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[21] Appl. No. **735,011**
[22] Filed **June 6, 1968**
[45] Patented **Jan. 26, 1971**

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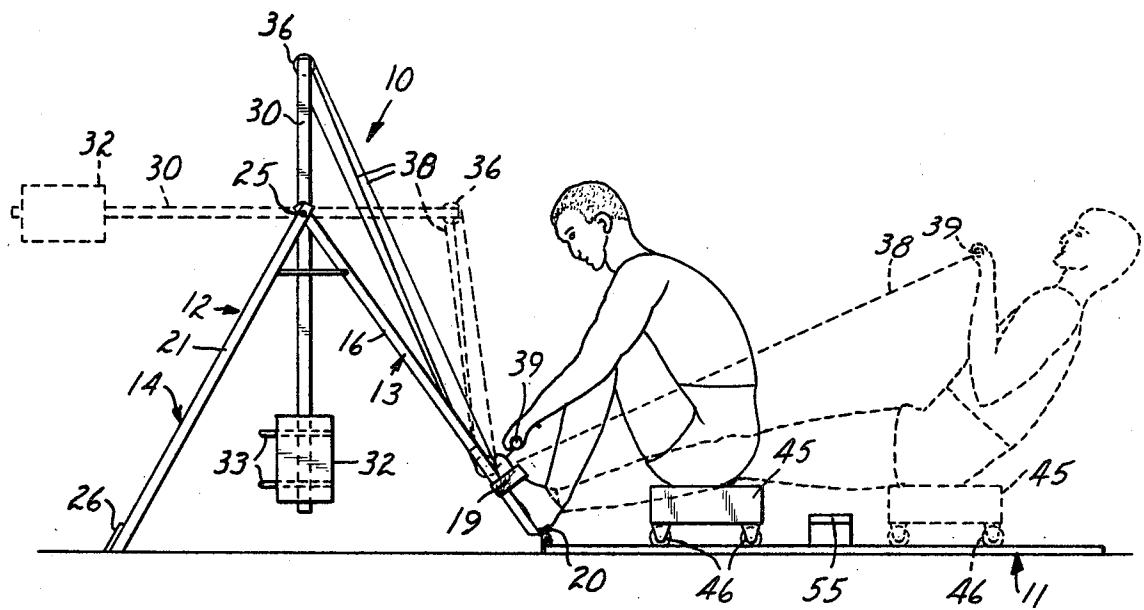
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[54] **EXERCISING DEVICE USING PENDULUM
WEIGHT AND PULLEY SYSTEM**
5 Claims, 9 Drawing Figs.

[52] U.S. Cl. 272/72,
272/81
[51] Int. Cl. A63b 69/06
[50] Field of Search 272/72, 80,
81

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ABSTRACT: A frame having a horizontal portion with a wheeled seat positioned thereon and movable longitudinally therealong and an inverted V-shaped portion pivotally attached to one end of the horizontal portion, an elongated arm pivotally attached at the apex of the inverted V-shaped portion with a weight affixed to one end and adjustable as to the size and position thereof, and pulley and rope means affixed between the inverted V-shaped portion of the frame adjacent the junction thereof with the horizontal portion and the free end of the elongated arm so that pulling on one end of the rope causes the arm to pivot and the weight to rise. By measuring the length of stroke (the length the rope is pulled and the distance the wheeled seat is moved) and the amount and position of weight at the end of the arm, the work accomplished can be accurately calculated.



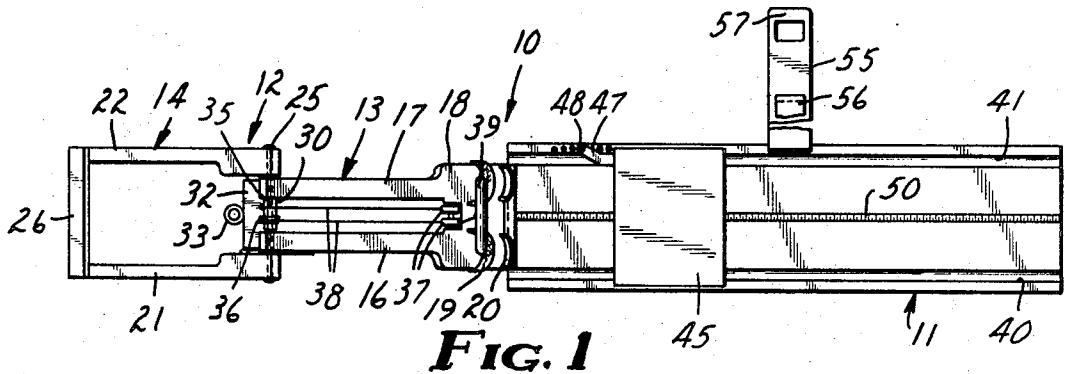


FIG. 1

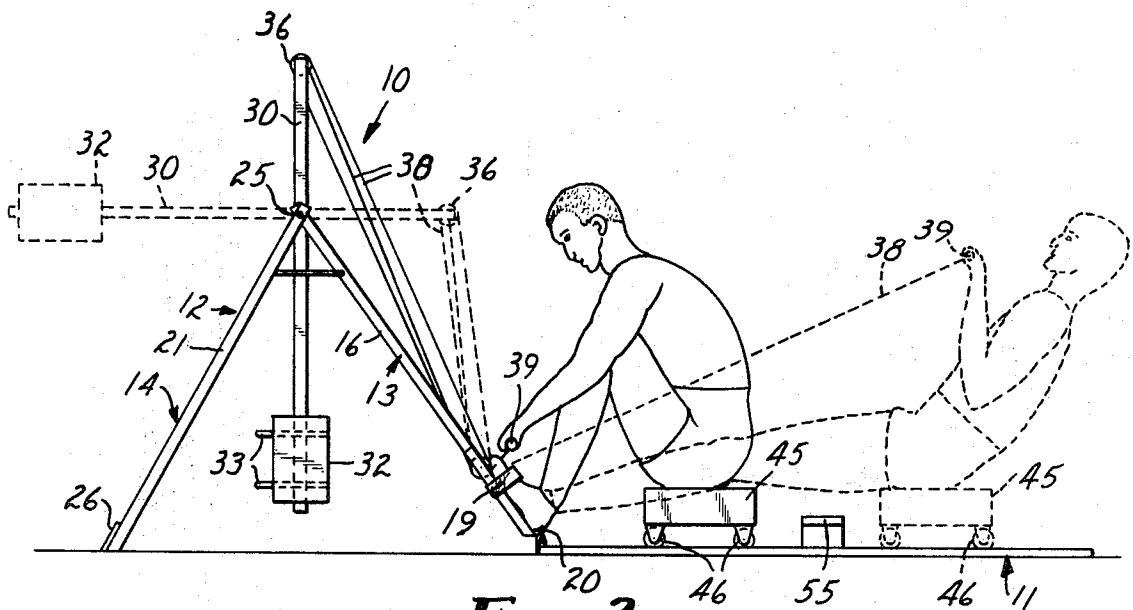


FIG. 2

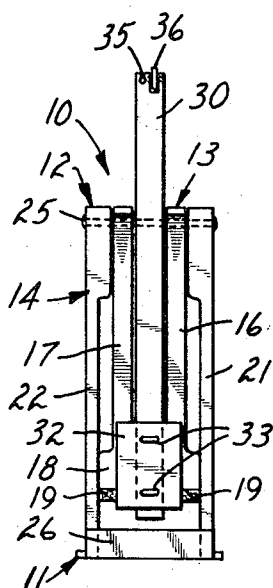


FIG. 3

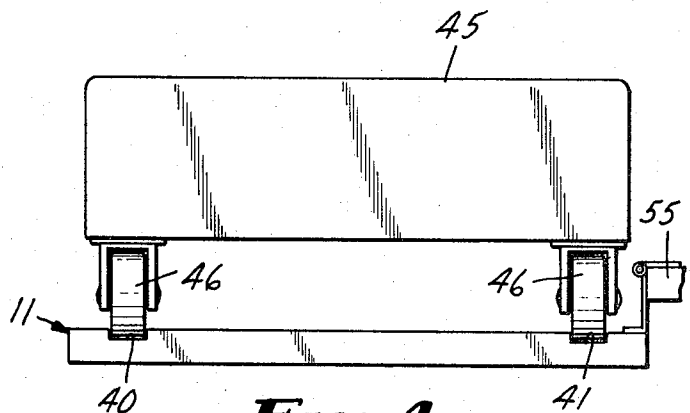


FIG. 4

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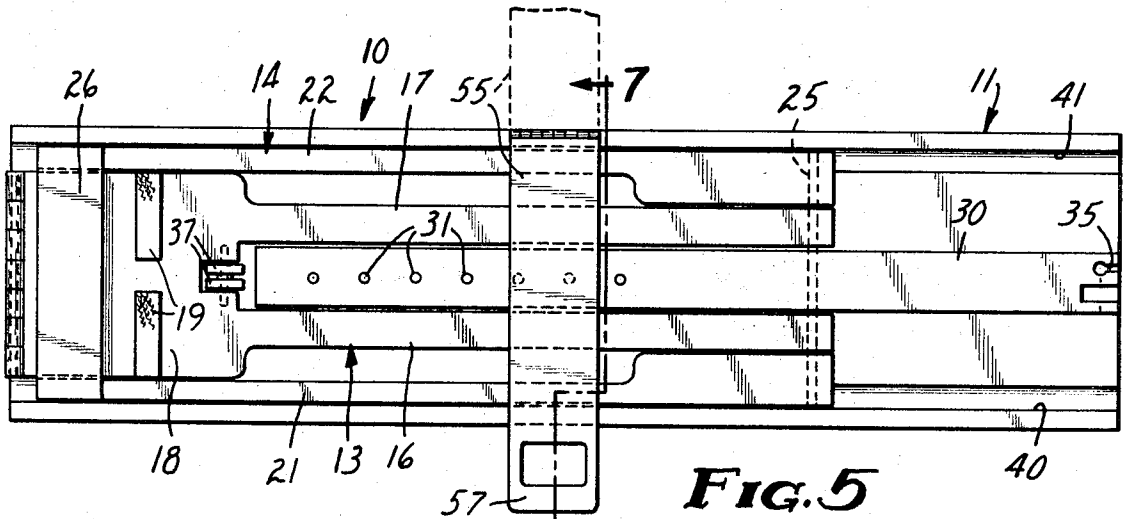


FIG. 5

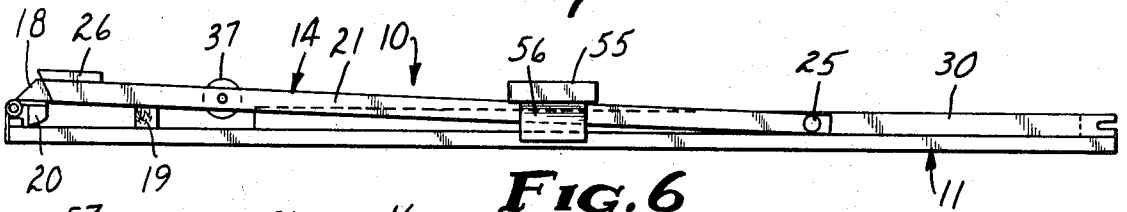


FIG. 6

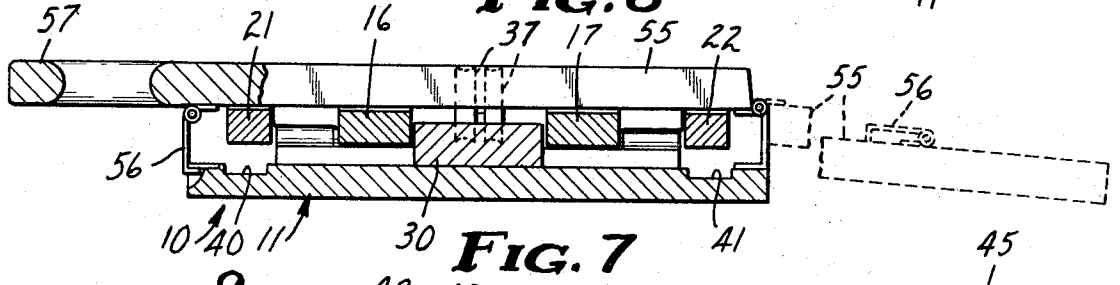


FIG. 7

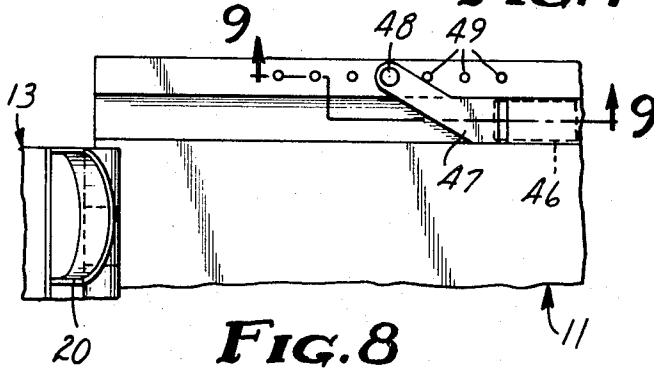


FIG. 8

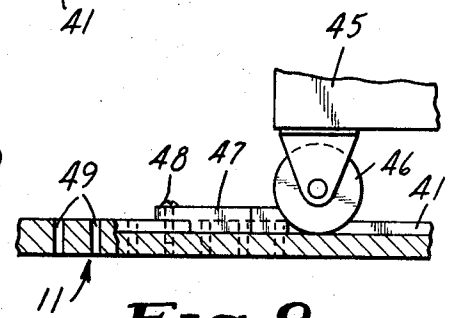


FIG. 9

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EXERCISING DEVICE USING PENDULUM WEIGHT AND PULLEY SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

In our present society very few if any people exercise sufficiently during their normal activities for good health. Even athletes and weekend sportsmen should exercise regularly to maintain the heart, the lungs and the circulatory system in good condition. Also, many coronary patients, post-myocardial infarction patients and sedentary men over 40 require a gradual regulated work load to maintain or improve their physical condition. In general, it is necessary that the work load be reproducible and gradually variable so that the exact amount of increase or decrease can be provided for aerobic exercise.

2. Description of the Prior Art

In the prior art many exercising devices are disclosed wherein springs or hydraulic devices are utilized as the force against which the operator must work. In general, these devices cannot provide a reliably reproducible force. In most of these devices it is extremely difficult to measure exactly the amount of work performed by the operator and gradually increase or decrease that amount on a day-to-day basis. Further, most of these prior art devices are extremely complicated and, in general, cannot be folded for convenient storage. Because these prior art devices are extremely complicated, cumbersome and unsightly they are generally relegated to basements and garages where they are inconvenient to use.

SUMMARY OF THE INVENTION

The present invention pertains to exercising apparatus including a frame having a generally inverted V-shaped portion and a horizontal elongated portion extending outwardly from one end thereof, an elongated arm pivotally attached adjacent a midportion thereof to the apex of the inverted V-shaped portion, a weight attached adjacent one end of said arm and longitudinally adjustable therealong, rope and pulley means attached between the inverted V-shaped frame and the other end of the arm so that pulling one end of the rope pivots the arm and raises the weight, and a wheeled seat positioned on the horizontal portion for movement therealong as an operator pulls on the rope.

It is an object of the present invention to provide a new and improved exercising apparatus of the aerobic type.

It is a further object of the present invention to provide an exercising apparatus capable of accurately reproducing work loads and variable to periodically increase or decrease the work load a predetermined amount.

It is a further object of the present invention to provide exercising apparatus which can be conveniently folded and stored when not in use.

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 indicated like parts throughout the FIGS.:

FIG. 1 is a view in top plan of the exercising apparatus in the operative position;

FIG. 2 is a view in side elevation of the apparatus illustrated in FIG. 1, illustrating the operation thereof in dotted lines;

FIG. 3 is a view in end elevation as seen from the left end of FIG. 2;

FIG. 4 is an enlarged end elevational view of the apparatus as seen from the right end of FIG. 2;

FIG. 5 is an enlarged view in top plan of the apparatus illustrated in FIG. 1 in the folded position;

FIG. 6 is a view in side elevation as seen from the lower side of FIG. 5;

FIG. 7 is an enlarged sectional view as seen from the line 7-7 in FIG. 5;

FIG. 8 is an enlarged detail view in top plan of the limiting adjustment for the wheeled seat, parts thereof removed; and FIG. 9 is a sectional view as seen from the line 9-9 in FIG. 8.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the FIGS. the numeral 10 generally designates a frame having an elongated horizontal portion 11 and an inverted V-shaped portion 12. A first leg 13 of the inverted V-shaped portion 12 is pivotally attached adjacent one end to one end of the horizontal portion 11 and the opposite end of the first leg 13 is pivotally attached to one end of a second leg 14 of the inverted V-shaped portion 12 to form an apex. The inverted V-shaped portion 12 extends outwardly from the horizontal portion 11 so that it lies approximately in a plane through the longitudinal axis of the horizontal portion 11.

The first leg 13 is bifurcated with two branches 16 and 17 extending toward the apex from a solid flat portion 18 adjacent the junction between the horizontal portion 11 and the inverted V-shaped portion 12. The two branches 16 and 17 are substantially parallel and spaced-apart to leave an elongated opening therebetween. The solid flat portion 18 has a pair of straps 19 and a pair of associated heel supports 20 affixed to the upper surface thereof and adapted to receive the feet of an operator therein.

The second leg 14 includes two generally parallel members 21 and 22 spaced-apart a sufficient distance to receive the first leg 13 therebetween. The members 21 and 22 each have one end pivotally attached to the ends of the branches 16 and 17 of the first leg 13 by an axle 25 and are spaced axially outwardly from the ends of the branches 16 and 17 on the axle 25. The opposite ends of the members 21 and 22 are maintained in the correct position by a cross brace 26 fixedly attached thereto. Thus, when the first leg 13 is pivoted into overlying relationship above the horizontal portion 11 about the junction therebetween, the second leg 14 can be pivoted downwardly so as to substantially encircle the first leg 13 in an approximately parallel relationship, as illustrated in FIGS. 5, 6 and 7.

An elongated arm 30 is pivotally mounted on the axle 25 between the branches 16 and 17 of the first leg 13 adjacent the midsection of the elongated arm 30. A plurality of longitudinally spaced-apart holes 31 are formed in the arm 30 adjacent one end thereof and a weight 32 is adapted to be coaxially positioned over that end of the arm 30 so as to be longitudinally movable therealong. The weight 32 is maintained in any desired position relative to the end of the arm 30 by a pair of pins 33 which extend through the weight 32 and the holes 31 perpendicular to the longitudinal axis of the arm 30. The weight 32 is constructed so that the size thereof is variable as well as the relative position on the arm 30. The weight 32 is removed from the arm 30 and stored separately when the frame 10 is placed in the folded position illustrated in FIGS. 5 through 7.

The end of the arm 30 opposite the end having the weight 32 thereon has a notch 35 formed therein and a pulley 36 attached thereto for rotation about an axis perpendicular to the longitudinal axis of the arm 30. Two pulleys 37 are mounted between the branches 16 and 17 for rotation about an axis approximately parallel with the axis of the pulley 36. One end of a rope 38 has a knot or the like formed therein and is engaged in the notch 35. The rope is threaded around one of the two pulleys 37, around the pulley 36, around the other pulley of the two pulleys 37 and the opposite end extends outwardly from the first leg 13 adjacent the solid flat portion 18. The outwardly extending end of the rope 38 has a handle 39 affixed thereto so that an operator can grip the same with both hands. The rope 38 is engaged around the pulleys 36 and 37 so that pulling the handle 39 pivots the arm 30 about the axle 25 and raises the weight 32 (illustrated in dotted lines in FIG. 2). It should be understood that the system of pulleys can be varied to provide the apparatus with a mechanical advantage lying in the range of two to one up to six to one or greater if desired.

The mechanical advantage of the apparatus can be varied by varying the number of pulleys being utilized.

The horizontal portion 11 of the frame 10 has a pair of transversely spaced-apart longitudinally extending grooves 40 and 41 formed therein. The grooves 40 and 41 extend substantially the length of the horizontal portion 11 in this embodiment, although, it should be understood that they might be of any desirable length. A seat 45 has four wheels 46 affixed to the underside thereof so that two on either side fit in the grooves 40 and 41. Thus, the seat 45 moves freely in a longitudinal direction along the horizontal portion 11 but is prevented from moving transversely thereto. The seat 45 can be constructed of any desirable material and should be of a height such that an operator sitting thereon can comfortably place his feet in the strap and heel supports 19 and 20. An adjustable stop 47 is positioned in overlying relationship with a portion of the groove 41 and is held in place by a bolt 48 threadedly engaged in one of a series of longitudinally spaced-apart holes 49 formed in the horizontal portion 11 adjacent the groove 41. The stop 47 is adjustable to limit the movement of the seat 45 in the grooves 40 and 41. By limiting the movement of the seat 45 the distance an operator pulls the rope 38, or the stroke, is limited.

In the operation of the present apparatus an operator sits on the seat 45 and places his feet in the strap and heel supports 19 and 20, as illustrated in FIG. 2. The operator then grips the handle 39 with both hands and pulls the handle 39 towards him while simultaneously straightening his legs. This pulling and straightening action is similar to a stroke in rowing and causes upward movement of the weight 32. The amount of work accomplished during each stroke depends upon the length of the stroke (that is the distance the rope 38 is pulled), the distance the seat 45 is moved, the size and position of the weight 32 on arm 30 and the mechanical advantage of the pulley system being utilized. A measuring device 50 is affixed to the upper surface of the horizontal portion 11 and extends the length thereof so that an operator can determine the length of each stroke and, consequently, with all of the remaining apparatus constant, any specific desirable work load can be accurately and easily reproduced. As an operator improves physically any of the variables in the apparatus can be altered to increase the work load. For example, the operator can increase the total number of strokes performed, the number of strokes per minute, the length of stroke, the size or position of the weight 32, or the mechanical advantage of the pulley system. Through all of these variables the work load can be gradually increased or decreased and is accurately reproducible. Since the apparatus does not depend upon mechanical devices, such as springs or hydraulic pressure devices, there is no variation in work load over a period of time when all of the aforementioned variables are maintained constant.

An elongated member 55 is pivotally attached to the horizontal portion 11 adjacent one side thereof for rotation about an axis parallel with the longitudinal axis of the horizontal portion 11. The member 55 partially encircles the first and second legs 13 and 14 of the inverted V-shaped portion 12 when they are in the folded position, illustrated in FIGS. 5 through 7. The member 55 has a L-shaped catch 56 pivotally affixed thereto adjacent the midsection so as to engage the opposite side of the horizontal portion 11 when the member 55 is placed in overlying relationship to the horizontal portion 11. When the catch 56 is engaged with the opposite side of the

horizontal portion 11 the entire apparatus is maintained in the folded position. The member 55 extends outwardly a substantial distance from the horizontal portion 11 in the folded position and has an opening therethrough so as to form a handle 57 at the end thereof. The handle 57 provides a convenient means of carrying the apparatus in the folded position.

Thus, an exercising apparatus has been described which is easily storable and can be quickly setup in any convenient area for the use thereof. Further, the disclosed apparatus accurately reproduces work loads from day to day and any desirable work load can be provided quickly and accurately as for aerobic exercises.

It should be understood that the specific embodiment shown and described is simply for exemplary purposes and further modifications and improvements will occur to those skilled in the art, all of which are included herein if they do not depart from the spirit and scope of this invention.

I claim:

1. Exercising apparatus of the aerobic type comprising:

- a. a frame having a generally inverted V-shaped portion and a generally horizontal elongated portion extending outwardly from a junction therebetween at one end of the inverted V-shaped portion;
- b. an elongated substantially rigid arm pendulously attached adjacent a midportion thereof to the apex of the inverted V-shaped portion;
- c. a weight attached to said arm adjacent the lower end thereof and longitudinally adjustable therealong;
- d. first pulley means with associated rope means intertwined therethrough attached to the other end of said arm and second pulley means attached to said frame adjacent the junction of said inverted V-shaped portion and said horizontal portion, said rope means having one end secured to said arm adjacent said other end and gripping means secured to the other end of said rope so that pulling said gripping means causes said arm to pivot and raise said weight; and
- e. a wheeled seat for receiving an operator thereon positionable on said horizontal portion and movable longitudinally therealong toward and away from said inverted V-shaped portion.

2. Exercising apparatus as set forth in claim 1 wherein the horizontal portion has grooves for receiving the wheels of the seat extending from adjacent the junction of said horizontal portion and the inverted V-shaped portion to adjacent the outwardly extending end of the horizontal portion.

3. Exercising apparatus as set forth in claim 2 having in addition means affixed to the horizontal portion of the frame and adjustable therealong for limiting the movement of the wheeled seat along the grooves.

4. Exercising apparatus as set forth in claim 1 having in addition foot-receiving rests on the inverted V-shaped portion of the frame adjacent the junction thereof with the horizontal portion.

5. Exercising apparatus as set forth in claim 1 wherein the inverted V-shaped portion is pivotally attached to the horizontal portion at the junction thereof and the legs forming the inverted V-shaped portion are pivotally attached together for allowing the inverted V-shaped portion to be folded into generally parallel overlying relationship on the horizontal portion.