United States Patent

Schenck et al.

[15] **3,667,453**

[45] **June 6, 1972**

[54] EXERCISE CHAIR

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[22] Filed: **Mar. 15, 1971**

[21] Appl. No.: **124,201**

[52] **U.S. Cl.** ..... **128/24 R,** 128/33
[51] **Int. Cl.** **A61h 1/00**
[58] **Field of Search** 128/24, 25, 33

[56] **References Cited**

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[57] **ABSTRACT**

An exerciser is provided in the form of an armchair having a body-carrying seat member mounted on the chair for rotary reciprocating motion about a vertical axis relative to the chair including its legs, back and arms. Power driving mechanism is provided for effecting the rotary reciprocating motion of the seat member so that a person sitting on the seat will have imparted to his buttocks a movement which will exercise his leg muscles when his feet are on the floor, his arm muscles when his arms or hands are engaging the arms of the chair and his back muscles through his arms or directly if his back is against the back of the armchair.

10 Claims, 9 Drawing Figures

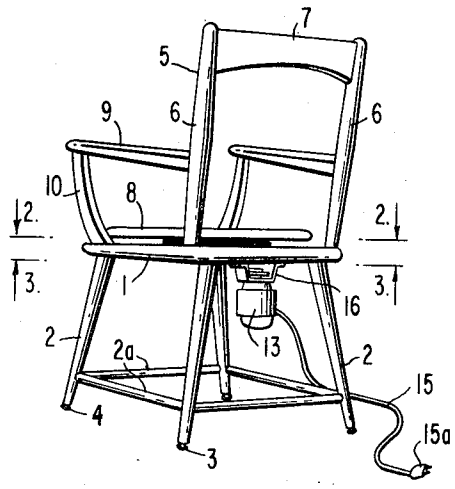


FIG. 2

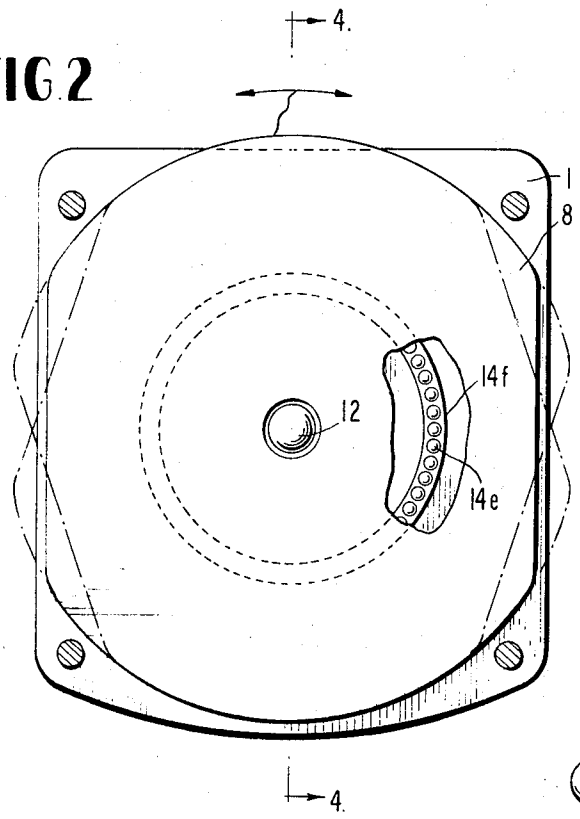
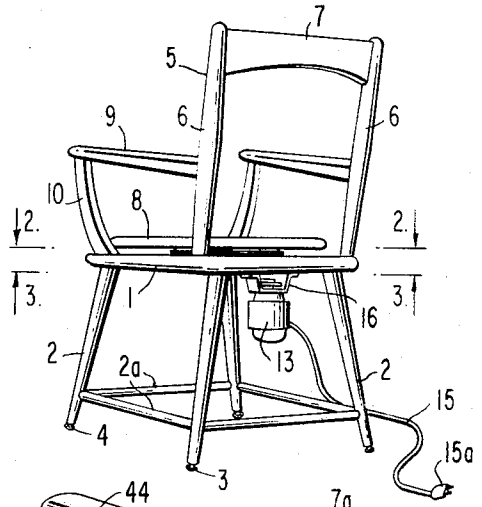


FIG. 1



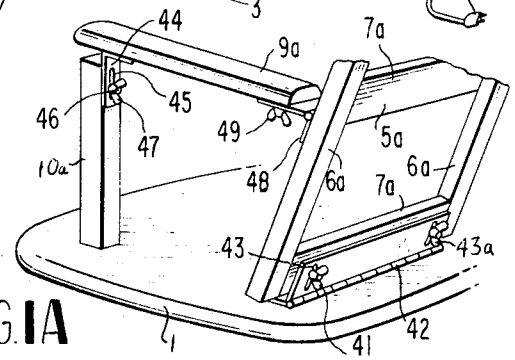
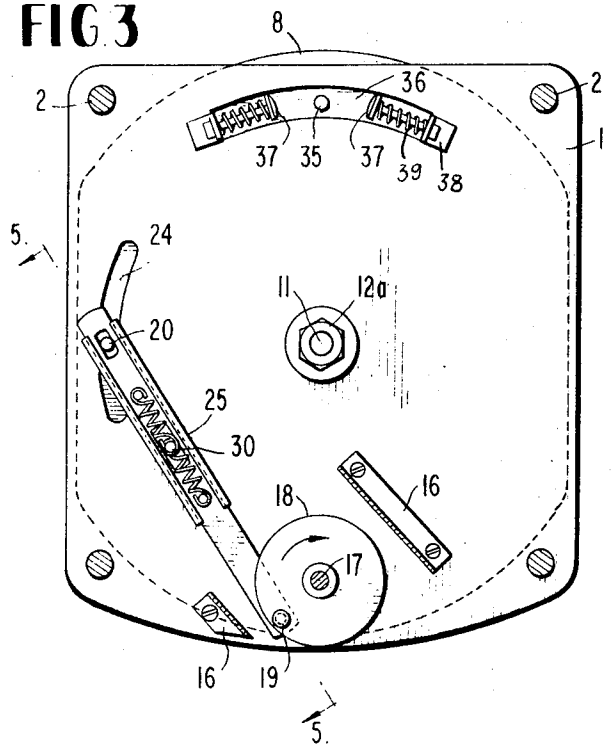


FIG. 1A

FIG. 3



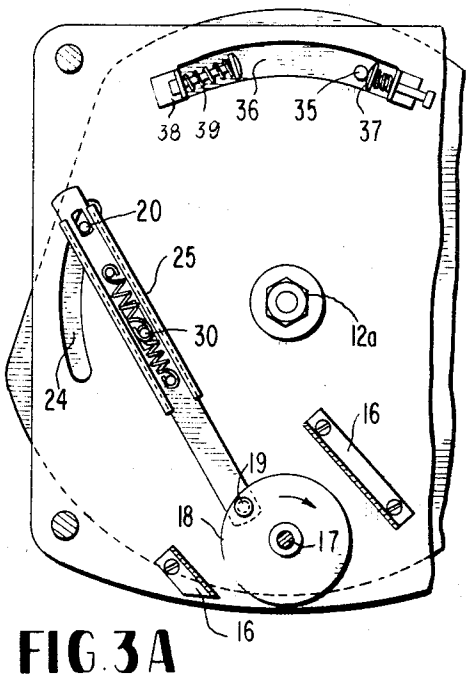
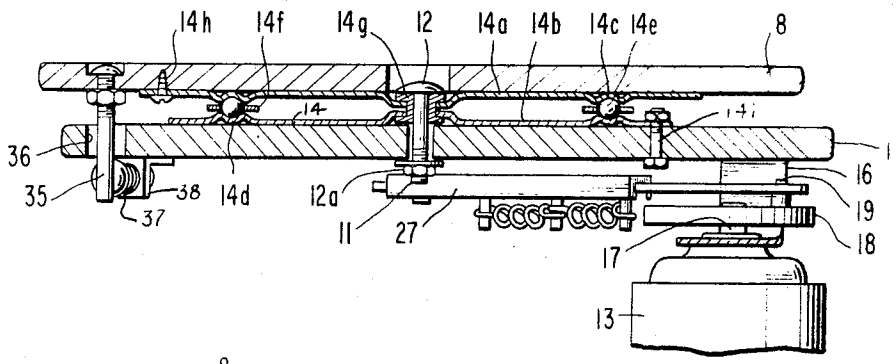


FIG. 3A

FIG. 4



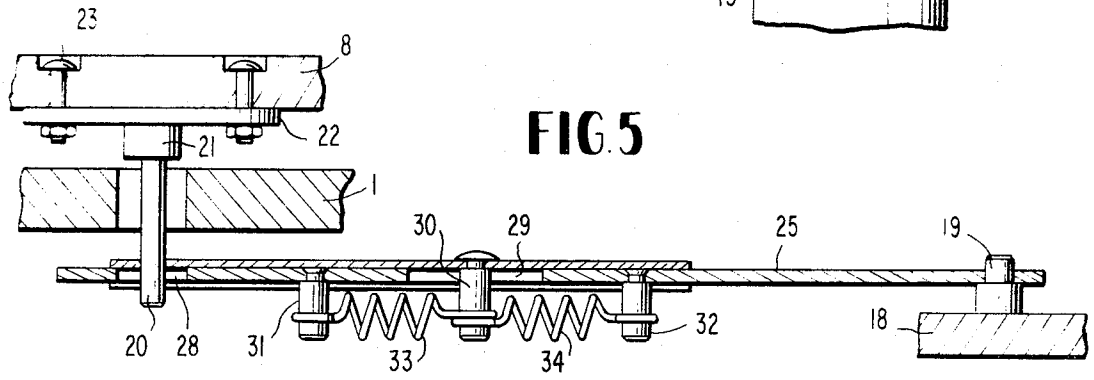


FIG. 5

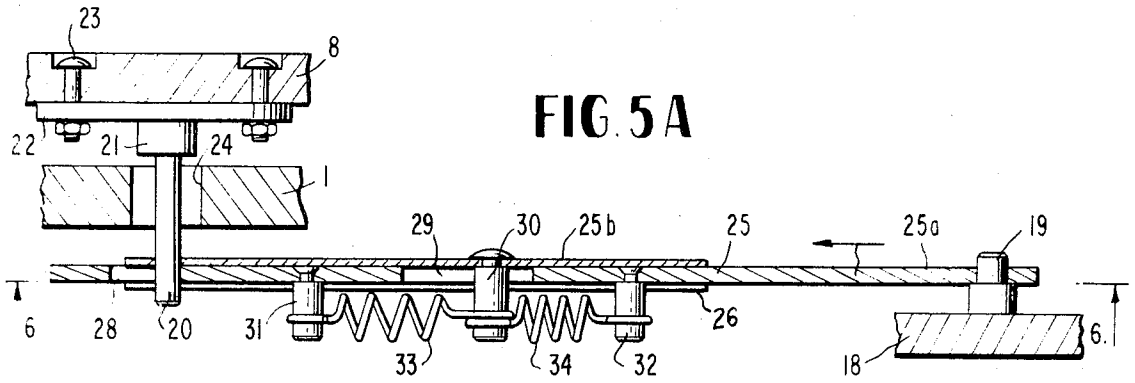


FIG. 5A

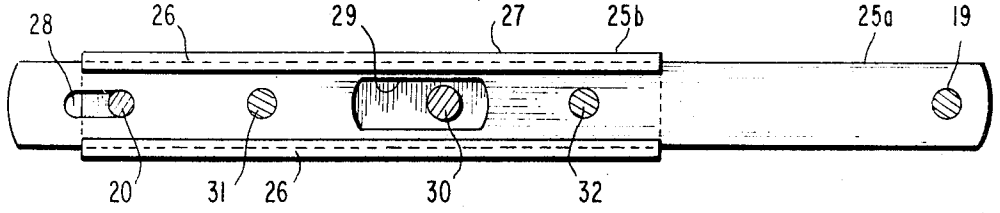


FIG. 6

EXERCISE CHAIR

This invention relates to an exercising device and more particularly has reference to a device wherein a person can have the muscles of his feet, ankles, legs, back, shoulders, arms, wrists and hands exercised without the person positively on his own behalf making any movements but by merely relaxing and in effect resisting in varying degrees at his option, movements to the various parts of his body, which are imparted thereto by a power-driven device which imparts rotary reciprocatory movement about a vertical axis to his buttocks.

Various exercising devices of a so-called passive body exercising type have been developed wherein vibratory or oscillatory motion is imparted to portions of a person's body while lying on a body support. Another type of exercising device has been devised which consists of a turntable on which the person desiring exercise must stand and balance himself while motion is imparted to his feet. Such a device tends to set the person's body in motion, and such motion is resisted by the inertia of the person's body. This type of device requires considerable ability of the person to balance himself and to avoid being thrown from the turntable. Such type of device obviously would be impractical and dangerous for use by elderly or infirmed persons who probably have more need for the exercise than a young person capable of balancing himself on the turntable.

In accordance with the present invention, the exercising device is in the form of an armchair in which the person to be exercised may sit and relax with his feet on the floor, his arms and hands on the arms of the armchair and if desired his back engaging the back of said armchair. Exercising motion is transmitted to the buttocks of the person sitting in the armchair by means of a seat having reciprocating rotary motion about a vertical axis and to which motion is imparted by means of a power-driven mechanism.

An object of the present invention is to provide an exercising device which avoids the disadvantages of the prior art devices.

Another object of this invention is to provide an exercising device wherein motion is imparted to the buttocks of a person sitting in a chair and the various muscles of the person's ankles, legs, shoulders, arms and hands are exercised by engagement of the person's feet with the floor, his arms and hands on the arms of the armchair and his back engaging the back of the chair.

Still another object of this invention is to provide a mechanism which will impart to the buttocks of a person being exercised a slow, rotary, reciprocatory motion through a small arc of oscillation and at such a speed as to effectively exercise most of the person's muscles without in any way endangering the person.

In order to more clearly understand the present invention, reference is made to the accompanying drawings, wherein:

FIG. 1 is a perspective view of an armchair embodying the principles of the present invention;

FIG. 1A is a fragmentary perspective view similar to that of FIG. 1 showing an embodiment having adjustable back and arm portions;

FIG. 2 is a cross-sectional view taken on line 2—2 of FIG. 1;

FIGS. 3 and 3A are similar views taken on line 3—3 of FIG. 1;

FIG. 4 is a cross-sectional view taken on line 4—4 of FIG. 2;

FIG. 5 is a cross-sectional view taken on line 5—5 of FIG. 3 with parts of the mechanism in one position;

FIG. 5A is a view similar to that of FIG. 5 with parts of the mechanism in a different position; and

FIG. 6 is a fragmentary sectional view of the linkage taken on line 6—6 of FIG. 5A.

Referring to the drawings, an embodiment of the invention is shown wherein an armchair is depicted having a seat portion 1 supported by ground or floor-engaging means in the form of legs 2. The legs 2 may be interconnected by rungs or bracing members 2*a* to impart rigidity to the ground or floor-engaging means. The lower ends of the legs are provided with feet members 3 which are carried by threaded studs 4 which are threadedly received in interiorly threaded recesses. By screwing the studs into or out of the threaded recesses, the effective length of legs 2 can be individually adjusted for raising or lowering the elevation of the seat portion 1 or for leveling the chair.

As shown in FIG. 1, the seat portion 1 has a back 5 extending upwardly therefrom. Back 5 can be of the conventional chair back construction but for purposes of illustration it has been shown as comprising two upstanding posts or members 6 with cross members 7. Only one cross member has been shown in FIG. 1 to better illustrate the body-carrying seat member 8, but obviously as many back cross members as desired or necessary may be employed.

Posts 6 serve as supports for the rear ends of arms or arm supports 9. As shown, arms 9 are carried at their forward portions by posts or upstanding members 10 of any desired shape or design. Of course if desired arms 9 and members 10 can be integral.

Actually the chair structure so far described may be of any of the many well-known designs and conventional chairs can be modified to embody the features of the present invention.

According to this invention reciprocatory rotary motion is imparted to the buttocks of a person using the exerciser. For this purpose the body-carrying seat member is mounted on the seat portion 1 of the chair by means of a center pivot pin or bolt 11 provided with a head 12 and a threaded body which passes through the body-carrying seat member 8 and the seat portion 1. A nut 12*a* is threaded on body 11 to retain the bolt in position. A concentric annular bearing 14 is interposed between seat member 8 and seat portion 1. Bearing 14 is of the thrust type and includes races with interposed balls.

Actually the bearing 14 is of a well-known type and is formed of two sheet metal discs 14*a* and 14*b* which are shaped to provide ball races 14*c* and 14*d* which receive balls 14*e* which are embraced by an annular cage or retainer 14*f*. The center of discs 14*a* and 14*b* are provided with registering openings through which a boss 14*g* passes. This boss is provided with an upper head and the lower end is pressed outwardly to secure the two discs 14*a* and 14*b* together.

Upper disc 14*a* is provided with ears on its outer periphery through which screws 14*h* pass into the seat member 8. Lower disc 14*b* is provided with ears through which bolts 14i pass to secure the lower disc 14*b* to the seat portion 1.

Bolt 11 as previously mentioned passes through the boss 14*g* and the seat portion 1 and serves as a safeguard to maintain the assembly together.

This structure provides an assembly which fully supports the weight of a person and yet may be driven in reciprocating rotary motion by a low-powered electric motor 13.

As shown in FIG. 1, motor 13 is provided with a cord 15 equipped with a plug 15*a* for connection to an electric plug receptacle. A bracket 16 serves to mount the motor on the under side of seat portion 1 of the chair. Drive shaft 17 of the motor 13 extends upwardly through the bracket 16 and carries a drive wheel 18 provided with an upstanding crank pin 19.

The reciprocable rotatably mounted seat member 8 carries a drive pin 20 which extends downwardly through seat 1 and is rigidly secured in position by a boss 21 having a flange 22 which is anchored to the under side of the seat member 8 by bolts 23 or other attaching means. Pin 20 extends through an arcuate slot 24 in the stationary seat portion 1 of the chair. Slot 24 is of a width and length to permit the pin 20 to freely reciprocate therein.

Reciprocatory rotary motion is imparted to the seat member 8 by a connecting rod or link 25 which is connected at one end to the crank pin 19 on the wheel 18 and at its other end to the drive pin 20. Since the weight of a person sitting on seat member 8 may be several hundred pounds there will be considerable inertia resisting change in direction of movement of seat member 8. To offset the undesirable effect on the mechanism the connecting rod or link 25 comprises two relatively sliding parts, 25*a* which is connected to crank pin 19,

and 25*b* which is connected to drive pin 20 of the seat member 8. While link 25 may be constructed in various manners by way of example part 25*b* is generally U-shaped in cross section and as shown in FIGS. 5A and 6 has the free edges 26 of the flanges 27 turned under the part 25*a* so as to embrace part 25*a*. This construction enables part 25*b* to freely slide relative to part 25*a*.

As shown in FIGS. 5, 5A and 6, part 25*a* is provided with a longitudinal slot 28 through which pin 20 may freely slide and a second longitudinal slot 29 through which a pin or post 30 carried by part 25*b* may freely slide.

A pair of spaced posts 31 and 32 are carried by part 25*a* and extend downwardly between the inturned edges 26 of flanges 27.

Tension springs 33 and 34 extend between post 30 and posts 31 and 32 as clearly shown. Springs 33 and 34 tend to maintain post 30 midway between posts 31 and 32 and are selected of appropriate size and force to enable seat member 8 to be driven in reciprocatory rotary motion with minimum shock to the drive mechanism and the chair.

It has been found that even with the above-described construction of the link 25, particularly with a heavy person, it is desirable to provide a shock-absorbing mechanism for reducing the shock of reversal of the direction of movement of seat 8. Such shock-absorbing mechanism may be constructed as shown in FIGS. 3, 3A and 4 wherein a pin or post 35 carried by seat member 8 extends downwardly through a second arcuate slot 36 in seat portion 1 of a width to enable post 35 to freely reciprocate therein. At each end of slot 36 bumpers 37 are provided which are carried by brackets 38 mounted on seat portion 1. Springs 39 resist movement of bumpers 37 when engaged by post 35 as shown in FIG. 3A.

Motor 13 is a so-called gear motor, that is a motor with a built-in reduction gear. While any speed suitable for the purpose may be used, it was found that when shaft 17 had a speed of 30 r.p.m. the seat member 8 had an oscillatory motion that was very satisfactory.

To enable the exercise chair to be used by persons of different sizes the legs are provided with adjustable devices 3, 4 to vary the height of seats 1 and 8 from the floor as previously described. Other adjustments for the arms and back are provided as shown in FIG. 1A. In this figure, back 5*a* has cross members 7*a* the lower one of which is attached by bolts and thumb screws 41 to one side of a piano or other suitable hinge 42, the other side of the hinge being attached to seat 1. Hinge 42 makes it possible to adjust the angle of the back 5*a* relative to seat 1. Slots 43 are provided in hinge 42 through which studs carrying thumb screws 43*a* extend to permit vertical adjustment of back 5*a* relative to seat 1.

Arms 9*a* have angle brackets 44 attached to the forward under side thereof. The vertical arms of brackets 44 are provided with slots 45 through which studs 46 carried by posts 10*a* extend and which are provided with thumb screws 47 to enable the brackets to be secured in vertically adjusted positions to the posts 10*a*.

The rear of arms 9*a* are secured to back 5*a* by hinges 48. One part of each hinge 48 is fixed to back 5*a* and the other parts are provided with slots (not shown) similar to slots 45 to enable the back to be tilted to various angles and secured to the rear portions of arms 9*a* by thumb screws 49.

With various adjustments shown in FIG. 1A the chair can be adjusted to accommodate various-sized persons and enable them to enjoy the benefits of the exercise chair.

Only the bare essentials of the exercise chair have been shown and described but quite obviously the "chair" may be upholstered and decorated as desired to make pleasing in appearance as well as useful. Also seat 8, arms 9, 9*a* and back 5, 5*a* may be padded, fitted with cushions or suitably upholstered to ensure maximum comfort to a person using the same.

It has been found that an exercise chair constructed as herein described enables a person sitting on a chair of appropriate size or an adjustable chair adjusted to their size to obtain exercise of various portions of their body. For instance, when sitting on seat 8 while the motor 13 is energized the person's buttocks has rotary reciprocating motion imparted thereto. By pressing their feet on the floor, the muscles of their feet, legs and buttocks will tend to resist the rotary reciprocatory motion with consequent exercise of the various muscles.

Upon pressing their arms on arms 9, 9*a* or by gripping arms 9, 9*a* with their hands the muscles of their hands, arms, shoulders and back may be exercised.

Similarly by varying the pressure of the person's back on back 5, 5*a* of the chair, back muscles, etc., will be exercised.

Having described our invention, we claim:

1. An exercising device comprising an armchair having a seat portion, ground or floor-engaging means extending downwardly from and carrying said seat portion, a back extending upwardly from said seat portion, arm supports mounted above and at the sides of said seat portion, a body-carrying seat member mounted on said seat portion for movement about a vertical axis and power-driven means for imparting reciprocal rotary movement to said seat member about said vertical axis.

2. An exercising device according to claim 1 wherein the ground or floor-engaging means is provided with adjustable means for varying the distance of the seat portion above the ground or floor.

3. An exercising device according to claim 1 wherein the height of the arms above the seat portion is adjustable.

4. An exercising device according to claim 1 wherein the height and angle of the back relative to the seat portion is adjustable.

5. An exercising device according to claim 2 wherein the height of the arms above the seat portion is adjustable.

6. An exercising device according to claim 1 wherein the ground or floor-engaging means is provided with adjustable means for varying the distance of the seat portion above the ground or floor, the height of the arms above the seat portion is adjustable, and the height and angle of the back relative to the seat portion is adjustable.

7. An exercising device according to claim 1 wherein the power-driven means comprises an electric motor, a crank pin rotated in a circle, a drive pin carried by the body-carrying seat member and a connecting link between the crank pin and drive pin.

8. An exercising device according to claim 7 wherein the connecting link comprises two parts relatively slidable with respect to each other and spring means for resisting relative sliding of one part with respect to the other.

9. An exercising device according to claim 8 wherein the fixed seat is provided with spaced bumpers and the movable seat member is provided with means reciprocable between the bumpers to absorb shocks due to change in direction of movement of the seat member.

10. An exercising device according to claim 9 wherein the ground or floor-engaging means is provided with adjustable means for varying the distance of the seat portion above the ground or floor, the height of the arms above the seat portion is adjustable, and the height and angle of the back relative to the seat portion is adjustable.

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