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BICYCLE-TYPE EXERCISER WITH SIDE-BY-SIDE PARALLEL PEDALS

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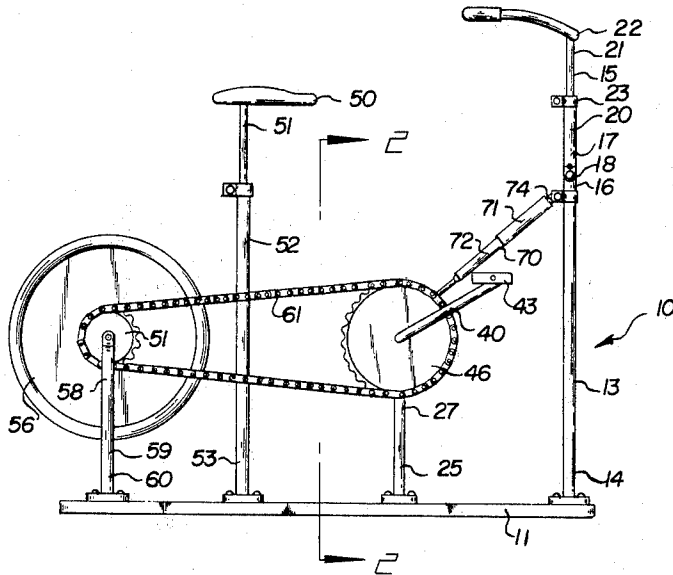


FIG. 1

FIG. 2

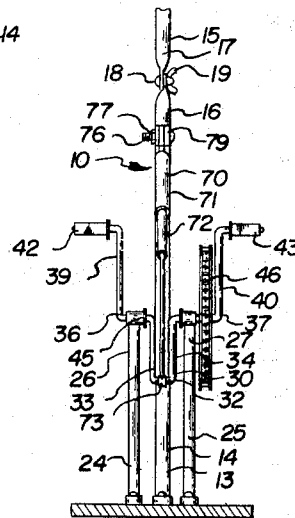
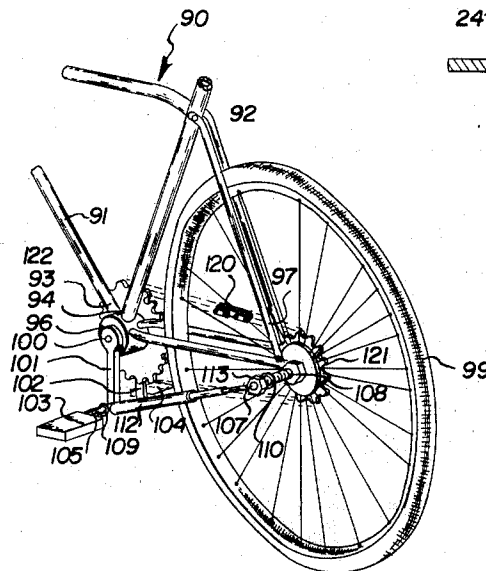


FIG. 3



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BICYCLE-TYPE EXERCISER WITH SIDE-BY-SIDE PARALLEL PEDALS

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8 Claims

ABSTRACT OF THE DISCLOSURE

A bicycle-type exerciser having pedal arms which extend in substantially side by side parallelism. The crank member for the pedals has a hydraulic damper attached thereto.

BACKGROUND OF THE INVENTION

This invention relates to exercising devices and more particularly to exercising devices of the bicycle-type.

It is the object of most exercisers of the bicycle type to provide, for the user, not only exercise for legs but also for the body and in particular for the muscles of the diaphragm of the chest.

To this end, most exercisers of this type are provided with pedals which are arranged in tandem and which are connected to a retarding mechanism, such as a brake, which requires the expenditure of considerable energy on the part of the user in order to operate the device.

It has always been evident that the simple pedalling action of most bicycle-type exercisers, where the pedals are arranged in tandem, provide little or no exercise for the body. To this end, therefore, most exercisers are arranged to provide for synchronized movement of the seat upon which the exerciser sits or upon movement of the handle bars with which most exercisers are provided so that the body must move either backwardly or forwardly or upwardly or downwardly as the pedals are rotated. Although this type of movement is beneficial, it will be appreciated that in order to obtain this movement, little or no effort is required of the body muscles. Consequently, although the leg muscles are well exercised, the body and particularly the muscles controlling the movement of the diaphragm, do not receive the proper amount of exercise.

SUMMARY OF THE INVENTION

The present invention provides a bicycle-type exerciser device which is so designed as to require strenuous use of the body muscles in order to effect the operation of the device and, consequently, results in the proper exercising of both body muscles and leg muscles.

Furthermore, the exercising device, in accordance with the invention, requires for its operation systematic and continuous changing of the body position between a crouched condition and an erect condition. This action of the body, together with the strains developed on the body muscles provides expansion and contraction of the diaphragm which consequently exercises all of the respiratory muscles.

In order to attain these ends the present invention provides a bicycle-type exerciser having its pedal arms arranged in substantially side by side parallelism so as to require movement of the user's legs in unison, which results in alternate straightening and bending of the body as he alternately presses his feet forwardly then lifts them upwardly in order to operate the exerciser. The present invention, furthermore, may include drag means to restrain free movement of the pedal arms.

BRIEF DESCRIPTION OF THE DRAWING

In the drawings which illustrate embodiments of the invention,

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FIGURE 1 is a side view of one of the embodiments, FIGURE 2 is a sectional view of the embodiment of FIGURE 1 taken along line 1—1 thereof, and FIGURE 3 is an isometric view of another embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGURES 1 and 2 of the drawings, 10 is an exercising device embodying one form of the invention. This exercising device is the stationary type which may be used in the home or gymnasium, and as illustrated, comprises an elongated base 11 which may be composed of a relatively wide wooden plank or the like at the forward end 12 of which is bolted an upright tow-piece stanchion 13 having a lower portion 14 and an upper portion 15. Both portions of the stanchions may be formed of tubular steel, the lower portion 14 having its upper end 16 flattened and the upper portion 15 having its lower end 17 flattened. The lower and upper portions 14 and 15 of the stanchion are hingedly interconnected by means of a bolt 18 passed through suitable apertures formed in both said flattened ends, said bolt being provided with a wing nut 19. This construction permits the upper portion 15 to be angularly oriented in a fore and aft direction relative to the lower portion 14. Into the upper end 20 of the upper portion 15 of the stanchion 13 slidably fits a tubular shaft 21, the latter carrying a pair of handle bars 22. The upper end 20 of said upper portion 15 is split and is provided with a split ring clamp 23 by means of which said upper end 20 may be compressed to bindably engage the tubular shaft 21.

Immediately aft of the stanchions 13 are a pair of transversely spaced apart upright braces 24 and 25 bolted securely at their lower ends to the base 11. Between the upper ends 26 and 27 of these braces 24 and 25 respectively, is rotatably mounted a crank member 30. This crank member 30 comprises a central U-shaped section having a base 32 and spaced apart arms 33 and 34, from the ends of which project laterally extending stub shafts 36 and 37 respectively, which rotatably extend through suitably aligned apertures, not shown, formed in the upper ends 26 and 27 of the braces 24 and 25 respectively. To the ends of each of the stub shafts 36 and 37 are secured pedal arms 39 and 40 respectively, to which are rotatably secured pedals 42 and 43 respectively. Washers 45 are positioned over both stub shafts 36 and 37 between the arms 33 and 34 and braces 24 and 25 so as to eliminate lateral movement of the crank member 30 relative to said braces 24 and 25, and a sprocket 46 is non-rotatably mounted on stub shaft 37 in a manner well known to the industry. Furthermore, the crank base 32 and stub shafts 36 and 37 are each ground to present a true cylindrical cross section.

Although crank member 30 and pedal arms 39 and 40 have been shown in unitary form for the sake of clarity, it is to be understood that, for ease of assembly, the entire crank member may be formed of separate detachable parts, that is, the pedal arms 39 and 40 may be detachably secured to the stub shafts 36 and 37 respectively, and the foot pedals 42 and 43 likewise detachably secured to said pedal arms 39 and 40 respectively.

The angular orientation of pedal arms 39 and 40 with respect to each other is of prime importance. As illustrated in the drawings, it will be observed that the pedal arms extend in side by side relationship rather than in the tandem relationship common to bicycle-type exercisers so that the pedals rotate in unison. Although this side by side relationship is preferred, these pedal arms may be positioned so that they extend between a position of side by side relationship and a position substantially at right angles to each other.

Immediately behind the braces 24 and 25 is a seat 50 mounted at the upper end 51 of a two-part telescopically adjustable support 52, preferably formed of tubular steel, the latter being securely bolted at its lower end 53 to the base 11.

A flywheel 56 have a toothed sprocket 57 suitably secured thereto for rotation therewith, is mounted for rotation between the upper ends 58 of a pair of standards 59 (one being shown in FIGURE 1), said standards being positioned behind the support 52 and bolted at their lower ends 60 to the base 11. The sprockets 57 and 46 are operatively connected for mutual rotation by means of a chain 61.

As is common with most bicycle-type exercising devices, exerciser 10 may be provided with a drag to prevent free rotation of the crank member 30 in order that the person operating the device is required to impose a strain on his muscles. The drag employed in exerciser 10 is a hydraulic damper 70 which preferably is of the double-acting piston and cylinder type and which, as illustrated in FIGURES 1 and 2, has telescopically extensible and retractable outer and inner tubular shell sections 71 and 72. The sections are provided with sleeve-type end connectors 73 and 74. Connector 73 is rotatably journaled on the base 32 of the crank member 30, and the other connector 74 is journaled on the shank 76 of a bolt 77 which is passed through a pair of spaced ears 79 secured to the adjacent upper end 16 of the upper portion 15 of the stanchion 13.

In the use of exerciser 10, a person requiring exercise seats himself on the seat 50, rotates the crank member 30 to position the pedal arms in a forwardly extending position, and grasps the handle bars with both hands. Both feet are then forced downwardly on the pedals and at the same time the hands are pulled upwardly against the handle bars. The pedals will move downwardly, rotating the flywheel. The momentum of the latter will then rotate the pedal arms upwardly until the pedals again attain a position to be pressed downwardly and forwardly by the feet. Free rotation of the crank member 30 will be retarded by the dampening action of the damper 50 and the flywheel on the down stroke which resist the forward and downward movement of the pedals while the damper resists their upward movement. In order therefore for the exerciser to impart sufficient momentum to the flywheel to return the pedals to their forward position, the downward force he exerts upon the pedals must be substantial. In order to exert the required force, he must straighten out his body when applying pressure with his feet against the pedals and must lift his feet from the pedals when the latter reach the lowest point of their rotational path. In order to properly lift his feet from the pedals, he must usually bend his body forwardly. This alternate straightening and bending of the body results in alternate expansion and contraction of the chest, and the general exercising of all body muscles as well as the muscles of the leg.

It will be appreciated that exerciser 10 may be adjusted as to height to suit individuals of all sizes. Furthermore, dampers may be employed which are quickly and easily adjustable to provide a weak retarding action for those taking exercise who have weak muscles, and a stronger retarding action for athletes and the like.

FIGURE 3 illustrates an alternative form of exercise device. Exerciser 90 is simply an adaption of a standard bicycle, consequently, in FIGURE 3 there is illustrated only the after portion of a conventional bicycle, the latter having a pair of convergent frame members 91 and 92, at the lower ends 93 and 94 of which is welded a crank housing 96. A pair of spaced frame members 97 extend rearwardly from housing 96, and the rear wheel 99 of the bicycle is mounted between these frame members in the conventional manner and acts as a flywheel member. The housing 96 rotatably supports a shaft 100 to which a pair of pedal arms 101 and 102 are non-rotatably se-

cured, said pedal arms having secured to their free end pedals 103 and 104 respectively. Exerciser 90 differs from the standard bicycle in that pedal 103 has an extra long pedal shaft 105 which spaces said pedal 103 a considerable distance outwardly of pedal arm 101. In addition, the rear wheel axle 107 is elongated to provide a pintle 108 extending laterally from the bicycle on the same side thereof as pedal 103. To the pintle 108 and the extended pedal shaft 105 are rotatably secured end connectors 109 and 110, respectively, of a double-acting piston and cylinder type hydraulic damper 112. The outer end portion of the pintle 108 is threaded to receive a nut 113 to retain connector 110 in position thereover. It will be appreciated that the damper 112 may be connected to any other suitable part of the frame of the bicycle, if desired.

The pedal arms 101 and 102 of exerciser 90 are positioned so that they extend in side by side relationship in the same manner as the pedal arms 39 and 40 of exerciser 10, although said arms may be angled up to about 90° from each other. Exerciser 90 also includes a sprocket 120 non-rotatably secured to the shaft 100 for rotation therewith, and a sprocket 121 secured to the rear wheel for rotation of the latter, both sprockets being connected for mutual rotation by a chain 122.

The operational characteristics of exerciser 90 are exactly the same as those of exerciser 10. However, whereas in exercise device 10 the momentum of the flywheel is utilized to rotate the pedal arms operatively from the lowermost point of the rotational path to a point in which they can again be depressed by the feet, the forward motion imparted to exerciser 90 when the pedals are depressed is sufficient to carry said pedals around to a position in which they again can be depressed. The normal resistance to forward motion is sufficient to give the appreciable resistance required for a mild degree of exercise on an ordinary bicycle in which case damper 112 can be omitted or rendered ineffective. For vigorous exercise on level ground at lower speeds, an added form of resistance in the form of the damper is needed. Beyond a limited rotational speed of wheel 99, it is impractical to increase the bicycle speed to gain resistance, as the resultant violent motion is unacceptable.

I claim:

1. A fixed exercising device comprising a supporting frame, a seat mounted on the frame, a hand supporting member mounted on the frame forwardly of the seat, a crank member having pedal arms mounted for rotation on the frame below the seat, said pedal arms being angularly arranged relative to their axis of rotation so that the included angle of said arms is not greater than 90° a flywheel member mounted for rotation on the frame, means operatively connecting the flywheel member and crank member in driven and driving engagement and reciprocatory damping means operatively connected to the crank member for retarding free rotation thereof.

2. An exercising device as claimed in claim 1 where the pedal arms are arranged in side-by-side parallelism.

3. An exercising device claimed in claim 1 in which the damper comprises a hydraulic damper extending between and connected to the crank member and frame.

4. An exercising device comprising a supporting frame, a seat mounted on the frame, a hand supporting member mounted on the frame forwardly of the seat, a pair of vertically extending, transversely spaced supports secured to the frame below the seat, a crank member rotatably mounted between the upper ends of said support, said crank member having a central U shaped member and pedal arms extending from each end of said U shaped member, said pedal arms extending in spaced, substantially side-by-side parallelism relative to each other, a flywheel member mounted for rotation on the frame and means operatively connecting the flywheel member and crank in driven and driving engagements.

5. A exercising device as claimed in claim 4 including drag means extending between and connected to the U-

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shaped member and the frame for retarding free rotation of the crank member.

6. An exercising device as claimed in claim 4 in which the drag means comprising a double acting piston and cylinder type hydraulic damper.

7. An exercising device comprising a frame, a driven wheel and a crank member having pedal arms, said pedal arms being angularly arranged relative to their axis of rotation so that the included angle of said arms is not greater than 90°, said crank member being directly connected in driving and driven engagement with said rear wheel and reciprocating damper means connected between said crank member and a frame part for retarding free rotation of the crank member.

8. An exercising device comprising a frame, a driven wheel and a crank member having pedal arms, said pedal arms being angularly arranged relative to their axis of rotations so that the included angle of said arms is not greater than 90, said crank member being directly con-

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nected in driving and driven engagement with said wheel and a piston and cylinder type hydraulic damper extending between and being connected to, one of the pedal arms and the frame.

References Cited

UNITED STATES PATENTS

2,286,154	6/1942	Norred	280—261
3,373,992	3/1968	Ludeman	272—73

FOREIGN PATENTS

351,858	7/1905	France.
1,072,001	9/1954	France.

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