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(54) Total body exercise equipment

(57) This invention is related with a total body exercise equipment, by which a person can exercise using four limbs, comprising a first crankshaft to which first crank arms having grips and a first sprocket are installed; a second crankshaft to which second crank arms having pedals, a second sprocket and a third sprocket are installed; a driven shaft to which a wheel and a driven sprocket are installed; a first driving force transmitting means so engaged with the first sprocket and the second sprocket that the torques of the first crankshaft and the second crankshaft are transmitted each other thereby the first crankshaft and the second crankshaft are linked; a second driving force transmitting means so engaged with the third sprocket and the driven sprocket that the torque of the third crankshaft is transmitted to the driven shaft thereby the driven shaft rotates; a frame to which the first and the second crankshafts are installed; a bracket on which the driven shaft is installed; and a base on which the frame and the bracket are fixed.

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Description

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[0001] The present invention relates in general to the field of exercise equipment, and more specifically, to a total body exercise equipment that allows a user to perform a total body exercise using four limbs effectively and safely.

DESCRIPTION OF THE RELATED ART

[0002] All the indoor cycles, steppers and elliptical trainers, typically well-known conventional exercise equipments to exercise conveniently and effectively indoor regardless of weather conditions, uses pedal mechanism for the exercise.

[0003] Regarding the indoor cycles, usually the frame of a conventional cycle is fixed on a base, and a wheel does not come into contact with the ground. A user rides on the cycle and steps on the pedals, thereby the wheel as an exercise load rotates idly, and the user can do cycle exercise indoor.

[0004] However, the effect of the bike exercise is focused mainly on the lower body, hardly on the upper body.

[0005] Korean Patent Publications, No. 10-2001-0020069 A1 (March 15, 2001), No. 10-0766426 B1 (October 12, 2007), No. 10-2009-0077360 A1 (July 15, 2009), Utility Model Publications No. 20-0334981 B1 (December 3, 2003), No. 20-0348843 B1 (May 3, 2004), and No. 20-2008-0005768 B1 (November 28, 2008) are the prior art for the conventional cycles.

[0006] A stepper is an apparatus for a user who performs an exercise emulating the action of mountain climbing and/or going up the stairs by stepping on both of the right and left side pedals. The stepper usually comprises a base part and a pair of pedals which is pivotally and rotatably mounted on the base part and moves up and down.

[0007] Korean Patent Publication No. 10-370816 B1 (March 28, 2003) and Utility Model Publication No. 20-419097 B1 (June 15, 2006) are the prior art for the steppers.

[0008] Elliptical trainers are the exercise machines of which pedals emulate the traces of human foot on walk. Generally, the elliptical trainers are known as aiming the total body exercise and comprise two handle bars which are installed on the pedals and oscillate back and forth in accordance with the movement of the pedals. However, the main function of the handle bars is to balance the posture of a user, and any substantial exercise effect is exerted on the upper part of a user.

[0009] As described above, most of the indoor exercise equipments are known or advertised that they aim a total body exercise. However, basically, the equipments use pedal, and therefore, the exercise effect on the upper body is relatively very small.

[0010] The purpose of the present invention is to provide a total body exercise equipment which is designed to solve the drawbacks of the conventional indoor exercise equipments as described above.

SUMMARY OF THE INVENTION

[0011] In order to solve the above-mentioned problems, according to a preferred embodiment, the present invention provides a total body exercise equipment comprising: a first crankshaft to which first crank arms having grips and a first sprocket are installed; a second crankshaft to which second crank arms having pedals, a second sprocket and a third sprocket are installed; a driven shaft to which a wheel and a driven sprocket are installed; a first driving force transmitting means so engaged with the first sprocket and the second sprocket that the torques of the first crankshaft and the second crankshaft are transmitted each other thereby the first crankshaft and the second crankshaft are linked; a second driving force transmitting means so engaged with the third sprocket and the driven sprocket that the torque of the third crankshaft is transmitted to the driven shaft thereby the driven shaft rotates; a frame to which the first and the second crankshafts are installed; a bracket on which the driven shaft is installed; and a base on which the frame and the bracket are fixed.

[0012] Preferably, gear is formed on the outer circumferences of the first sprocket, the second sprocket, the third sprocket and the driven sprocket, and the first driving force transmitting means and the second driving force transmitting means are timing belts.

[0013] Preferably, gear is formed on the outer circumferences of the first sprocket, the second sprocket, the third sprocket and the driven sprocket, and the first driving force transmitting means and the second driving force transmitting means are chain belts.

[0014] Preferably, idler guides are so installed to be engaged with inner circumference and outer circumference of the first driving force transmitting means to control the orbit and the tension of the first driving force transmitting means.

[0015] Optionally, the frame further comprises a saddle attachment part on which a saddle is attached.

[0016] Optionally, the frame further comprises a stationary grip.

[0017] Preferably, the total body exercise equipment further comprises a load applying means for applying load to the wheel and a load control means for controlling the load.

[0018] Preferably, the material of the wheel is metal, and the load applying means is a magnetism generating means which applies magnetism to the wheel.

[0019] Preferably, the load applying means is a pad which applies friction force to the wheel.

[0020] Preferably, the load control means comprises

a wire which moves the magnetism generating means toward the wheel and a spring which exerts tensile force to retreat the magnetism generating means back from the wheel.

[0021] Preferably, the load control means comprises a wire which moves the magnetism generating means away from the wheel and a spring which exerts compression force to push the magnetism generating means toward the wheel.

[0022] Preferably, the load control means comprises a wire which pulls the pad to be contact closely with the wheel and a spring which exerts tensile force to retreat the pad back from the wheel.

[0023] According to the preferred embodiment of the present invention, a user drives the first crankshaft by arms and the second crankshaft by feet. The first crankshaft and the second crankshaft are linked by the first driving force transmitting means. Consequently, the total body exercise equipment is so configured that a resultant torque of the first crankshaft torque and the second crankshaft torque made rotates the wheel as an exercise load, thereby a user can carry out total body exercise very effectively and safely.

[0024] Furthermore, since the guide idler is so adopted that the orbit of the first driving force transmitting means is conformed to an angle to maintain the lower body and upper body stable, hence a user can carry out total body exercise very effectively in a stable posture.

[0025] In addition, a user can increase or decrease the exercise load by adopting the load applying means and the load control means.

[0026] In addition, the total body exercise equipment according to the present invention can be used as in the same way with the conventional indoor bike exercise equipment since the optional saddle and the stationary grip are provided separately.

[0027] Other features, utilities, and advantages of various embodiments of the invention will be apparent from the following, more particular description of embodiments of the invention as illustrated in the accompanying drawings and set forth in the appended claims.

DESCRIPTION OF THE DRAWINGS

[0028] The detailed description will refer to the following drawings, wherein like numerals refer to like elements, and wherein:

Fig. 1 is a perspective view of the total body exercise equipment according to the present invention.

Fig. 2 is a partial sectional view representing the interior of the total body exercise equipment according to the present invention.

Fig. 3 is a drawing showing the structure for transmitting system of driving forces of the first crankshaft, the second crankshaft, the third crankshaft and the driven shaft in the total body exercise equipment according to the present invention.

Fig. 4 is a drawing representing another embodiment for the load applying means and the load control means in the total body exercise equipment according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0029] The nature and scope of the present invention will be better understood from the accompanying drawings, which are by way of illustration of a preferred embodiment of the total body exercise equipment according to the present invention and not by way of any sort of limitation.

[0030] Fig. 1 is a perspective view of the total body exercise equipment according to the present invention, in which the total body exercise equipment 100 has a similar shape overall to that of conventional indoor bike exercise equipment, and a base 110 for supporting the total body exercise equipment stably on the floor. In the drawing representing a preferred embodiment, most of structure related to the characteristic main parts of the total body exercise equipment according to the present invention is encased within a housing 120. However, the housing 120 is not an indispensible part, but an optional one provided for a better appearance and/or for convenience. Additionally, as shown in the drawing, a saddle 71 and a stationary grip 80 are attached to the housing for utilizing the total body exercise equipment according to the present invention as conventional indoor bike exercise equipment; however, they are not indispensible parts either.

[0031] Fig. 2 is a partial sectional view representing the interior of the total body exercise equipment according to the present invention in which the housing 120 is omitted, and Fig. 3 is a drawing showing the structure of a system for transmitting the driving forces (torques) from the first crankshaft, the second crankshaft and the third crankshaft to the driven shaft in the total body exercise equipment according to the present invention.

[0032] On the base 110 of the total body exercise equipment 100 represented in the drawings, a frame 60 and a bracket 61 are fixed. Frame 60 is, not particularly limited thereto, but preferably is made of metallic material, and has a shape that the lower part from the bottom end to the middle portion is upright and perpendicular to the base 110 and the upper part from the middle portion to the top end bends approximately 45 degrees forward.

[0033] The first crankshaft 10 is installed to near the top end of the frame 60 via conventional bearing means. First crank arms 12 are installed on the right and the left side of the first crankshaft 10. Grips 11 are provided to both of the first crank arms respectively, which are used to be grabbed by a user. A first sprocket 13, on which circumference gear is formed, is also installed to the first crankshaft 10.

[0034] As a user grabs the grips 11 and rotates the first crank arms 12, the first crankshaft 10 rotates.

[0035] The second crankshaft 20 is installed to near the middle portion of the lower part of the frame 60 via conventional bearing means. Second crank arms 22 are installed on the right and the left side of the second crankshaft 20. Pedals 21 are provided to the second crank arms 22 on which feet of a user can be put. A second sprocket 23 and a third sprocket 24 are installed on the second crankshaft 20. The second sprocket 23 is relatively small in diameter, and gear is formed around the outer circumferences of the second sprocket 23 and the third sprocket 24.

[0036] As a user put his or her feet on the pedals 21 and rotates the second crank arms 22, the second crankshaft 20 rates, thereby the second sprocket 23 and the third sprocket 24 rotate accordingly.

[0037] A first driving force transmitting means 40 for transmitting the torques between the first crankshaft 10 and the crankshaft 20 each other, and thus linking the crankshafts 10 and 20 is engaged around the gears which are formed on the outer circumferences of the first sprocket 13 and the second sprocket 23. The first driving force transmitting means 40 is preferably a timing belt, and gear, which is engaged to the gears formed on the outer circumferences of the first sprocket 13 and the second sprocket 23, is formed on the inner circumference face of the timing belt. However, the first driving force transmitting means 40 is not limited to the timing belt, but a chain belt or any other equivalents those can be engaged with the gear formed on the outer circumferences of the first sprocket 13 and the second sprocket 23 may be used as well without restriction.

[0038] Two guide idlers 42 are installed where the frame 60 bends and engaged with inner circumference and outer circumference of the first driving force transmitting means 40 respectively to control the orbit and the tension of the first driving force transmitting means 40 in the orbit formed by the timing belt as the first driving force transmitting means 40. The guide idlers 42 are so installed that the orbit of the first driving force transmitting means 40 follows the overall shape of the frame 60 and have a function to control the tension so that the timing belt does not come loose. To that purpose, the spacing between the guide idlers 42 is slightly narrower than the width of the orbit of the first driving force transmitting means 40, which is defined as the diameters of the first sprocket 13 and the second sprocket 14.

[0039] A bracket 61 is installed fixedly on the base 110, and a driven shaft 30 is installed on the bracket 61 via conventional bearing means. A wheel 32 as an exercise load, which is the same one as used in a conventional indoor bike exercise equipment, and a driven sprocket 32 is installed on the driven shaft 30.

[0040] Gear is formed on the outer circumferential surface of the driven shaft 30. A second driving force transmitting means 50 is engaged with the gears which are formed on the outer circumference of the driven sprocket 32 and the third of the sprocket 24 respectively for transmitting the torque from the third sprocket 24 to the driven sprocket 32. Similar to the first driving force transmitting means 40, the second driving force transmitting means 50 is composed of timing belt or chain belt, but any equivalents can be used if they can be engaged with the gears formed on the third sprocket 24 and the driven sprocket 32.

[0041] As the torque from the second crankshaft 20 is transmitted to the driven sprocket 32 via the third sprocket 24, the wheel 31 installed on the driven shaft 30 also rotates by the rotation of the driven sprocket 32.

[0042] On the other hand, a saddle attachment part 70 is installed near the position where the frame 60 bends, onto which a saddle 71 is attached. As described above, the saddle 71 is attached for a user to sit thereon and to use the total body exercise equipment according to the present invention as a conventional indoor bike exercise equipment.

[0043] In addition, near the upper end of the frame 60 a stationary grip 80 is fixed. The stationary grip 80 is held by a user when the user uses the total body exercise equipment according to the present invention as a conventional indoor bike exercise equipment, and rotates the pedals 21 to prevent his body from rocking from side to side.

[0044] On the other hand, since the wheel of the total body exercise equipment according to the present invention as an exercise load does not touch the ground, it is difficult to obtain sufficient exercise effects, therefore, a load applying means 90 for applying load to the wheel 31 and a load control means 91 for controlling the load volume applied to the wheel 31 are provided.

[0045] The load applying means 90 comprises a magnetism generating means 901 which applies attraction force to the wheel 31 in case that the material of the wheel 31 is metal. As the magnetism generating means 91, either a permanent magnet or an electro magnet can be used, and as can be seen from the Fig. 2, the magnetism generating means 91 preferably has the shape of a partial arc of a concentric circle corresponding to the arc of the wheel 31 and having larger diameter that that of the wheel 31.

[0046] The closer the magnetism generating means 901 approaches to the wheel 31, the bigger the attraction force exerted between them and vice versa, therefore, a user can regulate the exercise load volume which is appropriate for him or her by regulating the distance between the wheel 31 and the magnetism generating means 901 with the load control means 91.

[0047] The load control means 91, which allows a user to adjust the length of the wire 93 connected to the magnetism generating means 901 manually, pulls the wire 93 so that the magnetism generating means 901 approaches to the wheel 31. Unexplained number 94 is a tension spring which exerts stronger tensile force as the magnetism generating means 901 approaches to the wheel 31. When a user wants the magnetism generating means 901 to retreat back from the wheel 31, he or she let the wire come loose, then the tensile force of the ten-

sion spring 94 retreats the magnetism generating means 901 back from the wheel 31 against the attraction force of the magnetism generating means 901.

[0048] Load applying means 90 is not limited to such an embodiment, but, as shown in the Fig. 4, as an another embodiment, a magnetism generating means 901 in the form of partial arc can be installed inside the wheel 31 in such a manner that a compression spring 94 pushes the magnetism generating means 901 toward the wheel 31. A user can regulates the magnetism, as the exercise load, acting on the wheels by retreating the magnetic generating means 901 back from the wheel 31 against the compressive force of the compression spring 94.

[0049] As an alternative embodiment of the load applying means 90 using a physical friction force instead of magnetic force, a pad which contacts with the outer circumferential face of the wheel 31 can be adopted to apply the exercise load to the wheel 31. The volume of exercise load applied to the wheel 31 by the pad can be freely regulated by the wire 93 as the load control means 91 and spring 94 described above.

[0050] The working action of the total body exercise equipment according to the present invention configured as described above will be described below.

[0051] When a user put his or her feet on the pedals 21 and grabs the grips 11 with both hands to exercise with the total body exercise equipment according to the present invention, the posture of the user looks like that of a user arising from the saddle of a conventional sports bike to accelerate the bike and stepping on the pedals up and down rapidly.

[0052] As the user steps on the pedals, the second crankshaft 20 rotates, therefore, the driving force is transmitted to the first driving force transmitting means 40 engaged to the second sprocket 23 which, in turn, is installed on the second crankshaft 40, and the driving force will act to rotate the first crankshaft 10 via the first sprocket 13.

[0053] On the other hand, when the user grabs the grips 11 and rotates the crankshaft 10, since the first crankshaft 10 and the second crankshaft 20 are linked each other by the first driving force transmitting means (40), the first crankshaft 10 and the second crankshaft 20 rotate together by the resultant force due to the movement of the user's arms and legs.

[0054] Such resultant force is transmitted to the second driving force transmitting means 50 engaged to the third sprocket 24 which is, in turn, installed on the second crankshaft 20. Driving force as the resultant force is transmitted to the driven sprocket 32 engaged to the second driving force transmitting means 50 and to rotate the driven shaft 30 and the wheel 31 as the exercise load at the same time, which is installed on the driven shaft 30, hence a total body exercise using both arms and both legs at the same time is possible.

[0055] If the user needs more exercise load, the user manipulates the load control means 91 to pull the wire 93 connected to the load applying means 90, which approaches wheel 31 thereby the exercise load volume increases. On the other hand, if the user wants to decrease the exercise load, the user manipulates the load control means 91 to turn the wire connected to the load applying means 90 loose, and then the tension spring 94 exerts a tensile force to the load applying means 90 to retreat back from the wheel 31.

[0056] Especially, according to the total body exercise equipment of present invention, a total body exercise using four limbs of a human being evenly is possible.

[0057] For example, a user may aligns the first crankshaft 10 with the second crankshaft 20 in the same phase so that a pedal 21 and a grip 11 on one side and a pedal 21 and a grip 11 on the other side are rotated in a synchronized manner, thereby an arm and an leg of either side exercise simultaneously. Or, the first crankshaft 10 and the second crankshaft 20 can be aligned such that the grips and the pedals rotate in order of left arm, left leg, right arm, and right leg.

[0058] Of course, if a user does not want, the first crankshaft 10 and the second crankshaft 20 are not necessarily aligned in a synchronized manner. Instead, both crankshafts 10 and 20 can be aligned to have 90 degrees, 180 degrees or 270 degrees of phase difference.

[0059] It is evident for the skilled in the art that the pedals and the grips can be set to rotate in a totally different order of the sequence from the above-described manner in accordance with the purpose of a user, and that, at the same time, the crankshafts can be aligned at the time of manufacturing and/or using arbitrarily.

[0060] In addition, when a user does not want to do a total body exercise, but a conventional indoor bike exercise, the user sit on the saddle 71, grabs the stationary grip 80 and steps on the pedals 21. In this case, as the pedals 21 rotates, the first and second driving force transmitting means 40 and 50 which are engaged with the second sprocket 23 transmit the driving forces together, thus the first crankshaft (10) and the wheel (31) rotate simultaneously according to the rotation of the first sprocket (13) and the driven sprocket (32).

[0061] Even though the present invention described in detail based on the attached drawings and exemplary embodiments, which are not intended to limit the present invention, but various modifications and variations are possible in the scope of the appended claims to a skilled person in the art to which the present invention pertains.

Claims

1. A total body exercise equipment comprising:

   a first crankshaft to which first crank arms having grips and a first sprocket are installed; a second crankshaft to which second crank arms having pedals, a second sprocket and a third sprocket are installed;

   a driven shaft to which a wheel and a driven

sprocket are installed;
a first driving force transmitting means so engaged with the first sprocket and the second sprocket that the torques of the first crankshaft and the second crankshaft are transmitted each other thereby the first crankshaft and the second crankshaft are linked;
a second driving force transmitting means so engaged with the third sprocket and the driven sprocket that the torque of the third crankshaft is transmitted to the driven shaft thereby the driven shaft rotates;
a frame to which the first and the second crankshafts are installed;
a bracket on which the driven shaft is installed; and
a base on which the frame and the bracket are fixed.

2. The total body exercise equipment according to claim 1 wherein:

gears are formed on the outer circumferences of the first sprocket, the second sprocket, the third sprocket and the driven sprocket, and the first driving force transmitting means and the second driving force transmitting means are timing belts.

3. The total body exercise equipment according to claim 1 wherein:

gears are formed on the outer circumferences of the first sprocket, the second sprocket, the third sprocket and the driven sprocket, and the first driving force transmitting means and the second driving force transmitting means are chain belts.

4. The total body exercise equipment according to claim 2 or 3 wherein:

idler guides are so installed to be engaged with inner circumference and outer circumference of the first driving force transmitting means to control the orbit and the tension of the first driving force transmitting means to control the tension.

5. The total body exercise equipment according to claim 1 wherein:

the frame further comprises a saddle attachment part on which a saddle is attached.

6. The total body exercise equipment according to claim 1 wherein:

the frame further comprises a fixed grip.

7. The total body exercise equipment according to claim 1 wherein:

the total body exercise equipment further comprises a load applying means for applying load to the wheel and a load control means for controlling the load.

8. The total body exercise equipment according to claim 7 wherein:

the material of the wheel is metal, and the load applying means is a magnetism generating means which applies magnetism to the wheel.

9. The total body exercise equipment according to claim 7 wherein:

the load applying means is a pad which applies friction force to the wheel.

10. The total body exercise equipment according to claim 8 wherein:

the load control means comprises a wire which moves the magnetism generating means toward the wheel and a spring which exerts tensile force to retreat the magnetism generating means from the wheel.

11. The total body exercise equipment according to claim 8 wherein:

the load control means comprises a wire which moves the magnetism generating means away from the wheel and a spring which exerts compression force to push the magnetism generating means toward the wheel.

12. The total body exercise equipment according to claim 9 wherein:

the load control means comprises a wire which pulls the pad to be contact closely with the wheel and a spring which exerts tensile force to retreat the pad back from the wheel.

Fig. 1

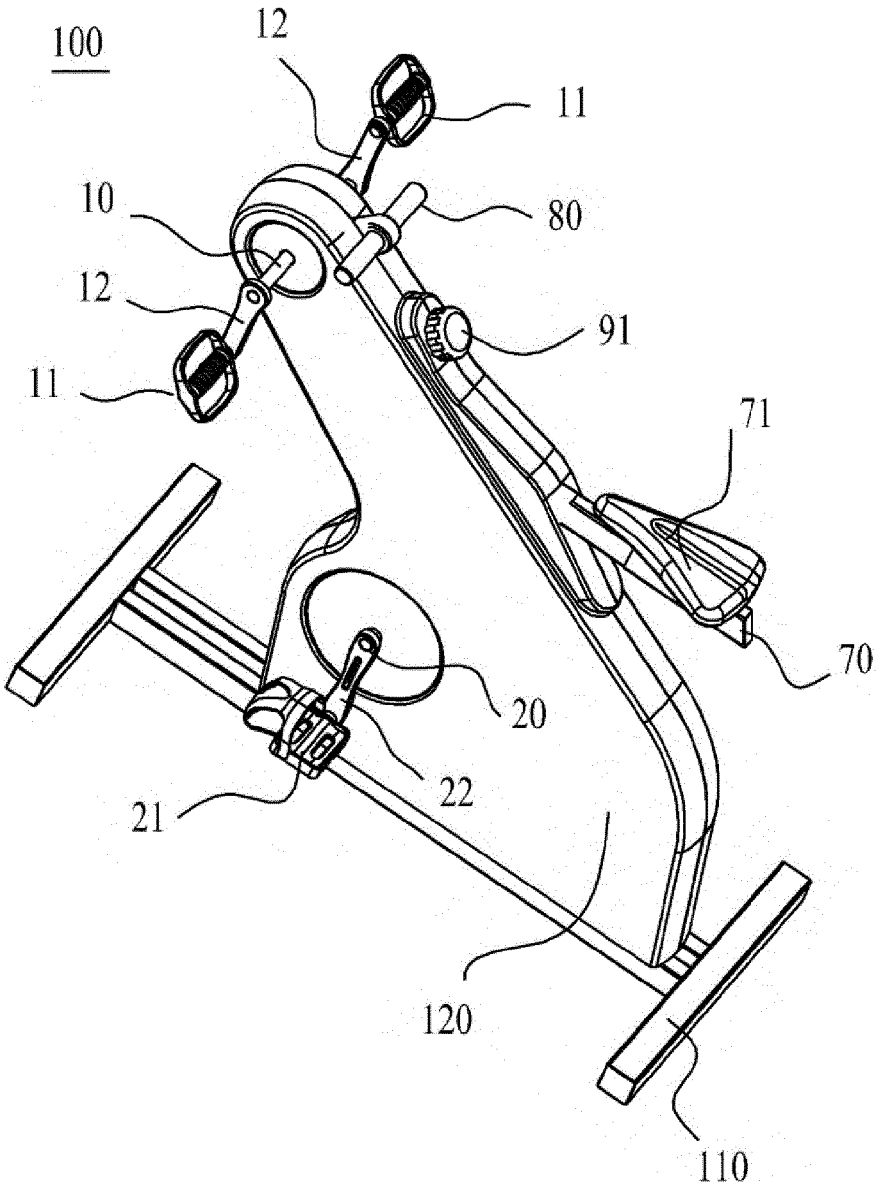

Fig. 2

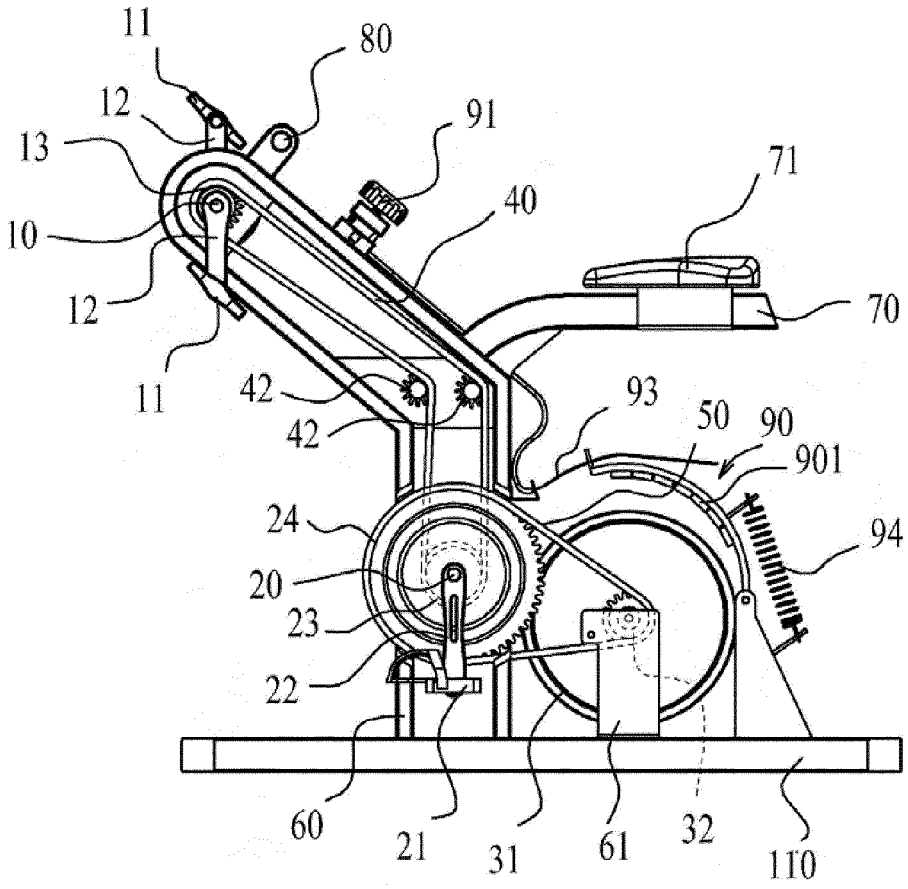
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Fig. 3

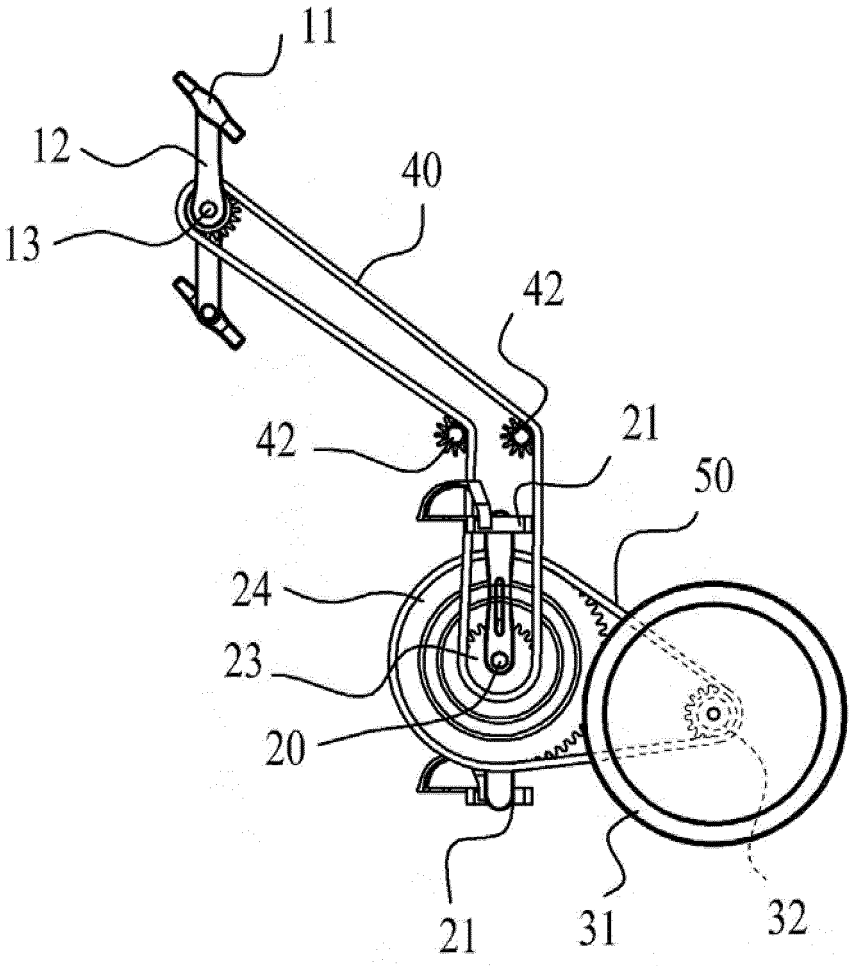
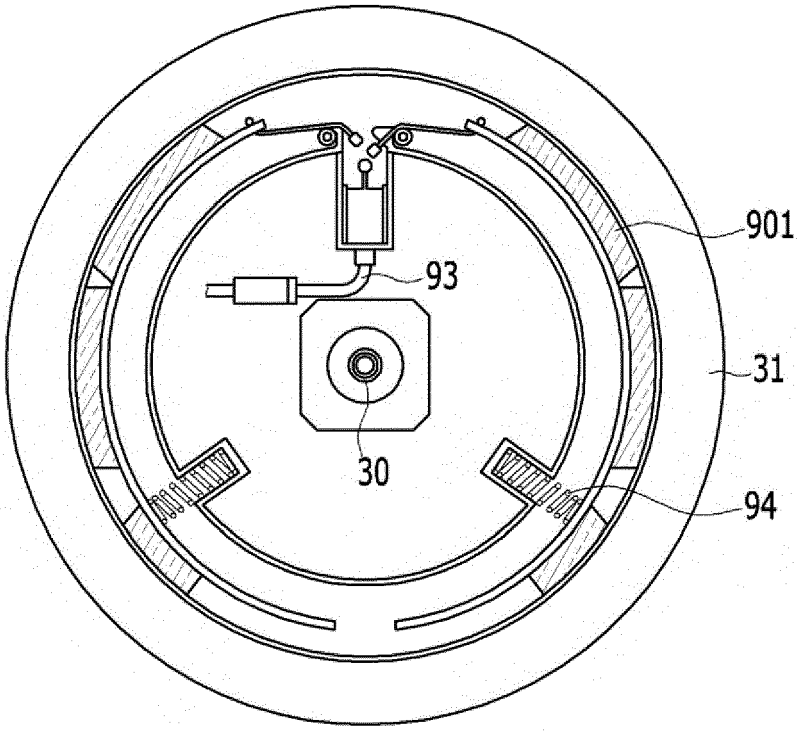


Fig. 4



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EUROPEAN SEARCH REPORT

Application Number
EP 14 15 5910

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)
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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
Munich	20 May 2014	Borrás González, E

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 14 15 5910

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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