

Dec. 4, 1934.

H. F. HUSTED

1,982,872

EXERCISER

Filed Nov. 25, 1932

3 Sheets-Sheet 1

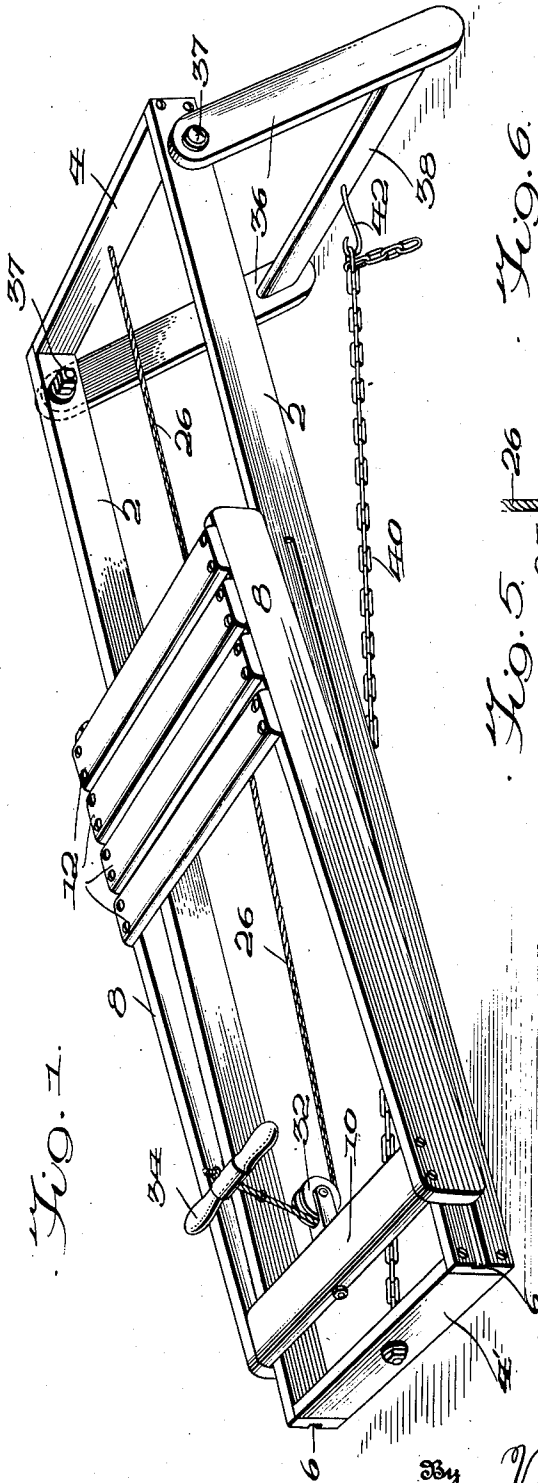


Fig. 1.

Fig. 6.

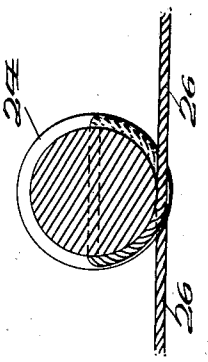


Fig. 5.

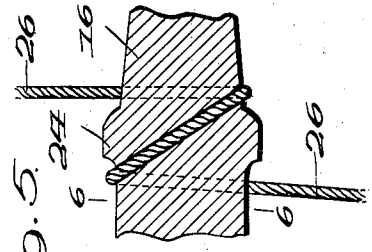
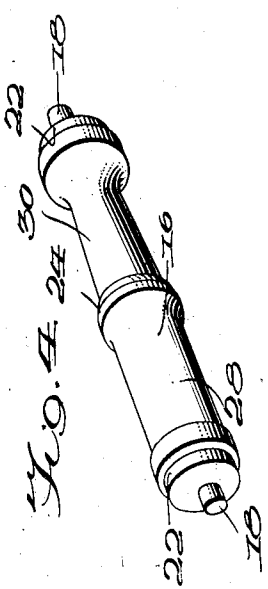


Fig. 4.



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3 Sheets-Sheet 2

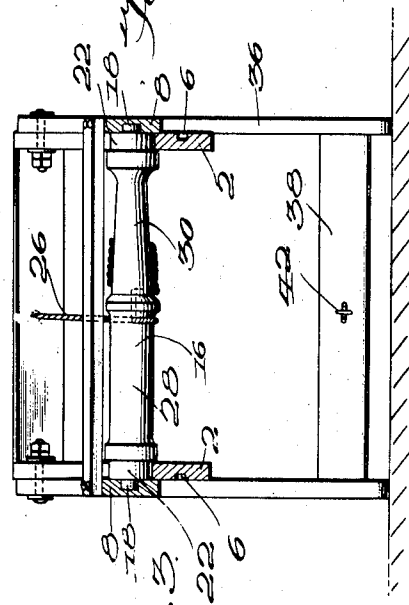
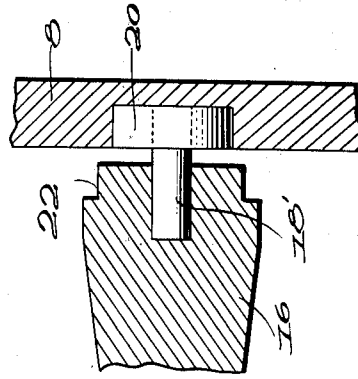
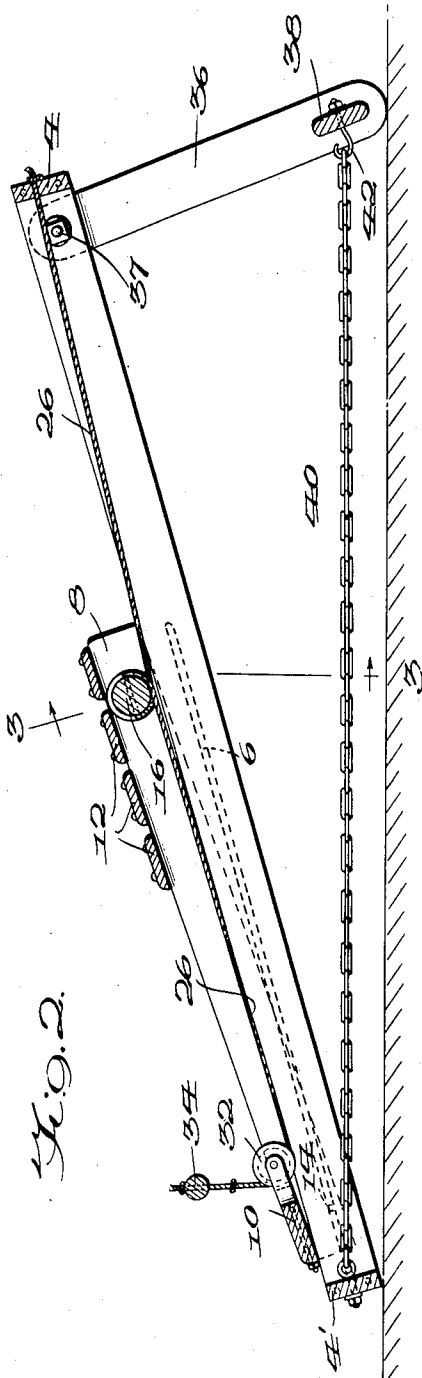


Fig. 2.

Fig. 5.

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3 Sheets-Sheet 3

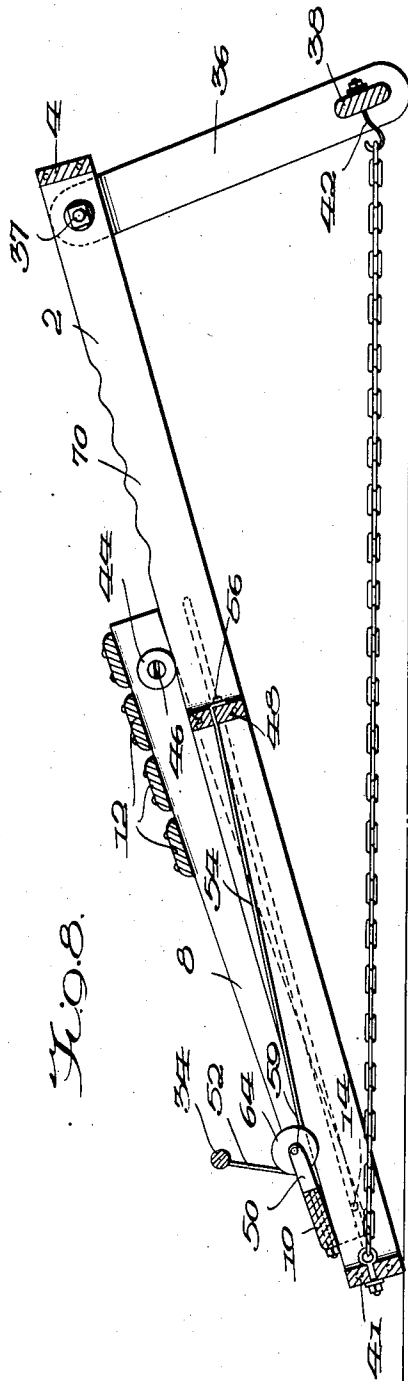


Fig. 8.

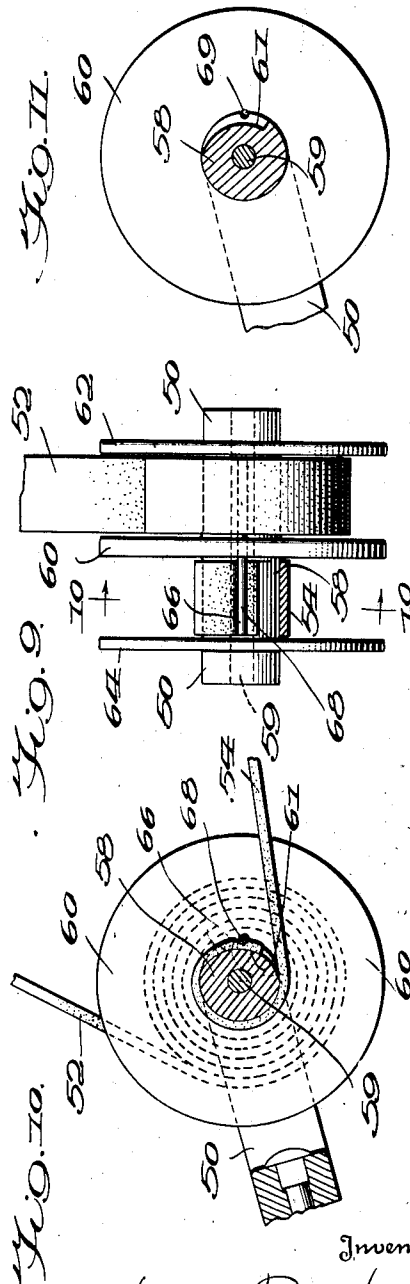


Fig. 11.

Fig. 9.

Fig. 10.

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UNITED STATES PATENT OFFICE

1,982,872

EXERCISER

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Application November 25, 1932, Serial No. 644,387

11 Claims. (Cl. 272-72)

My invention relates to an exerciser.

An object of my invention is to provide a simple though sturdy frame-work and seat upon which a person exercises by going through the motions similar to those required for rowing a boat.

In the accompanying drawings,

Fig. 1 is a perspective view of the device;

Fig. 2 is a longitudinal cross section thereof;

Fig. 3 is a cross section on the line 3-3, of

Fig. 2;

Fig. 4 is a perspective view of the main roller of the seat;

Fig. 5 is a longitudinal cross section of the center portion of the roller;

Fig. 6 is a cross section on the line 6-6, of Fig. 5;

Fig. 7 is a detail of a modified bearing of the roller;

Fig. 8 is a longitudinal cross section of a modified form of the device;

Fig. 9 is a plan view of a modified form of the roller;

Fig. 10 is a cross section on the line 10-10 of Fig. 9; and

Fig. 11 is a cross section on the line 10-10 of Fig. 9 with the belt removed.

I provide a rectangular shape frame-work consisting of the side pieces 2, and the end cross members 4 and 4' which are secured together by means of screws or nails, as shown in Fig. 1.

On the outside of each side piece 2, I provide a slot 6 which extends throughout approximately one-half of the length of the side piece.

The frame-work for a sliding seat is similarly constructed by side pieces 8, which are held together by a cross piece 10 at one end thereof, and by slats 12 at the other end thereof, which slats also form a seat. The sliding seat is constructed so that the side pieces 8 will extend over the side pieces 2 of the main frame, as shown in Fig. 1, so that the person seated upon the slats 12 would be unable to get his fingers caught between the sliding seat and the side pieces 2.

The side members 8, in close proximity to the cross member 10, are provided with guide pins 14 which are adapted to engage in the slots 6 in the side members 2 of the frame. At the other end of the side members 8, in a position beneath the slats 12 forming the seat, I provide a roller 16 the ends of which are formed into trunnions 18. In the modified form shown in Fig. 7, I provide a stub shaft 18' which is driven into the ends of the roller 16. The other end of the stub shaft 18 is positioned within a ball bearing 20 which is imbedded in the side member 8.

The roller 16 is made of wood or other material and is divided into two sections, the periphery of one of which is substantially parallel to the axis of rotation, while the periphery of the other section is conical in shape, as shown in Figs. 3, 4 and 5. The outside edges of the roller 16 form cylindrical surfaces 22, which are adapted to engage the side members 2 of the main frame and roll thereon.

The division between the two sides of the roller 16 is defined by the partition 24, through which I pass a rope 26, one end of which may be rolled about one side of the roller 16, while the other is rolled in the opposite direction on the other side of the partition 24. The end of the rope 26 which is rolled about the side 28 of the roller, extends therefrom to the cross member 4 and is secured thereto by passing the end of the rope 26 therethrough, and by tying a knot on the other side of the cross member 4, as shown in Fig. 2. The other end of the rope 26, which is wound about the conical section 30 of the roller 16 extends through a pulley 32, which is secured to the cross member 10 and to the handle 34 through which the end of the rope 26 passes and is knotted on the other side as shown in Figs. 1 and 2.

By pulling on the handle 34, the rope 26 will be unwound from its position on the conical section 30 of the roller 16, thereby causing the roller to revolve in a clockwise direction, as viewed in Fig. 2.

As the roller 16 is turned in this clockwise direction, while the rope 26 is being unwound therefrom on the conical section 30 of the roller, the other end of the rope 26 will be wound upon the section 28 of the roller 16 and thereby the sliding frame and seat will be caused to move in a direction toward the cross member 4.

When the pulling force is released from the handle 34, the seat frame-work will travel by force of gravity in the opposite direction and will resume the position shown in Figs. 1 and 2, at which time the rope 26 will have become unwound from the section 28 of the roller and will again have been wound up on the conical section 30 thereof, as shown in Fig. 3.

By the use of the conical section 30, I am enabled to utilize a simple means of gearing, so that when the pull on the handle 34 is first commenced from the position shown in Figs. 1 and 2, the ratio of the gearing will be approximately three to one, and thereby a three inch pull on the handle 34 and the rope 26 will only make the seat frame-work move one inch toward the

cross member 4 at the other end of the main frame-work.

As the rope 26 is uncoiled from the conical section 30 of the roller 16, the ratio between the portions 28 and 30 is reduced until when the seat frame-work is nearing the cross member 4, the gearing ratio approaches a ratio of one to one.

The end of the main frame-work at which the cross member 4 is positioned is held in an elevated position by means of legs 36, which are pivotally secured to the side members 2, by bolts 37 and which are braced at their lower ends by a cross member 38. I provide a chain 40 which is secured to the cross member 4' and which may be fastened to the hook 42 in any desired link as shown in Fig. 1, thereby determining the distance between the cross member 4' and the cross member 38, so that the elevation of the side pieces 2, and cross member 4, may be readily adjusted.

The weight which is to be carried by the seat 12 is primarily placed upon the roller 16 and the cylindrical surfaces 22 which directly transmit the weight to the side members 2 of the main frame. A portion of the weight will be transmitted to the side members 2 of the main frame through the cross member 10. The guide pin 14 is provided in the side members 8 to engage the slot 6 of the side members 2, so that there will be no possibility of the seat frame-work tipping up, if weight on the cross members 12 should become greater on the side of the roller 16 remote from the guide pin 14.

In the modified form which I have shown in Fig. 8, I have utilized substantially the same construction as that described above, in that I provide side members 2 and cross members 4 and 4', legs 36, and the cross member 38, to which is secured a hook 42 for engaging a chain 40 which is secured at its opposite ends to the cross member 4'.

The seat construction is substantially the same, but in this construction I provide a roller bearing 44 which is secured to the side members 8 by a screw or bolt 46, the end of this seat frame-work in proximity to the cross member 10 is substantially identical to that disclosed in Figs. 1 and 2, in that the cross member 10 engages the edges of the side members 2 of the main frame and the guide pin 14 is provided to assure that the lower end of the frame-work will not be improperly removed from the cross members 2.

In this modified form, I have provided an additional cross member 48, which extends between the two side members 2 approximately half way between the cross members 4 and 4'.

Secured to the cross member 10 of the seat frame-work, I provide a pulley 50, the construction of which is shown in detail in Figs. 9, 10 and 11.

In this construction, I utilize belts 52 and 54, the latter of which is secured to the cross member 48, by passing an end therethrough and securing it by a screw or nail 56.

The main casting 58 of the pulley is divided in the center thereof, by the flange 60 thereby providing two separate portions of the shaft for the straps 52 and 54. At the outer ends of the casting 58, I provide washers 62 and 64 carried on a shaft 59 for guiding the belts 52 and 54.

These belts 52 and 54 are wound in opposite directions upon the casting 58, as shown in Figs. 9 and 10, and on opposite sides of the partition 60, and are secured thereto by means of a cut-away or gouged out portion 61 of the casting 58

being provided for the extreme end of the straps or belts 52 and 54, which straps or belts are provided with a transverse groove 66, through which the pin 68 is passed. The pin 68 passes through the groove 66 in the belt 54, the hole 69 in the partition 60, and the groove 66, in the strap 52.

When the seat frame-work is in the position, as shown in Fig. 8, the belt 52 will be in a wound condition, as shown in Figs. 9 and 10, so that when a pull is exerted upon the handle 34, and the strap 52, the pulley casting 58 will be caused to revolve in a clockwise direction (as viewed in Fig. 10) on the shaft 59 extending therethrough, thereby unwinding the strap 52 and winding the strap 54 which will cause the pulley 50 to approach the cross member 48 and move the seat in a direction toward the cross member 4.

I have provided another slight modification in the side members 2, which is disclosed by the waving portion 70 thereof, over which the roller bearing 44 must pass either in an upward or downward travel.

This waving portion 70 of the side members 2 provides a slight variation which may result either in a smooth up and down motion or in a vibrating motion depending upon the length of the bumps or waves 70, and the diameter of the roller bearing 44. The waves 70 are provided in approximately the center between the two extremes to which the roller bearing 44 will pass on the side members 2, since I have found that by placing waves on the side members 2 at either extreme positions that it becomes difficult to start the seat frame-work in either its upward or downward motion.

By this construction, I have been able to provide an exerciser which is sturdy and inexpensive to make and has very few parts which become easily worn out.

The exercise afforded by my exerciser is substantially the same as that provided by rowing machines, but in my construction I do not utilize any spring elements which are likely to break and cause injury to the party exercising upon the machine.

I have found that my device is particularly suitable for use by children because they are willing to exercise upon my device, since the device not only affords exercise but amusement.

It will be obvious that I may find it necessary to make minor changes from time to time without departing from the spirit of my invention.

I claim:—

1. An exerciser comprising a slanting frame, a movable seat mounted on said frame, and a roller beneath one end of said seat, said roller adapted to receive a cable wound thereabout and extending to one end of said slanting frame and a cable wound thereabout in the opposite direction and extending through a pulley carried by one end of said seat.

2. In an exerciser a slanting frame, a movable seat mounted thereon, and means for changing the position of the seat relative to the frame, said means including a roller affixed to said seat, a cable extending therefrom to an end of the slanting frame, a cable reeled thereabout and extending therefrom to an end of the movable seat, and means for unreeling the latter cable from the roller while the former cable is being reeled thereon.

3. In an exerciser, a slanting frame, a movable seat mounted thereon, and a cable extending from said slanting frame to said movable seat,

a cable extending through a pulley secured to said movable seat, said cables being wrapped in opposite directions about a roller interposed between the said cables and secured to the said movable seat.

4. In an exerciser, a slanting frame, a movable seat mounted thereon, a roller carried by said seat, and cables wrapped thereabout, one cable extending from said roller to the end of said slanting frame and another cable extending from said roller and secured thereto in a direction opposite to the first-mentioned cable through a pulley carried by one end of said seat.

5. In an exerciser, a slanting frame, a movable seat mounted thereon, a roller carried by said seat, approximately one half of said roller being cylindrical and approximately one half being conical, a cable wrapped about said conical portion and extending through a pulley mounted on an end of the movable seat, and a cable wrapped in a direction opposite to the first-mentioned cable about the cylindrical section of said roller and extending to an end of the slanting frame.

6. An exerciser comprising a slanting frame, a movable seat mounted thereon, a double pulley carried by one end of said movable seat, a strap wrapped about and extending from said double pulley to a cross member on the said slanting frame, and a strap wrapped in the opposite direction about said pulley and extending from said double pulley to a handle.

7. In an exerciser, a slanting frame, a movable seat, a shaft rotatably mounted on one end of said movable seat, a strap wrapped about one portion of said shaft and extending to a cross member of the said slanting frame, a strap wrapped in the opposite direction about another portion of the said shaft and extending to a handle, and means carried by the shaft for making the straps roll upon themselves as the shaft is rotated.

8. In an exerciser, a slanting frame, a movable seat, means for moving the said seat in a direction toward the upper end of said slanting frame, and irregular surfaces upon the said slanting frame for causing the movable seat to vibrate while in motion.

9. In an exerciser, a slanting frame, a movable seat, a rotatable shaft mounted at one end of said seat, one portion of said shaft being cylindrical, one portion thereof being conical, a cable wrapped about the cylindrical portion of said shaft and extending to and fastened to a cross-member on said frame, and another cable wrapped in the opposite direction about the conical section of said shaft and extending through a pulley at the remote end of said seat to a handle.

10. In an exerciser, a slanting frame, a movable seat, rollers on one end of said seat, a double pulley secured to the opposite end thereof, a strap wound about one portion of said pulley and extending to a cross member of said frame, and a strap wound about said pulley in a direction opposite to the first-mentioned strap and extending to a handle.

11. An exerciser comprising a slanting frame, a movable seat mounted on said frame, and means for pulling said seat in a direction toward the upper end of said slanting frame, said pulling means including a cable secured to the upper end of said slanting frame, a pulley at the lower end of said movable seat through which a cable passes to a handle, and means affixed to said seat between said pulley and the upper end of said slanting frame for shortening the length of the cable between said means and the upper end of the said frame.

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