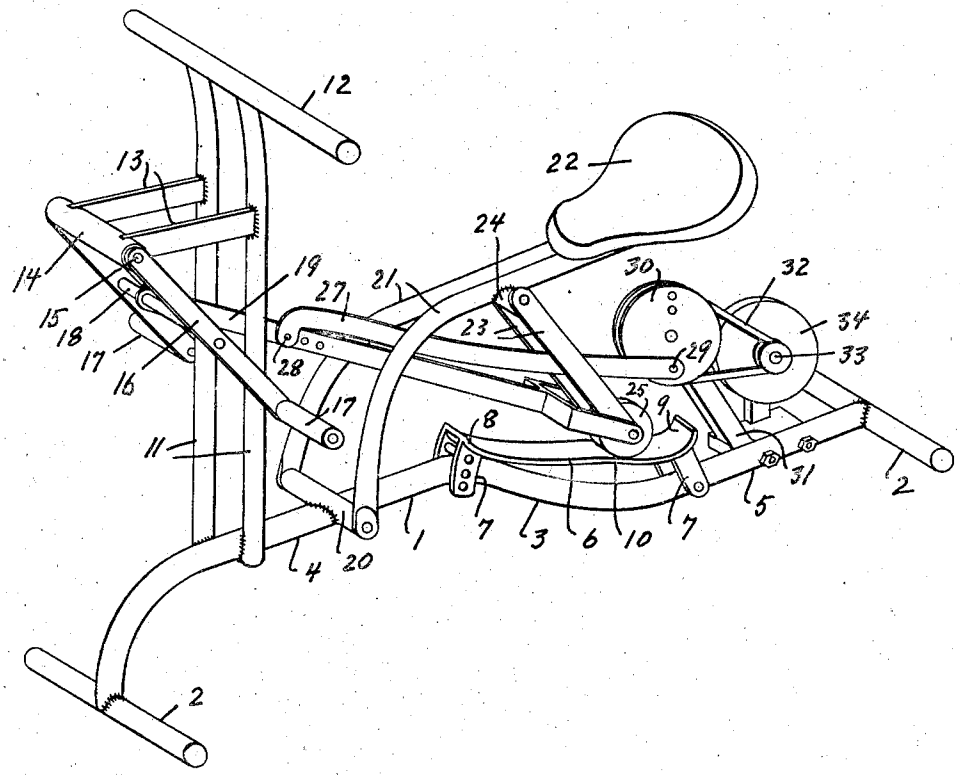
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EXERCISING MACHINE

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EXERCISING MACHINE

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The present invention relates to improvements in exercising machines and has particular reference to a machine of the character described in which a seat occupant raises the seat and the weight of his body by pushing forward on a set of foot pedals while the weight of his body returns the seat and the foot pedals to an initial position.

The present invention is a further development of my Pressure drive mechanism described in my Patent No. 2,252,156 of August 12, 1941.

While in the patented structure it was proposed to use a sliding wedge for raising the seat on a forward pressure on the foot pedals, in the present invention it is contemplated to use a fixed inclined track and a seat supporting brace for accomplishing a similar purpose, the brace being operated by the foot pedals.

The present device is intended particularly to be simple in construction and more economic in manufacture.

It is further proposed, as an additional feature, to provide means for limiting the movement of the brace on the track in either direction, designed to absorb energy for initiating the movement in the opposite direction.

It is further proposed to provide a wave in the track intended to equalize the force necessary for advancing the brace, it having been observed that a person operating the pedal is able to apply greater force at the beginning of the advance movement than toward the end of the latter.

It is additionally contemplated in the present invention to provide an auxiliary feature in the form of a fly wheel intended to smooth out the movement and to effect an easy transition from one movement to the other.

Further objects and advantages of my invention will appear as the specification proceeds, and the novel features of my invention will be fully defined in the claims attached hereto.

The preferred form of my invention is illustrated in the accompanying drawing, in which the single figure thereof illustrates my machine in perspective view.

While I have shown only the preferred form of my invention, I wish to have it understood that various changes and modifications may be made within the scope of the claims attached hereto without departing from the spirit of the invention.

In its preferred form my machine rests on a main frame 1 having cross members 2 at the front and rear ends thereof and bent as at 3 to present a raised front section 4 and a rear section 5 disposed in the plane of the two transverse members 2.

An inclined track 6 is mounted over the curved

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portion 3 on suitable supporting legs 7, the front of the track being higher than the rear and terminating in a curve 8 while the rear end terminates in a curve 9, the two curves being intended to limit the forward and rearward movement of the brace to be described presently and to initiate movement in the opposite direction. A slight wave 10 in an intermediate portion of the track performs a function to be described later.

The front legs 7 of the upwardly inclined track are secured upon the same with freedom of adjustability so as to allow the angle of the upward incline to be adjusted.

A pair of parallel posts 11 rise from the front section 4 of the main frame and carry, at their upper ends, a transverse hand-hold 12. A pair of bars 13 project forwardly from the posts 11 and carry a bearing 14 for a shaft 15 which latter has two arms 16 mounted thereon, on opposite sides of the posts, the free ends of the arms carrying the foot pedals 17. The two arms carry, intermediate their length, a transverse member 18 adapted to serve as a connection for the connecting link 19.

Rearwardly of the posts 11, the main frame carries a transverse member 20 on which are pivoted two arms 21 on the free ends of which is mounted a seat 22. The two arms 21 are curved and extend upwardly from their support to a suitable height whereupon they continue in a rearward direction so as to bring the seat 22 over the track 6.

The arms are supported by means of two braces 23 pivoted to a cross-member 24 secured upon the arms a short distance ahead of the seat. The free ends of the braces 23 carry a roller 25 free to ride on the track 6. The free ends of the braces are also connected by means of the connecting link 19 to the cross member 18 associated with the foot pedals.

The mechanism thus far described operates as follows: As a seat occupant pushes forward on the foot pedals 17 while grasping the hand-hold 12 he, by means of the connecting rod 19, pulls the roller 25 forward on the inclined track, thereby swinging the braces 23 to a more vertical position and thus, through this wedging action, raising the seat 22. As the roller 25 reaches the forward end of the track it tends to rise on the curved section 8 and to build up momentum for initiating movement in the opposite direction. Therefore, when the operator ceases to press forward on the pedals 17 the roller 25 will be urged backward and downward on the inclined track under the weight of the seat occupant and will automatically return

the seat to its initial position. The rearward movement of the roller **25** is limited by the stop **9**.

Thus the curvatures **8** and **9** at the front and rear ends of the track serve to limit the forward and rearward movement and also to absorb energy in initiating movement in the opposite direction.

It will be understood that at the beginning of the forward stroke on the foot pedals **17** the seat occupant is in position to apply greater pressure than towards the end of the stroke. In order to equalize the foot pressure necessary in operating the device, I provide the wave **10** in the track, this wave offering slightly increased resistance at the beginning of the forward stroke and decreasing the angle of incline after the wave has been passed, that is during the latter part of the forward stroke.

The wave also adds a certain amount of resistance to the seat movement.

As an auxiliary means for controlling and evening off movement of the roller **25** and the resulting movement of the seat **22** I provide a fly wheel control including a link **27** pivoted at one end to the connecting link **19** as at **28**, and at the other end to an eccentric pin **29** rising from the face of a pulley **30** which latter is revolvably supported on a bracket **31**. The pulley **30** drives, through a belt connection **32**, a pulley **33** on a fly wheel **34**, the drive being such that the fly wheel revolves at much greater speed than the pulley **30**. It is apparent that the pin **29** limits the travel of the roller **25** on the track **6** to a definite distance depending upon the distance of the pin **29** from the center of rotation. The pulley again is controlled in its revolving movement by the fly wheel **34** which smooths out the movement of the pulley and the resulting movement of the roller **25** on the track **6**.

With this attachment which is removable, as shown in the drawing, the movement of the roller is made smooth and easy, and particularly at the end of the movement any tendency for the roller to become jerky or spasmodic is eliminated. Suitable adjustment for the pivot **28** is provided for along the length of the link **19**, as shown, and another adjustment is provided for in the position of the pivot **29** with respect to the center of rotation. The latter adjustment determines the length of the forward and rearward strokes while the former adjustment determines the position of the roller on the track.

It should be noted that a comparatively light fly wheel will perform the desired function in view of the fact that it revolves at a higher speed than the pulley and further in view of the fact that the pivot **29** at the end of each stroke is alined with the pivot **28** and the center of rotation so that the momentum carrying the pivot **29** across center is translated into initiation of return movement on favorable terms.

It will be noted that the frame is made of tubular material, such as ordinary piping, and that the track **6** is mounted on the frame as a separate element. It should be understood that the underlying section **3** of the frame might be squared and used for a track or that the wheel **25** might be grooved in its circumference to cooperate with the pipe section **3**, as shown.

If desired, suitable cushioning members (not shown) may be used at the ends of the track, as at **8** and **9**, to further soften any shock inherent in the reversal of the movement. In case the belt drive **32** should occasion any undesirable slippage, a sprocket and chain drive may be readily substituted without involving invention.

The fly wheel assembly is mounted as a unit which may be removed at will if its use is not desired.

I claim:

1. An exercising machine comprising an elongated main frame having an inclined track intermediate its ends and having a hand-hold post member at its front end, a foot pedal member swingably supported on the said frame, an arm having one end rockably mounted intermediate the ends of the main frame and having a seat on its free end, a brace swingably suspended from the arm and having a free end riding on the track, and a connection between the pedal member and the brace whereby the latter will raise the seat as the pedals are swung forward and the seat will be lowered on the return of the pedals.

2. An exercising machine comprising an elongated main frame having an inclined track intermediate its ends and having a hand-hold post member at its front end, a foot pedal member swingably supported on the said frame, an arm having one end rockably mounted intermediate the ends of the main frame and having a seat on its free end, a brace swingably suspended from the arm and having a free end riding on the track, and a connection between the pedal member and the brace whereby the latter will raise the seat as the pedals are swung forward and the seat will be lowered on the return of the pedals, the said connection comprising a link pivoted to the foot pedal member and to the free end of the brace.

3. An exercising machine comprising an elongated main frame having an inclined track intermediate its ends and having a hand-hold post member at its front end, a foot pedal member swingably supported on the said frame, an arm having one end rockably mounted intermediate the ends of the main frame and having a seat on its free end, a brace swingably suspended from the arm and having a free end riding on the track, and a connection between the pedal member and the brace whereby the latter will raise the seat as the pedals are swung forward and the seat will be lowered on the return of the pedals, the track having a curved stop at the front end thereof to give impetus to the initiation of the return movement.

4. An exercising machine comprising an elongated main frame having an inclined track intermediate its ends and having a hand-hold post member at its front end, a foot pedal member swingably supported on the said frame, an arm having one end rockably mounted intermediate the ends of the main frame and having a seat on its free end, a brace swingably suspended from the arm and having a free end riding on the track, a link pivoted to the foot pedal member and the free end of the brace to effect alternating raising and lowering of the seat when the foot pedal member is operated by a seat occupant, and a pulley operable by the link for controlling the motion of the latter.

5. An exercising device comprising a frame having an inclined track thereon, an arm pivoted to the frame and having a seat above the track, a brace pivoted to the arm and having a free end riding on the track, and means operable by the feet of a seat occupant and acting on the free end of the brace for advancing the latter on the track whereby the seat is raised.

6. An exercising device comprising a frame having an inclined track thereon, an arm pivoted

to the frame and having a seat above the track, a brace pivoted to the arm and having a free end riding on the track, and means operable alternately by the feet and the weight of a seat occupant for moving the free end of the brace back and forth on the track for raising and lowering the seat.

7. An exercising device comprising a frame having an inclined track thereon, an arm pivoted to the frame and having a seat above the track, a brace pivoted to the arm and having a free end riding on the track, and means operable by the feet of a seat occupant and acting on the free end of the brace for advancing the latter on the track whereby the seat is raised, the track having a wave intermediate the length thereof for lightening the load toward the end of the advance.

8. An exercising machine comprising an elongated main frame having a hand-grip post at its front end and elevating means rearwardly thereof, a pedal yoke swingably connected with respect to the main frame, an auxiliary frame having one end connected to the main frame for swinging up and down movement and having a seat on the other end, a lift link swingably connected to the auxiliary frame intermediate its two ends and in cooperative relation with the elevating means, and a rod having one end connected to the pedal yoke and the other end to the lift link, the elevating means serving to raise the seat end of the auxiliary frame when the yoke swings forward.

9. An exercising machine comprising an elongated main frame having a hand-grip post at its front end and elevating means rearwardly thereof, a pedal yoke swingably connected to the post, an auxiliary frame having one end connected to the main frame for swinging up and down movement and having a seat on the other end, a lift link swingably connected to the auxiliary frame intermediate its two ends and in cooperative relation with the elevating means, and a rod having one end connected to the pedal yoke and the other end to the lift link, the elevating means serving to raise the seat end of the auxiliary frame when the yoke swings forward.

10. An exercising machine comprising an elongated main frame having a hand-grip post at its front end, a pedal yoke swingably connected with respect to the main frame, an auxiliary frame having one end connected to the main frame for swinging up and down movement and having a seat on the other end, a lift link swingably connected to the auxiliary frame intermediate its two ends, a rod having one end connected to the pedal yoke and the other end to the lift link, and cooperative means on the main frame and the lift link for raising the seat end of the auxiliary frame when the yoke swings forward.

11. An exercising machine comprising an elongated main frame having a hand-grip post at its front end, a pedal yoke swingably connected to the post, an auxiliary frame having one end connected to the main frame for swinging up and down movement and having a seat on the other end, a lift link swingably connected to the auxiliary frame intermediate its two ends, a rod having one end conected to the pedal yoke and the other end to the lift link, and cooperative means on the main frame and the lift link for raising the seat end of the auxiliary frame when the yoke swings forward.

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REFERENCES CITED

The following references are of record in the file of this patent:

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