Feb. 10, 1970 B. D. PARSONS 3,494,616

CYCLE-TYPE EXERCISER HAVING A FLUID PUMP RESISTANCE

Filed Feb. 15, 1968 2 Sheets-Sheet 1

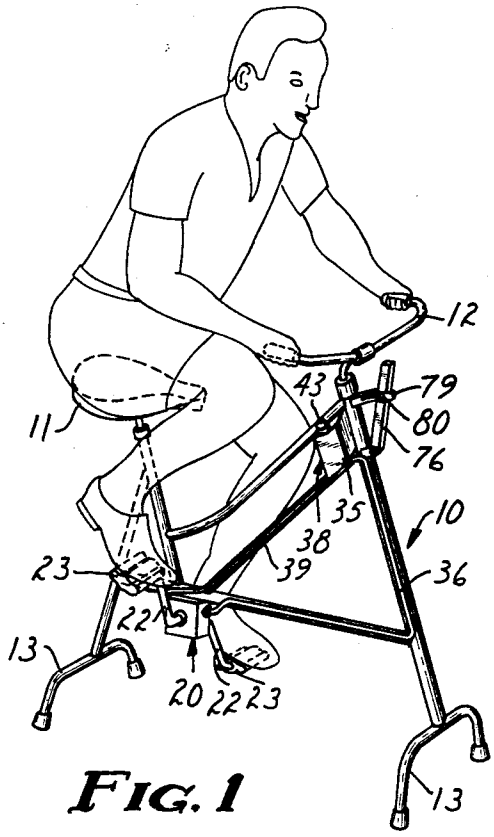


FIG. 1

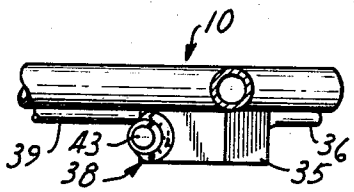


FIG. 3

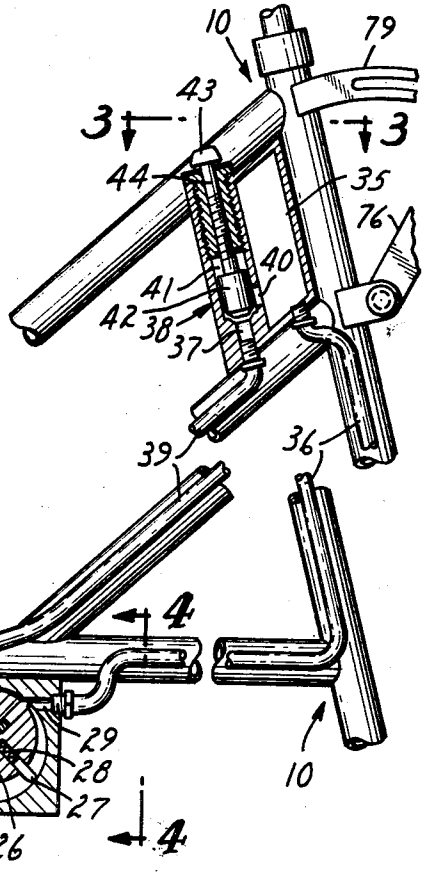


FIG. 2

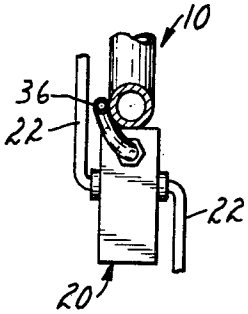


FIG. 4

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CYCLE-TYPE EXERCISER HAVING A FLUID PUMP RESISTANCE

Filed Feb. 15, 1968 2 Sheets-Sheet 2

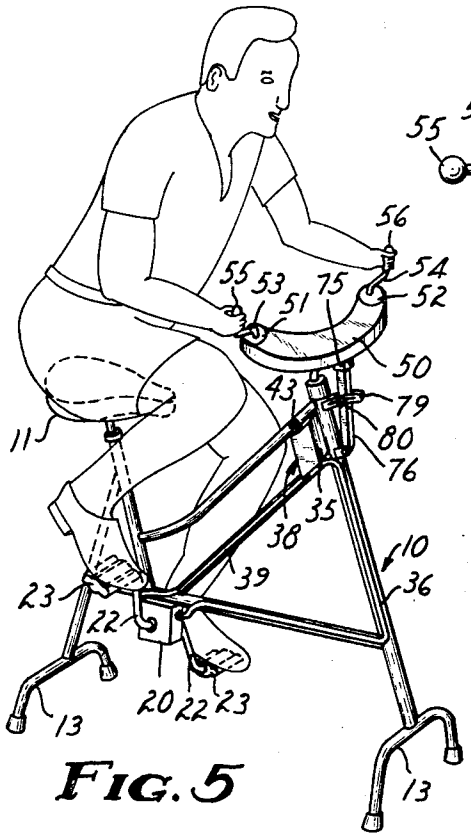


FIG. 5

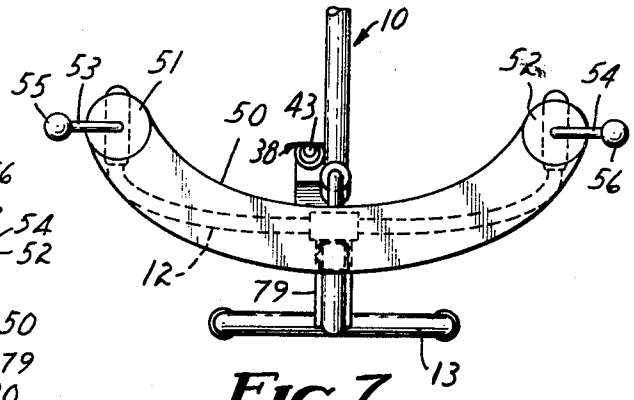


FIG. 7

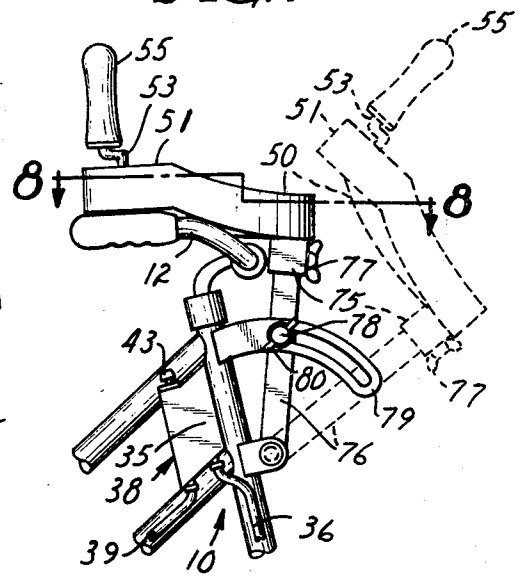


FIG. 6

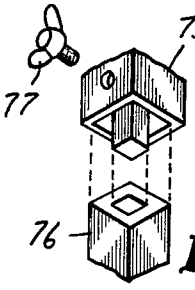


FIG. 10

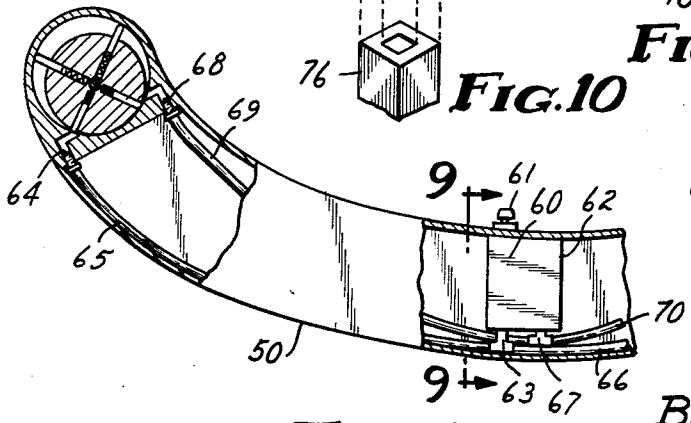


FIG. 8

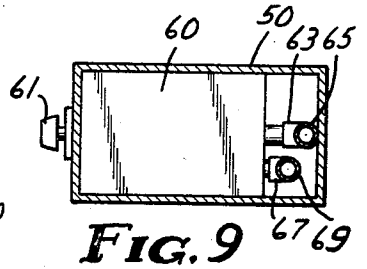


FIG. 9

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CYCLE-TYPE EXERCISER HAVING A FLUID PUMP RESISTANCE

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Filed Feb. 15, 1968, Ser. No. 705,842
Int. Cl. A63b 23/04, 69/16, 21/00
U.S. Cl. 272—73 1 Claim

ABSTRACT OF THE DISCLOSURE

A cycle-type frame with a seat and handlebars thereon and foot operated pedals attached to a fluid pump connected in a fluid circuit with a valve to vary the resistance to fluid flow in the circuit and a second fluid circuit having a pair of hand operated pumps and a valve therein for varying the resistance to fluid flow caused by the two hand pumps in the second circuit. The hand operated pumps are mounted on a frame pivotally attached to the cycle-type frame so that they can be moved into overlying relationship with the handlebars and operated simultaneous with the foot pedals or separately.

BACKGROUND OF THE INVENTION

Field of the invention

It is currently the practice to utilize various types of exercisers at home, in gyms and athletic clubs, and for training in various sports, to maintain the human body in good physical condition. In general, these exercisers are designed to provide exercise for various muscles in the body, such as arms, legs, etc.

Description of the prior art

In the prior art it is generally common to provide a single machine or exerciser for the exercise of each of the various parts or muscles of the body. That is, cycle-type exercisers include only pedals for exercising the legs. Also, in most instances it is very difficult to adjust the exercisers so that they provide the proper exercise for various types and sizes of individuals.

SUMMARY OF THE INVENTION

The present invention pertains to a cycle-type exerciser having a seat and handlebars attached thereto with foot operable pedals attached to a fluid pump connected in a fluid circuit with a valve conveniently adjustable by the operator to vary the resistance to fluid flow in the circuit, the exerciser further has a pair of hand operable pumps connected in a circuit with a valve adjustable to vary the resistance to fluid flow in the circuit and attached to the exerciser so they are movable into a position in overlaying relationship with the handlebars whereby the arms and legs can be exercised individually or simultaneously.

It is an object of the present invention to provide a new and improved cycle-type exerciser.

It is a further object of the present invention to provide an exerciser for exercising the legs and/or the arms of an individual.

It is a further object of the present invention to provide an exerciser which is conveniently and quickly adjustable for use by various sizes and types of individuals.

These and other objects of this invention will become apparent to those skilled in the art upon consideration of the accompanying specification, claims, and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring to the drawings, wherein like characters indicate like parts throughout the figures:

FIGURE 1 is a view in perspective of the cycle-type exerciser with the arm exerciser removed therefrom;

FIGURE 2 is an enlarged view in side elevation of the apparatus illustrated in FIGURE 1, parts thereof removed and parts thereof broken away and shown in section;

FIGURE 3 is a sectional view as seen from the line 3—3 in FIGURE 2;

FIGURE 4 is a sectional view as seen from the line 4—4 in FIGURE 2;

FIGURE 5 is a view similar to FIGURE 1 with the arm exerciser in place;

FIGURE 6 is an enlarged view in side elevation of the apparatus illustrated in FIGURE 5, parts thereof removed;

FIGURE 7 is a view in top plan of the apparatus illustrated in FIGURE 6 rotated 90°;

FIGURE 8 is an enlarged sectional view as seen from the line 8—8 in FIGURE 6;

FIGURE 9 is an enlarged sectional view as seen from the line 9—9 in FIGURE 8, rotated 90°; and

FIGURE 10 is an enlarged detail view in perspective of a device for mounting the arm exerciser.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawings a cycle-type frame generally designated **10** is constructed somewhat after the fashion of a bicycle but may be any frame adapted to have a seat **11** and handlebars **12** affixed thereto in the proper orientation. The cycle-type frame **10** has a pair of stands **13** attached to the bottom thereof to maintain it upright during operation. The seat **11** and handlebars **12** are the usual type found on cycles and are vertically adjustable to allow various sized individuals to operate the apparatus.

A fluid pump generally designated **20** is fixedly attached to the cycle-type frame **10** in a spaced relationship below the seat **11**. The fluid pump **20** has a rotatable shaft **21** extending therethrough with pedal cranks **22** and pedals **23** attached thereto. The fluid pump **20** is attached to the cycle-type frame **10** so that the pedals **23** are in a position relative to the seat **11** and handlebars **12** similar to the position of the pedals on a bicycle. It should be understood that the pedals **23** might be mounted in a variety of embodiments to operate the fluid pump **20**, for example belts or chains might be connected from a sprocket operated by the pedals **23** to the sprocket operating the fluid pump **20**. It is intended that all embodiments which perform the functions of this invention come within the scope thereof.

In this embodiment the pump **20** is a typical rotary pump having a cylindrical chamber **25** with an eccentrically mounted cylinder **26** therein. The cylinder **26** has four paddles **27** extending radially outwardly therefrom and spaced 90° apart. The paddles **27** are engaged in grooves in the cylinder **26** and biased outwardly by compression springs **28**. The springs **28** urge the paddles **27** outwardly so the outer edges thereof are always in contact with the inner surface of the cylindrical chamber **25**, thereby, dividing the portion of the chamber **25** around the cylinder **26** into four portions. An inlet **29** and an outlet **30** are in communication with the chamber **25** at points approximately 90° apart. The cylinder **26** is mounted within the chamber **25** so that it engages the inner surface of the chamber **25** between the inlet **29** and the outlet **30**. Thus, as the cylinder **26** rotates in a clockwise direction (as viewed in FIG. 2) the paddles **27** produce an expanding portion of the chamber **25** in communication with the inlet **29**, which draws fluid into the chamber **25**. On the opposite side of the cylinder **26** the paddles **27** produce a constricting portion of the chamber

25 in communication with the outlet 30 which forces fluid outwardly through the outlet 30. Thus, rotation of the cylinder 26 within the chamber 25 produces a pumping action. It should be understood that other pumps might be utilized and the fluid pump 20 is simply one embodiment utilized for illustrative purposes.

The inlet 29 of the pump 20 is connected to a fluid reservoir 35 by a fluid conduit 36. The outlet 30 of the pump 20 is connected to an inlet 37 of a valve generally designated 38 by a fluid conduit 39. An outlet 40 of the valve 38 is connected to the reservoir 35. Thus, the inlet 29 and outlet 30 of the pump 20 are connected in a fluid circuit containing the valve 38. The valve 38 includes a chamber 41 having a plunger 42 mounted therein for axial movement through rotation of an externally positioned control knob 43. The control knob 43 is attached to the plunger 42 by means of a threaded shaft 44 which is threadedly engaged in the body of the valve 38 to cause axial movement of the plunger 42 with rotation of the control knob 43. The plunger 42 and chamber 41 are so constructed that movement of the plunger 42 toward the inlet 37 causes further restriction thereof and increased resistance to the flow of fluid through the conduit 39 and valve 38 while movement of the plunger 42 in the reverse direction decreases the resistance. Thus, rotation of the control knob 43, positioned adjacent the handlebars 12, increases or decreases the resistance to rotation of the pedals 23 and pedal cranks 22, whereby, the amount of work the operator is performing is increased or decreased.

A second frame 50, which includes a generally arcuate shaped housing adapted to be positioned in overlying relationship to the handlebars 12, has two manually operable pumps 51 and 52 mounted in the ends thereof. The pumps 51 and 52 are the same type as pump 20, each having a rotatable shaft 53 and 54, respectively, affixed thereto. The pumps 51 and 52 are mounted so that the shafts 53 and 54 extend vertically upwardly approximately above each of the handles of the handlebars 12. The shafts 53 and 54 have cranks 55 and 56 attached thereto for manual rotation of the shafts 53 and 54.

A valve 60 similar to valve 38 and having a control knob 61 is attached within the frame 50 adjacent the center thereof for convenient access of the control knob 61. A reservoir 62 is associated with the valve 60 with the outlet of the valve 60 in communication with the inlet of the reservoir 62 (not shown). The valve 60 has an inlet 63 which is in communication with an outlet 64 of the pump 51 through a fluid conduit 65 and the outlet of the pump 52 (not shown) through a fluid conduit 66. An outlet 67 of the reservoir 62 is in communication with an inlet 68 of the pump 51 through a fluid conduit 69 and the inlet of the pump 52 (not shown) through a fluid conduit 70. Thus, the inlets and outlets of the pumps 51 and 52 are connected in a circuit with the valves 60 so that rotation of the control knob 61 increases or decreases the resistance to fluid flow in the circuit and increases or decreases the amount of work necessary to rotate the cranks 55 and 56.

To mount the frame 50 on the cycle-type frame 10, the frame 50 has attached thereto a tubular member 75 having a generally rectangular shaped cross-section and engaged over a second tubular member 76, with a similary shaped cross-section but smaller dimensions, for relative telescoping movements therebetween. A thumb screw 77 is threadedly engaged through the tubular member 75 for engagement with the tubular member 76 to maintain the two members 75 and 76 in a fixed position relative to each other. The tubular member 76 is pivotally attached adjacent the lower end thereof to the cycle-type frame 10. The pivotal connection of the tubular member 76 to the frame 10 is such that the frame 50 can be rotated into overlying relationship above the handlebars 12 or forwardly into a position spaced from the handlebars 12 (illustrated in dotted lines in FIG. 6). A bolt 78 extends outwardly from either side of the member 76 and is engaged through arcuate slots in guide members 79 on either side thereof. Wingnut 80 is threadedly engaged on the threaded end of the shaft 78 and serves to maintain the tubular member 76 in any desired position relative to the guide members 79. Thus, the frame 50 can be moved into overlying relationship above the handlebars 12 and the wingnut 80 tightened so that the apparatus is maintained in this position.

Thus, a cycle-type exerciser is disclosed wherein the legs are exercised by rotating the pedals 23 and pedal cranks 22 to cause the fluid pump 20 to move fluid in the fluid circuit attached thereto. The amount of work required to rotate the pedals 23 and pedal cranks 22 can be increased or decreased by rotation of the control knob 43 conveniently positioned adjacent the handlebars 12. The operator's arms can also be exercised by moving the frame 50 into overlying position above the handlebars 12 and rotating the cranks 55 and 56. The amount of work required to rotate the cranks 55 and 56 is conveniently adjusted by rotation of the control knob 61 mounted adjacent the center of the handlebars 12, which control knob 61 increases or decreases the resistance to fluid flow in the circuit containing the pumps 51 and 52. The control knobs 43 and 61, through the valves 38 and 60 provide continuous adjustment of the resistance in the fluid circuits so that both circuits can be adjusted to accommodate any desired operator.

While I have shown and described a specific embodiment of this invention, further modifications and improvements will occur to those skilled in the art. I desire it to be understood, therefore, that this invention is not limited to the particular form shown and I intend in the appended claims to cover all modifications which do not depart from the spirit and scope of this invention.

What is claimed is:

1. A cycle-type exerciser comprising:
   (a) a frame having a stand thereon for maintaining said exerciser upright;
   (b) a seat affixed to said frame;
   (c) a fluid pump having an inlet, an outlet and a rotatable shaft connected thereto with pedal cranks attached to said shaft for rotation therewith, said pump being attached to said frame in spaced relationship below said seat;
   (d) pedals attached to said pedal cranks;
   (e) handlebars attached to said frame in spaced relationship forward of said seat; and
   (f) a closed fluid circuit in communication with the inlet and outlet of said fluid pump and including adjustable valve means for varying the resistance to fluid flow in said circuit, said valve being attached to said frame adjacent said handlebars for convenient manipulation by an operator.

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272—79