

Sept. 14, 1954

R. G. SILVERTON ET AL

2,689,127

TABLE EXERCISING MACHINE

Filed July 1, 1952

2 Sheets-Sheet 1

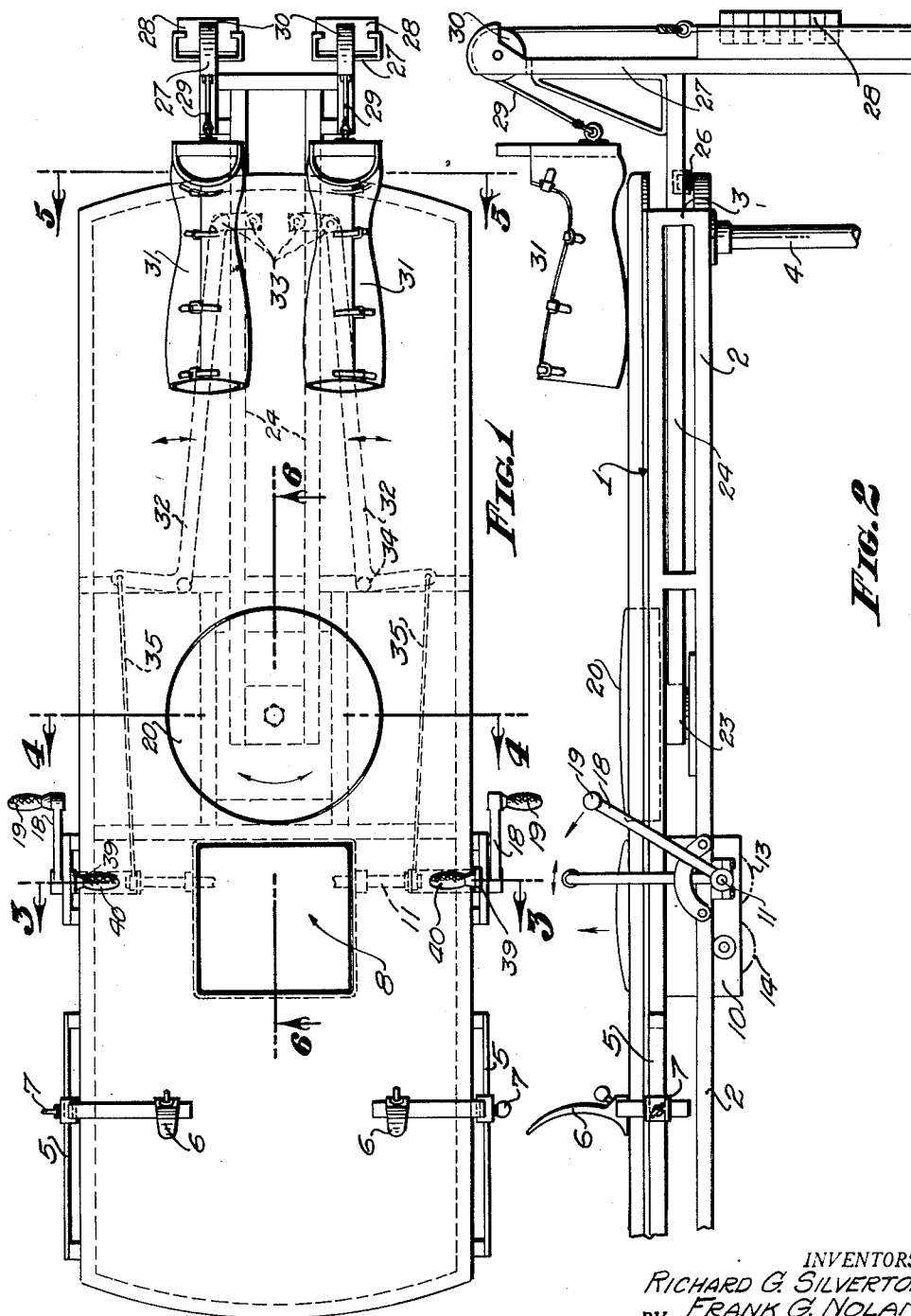


FIG. 1

FIG. 2

INVENTORS
RICHARD G. SILVERTON
BY FRANK G. NOLAN

Lyon & Lyon

ATTORNEYS

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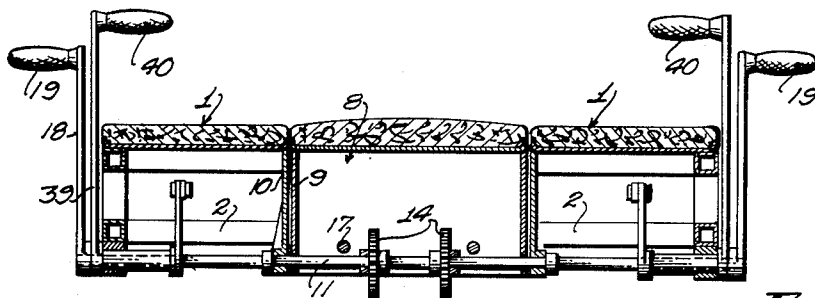


FIG. 3

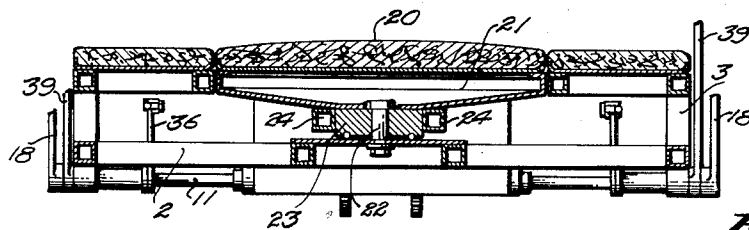


FIG. 4

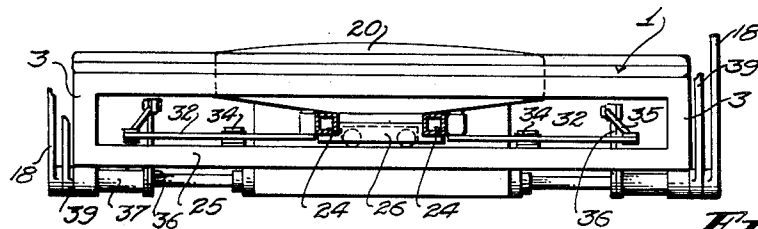


FIG. 5

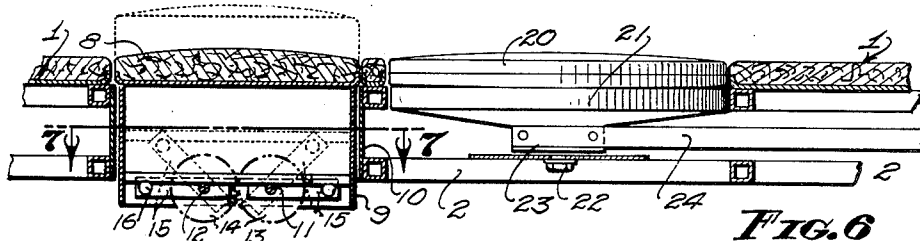


FIG. 6

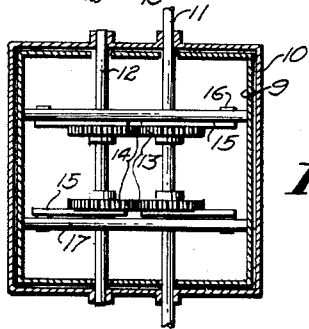


FIG. 7

INVENTORS
RICHARD G. SILVERTON
FRANK G. NOLAN
BY
Lyon & Lyon
ATTORNEYS

UNITED STATES PATENT OFFICE

2,689,127

TABLE EXERCISING MACHINE

Richard G. Silverton and Frank G. Nolan,
Los Angeles, Calif.

Application July 1, 1952, Serial No. 296,646

7 Claims. (Cl. 272-58)

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Our invention relates to exercising machines and included in the objects of our invention are:

First, to provide an exercising machine in the form of a table and including means for restraining of the upper portion of the patient's body while applying a predetermined tension to the feet of the patient.

Second, to provide an exercising machine whereby the patient himself or an attendant may relax, extend, manipulate, side bend and help to establish the normal range of motion of the lower dorsal, lumbar and sacral areas of the spinal column for the purpose of helping the rehabilitation of the muscular and neurological structures of these areas and to help relieve spasms of these areas which may have been caused by disease, trauma or fatigue.

Third, to provide an exercising machine of this class wherein the degree of exercise afforded may be readily controlled or limited, if desired, so as to be maintained within the capabilities of the patient.

With the above and other objects in view as may appear hereinafter, reference is directed to the accompanying drawings in which:

Figure 1 is a top or plan view of our exercising machine.

Figure 2 is a fragmentary side view thereof.

Figure 3 is a transverse sectional view through 3-3 of Figure 1.

Figure 4 is a transverse sectional view through 4-4 of Figure 1.

Figure 5 is a transverse sectional view through 5-5 of Figure 1.

Figure 6 is a fragmentary, longitudinal sectional view through 6-6 of Figure 1.

Figure 7 is a sectional view through 7-7 of Figure 6.

Our exercising machine includes table 1 having a padded surface and supported from a sub-frame 2 of similar area by means of vertical spacers 3. The sub-frame rests on legs 4.

Near the head end of the table, there is provided, at each side, longitudinally extending guide bars 5 to which are adjustably secured, by fastening means 6, a pair of arm restraining members 7 adapted to engage under the arms of a patient to restrict longitudinal movement of the patient toward the foot end of the table.

The table 1 is provided with a rectangular aperture in which is set a back supporting and exercising panel 8. The panel 8 is mounted on an inner box frame 9, guided within an outer box frame 10, suitably secured to cross members forming a part of the sub-frame 2. The inner box frame is capable of vertical sliding movement. To accomplish this, a drive shaft 11 extends through the outer box frame and terminates at the sides of the sub-frame 2. A second or countershaft 12 is also supported in the outer box frame. This construction is best shown in Figures 3, 6 and 7. The drive shaft and countershaft are provided with mating gears 13 and 14.

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The gears are provided with lever arms 15, having rollers 16 which engage elevator bars 17, secured in the inner box frame 9. Rotation of the drive shaft 11 causes the lever arms 15 to raise the inner box frame. The inner box frame and panel lower by gravity.

The extremities of the drive shaft 11 are provided with upwardly directed handle levers 18, terminating in handles 19 directed outwardly from the table. The handles are so located that they may be grasped by a patient lying on the table.

The table 1 is also provided with a circular opening in which is set a pelvis exercising panel 20, capable of pivoting movement. The pelvis exercising panel 20 is mounted on an under frame 21 having a central pivot pin 22 and supported on a suitable ball bearing structure 23. Struts 24 are secured to the under frame 21 and extended from the foot end from the table 1 between the table and its sub-frame 2. The extremities of the struts are connected by a cross bar. In addition, the struts are provided with a roller carriage 26 which rides on the end member of the sub-frame, this member having a radius of curvature centered at the pelvis exercising panel 20. The projecting extremities of the struts 24 are provided with vertically disposed guide brackets 27 which form tracks on which slide a series of weights 28. Each set of weights is connected by a cable 29 which passes over a pulley 30 at the upper extremity of the corresponding guide bracket 27 and is attached to a boot 31, adapted to receive a foot of a patient.

Secured under the table 1, are a pair of bar crank levers 32, having arms with rollers 33 at their extremities, engageable with the struts 24. The bar cranks 32 are provided with fulcrum pivots 34, separated by a cross bar forming a part of the sub-frame 2. The remaining arm of each bar crank lever is joined to a connecting rod 35 which, in turn, is secured to a lever arm 36, having a sleeve 37 adapted to journal an end of the drive shaft 11. Each sleeve, in turn, is journaled in a bearing 38, secured to the sub-frame 2. Each sleeve 37 is provided with a handle arm 39 which extends upwardly adjacent a corresponding handle arm 18. The upper extremities of the handle arms 39 are provided with intumed handles 40.

Operation of our exercising machine is as follows: The patient lies on the table in a supine position. The boots 31 are fastened over the feet of the patient. The patient is so positioned that the pelvic region is centered on the panel 20. The arm restraining members 6 are positioned to engage under the arms of the patient so as to restrain the patient against movement towards the foot of the table. The weights 28 are arranged in units so that one or more weights may be applied to provide the desired degree of tension on the boots. By reason of the fact that the pulleys 30 are above the level of the table, the patient's

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feet are raised slightly. The patient or attendant can then operate the handles 40 to pivot the exercise panel 20 and to move the extremities of the struts, including the boots and weight members, from side to side. Also the patient or attendant can operate the handles 19 to raise and lower the back position and exercising panel 8.

Thus, by means of handles 19 or 40, the patient and attendant may relax, extend, manipulate, side bend and help to establish the normal range of motion of the lower dorsal, lumbar and sacral areas of the spinal column to help rehabilitate the muscular and neurological structures of these areas, and to release spasms of the above mentioned areas which may have been caused by disease, trauma or fatigue.

Having fully described our invention, it is to be understood that we do not wish to be limited to the details herein set forth, but our invention is of the full scope of the appended claims.

We claim:

1. An exercising machine, involving: a flat padded fixed table structure, adapted to receive a patient in a supine position and having an aperture therein in the region of the patient's back; a flat padded back exercising panel set in said aperture and movable vertically to and from the surface of said table structure; and means including hand levers at the sides of said table and accessible to a patient lying on said table and panel for moving said panel.

2. An exercising machine, involving: a table structure, adapted to receive a patient in a supine position; a back exercising panel set in said table and movable vertically to and from the surface thereof; a laterally oscillatable lever structure disposed under said table structure and having a vertical fulcrum axis located at the pelvic region of said patient; feet retaining means above the foot end of said table structure connected to said lever structure and movable from side to side of said table; and independent means for operating said vertically movable panel and oscillatable lever structure.

3. An exercising machine, involving: a table structure, adapted to receive a patient in a supine position; a back exercising panel set in said table and movable vertically to and from the surface thereof; a laterally oscillatable lever structure disposed under said table structure and having a vertical fulcrum axis located at the pelvic region of said patient; feet retaining means above the foot end of said table structure connected to said lever structure and movable from side to side of said table; and independent pairs of hand levers disposed at the sides of said table and accessible to a patient lying thereon connected respectively to said vertically movable panel and said laterally oscillatable levers to effect arching of the patient's back and lateral oscillation of the patient's legs.

4. An exercising machine, involving: a table structure, adapted to receive a patient in a supine position; a laterally oscillatable lever structure under said table structure; feet retaining means above one end of said table connected with said oscillatable lever structure and movable therewith from side to side of said table; means engageable under the arms of a patient to restrain the patient against longitudinal movement toward the foot end of the table; means for applying tension to said feet retaining means, thereby to stretch said patient; and means for operating said oscillating panel and feet retaining means.

5. An exercising machine, involving: a table

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structure, adapted to receive a patient in a supine position; a laterally oscillatable lever structure under said table structure; feet retaining means above one end of said table connected with said oscillatable lever structure and movable therewith from side to side of said table; means engageable under the arms of a patient to restrain the patient against longitudinal movement toward the foot end of the table; and hand levers at the sides of said table accessible by a patient disposed thereon to operate said laterally oscillating lever and feet retaining means.

6. An exercising machine, comprising: a fixed padded table adapted to receive a patient in a supine position; longitudinally adjustable brackets overlying the table and including retainer members adapted to fit under the arms of the patient; a laterally oscillatable lever structure disposed under the table with its fulcrum below the pelvic region of the patient and protruding from the foot thereof; a pair of foot receiving devices located above the table and adapted to be secured to the feet of the patient; means carried by said lever structure and attached to said foot receiving devices to draw said devices toward the foot end of said table, thereby to place the patient restrained by said arm engaging members under traction; and a set of hand levers at the sides of said table accessible to the patient and operatively connected with said lever structure to effect lateral oscillation thereof and corresponding lateral oscillation of the patient's legs.

7. An exercising machine, comprising: a fixed padded table adapted to receive a patient in a supine position; longitudinally adjustable brackets overlying the table and including retainer members adapted to fit under the arms of the patient; a laterally oscillatable lever structure disposed under the table with its fulcrum below the pelvic region of the patient and protruding from the foot thereof; a pair of foot receiving devices located above the table and adapted to be secured to the feet of the patient; means carried by said lever structure and attached to said foot receiving devices to draw said devices toward the foot end of said table, thereby to place the patient restrained by said arm engaging members under traction; a set of hand levers at the sides of said table accessible to the patient and operatively connected with said lever structure to effect lateral oscillation thereof and corresponding lateral oscillation of the patient's legs; a panel set in said table in the region of the patient's back; guides for moving said panel vertically between a lower position substantially flush with the table and a raised position thereby to arch the back of the patient; and a second set of hand levers at the sides of said table accessible to the patient and operatively connected with said panel to raise and lower the same.

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