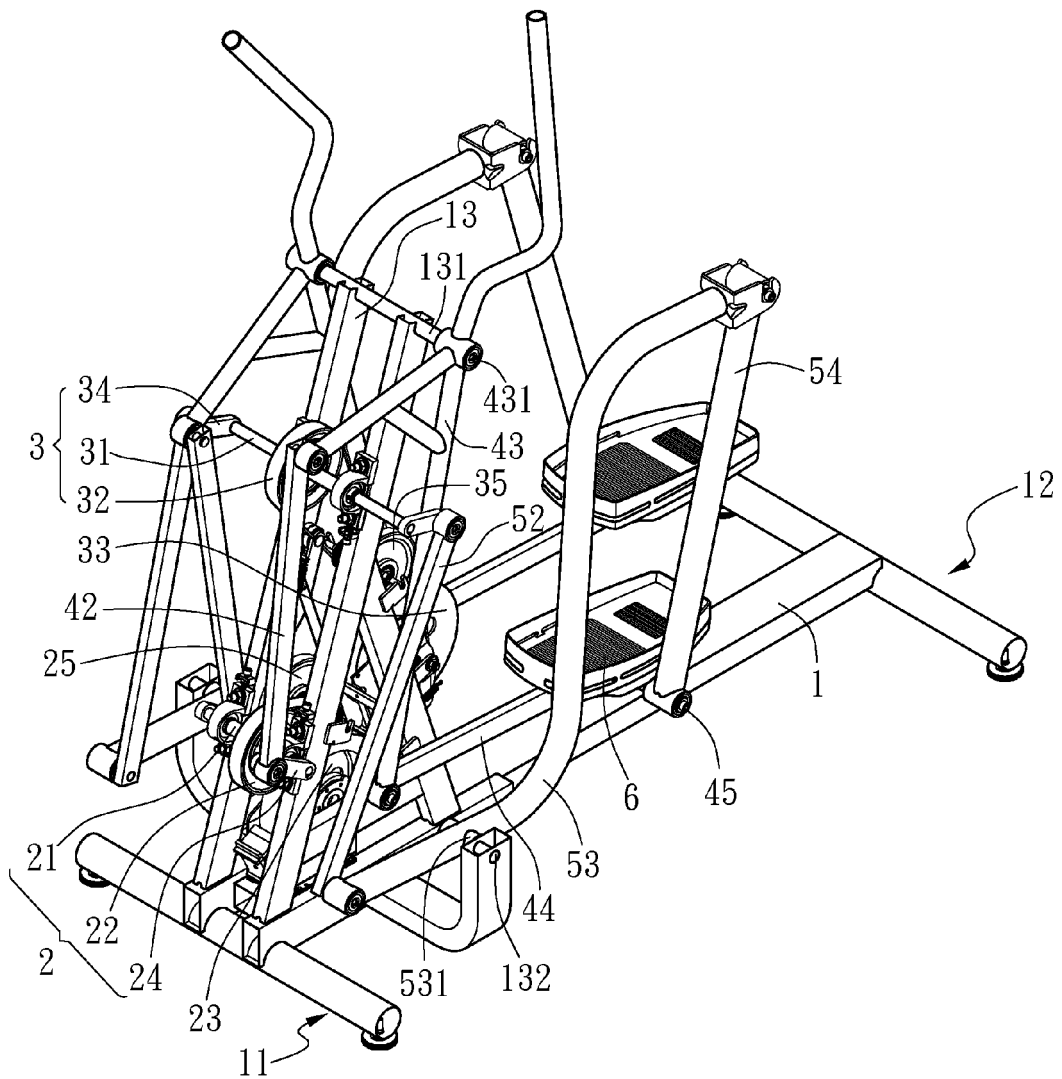


FIG. 1

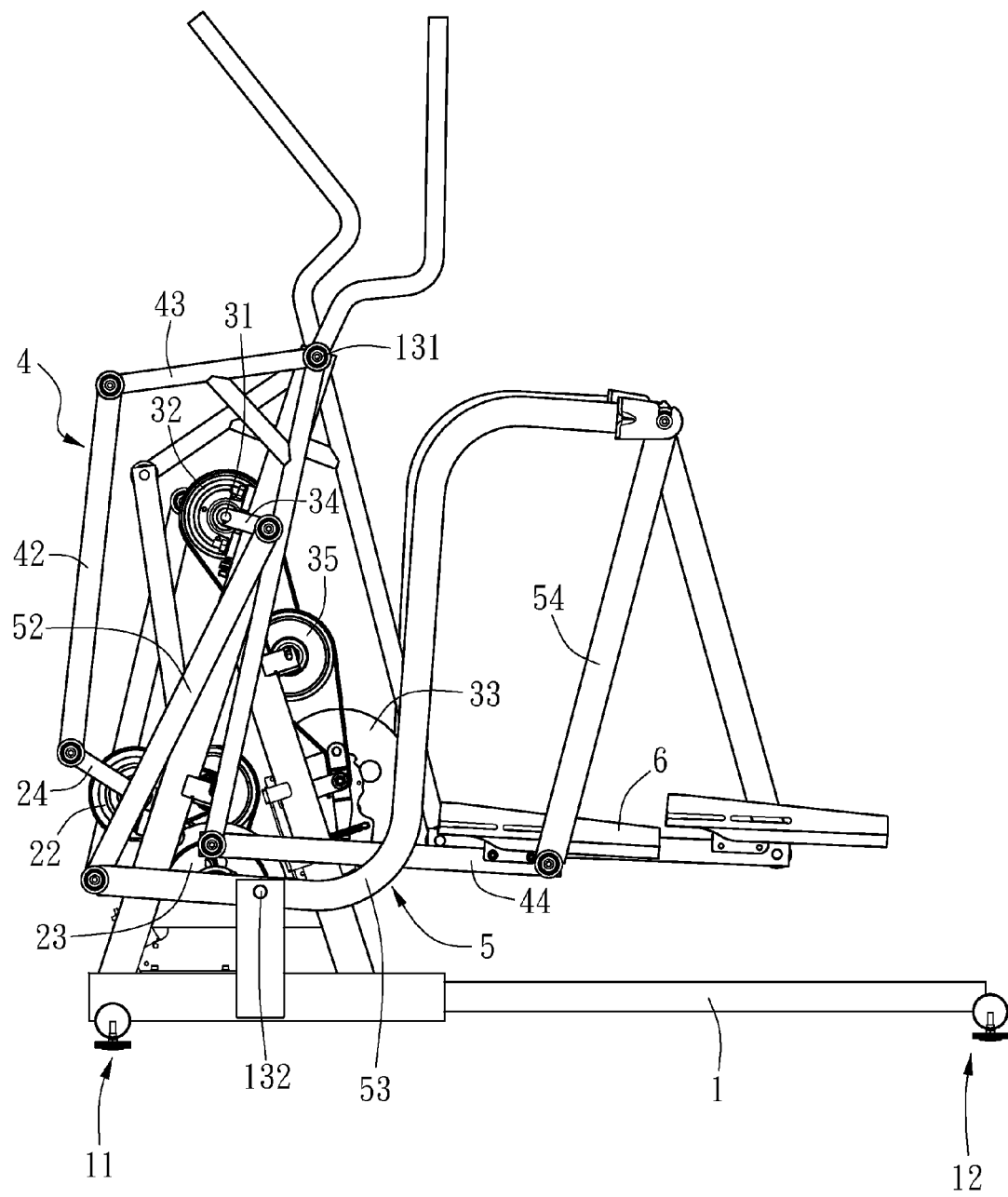


FIG. 2

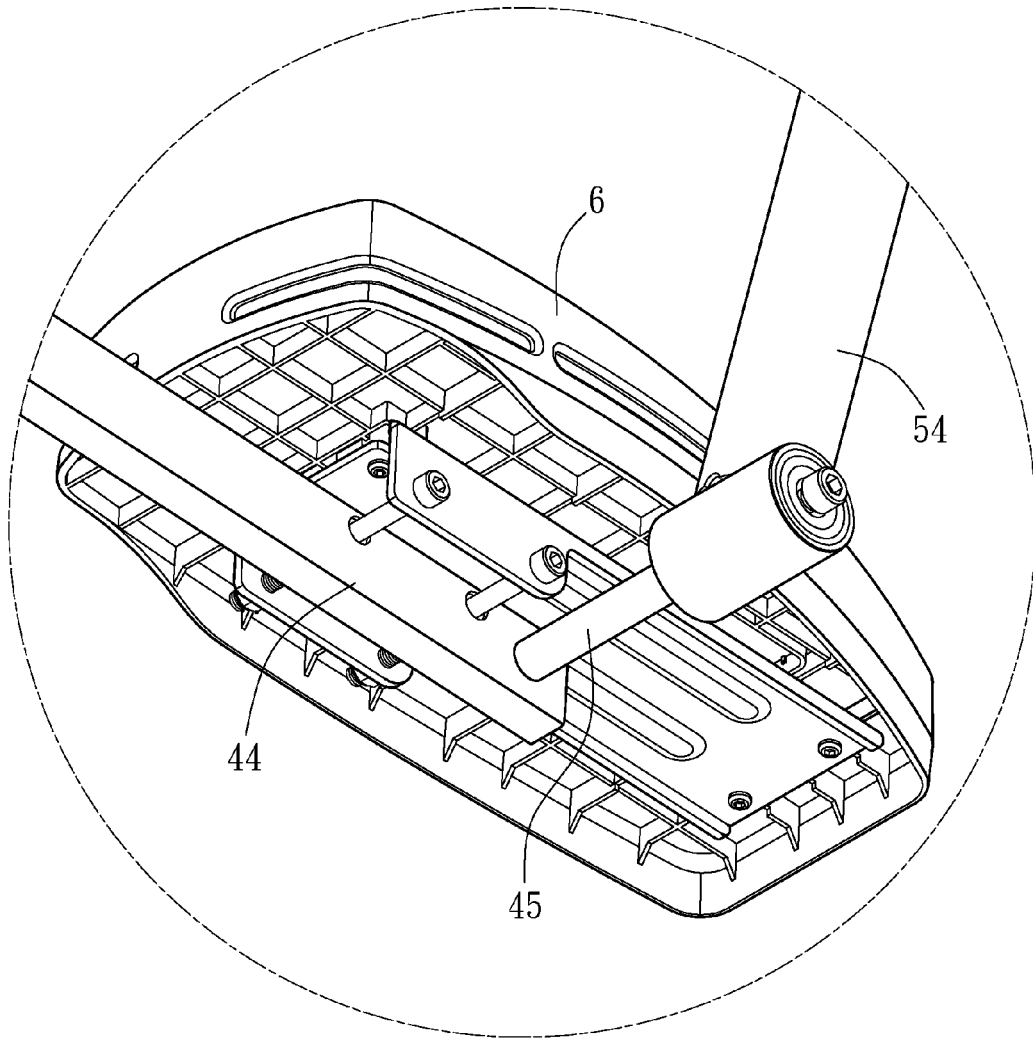


FIG. 3

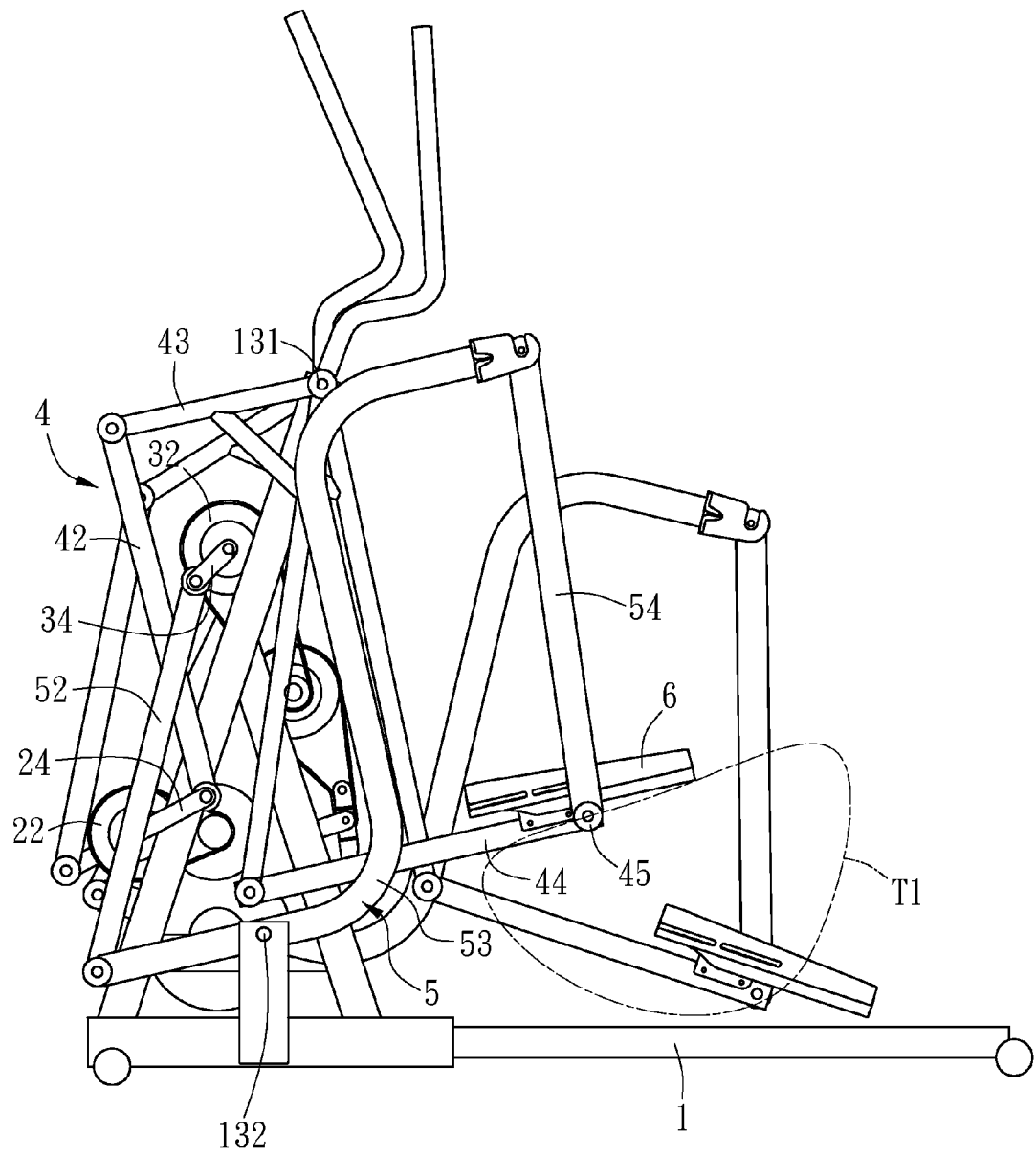


FIG. 4

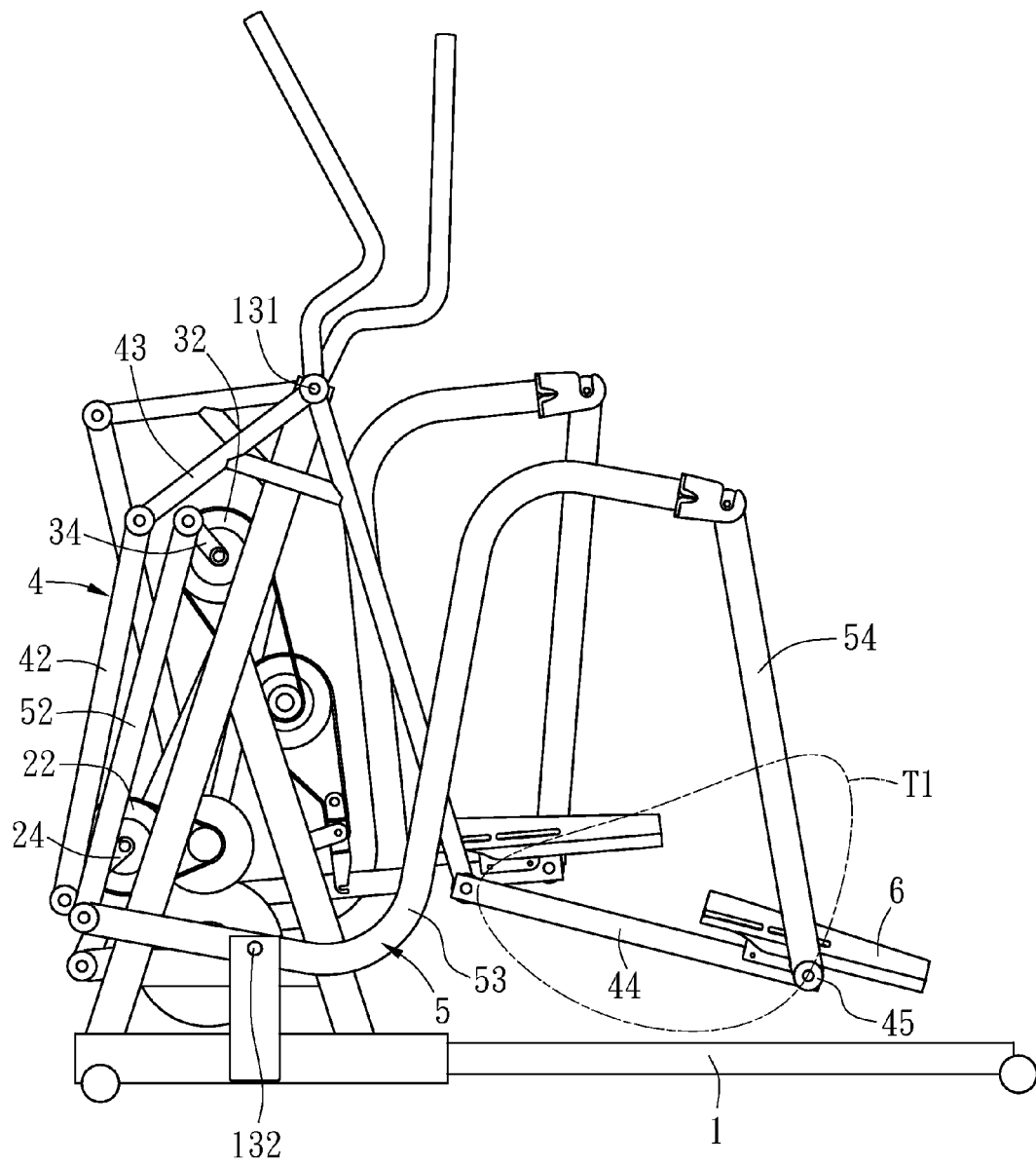


FIG. 5

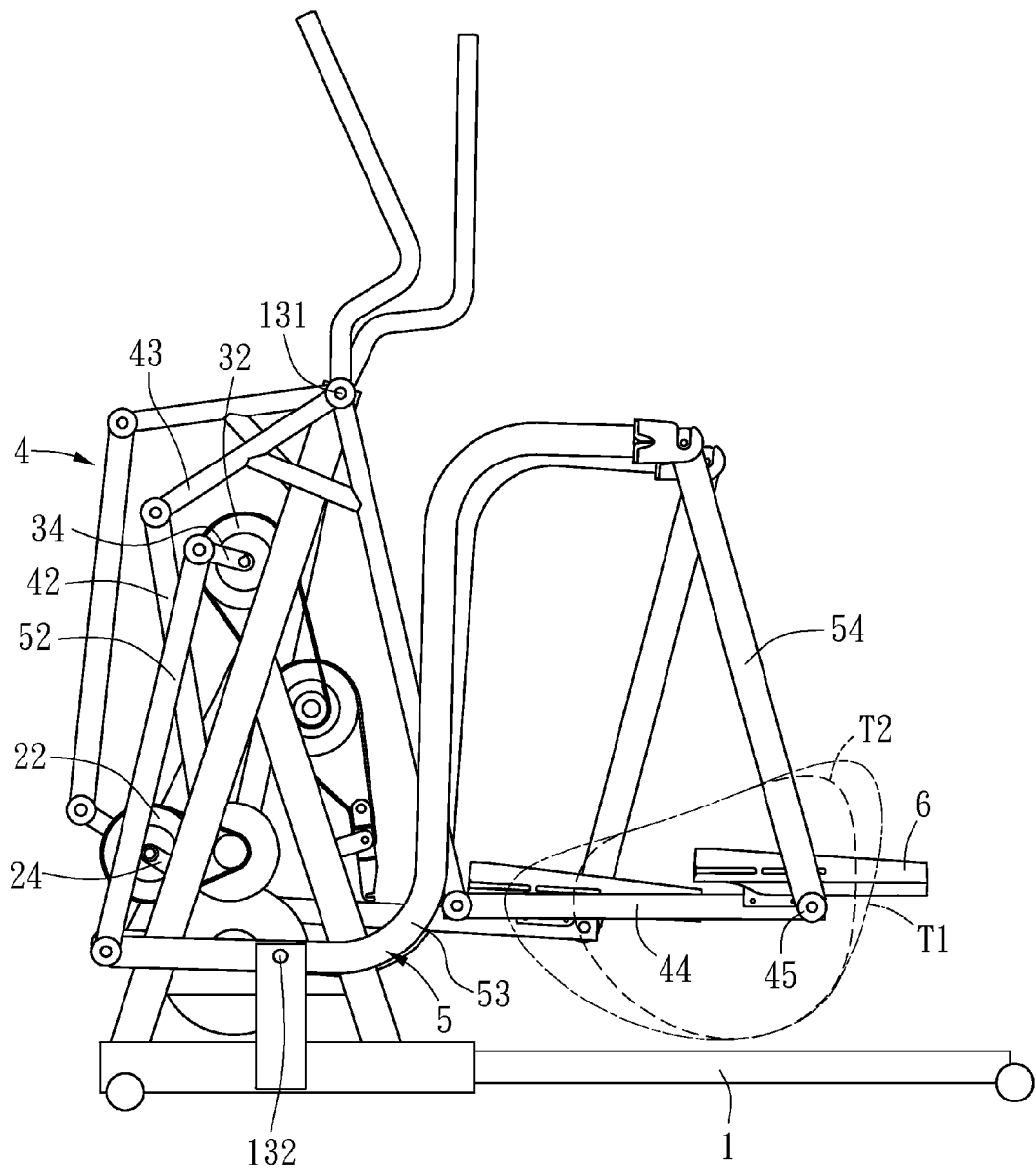


FIG. 6

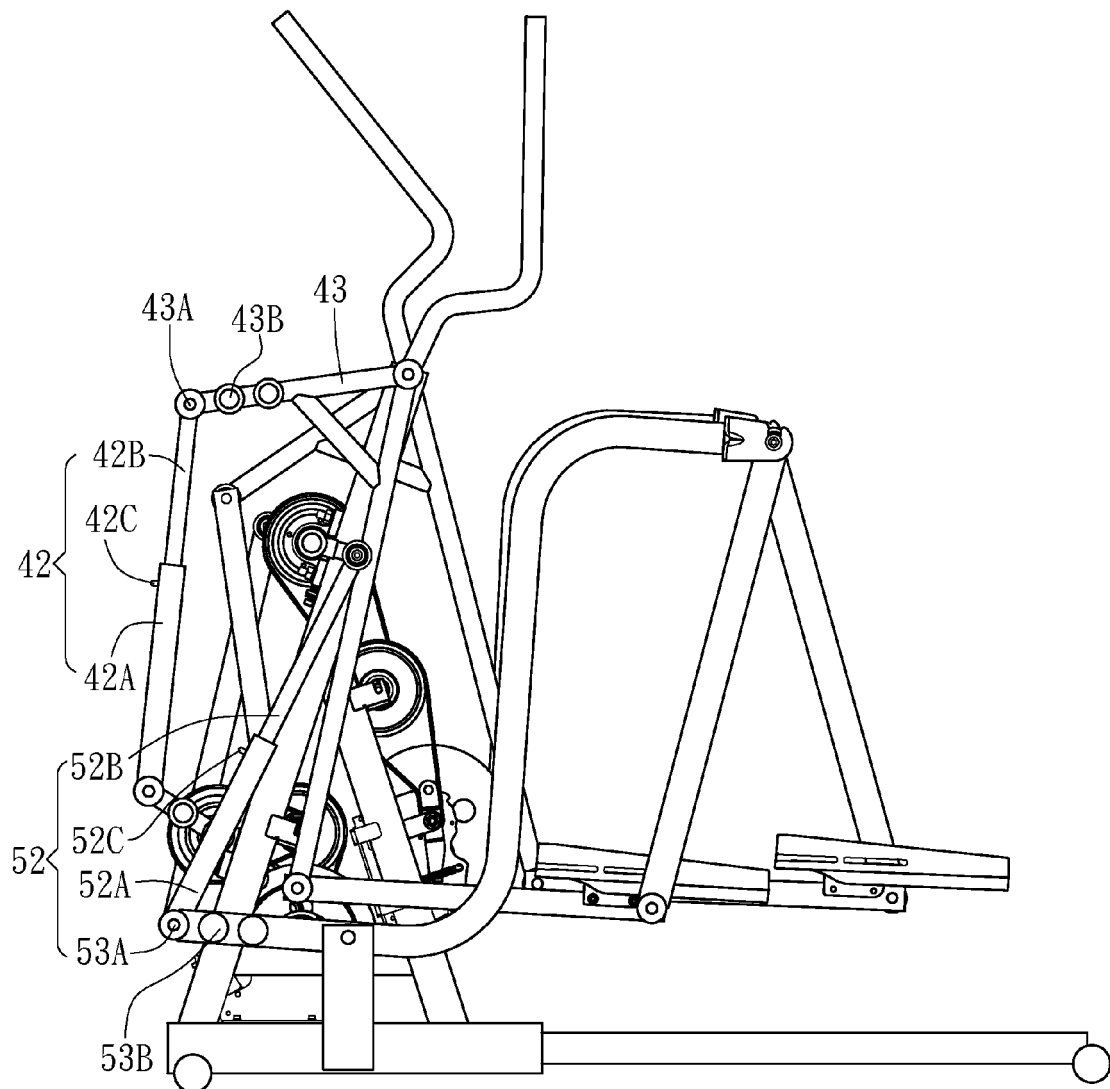


FIG. 7

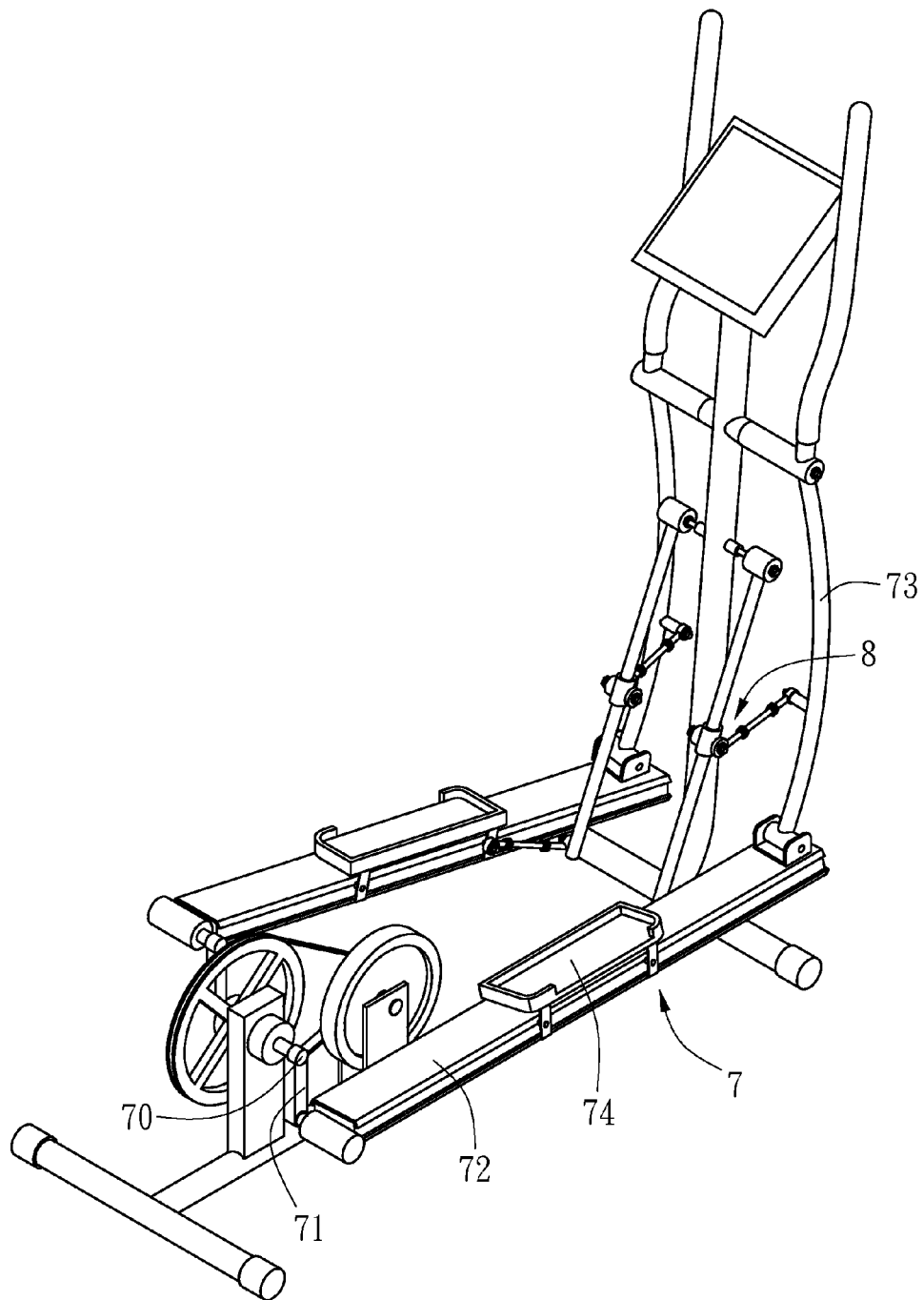


FIG. 8
PRIOR ART



EUROPEAN SEARCH REPORT

Application Number
EP 12 19 3835

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	US 2008/161164 A1 (STEWART JONATHAN M [US] ET AL) 3 July 2008 (2008-07-03) * the whole document *	1-11	INV. A63B22/00 A63B22/06
X	US 2012/289380 A1 (CHEN CHAO-CHUAN [TW]) 15 November 2012 (2012-11-15) * the whole document *	1-11	ADD. A63B21/005 A63B21/22
E	EP 2 537 566 A1 (STRENGTH MASTER FITNESS TECH CO LTD [TW]) 26 December 2012 (2012-12-26) * the whole document *	1-11	
			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 18 April 2013	Examiner Squeri, Michele
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 (P04/C01)

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

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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18-04-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008161164 A1	03-07-2008	US 2008161164 A1	03-07-2008
		US 2011028275 A1	03-02-2011

US 2012289380 A1	15-11-2012	NONE	

EP 2537566 A1	26-12-2012	NONE	
