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VIBRATING MOTOR-DRIVEN EXERCISING MACHINE THAT CAUSES WAIST BENDING

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Fig. 1

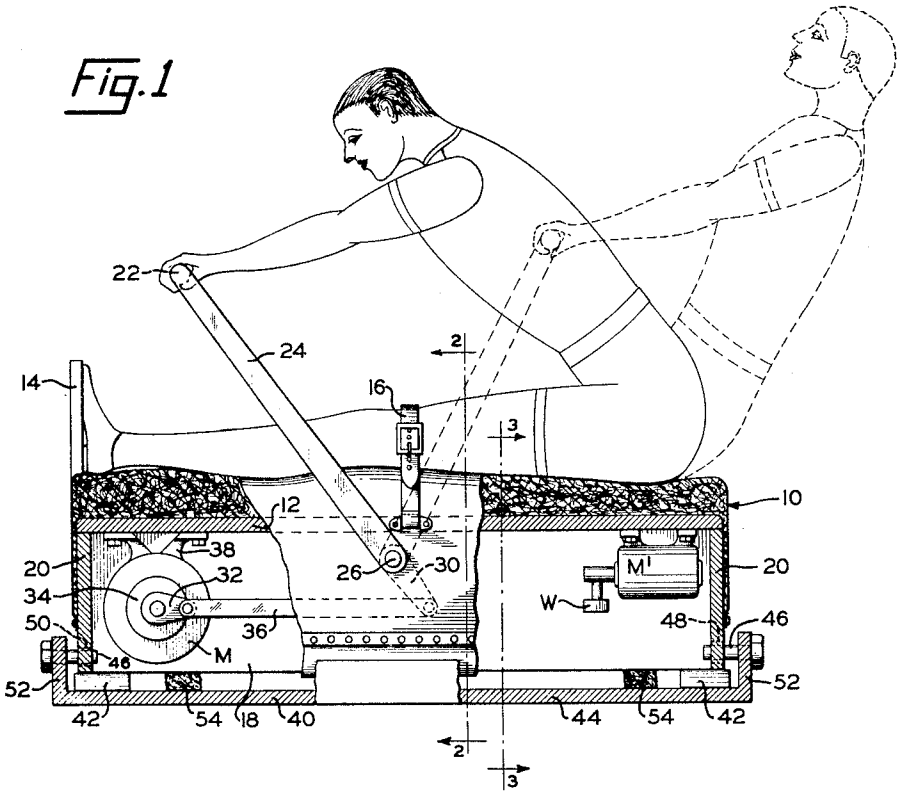



Fig. 2

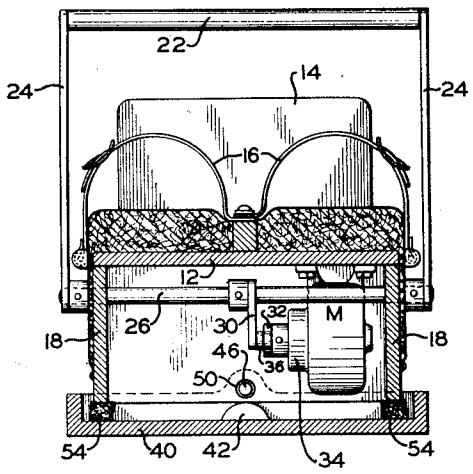
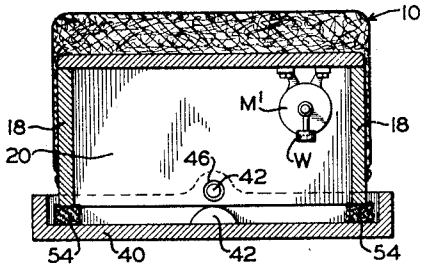



Fig. 3




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## VIBRATING MOTOR-DRIVEN EXERCISING MACHINE THAT CAUSES WAIST BENDING

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4 Claims. (Cl. 128—33)

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My present invention relates to therapeutic-exercising apparatus.

The primary object of this invention is to provide apparatus which is operable to cause the user thereof to bend forward and backward at the waist while in a sitting posture and with the legs immobilized and in such manner as to compel the user to stretch while bending.

In accordance with the preferred embodiment of the present invention, the apparatus comprises a power driven oscillatory hand grip which when grasped by the subject, while the latter is in a sitting position with the thighs and legs straightened and immobilized in a horizontal position, compels the subject to bend forward and backward at the waist with resulting stretching and/or dilation of various parts of the subject's body. Further, the apparatus, in the presently preferred embodiment of the invention, includes means for applying oscillation or vibrations of small amplitude to the subject.

The above and other objects, features and advantages of this invention will be fully understood from the following description considered with reference to the accompanying illustrative drawings in which:

Fig. 1 is a side view, partly in elevation and partly in section, of apparatus embodying the present invention;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view on the line 3—3 of Fig. 1.

Referring to the drawings in detail, the apparatus of the present invention comprises a frame 10 which, as here shown, has a top wall 12 on which the subject is seated, with the legs and thighs straightened and horizontal, when using the apparatus. Said wall may be padded for the comfort of the user. A foot rest 14 is fixed to the frame and projects upwardly from wall 12, and releasably adjustable buckled straps 16 are provided on wall for tieing down the subject's legs at or near the knees whereby to prevent the latter from bending. Said frame also includes the side walls 18 and the end walls 20.

Rigid hand-grip means 22 is positioned above and extends transversely of wall 12, said hand-grip means, which is preferably in the form of a bar, is fixed to the upper ends of rigid arms 24. The lower ends of said arms are fixed to an oscillatory shaft 26 which extends transversely of frame 10 below wall 12. Said shaft is mounted for oscillation in bearings 28 secured in the side walls 18 of the frame. Shaft 26 has a crank arm

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30 fixed thereto and operated by the crank arm 32 which is fixed to a rotary shaft operated by an electric motor M through speed-reduction gearing indicated at 34. Said crank arms are connected to each other by a rigid link 36 which is pivotally connected at its opposite ends to said crank arms, respectively. The electric motor M may be supported within the frame in any suitable way, for example by securing the frame 38 of the motor to wall 12 of the frame 10.

It will be understood that when the subject is positioned on top wall 12 of the frame, as illustrated in Fig. 1, and grasps the hand grip 22 which is oscillated longitudinally of the frame, when motor M is energized, the subject must necessarily bend forwardly and backwardly at the waist so long as said hand grip is grasped. It will be noted that the hand grip means is pivotally mounted on the frame at a point which is located substantially mid-way between the opposite ends of the frame or forwardly of the user's hips when the user is seated on the top of the frame facing said hand grip means and grasping the latter. Since the subject's feet bear against the foot rest 14 and the knees are prevented from bending, the subject is pulled forwardly by his or her arms when the hand grip is moved to the left, viewing Fig. 1, and is thereby caused to bend forwardly at the waist in synchronism with said hand grip; and when the hand grip is moved in the opposite direction, the subject is pushed back so long as the latter holds on to the hand grip and does not bend the arms at the elbows, whereby the subject is caused to bend backwards, at the waist in synchronism with said hand grip, to a semi-reclining position. During these bending movements, various parts of the user's body are stretched and/or dilated, as the case may be, with resulting beneficial therapeutic effects. The apparatus may be used in treatments for relieving constipation and/or for any other purpose for which the induced motion of the subject by the present apparatus is beneficial as prescribed by members of the medical or allied professions. The hand grip 22 may be oscillated at any suitable speed which may be varied, if desired. However motor M is preferably a constant-speed motor, as variable speed of movement of hand-grip 22 is not essential. Preferably the hand grip is moved at a speed of about 24 oscillations per minute, i. e., said hand grip moves forwardly 12 times per minute and backwardly the same number of times per minute. It will be understood however that the rate of movement of hand-grip 22 may be varied from this indicated preferred speed.

In accordance with the preferred embodiment of the invention, provision is made for affording the user of the apparatus the benefits of oscillation therapy. For this purpose frame 10 is mounted for oscillation on a base 40. More particularly said frame is pivotally supported on pivot bars 42 which are fastened to the bottom 44 of said base. Pins 46 pass through openings 48 and 50 in the end walls 20 of the frame and in the upstanding end walls 52, respectively, of the base. The openings 48 and 50 are somewhat larger than the pins 48 so that frame 10 can pivot or oscillate as in the apparatus shown by my Patent No. 2,374,492. The frame 10 is caused to oscillate by an electric motor M' which has an eccentric weight W fixed to the motor shaft, for example, as shown in my said patent. Motor M' is supported from wall 12 in such position within the frame that the shaft of the motor is at one side of the pivot of frame 10, the shaft axis of rotation being preferably parallel to the pivotal axis of said frame. Resilient pads 54 of rubber or other suitable material are placed at the four corners of the frame between the latter and the base to limit the oscillations of the frame to a small amplitude. If desired bars 42 may be omitted and pins 46 may constitute the sole pivotal mounting means for frame 10 on base 40.

In using the apparatus, the frame 10 may be oscillated or vibrated without operating the motor M for actuating the hand grip 22, and vice versa. When frame 10 is utilized for oscillation therapy without operation of hand grip 22, the subject may sit on said frame in any preferred position without being strapped thereto. Preferably, the subject is treated by oscillation of the frame 10 just before the treatment by the hand grip induced movements described above in order that the subject may be relaxed as a result of the treatment by the frame oscillations or vibrations. However, the frame oscillation treatment may be taken concurrently with or after the treatment by the hand grip induced movements.

It will be understood that the frame 10 may be supported in any suitable way, other than pivotally, when the apparatus does not include means for oscillation therapy. For example, frame 10 may be disconnected from base 40 or may be manufactured or sold without said base and may be used with or without another base, since the side and end walls provide a suitable support for the frame.

The invention may be embodied otherwise than as herein illustrated or described and various changes in the details of construction and in the arrangement of parts may be made without departing from the underlying idea or principles of the invention within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. Apparatus of the class described, comprising a frame having a top for supporting the user, hand grip means positioned above said top and pivotally mounted on said frame at a point which is located forwardly of the user's hips when the user is seated on said top of the frame facing said hand grip means and grasping the latter, said hand grip means being movable longitudinally of the frame in opposite directions, and power-operated means carried by said frame and operatively connected to said hand grip means for moving the same alternately in said opposite directions whereby the user, when seated on said top of the frame facing said hand grip means and grasping the latter and with the user's legs extended horizontally on said top of the frame, is compelled to bend forward and backward at the waist in synchronism with said hand grip.



2. Apparatus of the class described, comprising a frame having a top for supporting the user, hand grip means positioned above said top and pivotally mounted on said frame at a point located substantially mid-way between the opposite ends of the frame for movement longitudinally thereof in opposite directions, and power-operated means carried by said frame and operatively connected to said hand grip means for moving the same alternately in said opposite directions whereby the user, when seated on said top of the frame facing said hand grip means and grasping the latter, is compelled to bend forward and backward at the waist in synchronism with said hand grip, said frame being provided with means for immobilizing the user's legs to prevent bending thereof at the knees.

3. Apparatus of the class described, comprising a frame having a top for supporting the user, hand grip means positioned above said top and pivotally mounted on said frame at a point which is located forwardly of the user's hips when the user is seated on said top of the frame facing said hand grip means and grasping the latter, said hand grip means being movable longitudinally of the frame in opposite directions, and power-operated means carried by said frame and operatively connected to said hand grip means for moving the same alternately in said opposite directions whereby the user, when seated on said top of the frame facing said hand grip means and grasping the latter, is compelled to bend forward and backward at the waist in synchronism with said hand grip, and means for oscillating said frame about a horizontal axis.

4. Apparatus of the class described, comprising a frame having a top for supporting the user, hand grip means positioned above said top and pivotally mounted on said frame at a point located substantially mid-way between the opposite ends of the frame for movement longitudinally thereof in opposite directions, and power-operated means carried by said frame and operatively connected to said hand grip means for moving the same alternately in said opposite directions whereby the user, when seated on said top of the frame facing said hand grip means and grasping the latter, is compelled to bend forward and backward at the waist in synchronism with said hand grip, and means for vibrating said frame.

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