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(54) **Exercise device and exercise handle**

(57) Exercise device for muscular training of a person, comprising:

- a frame;
- at least one upright elongated element,
- at least one pivot arranged between the frame and the upright element so as to have one end of the element movable in a substantially horizontal plane, said end of the at least one elongated element being provided with a handle for gripping by the person;
- resistance means arranged between the elongated element and the frame for providing resistance against said horizontal movement of said end of the elongated element by the person gripping the handle.

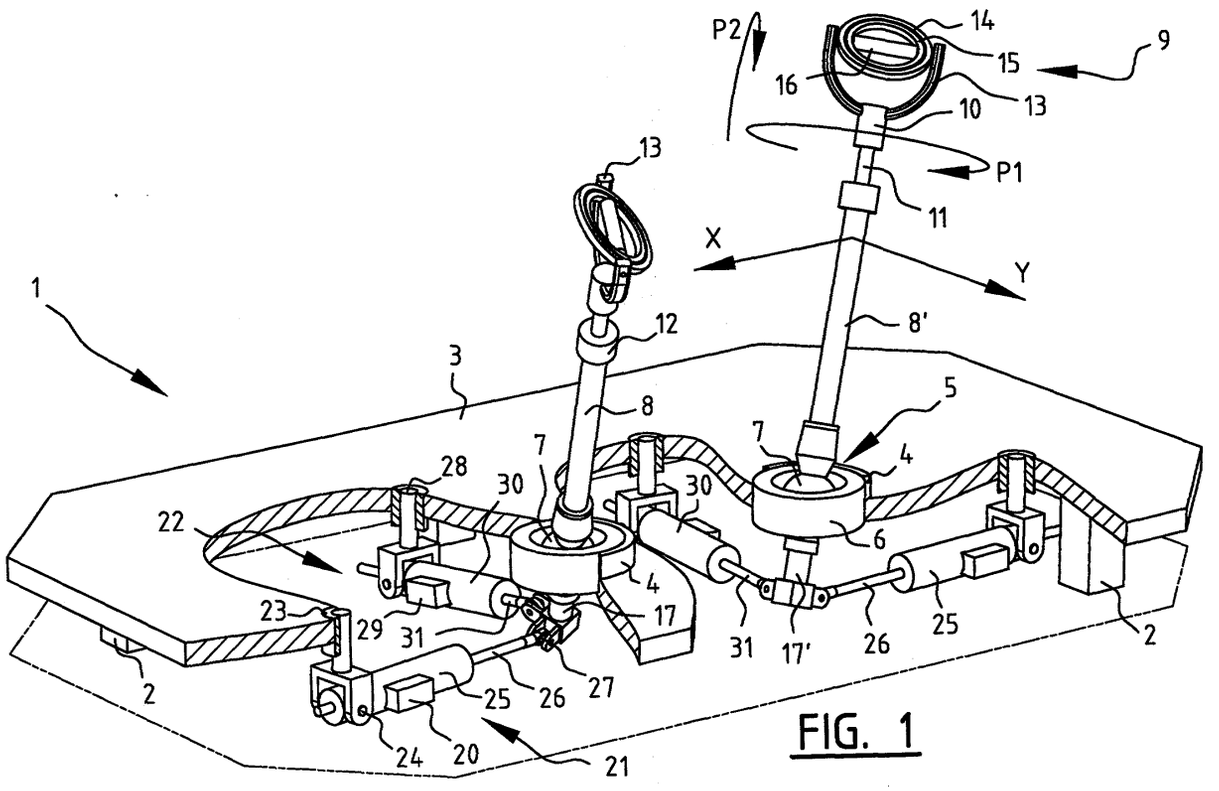

FIG. 1

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Description

[0001] The present invention relates to an exercise device for muscular training of a person. The present invention also relates to an exercise handle and to the use of the exercise device and exercise handle.

[0002] In recent years numerous devices for exercising various muscles in the body of a person have been developed. Many exercise devices use exchangeable weights in order to set the level of resistance to be overcome by the person performing the exercise. Other devices make use of hydraulic or pneumatic elements in order to provide a suitable level of resistance.

[0003] US 4 629 185 discloses an apparatus including a frame provided with two gimbals, each of which having a forwardly extending rod that is provided with a handle for gripping by the person. The gimbals enable simultaneous movement of the handles in more than one plane. Multiple hydraulic cylinders are provided so as to control the resistance experienced by the person.

[0004] One of the drawbacks of this apparatus is that the person at all times must overcome the gravitational force exerted on the handle and the rod as the handles are movable in the vertical plane. Especially when a patient is recovering from a serious injury the gravitational force may jeopardize the healing process.

[0005] Since the person assumes a sitting position during his exercises, only a limited number of muscles are trained. The muscles in the upper body part are exercised, while the muscles in the lower body parts, for example the legs, tend to be trained insufficiently.

[0006] It is an object of the present invention to provide an exercise device wherein at least one of the above-identified drawbacks is obviated.

[0007] According to a first aspect of the present invention an exercise device is provided for muscular training of a person, comprising:

- a frame;
- at least one upright elongated element,
- at least one pivot arranged between the frame and the upright element so as to have one end of the element movable in a substantially horizontal plane, said end of the at least one elongated element being provided with a handle for gripping by the person;
- resistance means arranged between the elongated element and the frame for providing resistance against said horizontal movement of said end of the elongated element by the person gripping the handle.

[0008] Because the elongated elements extend upward and the person gripping the handle will move it in any direction in the horizontal plane, the exercise can be performed substantially without gravitational force being applied by the device on the person.

[0009] In a preferred embodiment the pivot comprises at least one ball-and-socket joint attached to said frame and to said at least one upright elongated element. A joint of this type requires a minimum maintenance effort and is relatively inexpensive. However, various other embodiments of pivoting means are conceivable as well. For example, pivoting means may be made up of a gimbal assembly, as explained hereafter.

[0010] In a preferred embodiment the resistance means comprise a first and second hydraulic cylinder, the proximal end of each cylinder being attached to said frame and the distal end of each cylinder being connected to the elongated element, and wherein the first cylinder extends substantially perpendicular to the second cylinder. Using the hydraulic cylinders the resistance to movement in any direction may be varied relatively easy.

[0011] In a further preferred embodiment the device comprises a first upright elongated element with a handle to be gripped by the left hand of the person and a second upright elongated element with a handle to be gripped by the right hand of the person. In this way at least both arms can be trained simultaneously.

[0012] The person assumes an upright position when performing his exercises. Therefore, in order to make the exercise device suitable for people of different height, the length of the elongated elements can be varied. Preferably the elongate element then comprises:

- a cylinder including a housing and a plunger movable in and out the housing;
- fastening means for releasably fastening the plunger to the housing at a position suitable for the height of the person exercising.

[0013] In a further preferred embodiment the device comprises a spring arranged in the housing so as to exert an outward force on the plunger. In this way the plunger may be used in further exercises, especially abdominal exercises, wherein the user pushes the handle and hence the plunger in a downward direction against the action of the spring to exercise specific muscles and wherein the user displaces the handle in a controlled manner in an upward direction while offering resistance to the force exerted by the spring on the plunger.

[0014] In a further preferred embodiment the handle comprises:

- a yoke, provided with means for connecting with the rod;
- an outer ring, pivotably mounted to the arms of the yoke;
- an inner ring, snugly fitted in the outer ring, the inner ring being rotatable in the outer ring;
- a bar being rotatably or fixedly mounted in the inner ring.

[0015] This embodiment is in particular advantageous when the connecting means are shaped so as to connect the yoke also to one or more exchangeable

weights. In this way the handle can be used on its own, i.e. detached from the exercise device, to perform different exercises, for example exercises that usually are performed using one or more dumb bells. Dumb bells have the disadvantage that improper use thereof may cause serious injuries to the muscles in general and the tendons in particular. Due to the construction of the handle the chance of injuries is substantially reduced.

[0016] In a further preferred embodiment the device comprises resistance control means for controlling the resistance of the horizontal movement. Before, after or even during the exercises the resistance against displacement of the upright elongated elements may be varied, enabling training characteristics optimal for the specific situation or person. Preferably the control means are connected to the first and second hydraulic cylinder so as to independently adjust the resistance of the cylinders. The resistance to displacement in one direction need not be identical to the resistance to displacement in another direction. For example, in some case a one-dimensional movement of the uprights is preferred. Then the resistance of one of the cylinders is set at a very high value, essentially locking the upright in a predetermined orientation, while the resistance of the other cylinder is set to be suitable for the purpose of the one-dimensional displacement of the upright.

[0017] In a further preferred embodiment the first cylinder and second cylinder each have an input port and output port interconnected via an adjustable flow valve. The resistance of the hydraulic cylinders may be varied by adjusting the throughput of the adjustable valve.

[0018] Preferably the frame of the device comprises a surface on which the person can take position. The person will normally assume a standing position in order to exercise as many different muscles as possible. Furthermore, a wide variety of different exercises, including a number of exercises which to the present day were impossible to carry out, can be performed using the present device. For example, when training tennis players a complete displacement of the body during a backhand stroke may be simulated and trained accordingly.

[0019] In a further preferred embodiment the device comprises at least one sensor for providing displacement data representative of the actual displacement of the upright element and a storage for storing the displacement data. By storing the data on for example the hard disk of a computer the actual movement performed by a person is recorded for later use. The thus prestored data can be used later to assess the progress in time the person makes as a result of his exercises. The pre-stored data of the person can also be used to teach another person, as will be explained later.

[0020] In a further preferred embodiment the device comprises at least one actuator arranged between the elongated element and the frame for forcing said at least one elongated element to move in said substantially horizontal plane. Preferably the device is also provided with means for controlling the actuator so as to displace the upright element based on the pre-stored displacement data.

[0021] In a further preferred embodiment the at least one actuator and said resistance means are combined. In a specific embodiment hydraulic cylinders are employed, that may be used in a passive mode to provide the right amount of resistance against displacements of the upright caused by the person or may be used in an active mode, in combination with one or more hydraulic pumps, to bring about a displacement of the upright.

[0022] A further advantage of exercising in a standing position is that a relatively short exercise time is needed to achieve the wanted effect or result.

[0023] According to another aspect of the present invention an exercising handle for gripping by a person is provided, comprising:

- a yoke, provided with means for connecting with the rod;
- an outer ring, pivotably mounted to the arms of the yoke;
- an inner ring, snugly fitted in the outer ring, the inner ring being rotatable in the outer ring;
- a bar being rotatably mounted in the inner ring; wherein the connecting means are shaped so as to connect the yoke to one or more exchangeable weights.

[0024] Further advantages, features and details of the present invention will be elucidated on the basis of the following description of a preferred embodiment thereof. Reference is made in the description to the figures, in which:

Figure 1 shows a partly cut-away view in perspective of a preferred embodiment of the exercise device;
Figure 2 is a schematic cross-section through one of the uprights, the length of which can be adjusted;
Figure 3 shows a view, partly in cross-section, of a preferred embodiment of the handle; and
Figure 4 shows a partly exploded perspective view of the handle of figure 3, wherein a weight is attached to the handle.

[0025] Figure 1 shows the exercise device 1 in a partly cut-away perspective view. Device 1 comprises a frame in which two uprights are freely movable. The frame is constructed from a number of legs 2 on which rests a horizontal plate 3. This latter functions as mounting for the uprights and as surface on which the person stands during training.

[0026] Arranged at two positions in the flat plate 3 are openings, on the edge of which are provided upright flanges 4. The mutual distance between the two openings corresponds roughly to the width of the shoulders of the person using the exercise device (about 50 centimetres). Provided in the shown embodiment in each of

the openings is a ball-and-socket joint 5 built up of a housing 6 arranged against the plate and the upright flange 4 and a spherical element 7 mounted in the housing. In another embodiment the ball-and-socket joints are replaced by gimbals.

[0027] An upright 8 is arranged on the top side of ball-and-socket joint 5 (or the gimbal). As a result of the shown mounting with a ball-and-socket joint or gimbal, the upright has two degrees of freedom, i.e. the upright can be displaced in both the X-direction and the Y-direction. The top side of the upright 8 passes through an almost horizontal plane during such a displacement.

[0028] A handle 9 is provided at the top of the upright. The handle comprises a support 10 which in known manner is arranged rotatably on a displaceable element 11 (arrow P_1). A yoke 13 is further arranged on the support. As is shown in more detail in figure 3, yoke 13 is connected rotatably to an outer ring 14 using rotation shafts 34. Outer ring 14 can therefore be displaced rotatably in the direction of arrow P_2. An inner ring 15 is also provided, wherein between outer ring 14 and inner ring 15 a large number of ball bearings 35 are arranged. Owing to this construction the inner ring 15 can be rotated relative to outer ring 14 (arrow P_3). Finally, a bar 16 is arranged transversely of inner ring 15 and optionally provided with a covering (not shown) to make the bar sufficiently rough.

[0029] As a consequence of the shown construction of handle 9, the bar 16 can be moved in practically all directions, whereby the danger of injuries to the hands and arms of the user of the exercise device is minimal.

[0030] Referring to figure 1, a support 17 is arranged against the underside of each ball-and-socket joint 5. Using pivots 27 this support 17 is connected to respectively a first hydraulic cylinder 21 and second hydraulic cylinder 22. Each hydraulic cylinder comprises a housing 25 in which a plunger 26 can be moved in and out. Housing 25,30 is fastened to plate 3 of the frame by means of pivots 24,29 and fastening pins 23,28. By placing the two hydraulic cylinders 21,22 at a determined angle to each other, preferably at an angle of about 90°, the movement of support 17 can be slowed down in the X,Y plane. Cylinders 21,22 do after all provide a resistance to displacement of the lower end 17 and thereby of the other elements mounted thereon, such as handle 9.

[0031] The resistance applied by the cylinders can be adjusted as required by operation of schematically shown control means 20. Cylinders with adjustable resistance are known as such and will not be discussed here in detail. The resistance of these cylinders can be adjusted individually by actuating the respective control means 20 provided on each of the cylinders.

[0032] In another embodiment (not shown) wherein for example hydraulic cylinders are used, the cylinders are included in a control system connecting all cylinders to each other so as to enable the resistances of the various cylinders to be controlled in their mutual relationship. In case of two-way hydraulic (including pneumatic) cylinders, the cylinders are filled with liquid or gas. Also the cylinders are mutually connected via a network of liquid or gas conduits and one or more adjustable flow valves, so that the liquid is displaced from one end of a cylinder to the other end when plunger 26 is pressed in or out. The degree of resistance of each of the hydraulic cylinders can be individually adjusted by controlling the relevant flow valve(s).

[0033] The operation of exercise device 1 is as follows. The person will stand with both legs on the flat plate 3 and grip both handles 9. In this starting position no force at all, such as for instance gravitational force, will be exerted by the device on the muscles of the person. After setting the appropriate resistances of cylinders 21,22 of the left-hand upright and setting the resistances of cylinders 21,22 of the right-hand upright, the person can start training. The person then exerts a force on one or both handles, with the result that the handles are displaced in a substantially horizontal plane (in fact a spherical plane with the radius corresponding to the distance between ball-and-socket joints 5 and handle 9, wherein the radius is however very large in proportion to the maximum deflection of the uprights). Owing to the many rotation options of the handle the arms generally of a person, and the wrists in particular, will be spared as much as possible in this movement, which reduces the danger of injury.

[0034] Depending on the application, the resistance provided by hydraulic cylinders 21,22 can be adjusted during the exercise so as to make the exercise more difficult or easier. In an embodiment which is not shown, control means 20 of the cylinders are driven by a central control, for example a computer or micro-controller.

[0035] It is also possible to provide the cylinders with electric actuators or to give the cylinders an active form such that they can be displaced mechanically. In this case it is the task of the person to exert counterforce and to prevent displacement of the handles.

[0036] In a further preferred embodiment the central control comprises storage means (hard disk, recordable DVD or CD, or similar storage facilities) so as to store the displacements of each of the plungers of the cylinders when a certain movement of the handle is carried out. For example, the back hand stroke of a top tennis player can be stored in the storage means. Afterwards, when another user uses the exercise device, the cylinders may be actuated so as to force another user of the device to follow the displacements recorded on the recording means. In this way the other user might train his back stroke technique.

[0037] It is to be understood that the pre-stored displacements may also be derived from another exercise device and that the storage means of a specific exercise device may contain data representative of numerous pre-stored motions, such as different types of backhand or forehand strokes of different tennis players.

[0038] In order to make the exercise device suitable

for persons of different height, the uprights 8 are embodied such that the length thereof can be adjusted. Figure 2 shows a preferred embodiment of an upright adjustable in the length. The upright herein comprises a housing 29 in which a rod 11 can slide in and out (arrow P_4). The rod is provided at a number of positions with a groove 32. At the top of upright 8 is provided a screw element 12, on the inner side of which there are provided a number of ball bearings 33. When screw element 12 is unscrewed, a clearance is created between the ball bearings and rod 11 such that rod 11 is freely slidable in the height. When screw element 12 is tightened however, the clearance is reduced and at a certain point the ball bearings 33 will become fixed in grooves 32. In this manner the rod can be fixed at a number of positions (in the shown embodiment four) to make the exercise device suitable for people of differing height.

[0039] In the preferred embodiment shown in figure 2 a helical spring 30 is also provided which ensures that when screw element 12 is unscrewed the rod 11 is automatically displaced in upward direction.

[0040] Figure 4 shows that in a special embodiment the above mentioned handle 9 can also be applied separately of exercise device 1. An opening is herein provided on the underside of support 10, in which opening can be screwed a protrusion 37 of an element of a predetermined weight. The weight of handle 9 can hereby be increased as desired. Depending on the desired weight, a heavy or less heavy element 36 is applied. Once again the person can now do exercises to train the muscles, wherein the arm of the person, and in particular his/her wrist, is spared as much as possible due to the mobility of the handle.

[0041] In the embodiment shown in figure 4 the handle 9 can be arranged on the uprights 8 of the exercise device as well as being used as separate training element as just described. It is however also possible to embody handle 9 such that it can only be used as handle for the interchangeable weights (elements 36).

[0042] In another preferred embodiment (not shown) the device is provided with electrical or optical sensors that determine the degree of motion of the handle. When for example each of the cylinders connected to the pivot is provided with a motion sensor and the respective sensors are connected to a central processing unit, the processing unit is able to perform (preferably in real time) a determination of the exact position in three-dimensional space of the handle based on the data received from the sensors. Therefore, in this embodiment the handle may be used to control the motion of a further device that is controlled by the central control, such as a robot or similar device.

[0043] The rights sought are not limited to the above described embodiments of the invention but are defined by the claims, within the scope of which many modifications can be envisaged.

Claims

1. Exercise device for muscular training of a person, comprising:

   - a frame;
   - at least one upright elongated element,
   - at least one pivot arranged between the frame and the upright element so as to have one end of the element movable in a substantially horizontal plane, said end of the at least one elongated element being provided with a handle for gripping by the person;
   - resistance means arranged between the elongated element and the frame for providing resistance against said horizontal movement of said end of the elongated element by the person gripping the handle.

2. Exercise device according to claim 1, wherein the pivot comprises at least one ball-and-socket joint attached to said frame and to said at least one upright elongated element.

3. Device according to claim 1 or 2, wherein the resistance means comprise a first and second hydraulic cylinder the proximal end of each cylinder being attached to said frame and the distal end of each cylinder being connected to the elongated element, and wherein the first cylinder extends substantially perpendicular to the second cylinder.

4. Device according to claim 1, 2 or 3, comprising a first upright elongated element with a handle to be gripped by the left hand of the person and a second upright elongated element with a handle to be gripped by the right hand of the person.

5. Device according to claim 1, wherein the elongated element is extendable so as to be adaptable to the height of the person.

6. Device according to claim 5, wherein the elongated element comprises:

   - a cylinder including a housing and a plunger movable in and out the housing;
   - fastening means for releasably fastening the plunger to the housing at a position suitable for the height of the person exercising.

7. Device according to claim 6, comprising a spring arranged in the housing so as to exert an outward force on the plunger.

8. Device according to any of claims 1-7, wherein the handle comprises:

- a yoke, provided with means for connecting with the rod;
- an outer ring, pivotably mounted to the arms of the yoke;
- an inner ring, snugly fitted in the outer ring, the inner ring being rotatable in the outer ring;
- a bar being rotatably mounted in the inner ring.

9. Device according to claim 8, wherein the connecting means are shaped so as to connect the yoke also to one or more exchangeable weights.

10. Device according to any of the preceding claims, comprising resistance control means for controlling the resistance of the horizontal movement.

11. Device according to any of the preceding claims, wherein the control means are connected to the first and second hydraulic cylinder so as to independently adjust the resistance of the cylinders.

12. Device according to any of the preceding claims, wherein the first cylinder and second cylinder include each have an input port and output port interconnected via an adjustable flow valve.

13. Device according to any of the preceding claims, wherein the frame comprises a surface on which the person can take position.

14. Device according to any of the preceding claims, wherein the pivot comprises at least one gimbal assembly attached to said frame and to said at least one upright elongated element.

15. Device according to any of the preceding claims, comprising:

- at least one sensor for providing displacement data representative of the actual displacement of the upright element;
- a storage for storing the displacement data.

16. Device according to any of the preceding claims, comprising at least one actuator arranged between the elongated element and the frame for forcing said at least one elongated element to move in said substantially horizontal plane.

17. Device according to claim 16, wherein the at least one actuator comprises an electric motor.

18. Device according to claim 16, wherein the at least one actuator and said resistance means are combined.

19. Device according to claim 15 and 16, comprising means for controlling the actuator so as to displace the upright element based on pre-stored displacement data.

20. Device for controlling the movement of an element, preferable a device according to any of the preceding claims, comprising:

- a frame;
- at least one upright elongated element,
- at least one pivot arranged between the frame and the upright element so as to have one end of the element movable in a substantially horizontal plane, said end of the at least one elongated element being provided with a handle for gripping by the person;
- at least one sensor for providing displacement data representative of the actual displacement of the upright element;
- means for controlling the movement of element based on the displacement data.

21. Exercise handle for gripping by a person, comprising:

- a yoke, provided with means for connecting with the rod;
- an outer ring, pivotably mounted to the arms of the yoke;
- an inner ring, snugly fitted in the outer ring, the inner ring being rotatable in the outer ring;
- a bar being rotatably mounted in the inner ring;

wherein the connecting means are shaped so as to connect the yoke to one or more exchangeable weights.

22. Use of the exercise device and/or exercise handle according to any of the preceding claims.

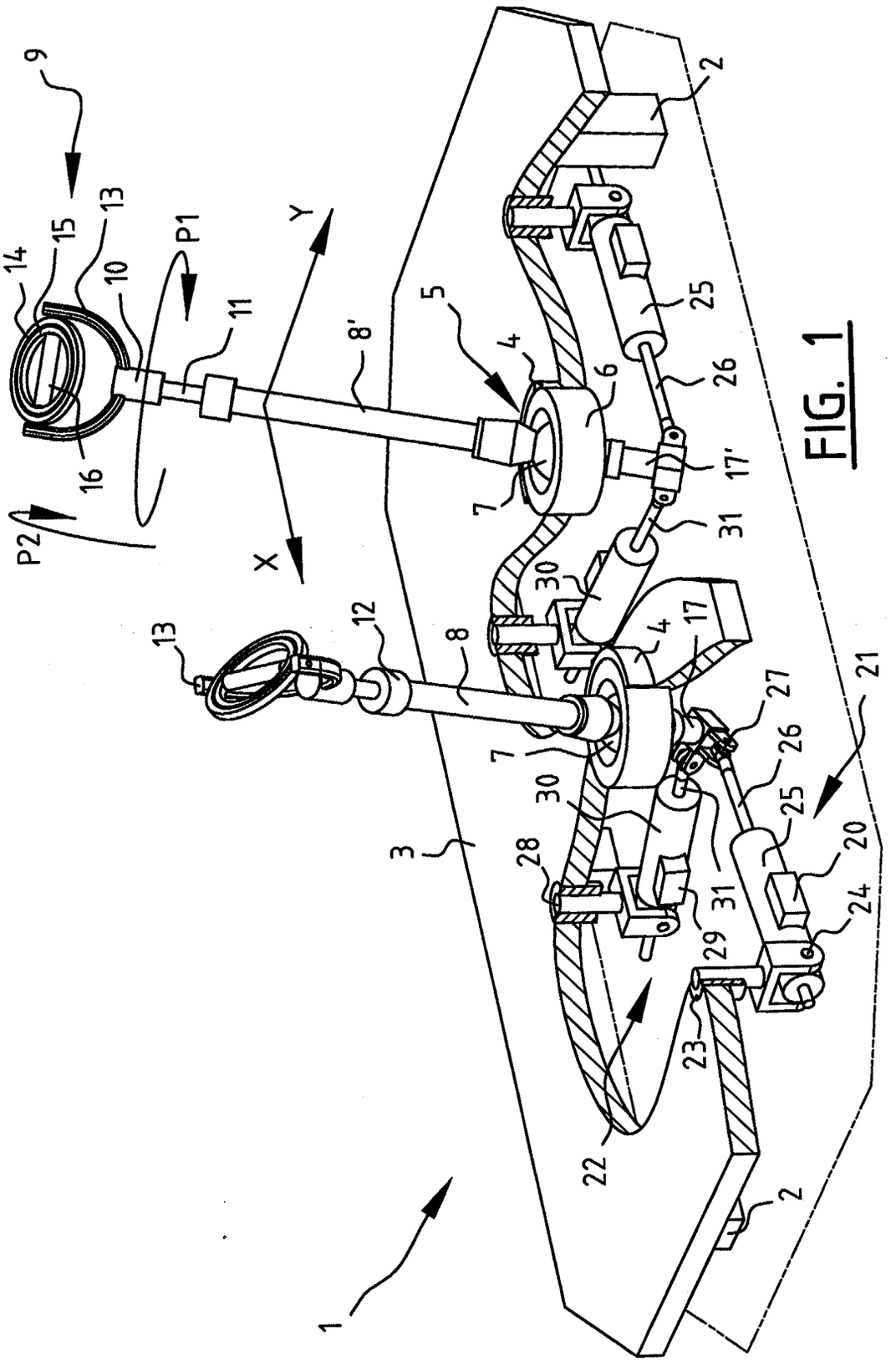
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FIG. 1

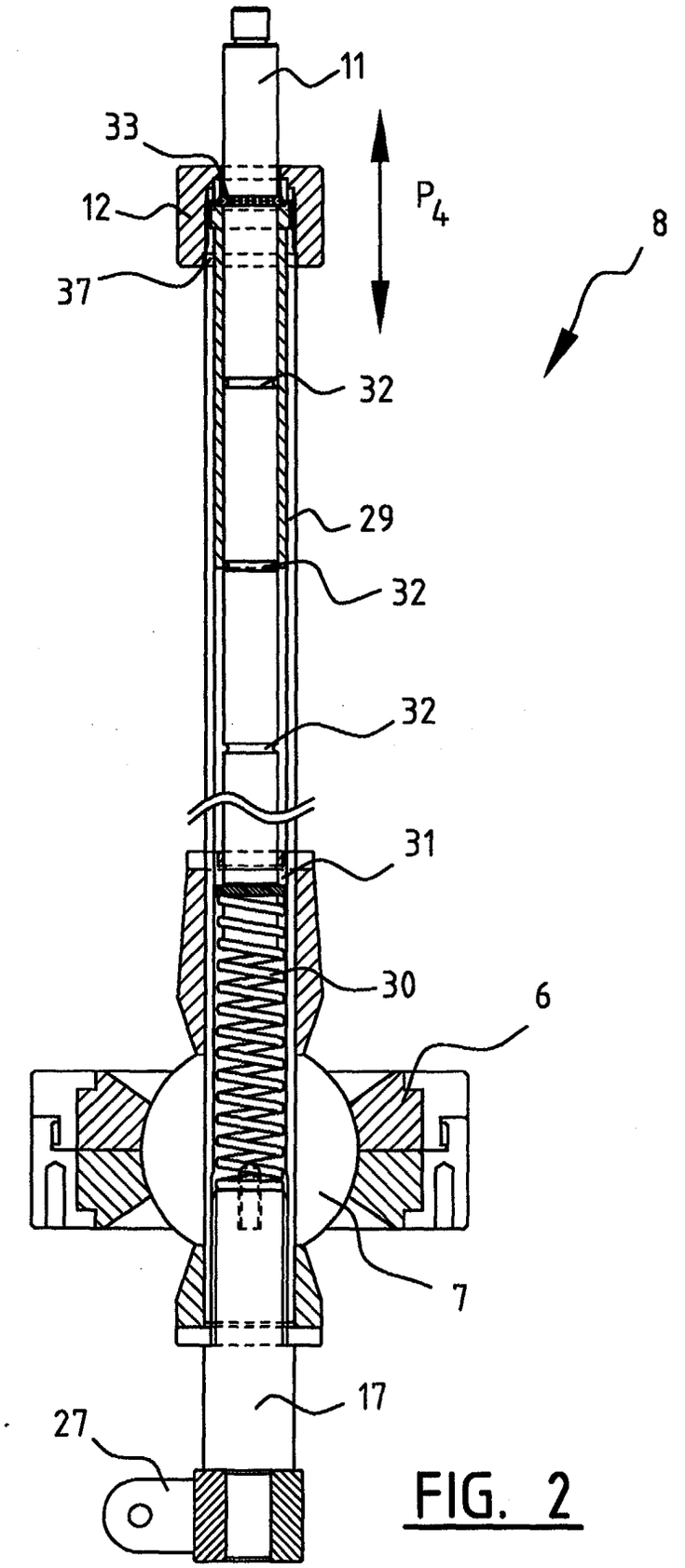

FIG. 2

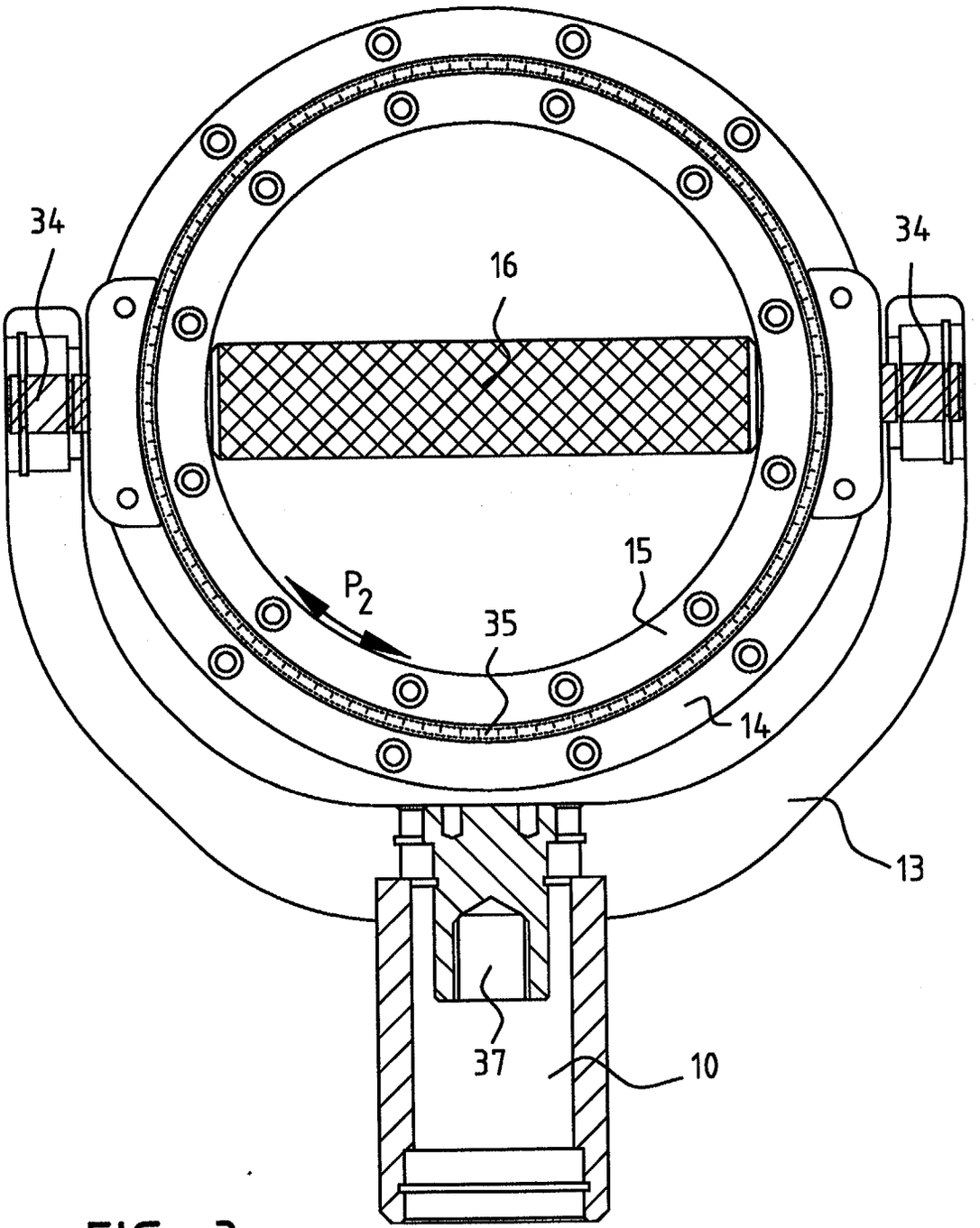

FIG. 3

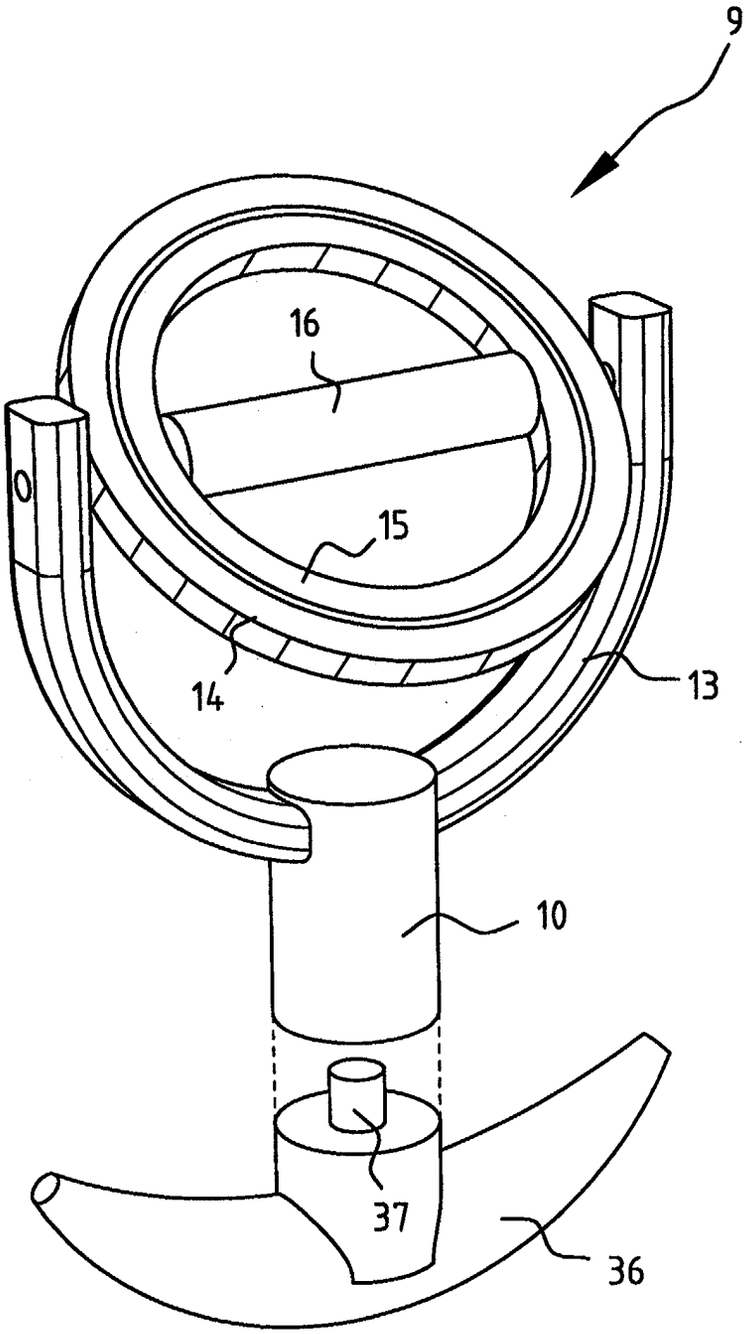

FIG. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 07 8138

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	US 4 872 668 A (MCGILLIS JOSEPH P ET AL) 10 October 1989 (1989-10-10) * column 2, line 13 - column 8, line 2; figures 1-19 *	1,3,4, 8-16,22 17-19	A63B21/008 A63B23/12
X	US 5 372 564 A (SPIRITO PAMELA J) 13 December 1994 (1994-12-13) * column 5, line 24 - column 10, line 56; figures 1-5 *	1,4-7, 13,16, 18,22	
X	US 3 587 319 A (ANDREWS WILLIAM J) 28 June 1971 (1971-06-28) * the whole document *	1-3,13, 16,18,22	
X	US 3 782 721 A (PASSERA F) 1 January 1974 (1974-01-01) * column 2, line 29 - column 3, line 3; figures 1,3 *	1,2,4, 10,13,22	
X	US 4 249 727 A (DEHAN CHARLES J) 10 February 1981 (1981-02-10) * column 2, line 45 - column 4, line 15; figures 1,2 *	1,2,5, 10,13,22	TECHNICAL FIELDS SEARCHED (Int.Cl.7) A63B
X	FR 2 564 735 A (JULLIEN GEORGES) 29 November 1985 (1985-11-29) * page 1, line 20 - page 2, line 38; figures 1-3 *	1-3,5, 10,11, 13,22	
X	FR 2 239 262 A (GAUBERT LOUIS) 28 February 1975 (1975-02-28) * the whole document *	1,2,5, 10,13,22	

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~~The present search report has been drawn up for all claims~~

Place of search	Date of completion of the search	Examiner
The Hague	1 April 2004	Oelschläger, H

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

EPO FORM 1503 03.82 (P04C01)

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 07 8138

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 0 259 134 A (HEALTH HABIT DEVELOPMENTS LIMI) 9 March 1988 (1988-03-09) * column 2, line 49 - column 6, line 14; figures 1-7 *	1,4,5, 10,14,22	
Y	US 5 178 160 A (GRACOVETSKY SERGE ET AL) 12 January 1993 (1993-01-12)	17-19	
A	* column 3, line 53 - column 6, line 50; figures 1-5 *	1-3,5, 10-13, 15,16, 18,22	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)

~~The present search report has been drawn up for all claims~~

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D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

European Patent Office

Application Number
EP 03 07 8138

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-19, 22

European Patent Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 03 07 8138

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-19, 22

Claims 1-19 disclose
a)an exercise device comprising
b)a frame,
c)at least one upright elongated element,
d)at least one pivot arranged between the frame and the upright element,
e)said end of the at least one elongated element being provided with a handle,
f)resistance means arranged between the elongated element and the frame;
and claim 22 discloses the use of such a device.

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2. claims: 20,22

Claim 20 discloses
g)a device for controlling the movement of an element comprising:
b)a frame,
c)at least one upright elongated element,
d)at least one pivot arranged between the frame and the upright element,
e)said end of the at least one elongated element being provided with a handle,
h)at least one sensor for providing displacement data,
i)means for controlling the movement of element;
and claim 22 discloses the use of such a device.

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3. claims: 21, 22

Claim 21 discloses
j)an exercise handle comprising:
k)a yoke, provided with means for connecting with a rod,
l)an outer ring, pivotably mounted to the arms of the yoke,
m)an inner ring, snugly fitted in the outer ring, the inner ring being rotatable in the outer ring,
n)a bar being rotatably mounted in the inner ring,
o)the connecting means are shaped so as to connect the yoke to one or more exchangeable weights;
and claim 22 discloses the use of such a handle.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 07 8138

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