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(54) **Athletic apparatus with non-parallel linear sliding track**

Sportvorrichtung mit nichtparalleler linearer Gleitschiene

Appareil athlétique avec couloir coulissant non parallèle

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Description**FIELD OF THE PRESENT INVENTION**

[0001] The present invention relates to athletic apparatus, and particular to an athletic apparatus with a non-parallel linear sliding track and provides complicated exercise for user's hands and feet.

DESCRIPTION OF THE PRIOR ART

[0002] A plenty of athletic apparatus are developed for the purposes of body fitness or rehabilitation. Athletic apparatus such as a stair climber can provide an exercise for a user's feet by treading up and down on pedals only. Athletic apparatus such as an elliptical trainer can provide an exercise for both hands and feet. Pedals of the elliptical trainer fixed to a linking rod can not be moved alone. Although the stair climber and the elliptical trainer are well developed and improved, the exercise style of the stair climber is still an upwards and downwards exercise and the style of the elliptical trainer is still an elliptical movement and the pedals still can not be slid on the supporting linking rod.

[0003] For instance, EP 1 834 674 A2 refers to a climber mechanism having arm handles that move in synchronism with the motion of foot pedals and enabling linear foot movement at a simulated climbing angle.

SUMMARY OF THE PRESENT INVENTION

[0004] Accordingly, the present invention provides an athletic apparatus according to claim 1. The athletic apparatus provides exercise for a user's hands and feet, especially a non-parallel linear slide of good athletic effect for the user's feet.

[0005] The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing.

BRIEF DESCRIPTION OF THE DRAWINGS**[0006]**

Fig. 1 is a pictorial drawing of an embodiment of an athletic apparatus of the present invention.

Fig. 2 is a pictorial drawing of the embodiment of the present invention viewing from a side.

Fig. 3 is a pictorial drawing of the embodiment of the present invention viewing from another side to the Fig. 2.

Fig. 4 is a top view showing pedal mechanisms at a back and front positions of tracks.

Fig. 5 is a rear view showing the pedal mechanisms at the back and front positions of the tracks.

Fig. 6 shows drawing of the Fig. 5 from a side.

Fig. 7 shows the non-parallel linear tracks oppositely

installed to a center line.

Fig. 8 is a pictorial drawing of the athletic apparatus viewing from a back side.

Fig. 9 is a lateral view of an athletic apparatus in another embodiment of the present invention, wherein a screw rod screwedly moves along the track.

Fig. 10 is a front view which shows that the pedals in Fig. 9 are positioned on the track with one being at the front side and another being at a rear side.

DETAILED DESCRIPTION OF THE INVENTION

[0007] In order that those skilled in the art can further understand the present invention, a description will be provided in the following in details. However, these descriptions and the appended drawings are only used to cause those skilled in the art to understand the objects, features, and characteristics of the present invention, but not to be used to confine the scope of the present invention defined in the appended claims.

[0008] With reference to Figs. 1, 2, 3, and 8, an athletic apparatus 1 according to the present invention is illustrated. The athletic apparatus 1 includes a frame 10, a pair of separated tracks 3 and 4, a pair of pedal mechanisms, a pair of separated rocker arm mechanisms, two transmitting mechanisms, and a damping mechanism.

[0009] The frame 10 has a base 18 which includes a front bottom rod 11 and a rear bottom rod 13 separated from each other. The front bottom rod 11 is formed as a standing rod 12, a control panel 121 is installed to a top of the standing rod 12. The users can operate the athletic apparatus 1 through the control panel 121. An axle rod 14 is formed near an upper end of the standing rod 12, handles 15 for holding by the users are formed respectively between two ends of the axle rod 14 and a middle bottom rod 19 of the base 18. Installation portions 131 and 132 are formed separately to the rear bottom rod 13.

[0010] The tracks 3 and 4 of the same structure are arranged to a left and right side of the athletic apparatus 1 respectively. Bottom ends of track 3 and 4 are fixed to the installation portions 131 and 132 respectively, while upper ends of the tracks 3 and 4 are fixed to an inclined supporting rod 16 of the frame 10 so that the left and right tracks are at an predetermined angle to the ground. A main characteristic of the tracks is that the tracks are made of non-parallel linear arrangement. The distances of the two tracks 3, 4 become smaller and smaller from the lower ends thereof to the upper ends thereof. The design of the tracks will have the users experienced the most natural exercise for feet, it is also an ergonomic design capable of protecting user's heels from being hurt.

[0011] The left and right pedal mechanisms of the same structure have pedal bases 5 and 6, supporters 51 and 61 linked to the pedal bases 5 and 6, and pedals 52 and 62 for treading by the users respectively. The pedal bases 5 and 6 are slidably installed to the inclined tracks 3 and 4 respectively and capable of being slid up and

down along the tracks.

[0012] The left and right rocker arm mechanisms of the same structure have rocker arms 7 and 8 respectively. Upper ends 71 and 81 of the rocker arms 7 and 8 respectively are pivoted to the axle rod 14, and handles 70 and 80 are arranged to the rocker arms 7 and 8 respectively for holding by the users. Lower ends 72 and 82 of the rocker arms 7 and 8 are pivoted to linking rods 73 and 83 through universal connectors 74 and 84 (which are capable of rotating in Y and Z axes) respectively. Another ends of the linking rods 73 and 83 are also pivoted to the pedal bases 5 and 6 through universal connectors 75 and 85. Therefore, the left and right rocker arm mechanisms and the left and right pedal mechanisms can be moved identically.

[0013] A first transmitting mechanism has a pulley 91 which is rotatably installed to the inclined supporting rod 16, said pulley 91 is positioned near to the upper ends of the tracks below. Said first transmitting mechanism further comprises a steel rope 92 which is wound on said pulley 91. Two ends of the steel rope 92 are connected to the left and right pedal bases 5 and 6 respectively so that the pedal bases 5 and 6 can be slid back and forth, up and down against each other alternately.

[0014] Referring to Figs. 1 to 3, a second transmitting mechanism is illustrated. The second transmitting mechanism has two timing belts 21, 22 and an elastic belt 23 linking the two timing belts 21, 22. Outer ends of the timing belts 21, 22 are connected to the lower ends 72, 82 of the rocker arms 7 and 8 respectively so that the left and right rocker arm mechanisms can be swung back and forth alternately with an axle center of the axle rod 14. A shaft rod 24 is installed to the frame 10. A belt wheel 25 is installed to a middle position of the shaft rod 24, and two gear wheels 26, 27 are installed to two ends of the shaft rod 24. The gear wheels 26, 27 have single direction bearing. The timing belts 21, 22 clench the teeth of the gear wheels 26 and 27 respectively. Two wheels 28, 29 are pivoted to two ends of the front bottom rod 11. The elastic belt 23 linking the timing belts 21, 22 also winds the wheels 28 and 29. By the second transmitting mechanism, the left and right rocker arms 7 and 8 can be moved back and forth against each other alternately.

[0015] The damping mechanism includes a load wheel 101 and an electro-magnetic brake 102. By the link of a transmitting belt 103, the load wheel 101 is linked to the belt wheel 25. When the handles 70 and 80 are swung back and forth alternately, the damping mechanism can provide a resistance. The resistance can be pre-selected on the control panel 121.

[0016] With reference to Figs. 4 to 6, the main characteristic of the left and right tracks 3 and 4 is made of at least one non-parallel linear track. The tracks 3 and 4 of the embodiment of the present invention are non-parallel linear tracks; which are made of two parallel linear pipes 31, 32 and 41, 42 and combined by linking bodies 33, 43 respectively. The upper ends of the linear pipes are all fixed to a common linking unit 161 which is fixed to an

upper end of the inclined supporting rod 16. The linking bodies 33 and 43 and the lower ends of the tracks are fixed to the installation portions 131 and 132 so that the tracks are installed to the frame 10 at an angle A to the ground as shown in Fig. 6.

[0017] Referring to Fig. 7, a center line 17 illustrated between the oppositely installed tracks 3 and 4 indicates a longitudinal direction of the base 18 of the present invention. The tracks 3, 4 are non-parallel. After the tracks 3, 4 are installed to be between the rear bottom rod 13 and the center line 17, they are downwards and expanded in the distances therebetween. Namely, the upper ends 30, 40 of the tracks 3, 4, respectively are near the center line 17 and the lower end 39, 49 thereof are far away from the center line 17 so that the opening between the lower ends of the tracks 3, 4 are faced outwards and has an angle B with the center line 17.

[0018] When operating the athletic apparatus 1 according to the present invention, a user (not illustrated) stands on the pedals 52 and 62 with both feet respectively and holds the handles 70 and 80 with both hands respectively. While the user overcomes the resistance of the load wheel 101, the rocker arm mechanisms are pulled back and forth and the pedals mechanisms are moved back and forth, up and down against each other alternately in the same time.

[0019] The athletic apparatus 1 according to the present invention can provide a composite body exercise for hands and feet of the users. Also, by the design of the non-parallel linear tracks 3 and 4, the pedals bases 5 and 6 will be moved along the non-parallel linear tracks to present non-parallel linear track in the movement so that feet of the user can exercise smoothly by moving outwards and downwards together and moving forth and upwards together.

[0020] The pedals 52 and 62 are parallel to the ground on the non-parallel tracks 3 and 4 at a static status. For the balance of the users operating the athletic apparatus 1, as shown in Fig. 5, the pedals 52 and 62 can retain in a horizontal state so that the upwards and downwards movement along the track are smooth and safe.

[0021] The athletic apparatus 1 according to the present invention has a simple structure and provides a physical training on muscles of user's arms and feet. Especially to the design of the tracks 3 and 4, the users can exercise inwards and outwards with a non-parallel linear track. Moreover, the rocker arm mechanisms can drive the load wheel 101 through the belt wheel 25 by the link of two timing belts on the same axis to the belt wheel 25. On the other hand, the rocker arm mechanisms can drive the corresponding pedal mechanisms on the left and right tracks 3, 4 synchronously by the link of linking rods 73 and 83 so that the athletic apparatus 1 can archive an anticipated purpose and effect.

[0022] Another embodiment of the present invention is illustrated in Figs. 9 and 10, it is illustrated that the first transmitting mechanism is rotatably installed to the tracks 3, 4 and are positioned to the pulleys 93, 94 of the tracks

3, 4, respectively (as shown in Fig. 10). The lower ends of the tracks 3, 4 are rotatably installed to the installation portions 131, 132. The tracks 3, 4 are swingable along the axles 133, 134 of the installation portions 131, 132, respectively. The upper ends of the tracks 3, 4 are retained by a screwing unit 20 which is installed to the frame 10. The tracks 3, 4 are supported and positioned by the screwing unit 20 so as to form with an incline angle A with the ground. The screwing unit 20 has an outer tube 201 retained to the frame 10, an inner tube 202 telescopically moved in the outer tube 201 and a motor 203 for driving the inner tube 202. A top end of the inner tube 202 serves to pivotally support a connecting unit 161 which serve to position the upper ends of the tracks 3, 4. When the inner tube 202 moves out of the outer tube 201 with a predetermined amount, a moving tracks 3, 4 will rotate along the axles 133, 134, respectively so that the user can adjust a proper inclined angle A.

[0023] The structure of the present invention is novel and inventive to the prior art structure. The non-parallel linear tracks are different from the prior art linear and parallel tracks so as to increase the effect in exercise. Thus, the present invention is better than the prior art structure.

Claims

1. An athletic apparatus comprising:

a frame (10) placed on a level ground;
 a pair of left (3) and right (4) tracks of the same structure fixed to the frame (10) at a predetermined angle to the ground; the tracks being linear;
 a pair of left and right pedal mechanisms of the same structure including pedals (52, 62) for treading by a user's feet and being installed to the left and right tracks respectively;
 a pair of left and right rocker arm mechanisms of the same structure being movably installed to the frame (10) and the left and right pedal mechanisms so as to be moved identically with the pedal mechanisms;
characterised in that
 the tracks (3, 4) are non-parallel,
 the pedal mechanisms further being moved up and down along the non-parallel linear tracks (3, 4);
 wherein by the tracks are non-parallel linear tracks, the users experiences the most natural feet exercise and an ergonomic design capable of protecting user's heels from being hurt.

2. The athletic apparatus (1) as claimed in claim 1, wherein the frame (10) has a base (18) which includes a front bottom rod (11) and a rear bottom rod (13) separated from each other; the front bottom rod

(11) is formed as a standing rod, (12) a control panel (121) is installed to a top of the standing rod (12); the users can operate the athletic apparatus (1) through the control panel (121); an axle rod (14) is formed near an upper end of the standing rod (12), handles (15) for holding by the user's hands are formed respectively between two ends of the axle rod (14) and a middle bottom rod (19) of the base (18); installation portions (131,132) and are formed separately to the rear bottom rod (13).

3. The athletic apparatus (1) as claimed in claim 1, wherein the left and right rocker arm mechanisms have rocker arms (7,8) with upper ends (71,81) thereof pivoted to the axle rod (14), and handles (70,80) arranged to the rocker arms (7,8) respectively for holding by the user; lower ends (72,82) of the rocker arms (7,8) are pivoted to linking rods (73,83) through universal connectors (74,84) respectively; another ends of the linking rods (73,83) are pivoted to the left and right pedal mechanisms through universal connectors (75,85); therefore, the left and right rocker arm mechanisms and the left and right pedal mechanisms can be moved identically.

4. The athletic apparatus (1) as claimed in claim 1, wherein the left and right pedal mechanisms have pedal bases (5,6), supporters (51,61) installed on the pedal bases (5,6), and pedals (52,62) for treading by the user's feet respectively; the pedal bases (5,6) are slidably installed to the non-parallel linear tracks (3,4) respectively and capable of being slid up and down along the tracks.

5. The athletic apparatus (1) as claimed in claim 1, wherein bottom ends of the tracks (3,4) are fixed to the installation portions (131,132) of the rear bottom rods (13) respectively, while upper ends of the tracks (3,4) are fixed to an inclined supporting rod (16) of the frame (10) so that the left and right tracks (3,4) are at an predetermined angle to the ground.

6. The athletic apparatus (1) as claimed in claim 1 including a first transmitting mechanism, a second transmitting mechanism and a damping mechanism, said first transmitting mechanism has a pulley (91) which is rotatably installed to the inclined supporting rod (16) of said frame (10), said pulley (91) is positioned near to the upper ends of the tracks below; said first transmitting mechanism further comprises a steel rope (92) which is wound on said pulley (91); two ends of the steel rope (92) are connected to the left and right pedals (5,6) respectively so that the pedals can be slid back and forth, up and down against each other alternately; said second transmitting mechanism has two timing belts (21,22) and an elastic belt (23) linking the two timing belts (21,22); outer ends of the timing belts (21,22) are connected

to the lower ends (72,82) of the rocker arms (7,8) respectively so that the left and right rocker arm mechanisms can be swung back and forth alternately with an axle center of the axle rod (14); a shaft rod (24) is installed to the frame (10); a belt wheel (25) is installed to a middle position of the shaft rod (24), and two gear wheels (26,27) are installed to two ends of the shaft rod (24); the gear wheels (26,27) have single direction bearing; the timing belts (21,22) clench the teeth of the gear wheels (26,27) respectively; two wheels (28,29) are pivoted to two ends of the front bottom rod (11), and the elastic belt (23) linking the timing belts (21,22) winds the wheel (28,29); by the linking of the second transmitting mechanism, the left and right rocker arm mechanisms can be moved back and forth against each other alternately; said damping mechanism includes a load wheel (101) and an electro-magnetic brake (102); by the link of a transmitting belt (103), the load wheel (101) is linked to the belt wheel (25); when the handles (70,80) are swung back and forth alternately, the damping mechanism can provide a resistance.

7. The athletic apparatus (1) as claimed in claim 1, wherein the left and right tracks are respectively made of two combined linear pipes (31,32 and 41,42).
8. The athletic apparatus (1) as claimed in claim 2, wherein a center line of a longitudinal direction of the base is defined as a center line (17) and the left and right tracks (3,4) are oppositely installed beside the line; the tracks (3,4) are non-parallel linear tracks; after the tracks (3,4) are installed to be between the rear bottom rod (13) and the center line (17), they are downwards and expanded in the distances therebetween; namely, the upper ends (30,40) of the tracks (3,4), respectively are near the center line (17) and the lower end (39,49) thereof are far away from the center line (17) so that the opening between the lower ends of the tracks (3,4) are faced outwards and has an angle (8) with the center line (17).
9. The athletic apparatus (1) as claimed in claim 1, wherein the pedals (52,62) are parallel to the ground on the tracks (3,4) at a static status; the pedals (52,62) can tilt towards each other with a predetermined angle so that the upwards and downwards movements of the pedals (52,62) along the non-parallel linear tracks are smooth and safe; for not to affect the balance of a user by a non-parallel linear trace from the pedal, the pedal (52,62) is retained in horizontal state with the non-parallel linear trace of the tracks, and thus the pedal (52,62) is moved up and down along a non-parallel trace.
10. The athletic apparatus (1) as claimed in claim 6,

wherein the first transmitting mechanism is rotatably installed to the tracks (3,4) and are positioned to the pulleys (93,94) of the tracks (3,4) respectively; the lower ends of the tracks (3,4) are rotatably installed to the installation portions (131,132) the tracks (3,4) are swingable along the axles (133,134) of the installation portions (131,132), respectively; the upper ends of the tracks (3,4) are retained by a screwing unit (20) which is installed to the frame (10); the tracks (3,4) are supported and positioned by the screwing unit (20) so as to form with an incline angle (A) with the ground; said screwing unit (20) has an outer tube (201) retained to the frame (10), an inner tube (202) telescopically moved in the outer tube (201) and a motor (203) for driving the inner tube (202); a top end of the inner tube (202) serves to pivotally support a connecting unit (161) which serve to position the upper ends of the tracks (3,4); when the inner tube (202) moves out of the outer tube (201) with a predetermined amount, a moving tracks (3,4) will rotate along the axles (133,134), respectively so that the user can adjust a proper inclined angle.

25 Patentansprüche

1. Sportgerät, das umfasst:

einen Rahmen (10), der auf einem ebenen Untergrund angeordnet ist;
 ein Paar aus einer linken Schiene (3) und einer rechten Schiene (4), die den gleichen Aufbau haben und am Rahmen (10) unter einem vorgegebenen Winkel in Bezug auf den Boden befestigt sind; wobei die Schienen geradlinig sind;
 ein Paar aus einem linken und einem rechten Pedalmechanismus, die den gleichen Aufbau haben und Pedale (52, 62) aufweisen, die von den Füßen eines Anwenders getreten werden sollen und an der linken bzw. rechten Schiene installiert sind;
 ein Paar aus einem linken und einem rechten Schwinghebelmechanismus, die den gleichen Aufbau haben und am Rahmen (10) sowie am linken und am rechten Pedalmechanismus beweglich installiert sind, um in der gleichen Weise wie die Pedalmechanismen bewegt zu werden;
dadurch gekennzeichnet, dass
 die Schienen (3, 4) nicht parallel sind,
 die Pedalmechanismen ferner längs nicht paralleler, geradliniger Schienen (3, 4) aufwärts und abwärts bewegt werden;
 wobei durch die Tatsache, dass die Schienen nicht parallele, geradlinige Schienen sind, der Anwender das natürlichste Fußtraining und ein ergonomisches Design, das die Fersen des Anwenders vor einer Verletzung schützen kann, wahrnimmt.

2. Sportgerät (1) nach Anspruch 1, wobei der Rahmen (10) eine Basis (18) besitzt, die eine vordere Bodenstange (11) und eine hintere Bodenstange (13), die voneinander getrennt sind, aufweist; wobei die vordere Bodenstange (11) als eine stehende Stange (12) ausgebildet ist, an einer Oberseite der stehenden Stange (12) eine Steuerkonsole (121) installiert ist; die Anwender das Sportgerät (1) über die Steuerkonsole (121) bedienen können; in der Nähe eines oberen Endes des stehenden Stange (12) eine Wellenstange (14) ausgebildet sind, Griffe (15) zum Halten der Hände des Anwenders zwischen zwei Enden der Wellenstange (14) bzw. einer mittleren Bodenstange (19) der Basis (18) ausgebildet sind; und Installationsabschnitte (131, 132) getrennt an der hinteren Bodenstange (13) ausgebildet sind.
3. Sportgerät (1) nach Anspruch 1, wobei der linke und der rechte Schwinghebelmechanismus Schwinghebel (7, 8) besitzen, wovon obere Enden (71, 81) an der Wellenstange (14) angelenkt sind, und Griffe (70, 80) an den Schwinghebeln (7, 8) angeordnet sind, um vom Anwender gehalten zu werden; untere Enden (72, 82) der Schwinghebel (7, 8) an Verbindungsstangen (73, 83) über jeweilige Universalverbinder (74, 84) angelenkt sind; und weitere Enden der Verbindungsstangen (73, 83) am linken bzw. rechten Pedalmechanismus über Universalverbinder (75, 85) angelenkt sind; wodurch der linke und der rechte Schwinghebelmechanismus und der linke und der rechte Pedalmechanismus auf gleiche Weise bewegt werden können.
4. Sportgerät (1) nach Anspruch 1, wobei der linke und der rechte Pedalmechanismus Pedalgrundflächen (5, 6), Träger (51, 61), die an den Pedalgrundflächen (5, 6) installiert sind, und Pedale (52, 62), um von den jeweiligen Füßen des Anwenders getreten zu werden, besitzen; wobei die Pedalgrundflächen (5, 6) an den nicht parallelen, geradlinigen Schienen (3, 4) jeweils gleitend installiert sind und längs der Schienen nach oben und nach unten gleiten können.
5. Sportgerät (1) nach Anspruch 1, wobei untere Enden der Schienen (3, 4) an den Installationsabschnitten (131, 132) der jeweiligen hinteren Bodenstangen (13) befestigt sind, während obere Enden der Schienen (3, 4) an einer geneigten Unterstützungsstange (16) des Rahmens (10) befestigt sind, so dass die linken und rechten Schienen (3, 4) zum Boden einen vorgegebenen Winkel bilden.
6. Sportgerät (1) nach Anspruch 1, die einen ersten Übertragungsmechanismus, einen zweiten Übertragungsmechanismus und einen Dämpfungsmechanismus umfasst, wobei der erste Übertragungsmechanismus eine Riemenscheibe (91) besitzt, die an der geneigten Unterstützungsstange (16) des Rahmens (10) drehbar installiert ist, wobei die Riemenscheibe (91) in der Nähe der oberen Enden der Schienen unterhalb positioniert ist; wobei der erste Übertragungsmechanismus ferner ein Stahlseil (92) aufweist, das um die Riemenscheibe (91) gewunden ist; wobei zwei Enden des Stahlseils (92) mit dem linken bzw. rechten Pedal (5, 6) verbunden sind, so dass die Pedale abwechselnd gegeneinander nach hinten und nach vorn, nach oben und nach unten bewegt werden können; wobei der zweite Übertragungsmechanismus zwei Synchronriemen (21, 22) sowie einen elastischen Riemen (23), der die beiden Synchronriemen (21, 22) verbindet, aufweist; wobei äußere Enden der Synchronriemen (21, 22) mit den unteren Enden (72, 82) der jeweiligen Schwinghebel (7, 8) verbunden sind, so dass der linke und der rechte Schwinghebelmechanismus abwechselnd mit der Wellenstange (14) als Drehzentrum nach hinten und nach vorn geschwenkt werden können; eine Schaftstange (24) am Rahmen (10) installiert ist; ein Riemenrad (25) an einer mittleren Position der Schaftstange (24) installiert ist und zwei Zahnräder (26, 27) an zwei Enden der Schaftstange (24) installiert sind; wobei die Zahnräder (26, 27) eine Einzelrichtungsunterstützung haben; die Synchronriemen (21, 22) mit den Zähnen der jeweiligen Zahnräder (26, 27) kämmen; zwei Räder (28, 29) an zwei Enden der vorderen unteren Stange (11) angelenkt sind und der elastische Riemen (23), der die Synchronriemen (21, 22) verbindet, um die Räder (28, 29) gewunden ist; wobei durch das Verbinden des zweiten Übertragungsmechanismus der linke und der rechte Schwinghebelmechanismus abwechselnd zueinander nach hinten und nach vorn bewegt werden können; der Dämpfungsmechanismus ein Lastrad (101) und eine elektromagnetische Bremse (102) aufweist; durch das Verbinden eines Übertragungsriemens (103) das Lastrad (101) mit dem Riemenrad (25) verbunden ist; wobei der Dämpfungsmechanismus dann, wenn die Griffe (70, 80) abwechselnd nach hinten und nach vorn geschwenkt werden, einen Widerstand schaffen kann.
7. Sportgerät (1) nach Anspruch 1, wobei die linke und die rechte Schiene aus zwei kombinierten, geradlinigen Rohren (31, 32 und 41, 42) hergestellt sind.
8. Sportgerät (1) nach Anspruch 2, wobei eine Mittellinie einer Längsrichtung der Basis als Mittellinie (17) definiert ist und die linken und rechten Schienen (3, 4) neben dieser Linie einander gegenüber installiert sind; die Schienen (3, 4) nicht parallele, geradlinige Schienen sind; wobei die Schienen (3, 4), nachdem sie zwischen der hinteren unteren Stange (13) und der Mittellinie (17) installiert worden sind, nach unten verlaufen und sich voneinander entfernen; d. h., die oberen Enden (30, 40) der Schienen (3, 4) befinden sich in der Nähe der Mittellinie (17) und die unteren

Enden (39, 49) befinden sich weit entfernt von der Mittellinie (17), so dass die Öffnung zwischen den unteren Enden der Schienen (3, 4) nach außen weist und zu der Mittellinie (17) einen Winkel (8) bildet.

9. Sportgerät (1) nach Anspruch 1, wobei die Pedale (52, 62) in einem stationären Zustand auf den Schienen (3, 4) parallel zum Boden sind; die Pedale (52, 62) unter einem vorgegebenen Winkel zueinander geneigt werden können, so dass Aufwärts- und Abwärtsbewegungen der Pedale (52, 62) entlang der nicht parallelen, geradlinigen Schienen gleichmäßig und sicher sind; um das Gleichgewicht eines Anwenders durch die nicht parallele, geradlinige Bahn der Pedale nicht nachteilig zu beeinflussen, wobei das Pedal (52, 62) in einem horizontalen Zustand mit der nicht parallelen, geradlinigen Bahn der Schienen gehalten wird und somit das Pedal (52, 62) entlang einer nicht parallelen Bahn nach oben und nach unten bewegt wird.
10. Sportgerät (1) nach Anspruch 6, wobei der erste Übertragungsmechanismus an den Schienen (3, 4) drehbar installiert ist und an den Riemenscheiben (93, 94) der jeweiligen Schienen (3, 4) positioniert ist; die unteren Enden der Schienen (3, 4) an den Installationsabschnitten (131, 132) drehbar installiert sind; die Schienen (3, 4) längs der Wellen (133, 134) der jeweiligen Installationsabschnitte (131, 132) schwenkbar sind; die oberen Enden der Schienen (3, 4) durch eine Schraubeneinheit (2), die am Rahmen (10) installiert ist, gehalten sind; die Schienen (3, 4) durch die Schraubeneinheit (20) unterstützt und positioniert sind, um einen Neigungswinkel (A) in Bezug auf den Boden zu bilden; die Schraubeneinheit (20) ein Außenrohr (201), das am Rahmen (10) gehalten ist, und ein Innenrohr (202), das im Außenrohr (201) teleskopartig beweglich ist, aufweist, wobei ein Motor (203) zum Antreiben des Innenrohrs (202) am oberen Ende des Innenrohrs (202) vorhanden ist, um eine Verbindungseinheit (161), die dazu dient, die oberen Enden der Schienen (3, 4) zu positionieren, schwenkbar zu unterstützen; wobei sich dann, wenn sich das Innenrohr (202) aus dem Außenrohr (201) um einen vorgegebenen Betrag bewegt, bewegliche Schienen (3, 4) längs der Wellen (133, 134) drehen, so dass der Anwender einen geeigneten Neigungswinkel einstellen kann.

Revendications

1. Appareil de sport comprenant :

un cadre (10) placé sur un sol de niveau;
une paire de rails gauche (3) et droit (4) de structure identique fixés au cadre (10) selon un angle prédéterminé par rapport au sol ; les rails étant

linéaires ;

une paire de mécanismes à pédale gauche et droit de structure identique comprenant des pédales (52, 62) pour poser les pieds d'un utilisateur et installés sur les rails gauche et droit, respectivement ;

une paire de mécanismes à bras oscillant gauche et droit de structure identique installés de manière mobile sur le cadre (10) et les mécanismes à pédale gauche et droit de manière à être déplacés de façon identique avec les mécanismes à pédales ;

caractérisé en ce que

les rails (3, 4) ne sont pas parallèles,

les mécanismes à pédale étant en outre déplacés vers le haut et vers le bas le long des rails (3, 4) linéaires non parallèles ;

dans lequel, du fait que les rails sont des rails linéaires non parallèles, les utilisateurs pratiquent l'exercice des pieds le plus naturel et font l'expérience d'une conception ergonomique capable de protéger d'un choc les genoux de l'utilisateur.

2. Appareil de sport (1) selon la revendication 1, dans lequel le cadre (10) comporte une base (18) qui comprend une tige inférieure avant (11) et une tige inférieure arrière (13) séparées l'une de l'autre ; la tige inférieure avant (11) est formée en tant que tige verticale (12), un panneau de commande (121) est installé au sommet de la tige verticale (12) ; les utilisateurs peuvent commander l'appareil de sport (1) par l'intermédiaire du panneau de commande (121) ; une tige d'axe (14) est formée à proximité d'une extrémité supérieure de la tige verticale (12), des poignées (15) destinées à être tenues par les mains de l'utilisateur sont respectivement formées entre les deux extrémités de la tige d'axe (14) et d'une tige inférieure centrale (19) de la base (18) ; des parties d'installation (131, 132) sont formées séparément sur la tige inférieure arrière (13).

3. Appareil de sport (1) selon la revendication 1, dans lequel les mécanismes à bras oscillant gauche et droit comportent des bras oscillants (7, 8) dont les extrémités supérieures (71, 81) pivotent sur la tige d'axe (14), et des poignées (70, 80) agencées sur les bras oscillants (7, 8), respectivement, pour être tenues par l'utilisateur ; les extrémités inférieures (72, 82) des bras oscillants (7, 8) pivotent sur des bielles (73, 83) par l'intermédiaire de raccords universels (74, 84), respectivement ; les autres extrémités des bielles (73, 83) pivotent sur les mécanismes à pédale gauche et droit par l'intermédiaire de raccords universels (75, 85) ; par conséquent, les mécanismes à bras oscillant gauche et droit et les mécanismes à pédale gauche et droit peuvent être déplacés de manière identique.

4. Appareil de sport (1) selon la revendication 1, dans lequel les mécanismes à pédale gauche et droit comportent des bases de pédale (5, 6), des éléments de support (51, 61) installés sur les bases de pédale (5, 6) et des pédales (52, 62) pour la pose des pieds de l'utilisateur, respectivement ; les bases de pédale (5, 6) sont respectivement installées de manière coulissante sur les rails (3, 4) linéaires non parallèles et sont capables de coulisser vers le haut et vers le bas le long des rails.
5. Appareil de sport (1) selon la revendication 1, dans lequel les extrémités inférieures des rails (3, 4) sont fixées aux parties d'installation (131, 132) des tiges inférieures arrière (13), respectivement, tandis que les extrémités supérieures des rails (3, 4) sont fixées à une tige de support inclinée (16) du cadre (10) de sorte que les rails gauche et droit (3, 4) forment un angle prédéterminé avec le sol.
6. Appareil de sport (1) selon la revendication 1, comprenant un premier mécanisme de transmission, un deuxième mécanisme de transmission et un mécanisme d'amortissement, ledit premier mécanisme de transmission comporte une poulie (91) qui est installée en rotation sur la tige de support inclinée (16) dudit cadre (10), ladite poulie (91) est positionnée à proximité des extrémités supérieures des rails au-dessous ; ledit premier mécanisme de transmission comprend en outre un câble d'acier (92) qui est enroulé sur ladite poulie (91) ; les deux extrémités du câble d'acier (92) sont respectivement reliées aux pédales gauche et droite (5, 6) de sorte que les pédales peuvent coulisser en arrière et en avant, vers le haut et vers le bas l'une par rapport à l'autre alternativement ; ledit deuxième mécanisme de transmission comporte deux courroies de synchronisation (21, 22) et une courroie élastique (23) reliant les deux courroies de synchronisation (21, 22) ; les extrémités extérieures des courroies de synchronisation (21, 22) sont respectivement reliées aux extrémités inférieures (72, 82) des bras oscillants (7, 8) de sorte que les mécanismes à bras oscillant gauche et droit peuvent basculer vers l'arrière et vers l'avant alternativement avec un centre d'axe de la tige d'axe (14) ; une tige d'arbre (24) est installée sur le cadre (10) ; une roue de courroie (25) est installée à une position centrale de la tige d'arbre (24), et deux roues d'engrenage (26, 27) sont installées aux deux extrémités de la tige d'arbre (24) ; les roues d'engrenage (26, 27) comportent un palier de direction unique ; les courroies de synchronisation (21, 22) serrent les dents des roues d'engrenage (26, 27), respectivement ; deux roues (28, 29) pivotent aux deux extrémités de la tige inférieure avant (11), et la courroie élastique (23) reliant les courroies de synchronisation (21, 22) est enroulée sur les roues (28, 29) ; du fait de la liaison du deuxième mécanisme de transmission, les mécanismes à bras oscillant gauche et droit peuvent être déplacés vers l'arrière et vers l'avant l'un par rapport à l'autre alternativement ; ledit mécanisme d'amortissement comprend une roue de charge (101) et un frein électromagnétique (102) ; du fait de la liaison d'une courroie de transmission (103), la roue de charge (101) est reliée à la roue de courroie (25) ; lorsque les poignées (70, 80) sont pivotées vers l'arrière et vers l'avant alternativement, le mécanisme d'amortissement peut fournir une résistance.
7. Appareil de sport (1) selon la revendication 1, dans lequel les rails gauche et droit sont respectivement constitués de deux tubes (31, 32 et 41, 42) linéaires combinés.
8. Appareil de sport (1) selon la revendication 2, dans lequel une ligne centrale d'une direction longitudinale de la base est définie en tant que ligne centrale (17) et les rails gauche et droit (3, 4) sont installés de manière opposée auprès de la ligne ; les rails (3, 4) sont des rails linéaires non parallèles ; après que les rails (3, 4) ont été installés pour être entre la tige inférieure arrière (13) et la ligne centrale (17), ils s'étendent vers le bas et sont déployés dans les distances entre celles-ci ; à savoir, les extrémités supérieures (30, 40) des rails (3, 4) sont respectivement à proximité de la ligne centrale (17) et les extrémités inférieures (39, 49) de ceux-ci sont éloignées de la ligne centrale (17) de sorte que les ouvertures entre les extrémités inférieures des rails (3, 4) sont orientées vers l'extérieur et forment un angle (B) avec la ligne centrale (17).
9. Appareil de sport (1) selon la revendication 1, dans lequel les pédales (52, 62) sont parallèles au sol sur les rails (3, 4) dans un état statique ; les pédales (52, 62) peuvent s'incliner l'une vers l'autre selon un angle prédéterminé de sorte que les mouvements vers le haut et vers le bas des pédales (52, 62) le long des rails linéaires non parallèles sont réguliers et sans danger ; pour ne pas affecter l'équilibre d'un utilisateur par une trace linéaire non parallèle de la pédale, la pédale (52, 62) est retenue dans l'état horizontal du fait de la trace linéaire non parallèle des rails, et ainsi la pédale (52, 62) est déplacée vers le haut et vers le bas le long d'une trace non parallèle.
10. Appareil de sport (1) selon la revendication 6, dans lequel le premier mécanisme de transmission est installé en rotation sur les rails (3, 4) et est positionné sur les poulies (93, 94) des rails (3, 4), respectivement ; les extrémités inférieures des rails (3, 4) sont installées en rotation sur les parties d'installation (131, 132) ; les rails (3, 4) sont capables de pivoter le long des axes (133, 134) des parties d'installation (131, 132), respectivement ; les extrémités

supérieures des rails (3, 4) sont retenues par une unité de vissage (20) qui est installée sur le cadre (10) ; les rails (3, 4) sont supportés et positionnés par l'unité de vissage (20) de manière à former un angle incliné (A) avec le sol ; ladite unité de vissage (20) comporte un tube extérieur (201) retenu sur le cadre (10), un tube intérieur (202) déplacé de manière télescopique dans le tube extérieur (201) et un moteur (203) pour entraîner le tube intérieur (202) ; une extrémité supérieure du tube intérieur (202) sert à supporter de manière pivotante une unité de liaison (161) qui sert à positionner les extrémités supérieures des rails (3, 4) ; lorsque le tube intérieur (202) sort du tube extérieur (201) d'une quantité prédéterminée, les rails mobiles (3, 4) tournent le long des axes (133, 134), respectivement, de sorte que l'utilisateur peut ajuster un angle incliné correct.

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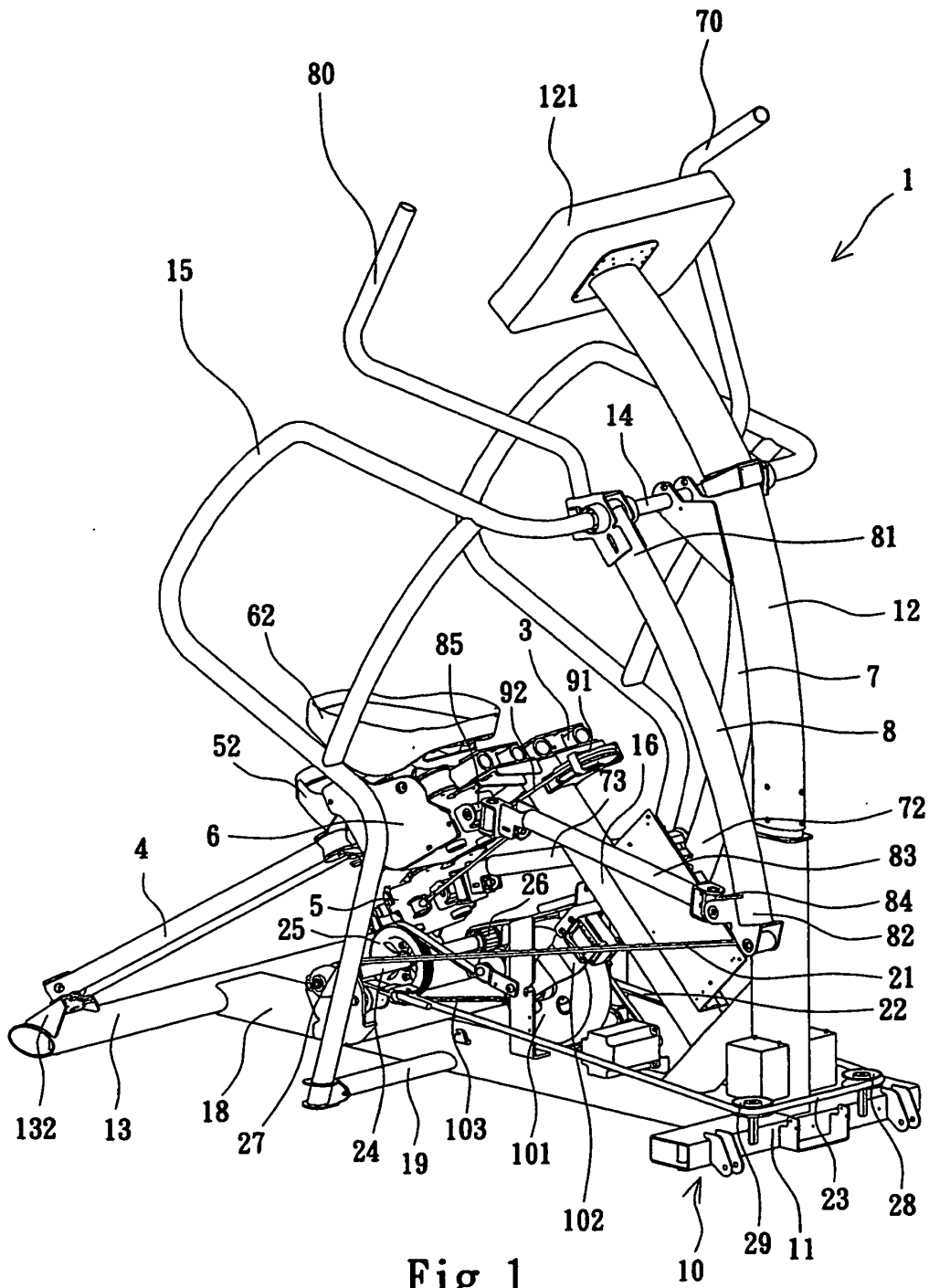
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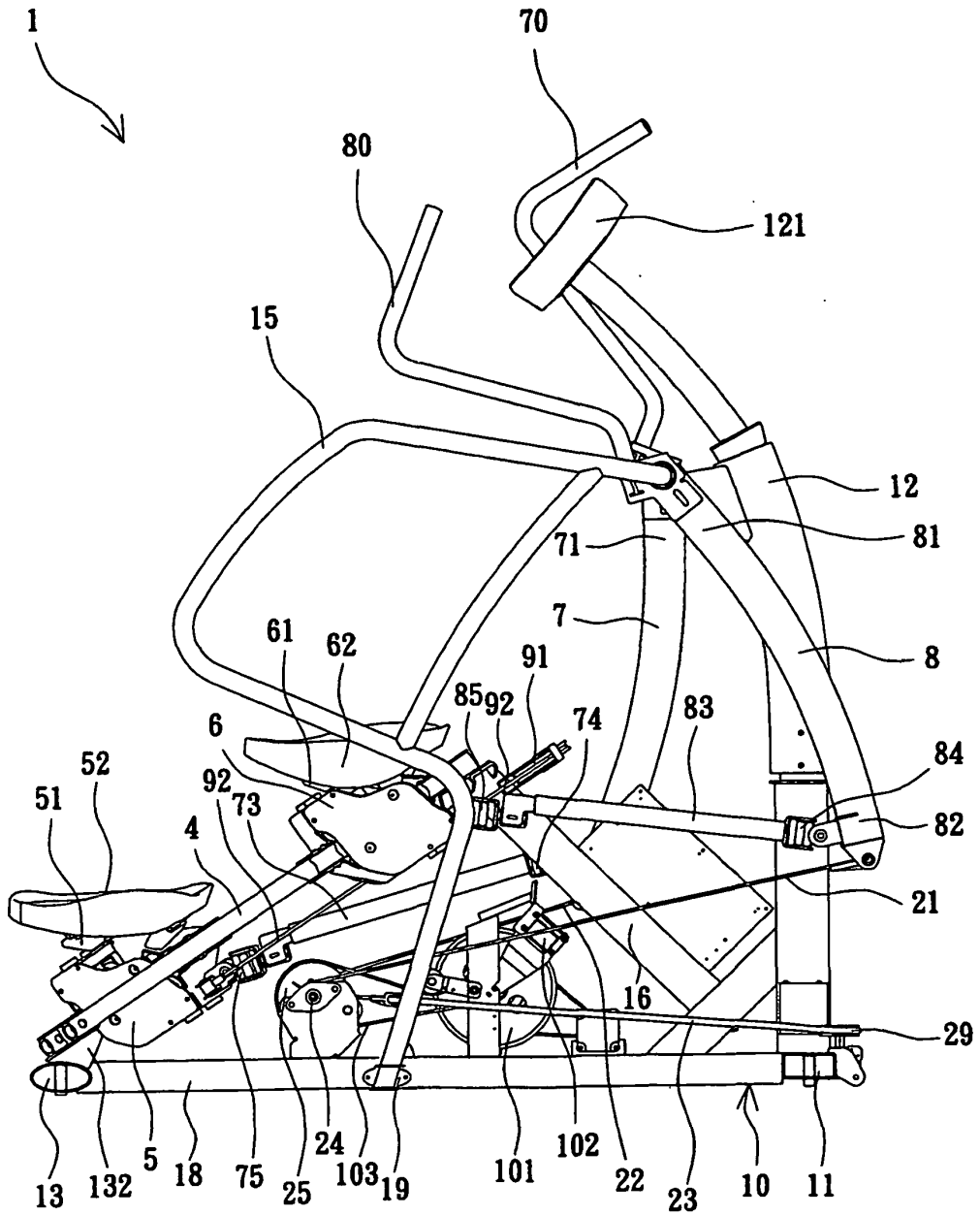


Fig. 2

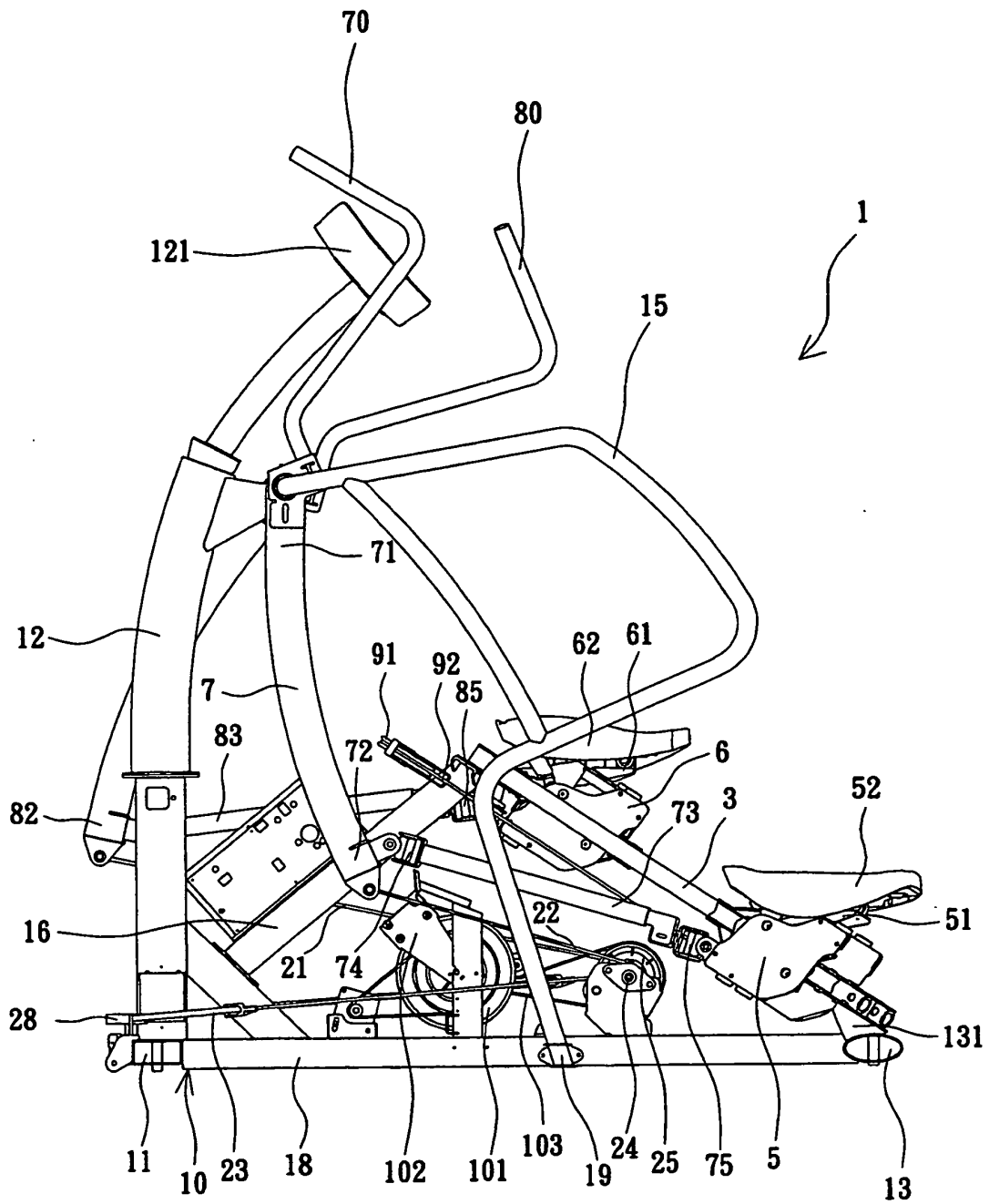


Fig. 3

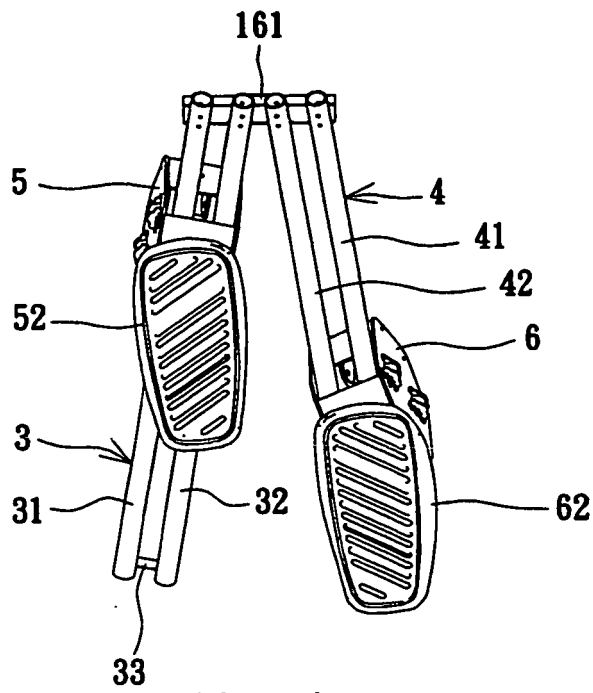


Fig. 4

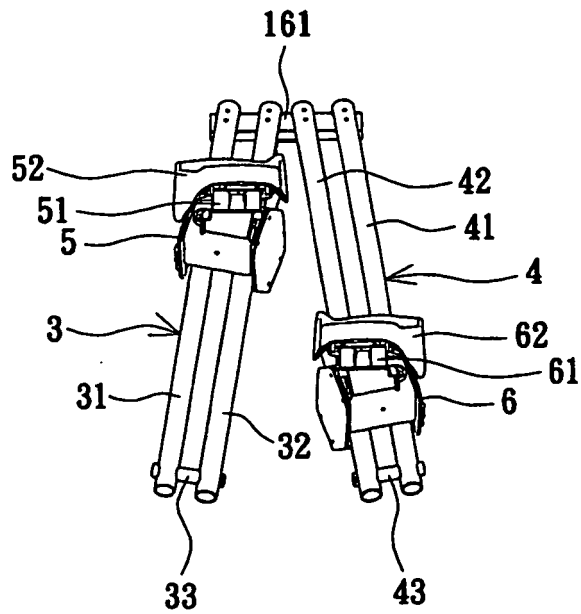


Fig. 5

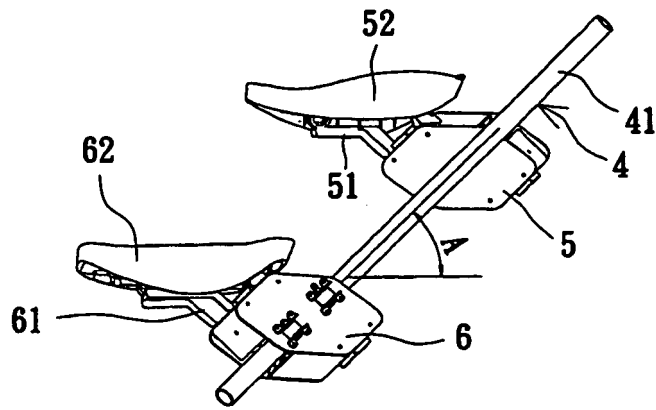


Fig. 6

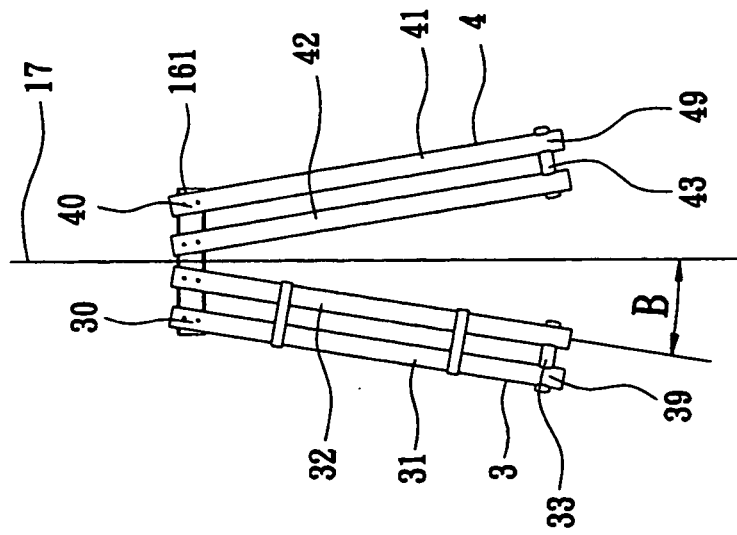


Fig. 7

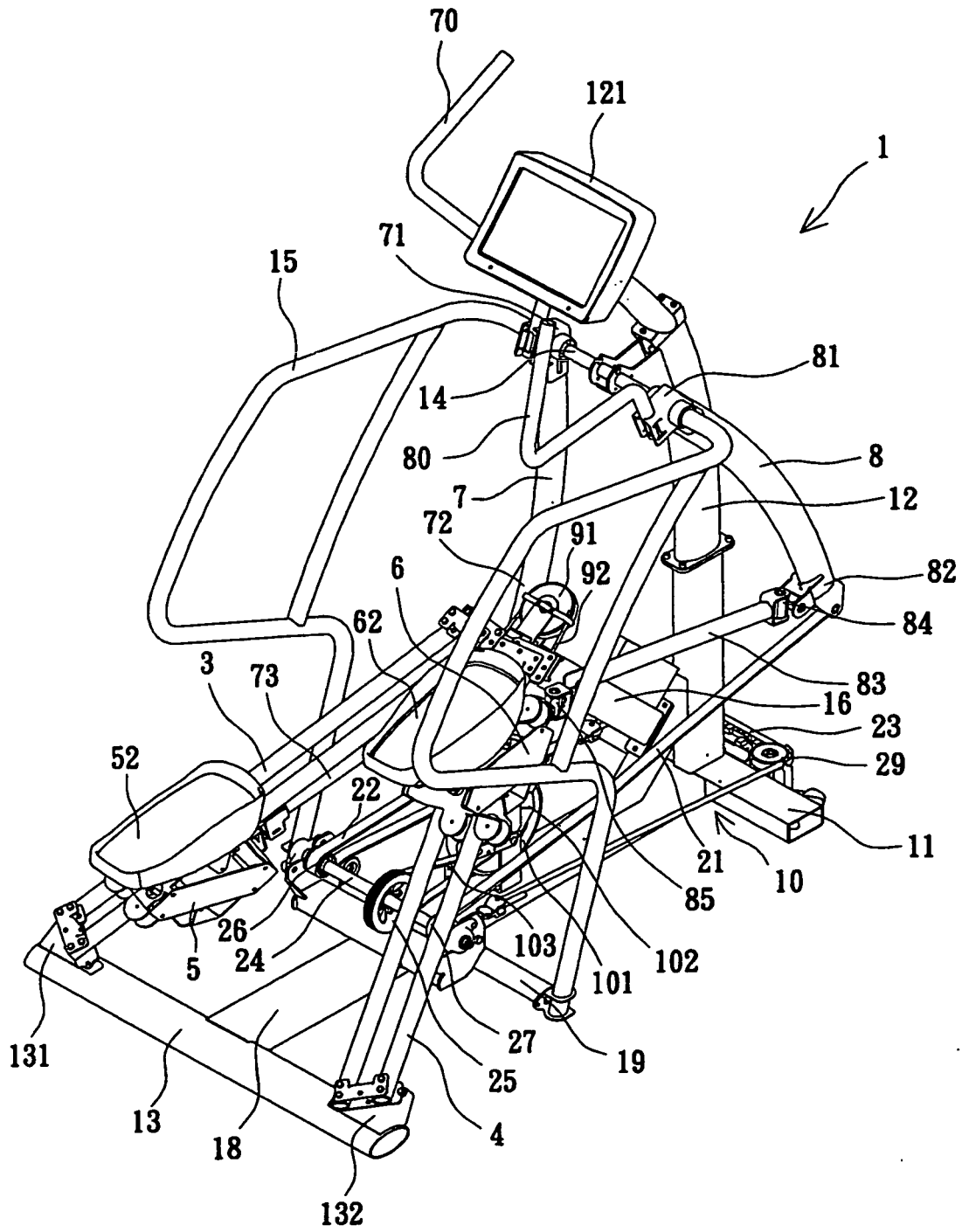


Fig. 8

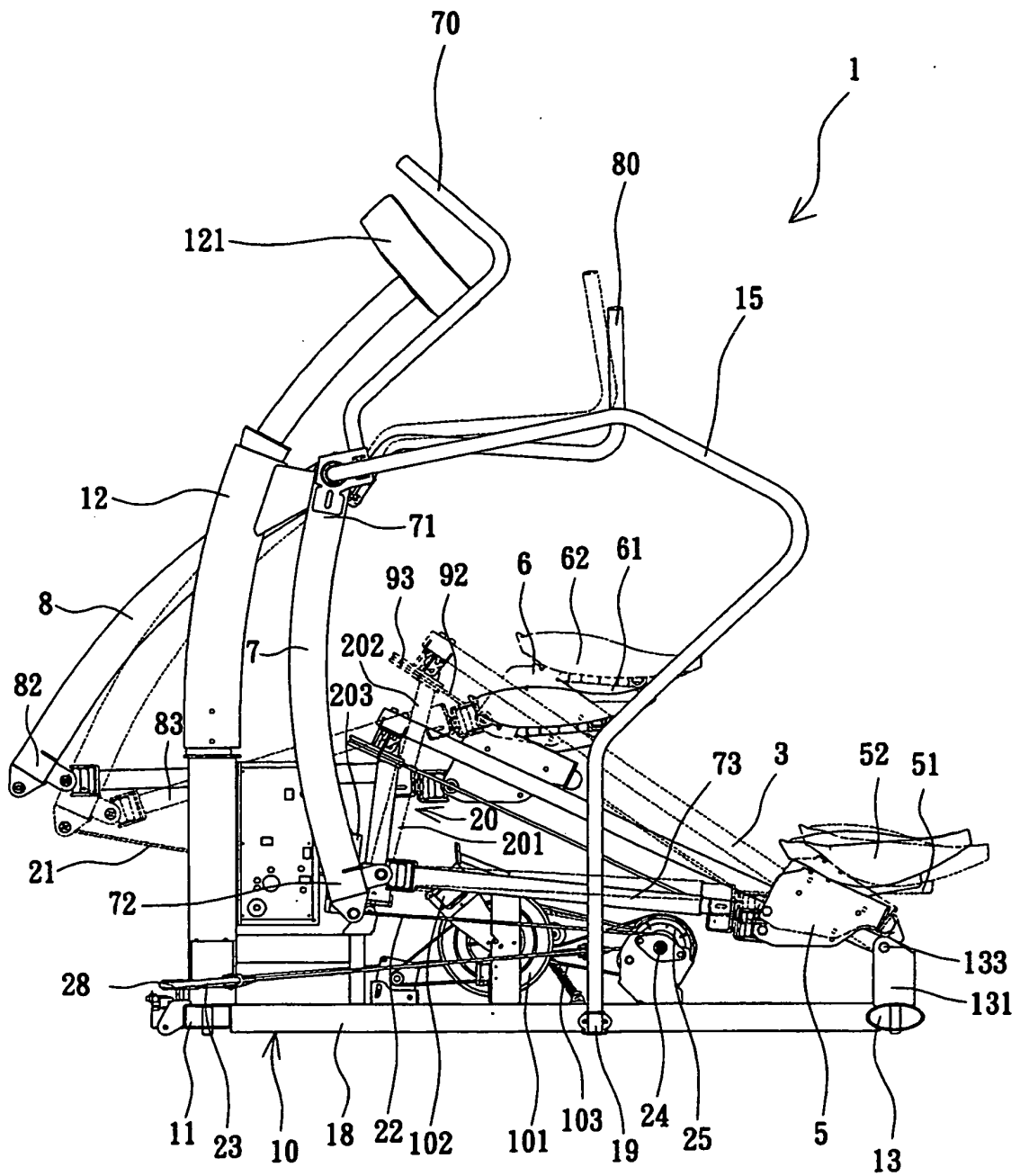


Fig. 9

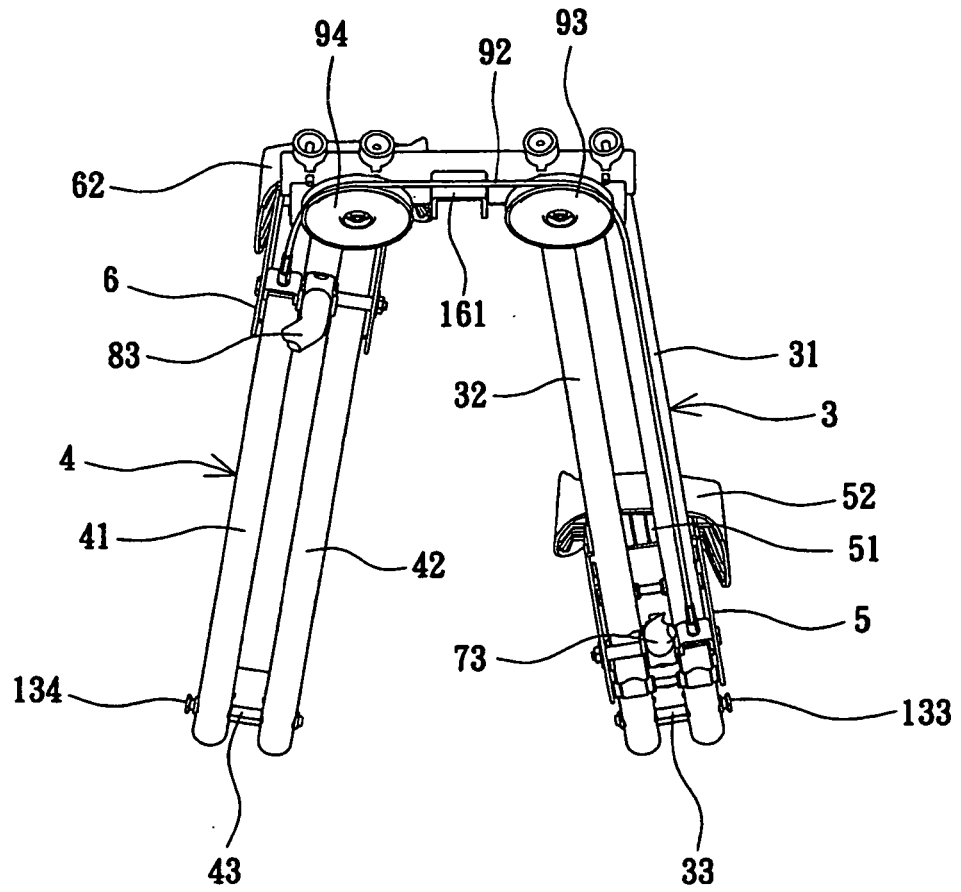


Fig. 10

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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