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(54) **Physical exercise device simulating the use of a bicycle**

Körperübungsgerät, welches den Gebrauch eines Fahrrads simuliert

Appareil d'exercice physique simulant l'usage d'une bicyclette

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(56) References cited:
EP-A- 0 354 785
DE-U- 29 713 828
FR-A- 2 602 150
US-A- 4 743 012
US-A- 5 145 477

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EP 0 925 809 B1

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a physical exercise device simulating the use of a bicycle.

[0002] Physical or gymnastic devices or implements, provided with pedals allowing a user to pedal with physical movements like those of a bicycle, are already known.

[0003] These prior devices or implements conventionally comprise a supporting frame, which supports a seat, a handlebar as well as a pair of pedals, which elements are arranged with an arrangement similar to that of the seat, handlebar and pedals of a conventional bicycle.

[0004] However, this bicycle-like frame, instead of including wheels, is provided with a supporting base statically supported on a floor, so as to allow a user to perform, even in a comparatively small size closed room, gymnastic exercises, like those performed in cycling.

[0005] The above mentioned bicycle-like devices or implements are broadly diffused since they allow to perform, at any desired times, physical or gymnastic exercises, like those performed on a bicycle, without compelling the user to follow high traffic roads, and without the effects of meteorological agents.

[0006] On the other hand, notwithstanding the above mentioned advantages, the mentioned prior physical exercise devices have the drawback that they do not allow to exercise all of the body muscles which, on the contrary, would be properly exercised on a conventional bicycle.

[0007] In fact, since the construction of the prior devices is of a static type, the exercises performed thereon do not involve all of the body muscles which are involved in the use of a conventional bicycle, for example the muscles allowing the bicycle to be held in a balanced or equilibrium condition, both in a vertical attitude and in a slanted attitude, for example on curved portions of roads and the like.

[0008] In this connection it should be apparent that in a slanted position, which can not be assumed in the mentioned prior devices, the body muscles would operate in a different manner from the operation in a vertical attitude.

[0009] Document DE 29 813 828 U discloses an example of a physical exercice device.

SUMMARY OF THE INVENTION

[0010] Accordingly, the aim of the present invention is to solve the above mentioned problem, by providing a physical exercise device or implement adapted to fully simulate the use of a conventional bicycle, thereby allowing to properly exercise all of the muscles which are usually involved in the use of a conventional bicycle.

[0011] Within the scope of the above mentioned aim, a main object of the present invention is to provide such a physical exercise device which is also adapted to exercise those body muscles which, in the use of a conventional bicycle, cooperate to hold the bicycle in an equilibrium condition, both as the bicycle is driven on a rectilinear road and as it is driven on curved parts of the road.

[0012] Another object of the present invention is to provide such a physical exercise device which is very safe and reliable in operation.

[0013] Yet another object of the present invention is to provide such a physical exercise device which can be easily used in comparatively small size closed rooms.

[0014] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a physical exercise device according to claim 1

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] Further characteristics and advantages of the physical exercise device according to the present invention will become more apparent hereinafter from the following detailed disclosure of some preferred, though not exclusive, embodiments of said device which is illustrated, by way of an indicative, but not limitative, example, in the figures of the accompanying drawings, where:

Figure 1 is a perspective view illustrating a first embodiment of the physical exercise device according to the invention, in which the supporting means comprises a pair of curved elements, coupled at the bottom to the frame of the device;

Figure 2 is a further perspective view illustrating a second embodiment of the subject physical exercise device, in which the supporting means comprise a curved supporting element, connected to the bottom of the device frame;

Figure 3 is a further perspective view illustrating a third embodiment of the subject physical exercise device, similar to that shown in Figure 1, in which the pair of curved elements is directly formed on the base of the device frame;

Figure 4 is a further perspective view illustrating a fourth embodiment of the subject physical exercise device, including means for limiting the swinging movement of the device;

Figure 5 is a further perspective view illustrating yet another embodiment of the invention, including modified means for limiting the device swinging movement;

Figure 6 is a further perspective view illustrating yet another embodiment of the subject physical exercise device, the supporting means thereof being shown in an exploded form;

Figure 7 is yet another perspective view illustrating a further embodiment of the physical exercise de-

vice according to the invention;
Figure 8 is an embodiment which is not part of the invention;
Figure 9 is an embodiment which is not part of the invention;
Figure 10 is a further perspective view illustrating yet another embodiment of the physical exercise device according to the invention;
Figure 11 is yet another perspective view illustrating a further embodiment of the physical exercise device according to the present invention, in which the supporting means allow the device to swing both longitudinally and transversely;
Figure 12 is a side elevation view illustrating a detail related to the base of the subject physical exercise device shown in Figure 11;
Figure 13 is a front elevation view illustrating a detail related to the base of the physical exercise device or implement shown in Figure 11; and
Figure 14 is a bottom plan view illustrating the base of the physical exercise device or implement shown in Figure 11.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0016] With reference to the number references of the above mentioned drawing figures, the physical exercise device or implement, according to the present invention, comprises a supporting frame 1, which includes a seat 2, a handlebar 3 as well as a pair of pedals 4, which elements are arranged likewise to the arrangement of the seat, handlebar and pair of pedals of a conventional bicycle.

[0017] Thus, the frame 1 is substantially made as the prior implements simulating a bicycle.

[0018] However, differently from prior bicycle like devices, the frame 1 of the device according to the invention is provided with supporting means, allowing the frame 1 to swing, in operation, in its longitudinal middle plane and/or transversely of said longitudinal middle plane.

[0019] As is clearly shown in Figure 1, said supporting means can comprise a pair of curved elements 5a and 5b which have their bottom end portions coupled to the base 6 of the frame 1 and being arranged transversely of the longitudinal middle plane of said frame 1.

[0020] The two curved elements 5a and 5b are arranged parallel to one another and are spaced from one another along the longitudinal extension of the frame 1.

[0021] The two curved elements 5a and 5b bear by their curved side on the floor, so as to allow, in operation, the supporting frame 1 to swing transversely of its longitudinal middle plane.

[0022] As is clearly shown in Figure 3, the curved elements, which in this figure have been indicated by the reference numbers 7a and 7b, can be directly formed in the base 6 of the supporting frame 1.

[0023] Figure 2 illustrates another embodiment in which the supporting means of said frame 1, which, likewise to the embodiments shown in Figures 1 and 3 will allow the frame 1 to swing transversely of its longitudinal middle plane, comprise a curved supporting element 8, bearing by its curved side against the floor and being connected at the bottom to the base 6.

[0024] During the operation of the embodiment shown in Figure 2, the swinging of the frame 1 is obtained, instead of using a pair of curved elements 5a, 5b or 7a, 7b, by a continuous curved surface, the curvature axis thereof substantially lies in the longitudinal middle plane of the frame 1.

[0025] The base 6 is preferably formed by a pair of cross members 9a, 9b, parallel to one another and spaced from one another along the longitudinal extension of the frame 1, and being coupled at the central portion thereof by a longitudinal middle beam 10.

[0026] In the embodiment shown in Figure 6, the supporting means comprise a cup-like member 11 which is coupled, by its base, to the bottom of a plate 12, in turn connected under the base 6.

[0027] The cut-like element 11 is preferably coupled to a central region of the base 6, so as to allow the implement frame to swing in any desired directions.

[0028] In Figure 7, the supporting means comprise a pair of cup-like elements 13a and 13b, which are coupled at the bottom thereof to the base 6 and being spaced from one another along the longitudinal extension of the implement.

[0029] In Figure 8, the base 6 is pivoted to the bearing foot elements 14a and 14b about a pivot axis 15, which is substantially horizontal and lies in the longitudinal middle plane of the frame 1, so as to allow said frame 1 to swing about said pivot axis 5.

[0030] Figure 9 illustrates another embodiment in which the swinging movement of the frame 1, both longitudinally and transversely, as well as in a composite manner with respect to the mentioned two swinging directions, is obtained by four resilient bearing foot elements, comprising springs 16 spaced from one another and from the longitudinal middle plane, as well as from the transversal or cross middle plane of the frame 1.

[0031] Figure 10 illustrates yet another embodiment, similar to that shown in Figure 2, where the supporting means comprise a curved supporting element 17 which, in this case, is provided with a curvature axis perpendicular to the longitudinal middle plane of the frame 1.

[0032] Figures 11 to 14 illustrate yet another embodiment of the physical exercise device according to the present invention, in which the supporting means comprise a pair of curved supporting elements 18 and 19 which are diagonally coupled at the bottom of the base 6, so as to define two curved bearing surfaces for the base 6.

[0033] The curved supporting elements 18 and 19 cross one another at a central vertical axis of the frame 1 and define two bearing curved surfaces, having cur-

vature axes respectively parallel and perpendicular to the longitudinal middle plane of the frame 1, to allow said frame 1 to swing both in its longitudinal middle plane and transversely of said longitudinal middle plane.

[0034] The physical exercise device according to the present invention further comprises limiting means for limiting the swinging amplitude of the frame 1.

[0035] Said swinging amplitude limiting means can merely comprise, as shown in Figure 3, side extensions of the cross members 9a and 9b of the base 6, or they can also comprise suitable extensions 20, 21 coupled to the end portions of the cross members 9a and 9b of the base 6, as shown in Figures 4 and 8.

[0036] In Figure 5, in addition to the extensions 20, side bearing foot elements 22 are moreover provided, said side bearing foot elements being coupled to the extensions 20 and projecting at the bottom thereof.

[0037] The foot elements 22, in a vertical equilibrium condition of the frame 1, are spaced from the floor, and they can be of a height adjustable type, in order to allow the swinging amplitude of the frame 1 to be easily adjusted or changed.

[0038] In the embodiment shown in Figure 8 springs 23 are provided to counter-bias the swinging movement in a set direction, or in another set direction, of the frame 1 about the pivot axis 15.

[0039] From the above disclosure and from the figures of the accompanying drawings, it should be apparent that the invention fully achieves the intended aim and objects.

[0040] In particular, the fact is to be pointed out that a physical exercise device or implement has been provided which, owing to the capability thereof of swinging longitudinally, transversely, or in a composite manner along the two mentioned swinging directions, would allow all of the body muscles to be exercised or affected, likewise in a conventional type of bicycle.

[0041] While the invention has been disclosed and illustrated with reference to several embodiments thereof, it should be apparent that the disclosed embodiments are susceptible to many modifications and variations, all of which will come within the scope of the appended claims.

Claims

1. A physical exercise device to be supported on a floor, for simulating a use of a bicycle, comprising a device frame (1) supporting a seat (2), a handlebar (3) and a pair of pedals (4) simulating a bicycle, said frame (1) further comprising swinging supporting means (5a,5b,7a,7b,8, 11,13a,13b,14a,14b, 16,17,18,19) swingably supporting said frame for allowing said frame to swing, said frame (1) having a base frame comprising a pair of cross-members (9a,9b), parallel to one another and coupled by a longitudinal middle beam (10), said handlebar (3) being rigidly fixed to said frame (1), **characterized in that** said swinging supporting means comprise at least a curved element coupled to said cross members (9a,9b) and having convex portions adapted to bear on said floor to allow said frame to perform swinging movements longitudinally and/or transversely of a longitudinal middle plane of said frame.

2. A device according to Claim 1, **characterized in that** said supporting means comprises a pair of curved elements (5a,5b) each having end portions thereof coupled to a respective said cross-members (9a,9b) of said frame base, said curved elements (5a,5b;7a,7b) being arranged transversely of said longitudinal middle plane and being spaced from one another along a longitudinal extension of said frame (1).

3. A device according to Claim 2, **characterized in that** said pair of curved elements (7a,7b) is directly formed with said cross-members (9a,9b) of said frame (1).

4. A device according to Claim 1, **characterized in that** said supporting means comprise a single curved element (8) curved at a bottom thereof and coupled, at said bottom thereof, to said frame cross-members (9a,9b), and that said single curved element (8) has a curvature axis thereof arranged on said longitudinal plane.

5. A device according to claims 1, **characterized in that** said supporting means comprise a single curved element (17) curved at a bottom thereof and compled, at said bottom single curved element (17) has a curvature axis thereof arranged substantially perpendicular to said longitudinal middle plane.

6. A device according to Claim 1, **characterized in that** said supporting means comprises a cup-like member (11), having a base thereof coupled to a central bottom region of a plate (12) coupled to said frame cross-members (9a,9b).

7. A device according to Claims 1 and 6, **characterized in that** said supporting means comprise two cup-like members (13a,13b), each having a base thereof coupled to the bottom of a respective cross-member of said frame cross-member (9a,9b).

8. A device according to any preceding claims, **characterized in that** said supporting means comprise a pair of curved elements connected to the bottom of the base of the frame and crossing one another at a central vertical axis of said frame, said pair of curved elements defining two curved bearing surfaces having curvature axes respectively parallel

and perpendicular to said longitudinal middle plane.

9. A device according to Claim 1, **characterized in that** said device further comprises means (20,22) for limiting the swinging amplitude of said frame.

10. A device according to claim 9, **characterized in that** said limiting means comprise side extensions (20) of said cross-members 9a,9b) of said frame.

11. A device according to Claim 10, **characterized in that** said side extensions are provided with bearing foot elements (22) which, under a vertical equilibrium condition of said frame (1), are spaced above the floor and the height of which can be adjusted.

Patentansprüche

1. Körperübungsgerät zur Aufstellung auf einer Bodenfläche, welches den Gebrauch eines Fahrrades simuliert, mit einem einen Sitz (2), eine Lenkstange (3) und ein Paar von Pedalen (4) tragenden Geräterahmen (1), welcher ein Fahrrad simuliert, wobei der Rahmen (1) weiterhin schwenkbare Trägereinrichtungen (5a,5b,7a,7b,8,11,13a,13b,14a,14b,16, 17,18,19) aufweist, die den Rahmen schwenkbar tragen, so dass der Rahmen schwingen kann, wobei der Rahmen (1) einen Grundrahmen mit einem Paar zueinander parallel angeordneter und durch einen mittleren Längsträger (10) miteinander verbundener Querverbindungselemente (9a,9b) aufweist, wobei die Lenkstange (3) starr mit dem Rahmen (1) verbunden ist,
dadurch gekennzeichnet, dass
die schwenkbaren Trägereinrichtungen mindestens ein mit den Querelementen (9a,9b) verbundenes, gekrümmtes Element umfassen, welches konvexe Abschnitte aufweist, die so angepasst sind, dass sie auf der Bodenfläche aufliegen, um dem Rahmen die Ausführung von Schwenkbewegungen längs und/oder quer zu einer mittleren Längsebene des Rahmens zu ermöglichen.

2. Gerät nach Anspruch 1,
dadurch gekennzeichnet, dass
die Trägereinrichtung ein Paar gekrümmter Elemente (5a,5b) aufweist, deren Endabschnitte jeweils mit einem der Querelemente (9a,9b) der Rahmenbasis verbunden sind, wobei die gekrümmten Elemente (5a,5b;7a,7b) quer zu der mittleren Längsebene, und entlang einer Längsausdehnung des Rahmens (1) voneinander beabstandet angeordnet sind.

3. Gerät nach Anspruch 2,
dadurch gekennzeichnet, dass
ein Paar gekrümmter Elemente (7a,7b) direkt mit den Querelementen (9a,9b) des Rahmens (1) ausgebildet ist.

4. Gerät nach Anspruch 1,
dadurch gekennzeichnet, dass
die Trägereinrichtung ein einzelnes, gekrümmtes Element (8) aufweist, welches an seiner Unterseite gekrümmt und an seiner Unterseite mit den Querelementen (9a,9b) des Rahmens verbunden ist, und dass eine Krümmungsachse des einzelnen, gekrümmten Elementes (8) auf der Längsebene angeordnet ist.

5. Gerät nach Anspruch 1,
dadurch gekennzeichnet, dass
die Trägereinrichtung ein einzelnes, gekrümmtes Element (17) aufweist, welches an seiner Unterseite gekrümmt und an seiner Unterseite mit den Querelementen (9a,9b) des Rahmens verbunden ist, und dessen Krümmungsachse im Wesentlichen senkrecht zu der mittleren Längsebene angeordnet ist.

6. Gerät nach Anspruch 1,
dadurch gekennzeichnet, dass
die Trägereinrichtung ein kelchförmiges Element (11) aufweist, dessen Basis mit einem zentralen Unterseitenbereich einer mit den Querelementen (9a, 9b) des Rahmens verbundenen Platte (12) verbunden ist.

7. Gerät nach den Ansprüchen 1 und 6,
dadurch gekennzeichnet, dass
die Trägereinrichtung zwei kelchförmige Elemente (13a,13b) aufweist, deren Basis jeweils mit der Unterseite jeweils eines Querelementes der Querelemente(9a,9b) des Rahmens verbunden ist.

8. Gerät nach einem der vorangegangenen Ansprüche,
dadurch gekennzeichnet, dass
die Trägereinrichtungen ein Paar gekrümmter, mit der Unterseite der Basis des Rahmens verbundener, und einander auf einer zentralen, vertikalen Achse des Rahmens kreuzender, gekrümmter Elemente umfassen, wobei das Paar gekrümmter Elemente zwei gekrümmte Trägerflächen mit jeweils parallel und senkrecht zu der mittleren Längsebene verlaufenden Krümmungsachsen festlegt.

9. Gerät nach Anspruch 1,
dadurch gekennzeichnet, dass
das Gerät weiterhin Einrichtungen (20,22) zum Begrenzen der Schwenkbewegungsbandbreite des Rahmens aufweist.

10. Gerät nach Anspruch 1,
dadurch gekennzeichnet, dass

die Begrenzungseinrichtungen (20,22) Seitenverlängerungen der Querelemente (9a,9b) des Rahmens umfassen.

11. Gerät nach Anspruch 10,
dadurch gekennzeichnet, dass
die Seitenverlängerungen mit tragenden Fußelementen (22) versehen sind, die in einem vertikalen Gleichgewichtszustand des Rahmens (1) von dem Boden beabstandet sind und deren Höhe regulierbar ist.

Revendications

1. Dispositif d'exercice physique qui doit être supporté sur un sol, pour simuler l'utilisation d'une bicyclette, comprenant une structure de dispositif (1) supportant un siège (2), une barre de maintien (3) et une paire de pédales (4) simulant une bicyclette, ladite structure (1) comprenant en outre des moyens de support oscillants (5a, 5b, 7a, 7b, 8, 11, 13a, 13b, 14a, 14b, 16, 17, 18, 19) supportant de manière oscillante ladite structure afin de permettre à ladite structure d'osciller, ladite structure (1) possédant une base de structure comprenant une paire d'éléments transversaux (9a, 9b), parallèles l'un à l'autre et couplés par un rayon central longitudinal (10), ladite barre de maintien (3) étant fixée de manière rigide à ladite structure (1), **caractérisé en ce que** lesdits moyens de support oscillants comprennent au moins un élément courbe couplé audits éléments transversaux (9a, 9b) et présentent des parties convexes adaptées pour s'appuyer sur ledit sol afin de permettre à ladite structure d'effectuer des mouvements oscillants de manière longitudinale et/ou transversale par rapport au plan médian longitudinal de ladite structure.

2. Dispositif selon la revendication 1, **caractérisé en ce que** ledit moyen de support comprend une paire d'éléments courbés (5a, 5b) chacun présentant des parties d'extrémité couplées à un desdits éléments transversaux (9a, 9b) respectifs de ladite base de structure, lesdits éléments courbés (5a, 5b ; 7a, 7b) étant disposés transversalement par rapport audit plan médian longitudinal et étant espacés les uns des autres le long d'une prolongation longitudinale de ladite structure (1).

3. Dispositif selon la revendication 2, **caractérisé en ce que** ladite paire d'éléments courbés (7a, 7b) est directement formée avec lesdits éléments transversaux (9a, 9b) de ladite structure (1).

4. Dispositif selon la revendication 1, **caractérisé en ce que** lesdits moyens de support comprennent un seul élément courbé (8) courbé au niveau de la partie inférieure de celui-ci et couplé, au niveau de ladite partie inférieure de celui-ci, audits éléments transversaux (9a, 9b) de structure, et **en ce que** ledit seul élément courbé (8) présente un axe de courbure placé sur ledit plan longitudinal.

5. Dispositif selon la revendication 1, **caractérisé en ce que** lesdits moyens de support comprennent un seul élément courbé (17) courbé au niveau de la partie inférieure de celui-ci et couplé, au niveau de ladite partie inférieure de celui-ci, audits éléments transversaux (9a, 9b), ledit seul élément courbé (17) présente un axe de courbure placé sensiblement perpendiculairement par rapport audit plan médian longitudinal.

6. Dispositif selon la revendication 1, **caractérisé en ce que** ledit moyen de support comprend un élément de type coupe (11), présentant une base couplée au niveau d'une région inférieure centrale d'un pateau (12) couplé audits éléments transversaux de structure (9a, 9b).

7. Dispositif selon les revendications 1 et 6, **caractérisé en ce que** lesdits moyens de support comprennent deux éléments de type coupe (13a, 13b), chacun présentant une base de ceux-ci couplée au niveau du fond d'un élément transversal respectif desdits éléments transversaux (9a, 9b).

8. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit moyen de support comprend une paire d'éléments courbés connectée au fond de la base de la structure et se traversant l'un à l'autre au niveau d'un axe vertical central de ladite structure, ladite paire d'éléments courbés définissant deux surfaces courbées de support présentant des axes de courbure respectivement parallèle et perpendiculaire audit plan médian longitudinal.

9. Dispositif selon la revendication 1, **caractérisé en ce que** ledit dispositif comprend en outre des moyens (20, 22) afin de limiter l'amplitude d'oscillation de ladite structure.

10. Dispositif selon la revendication 9, **caractérisé en ce que** lesdits moyens de blocage comprennent des prolongations latérales (20, 21) desdits éléments transversaux (9a, 9b) de ladite structure.

11. Dispositif selon la revendication 10, **caractérisé en ce que** lesdites extensions latérales sont munies d'éléments de supports de type pied (22) qui, sous une condition d'équilibre vertical de ladite structure (1), sont espacés au-dessus du sol et leur hauteur peut être ajustée.

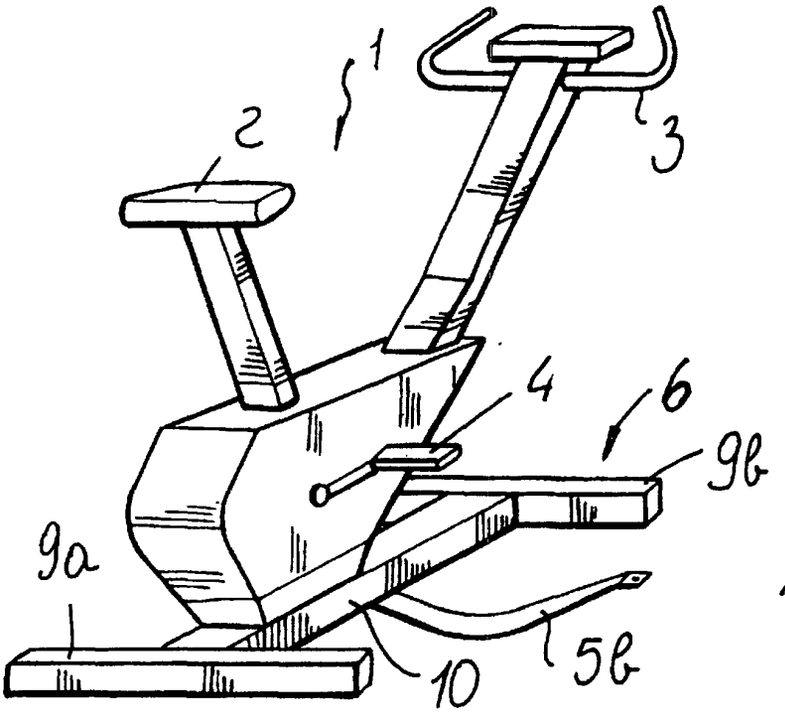
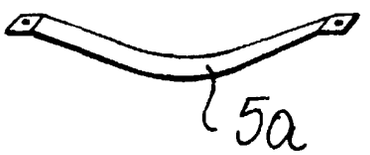


FIG. 1



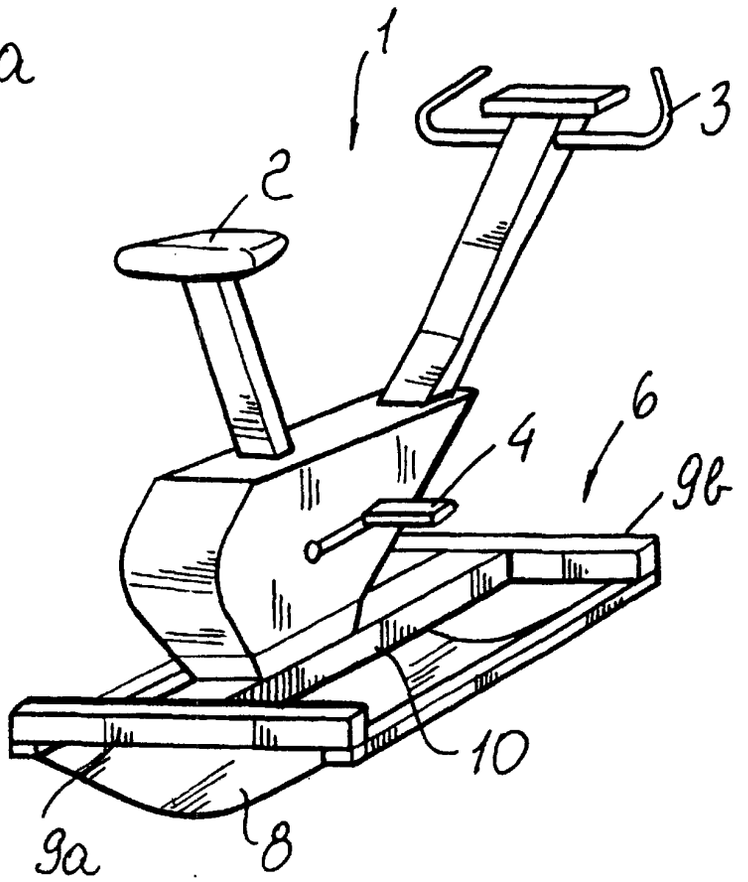


FIG. 2

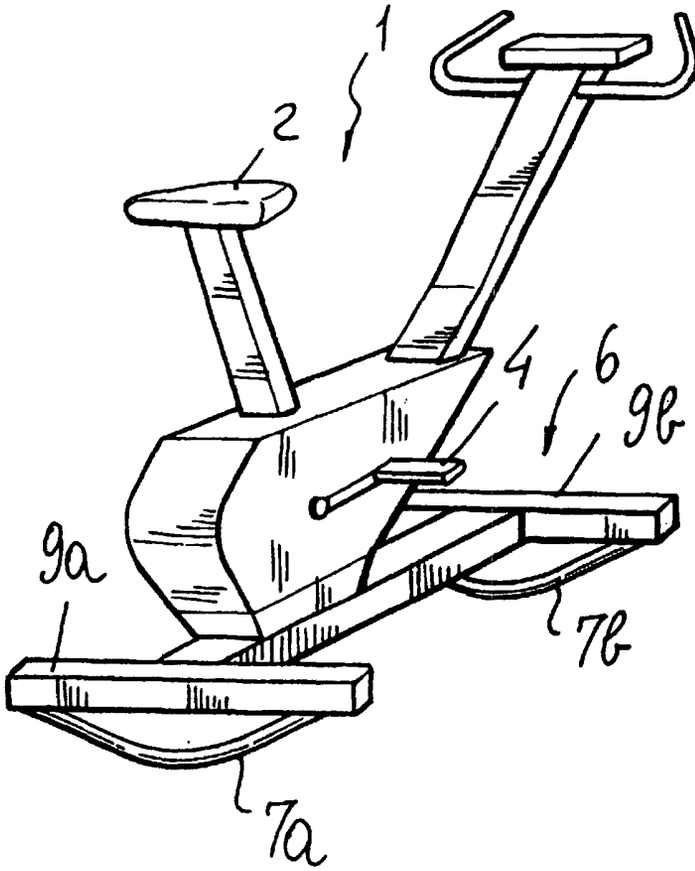


FIG. 3

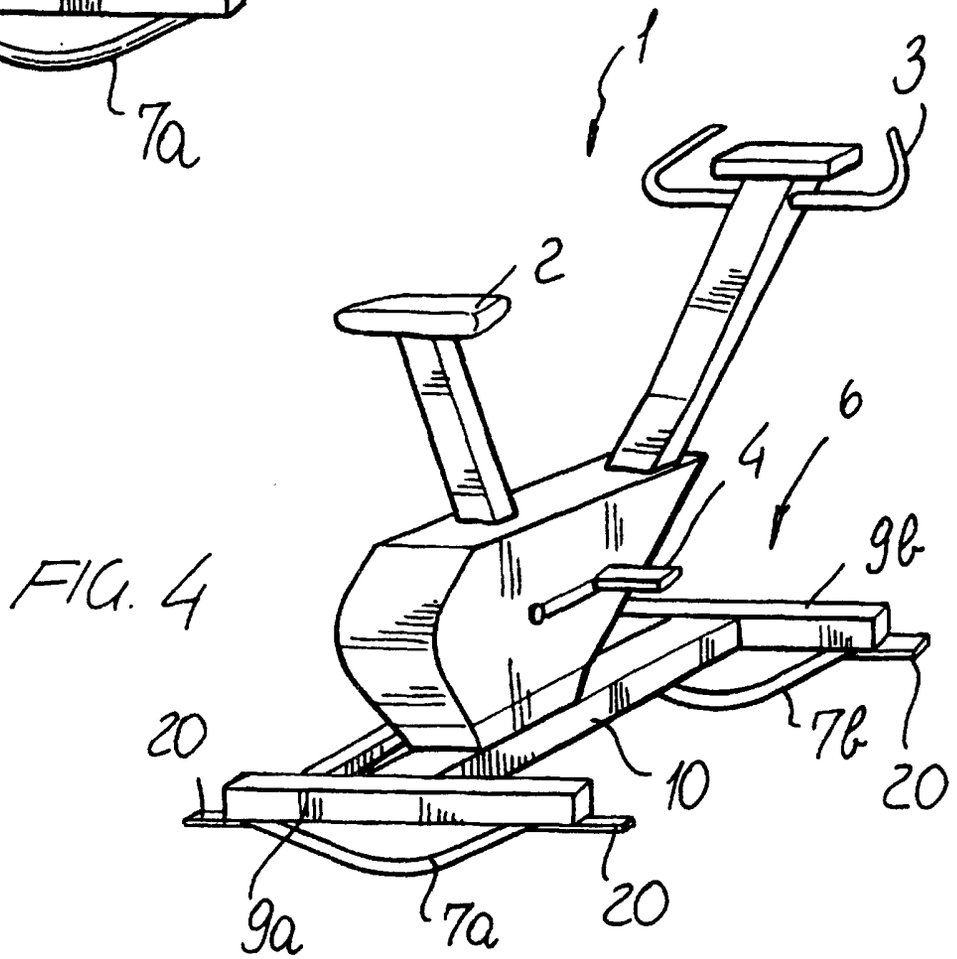


FIG. 4

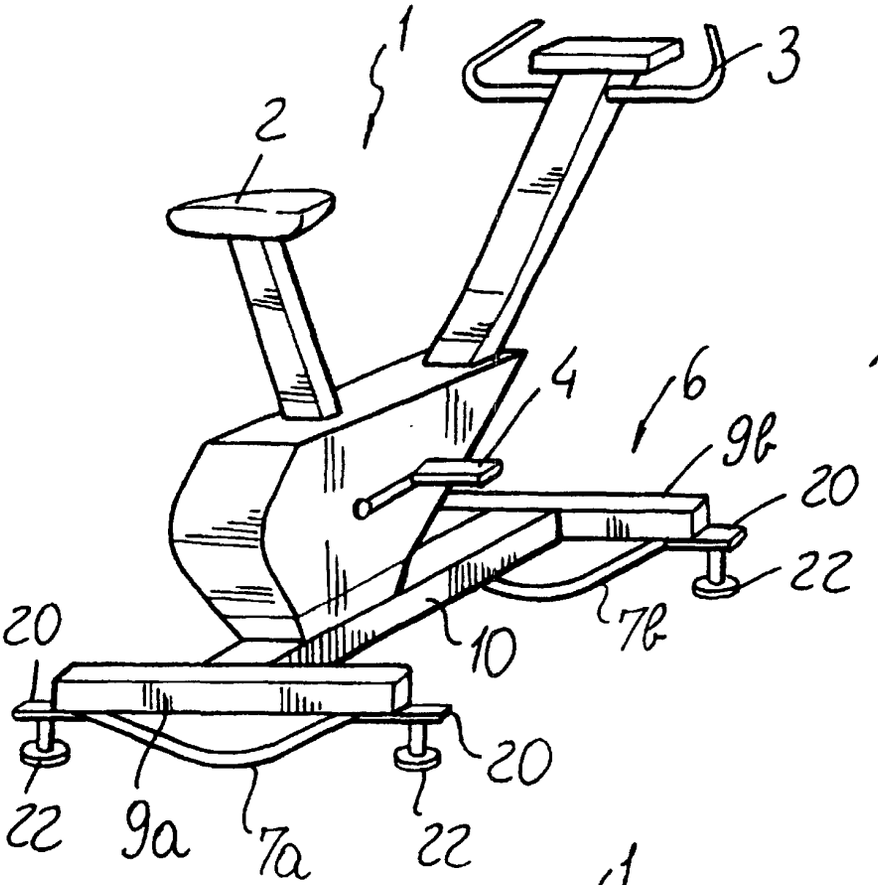


FIG. 5

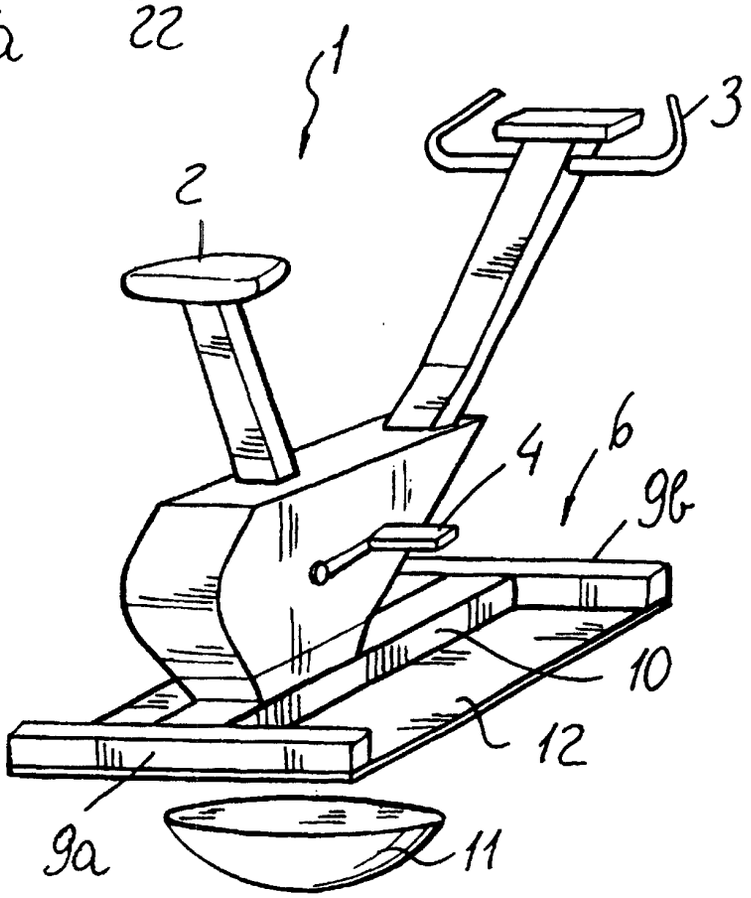


FIG. 6

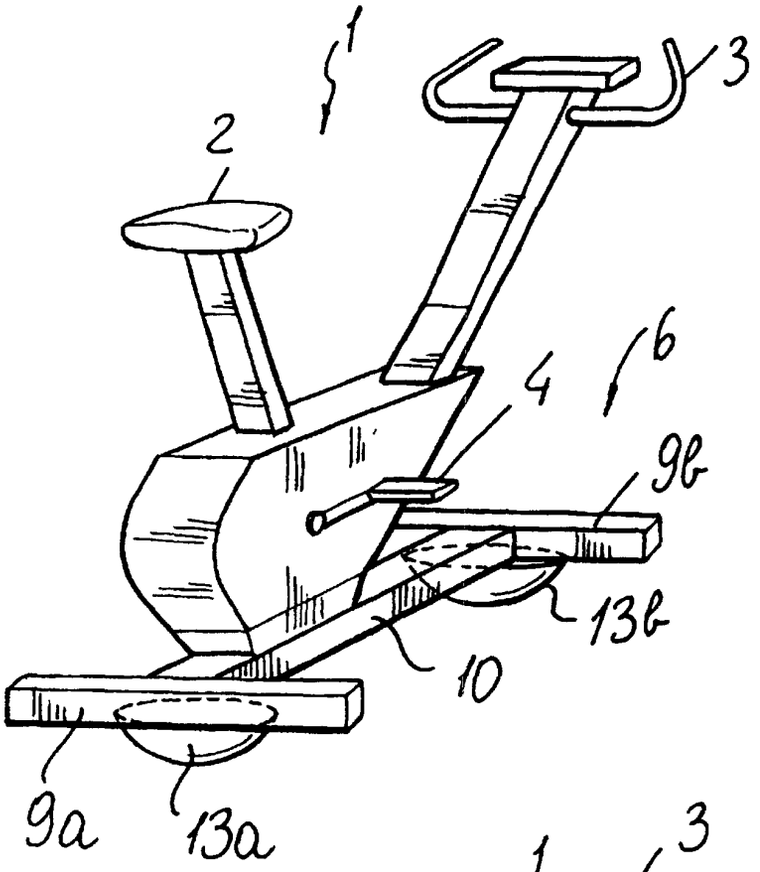


FIG. 7

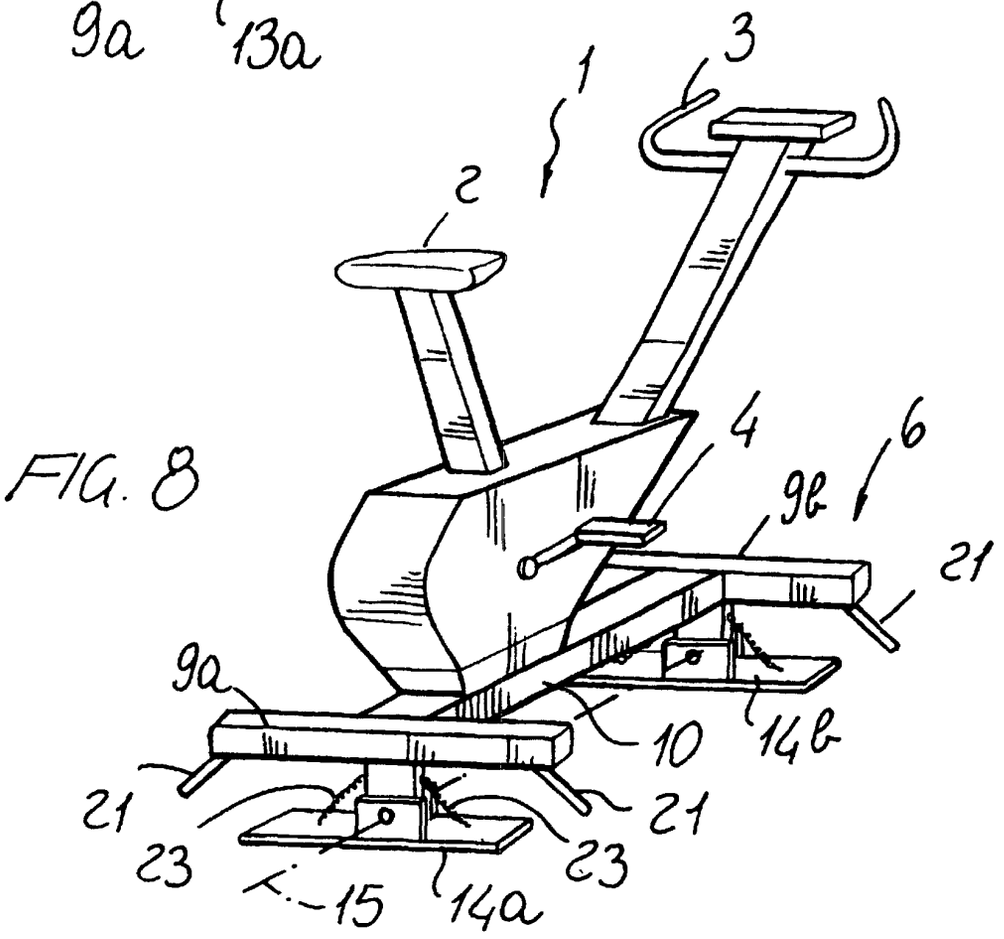


FIG. 8

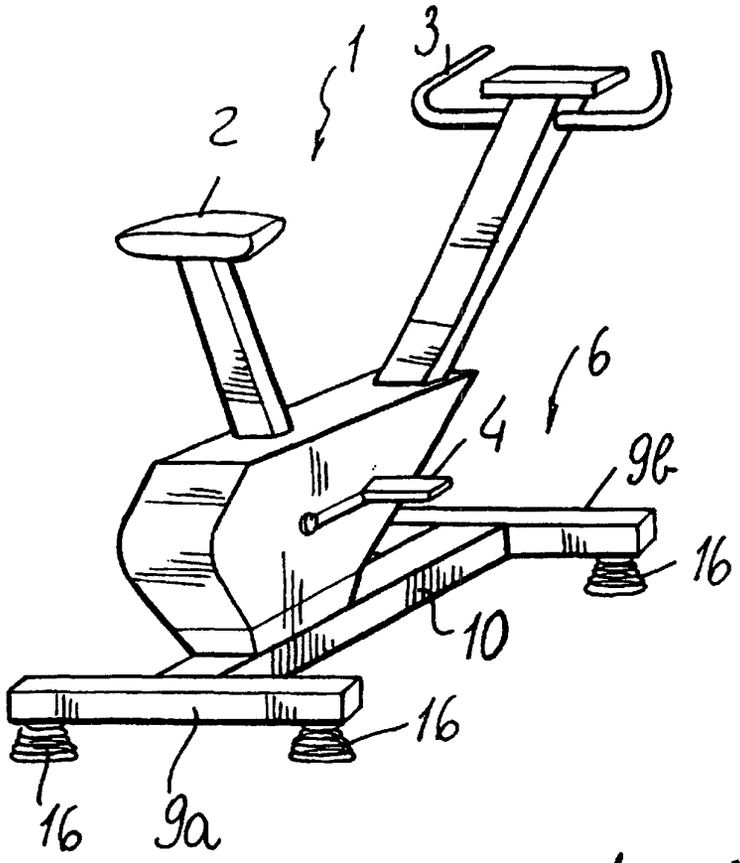


FIG. 9

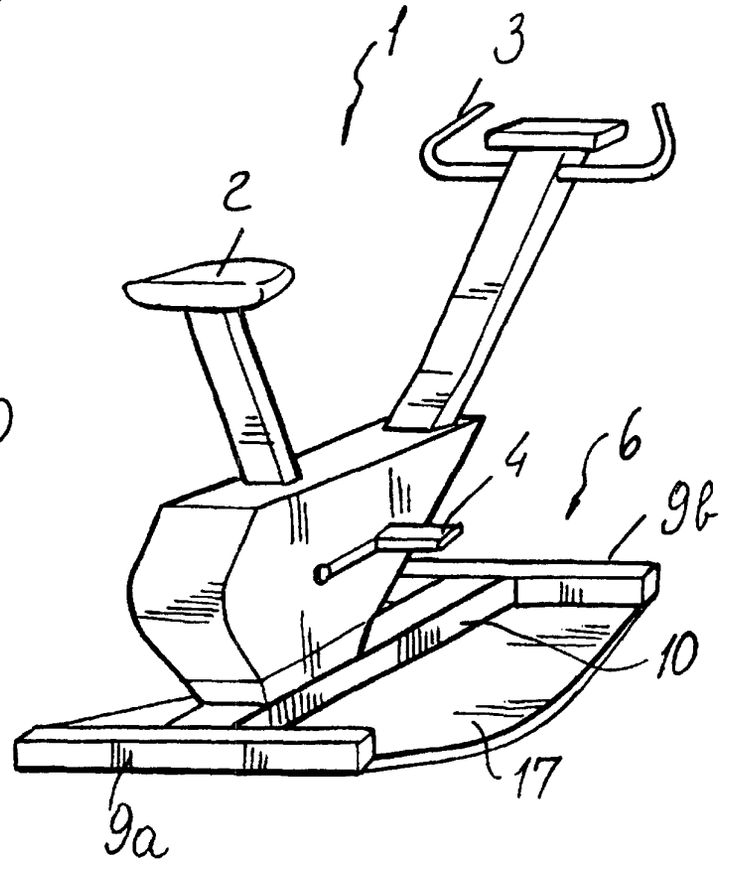


FIG. 10

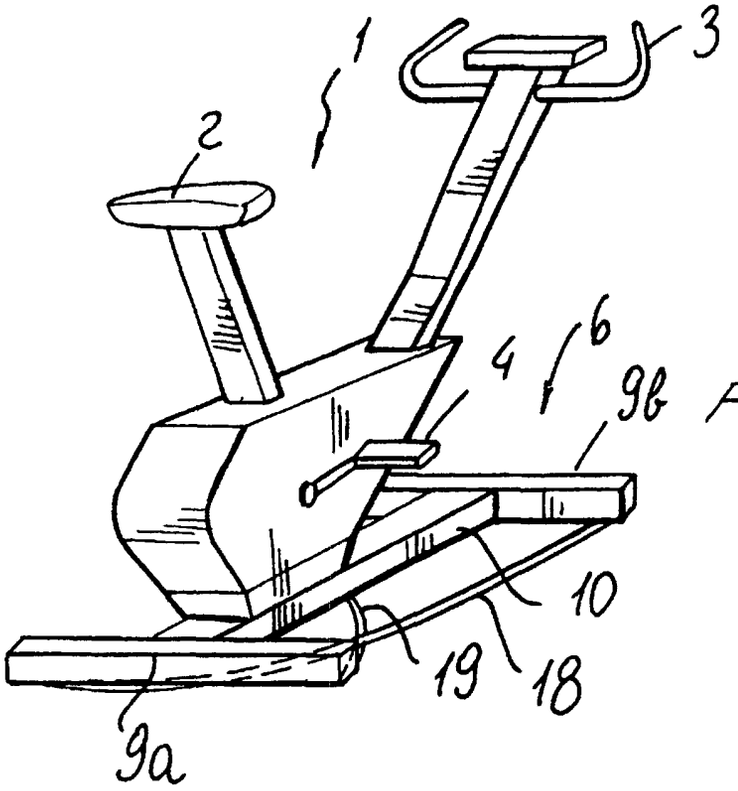


FIG. 11

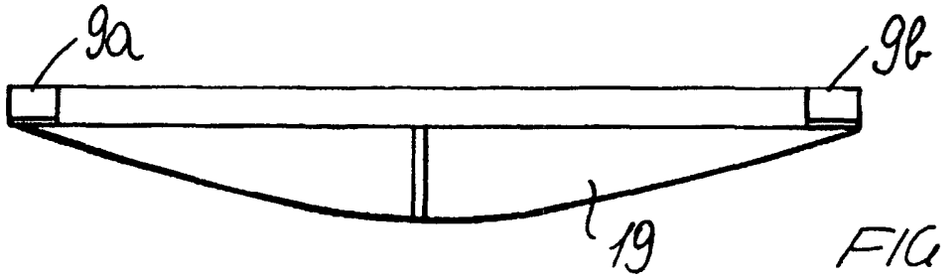


FIG. 12

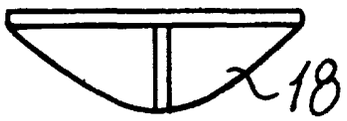


FIG. 13

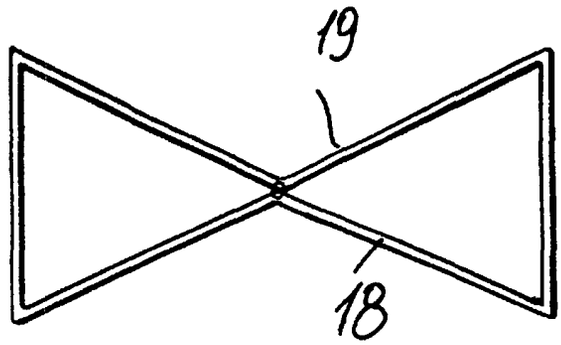


FIG. 14