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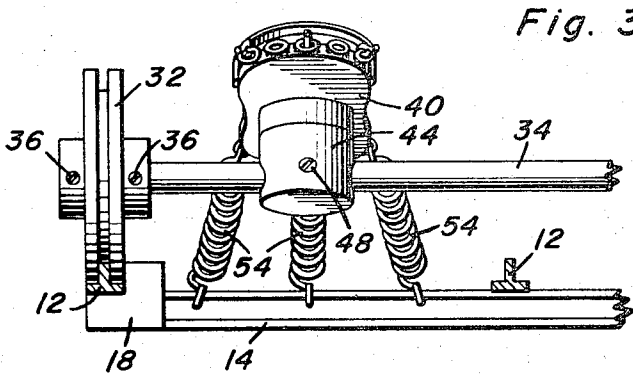
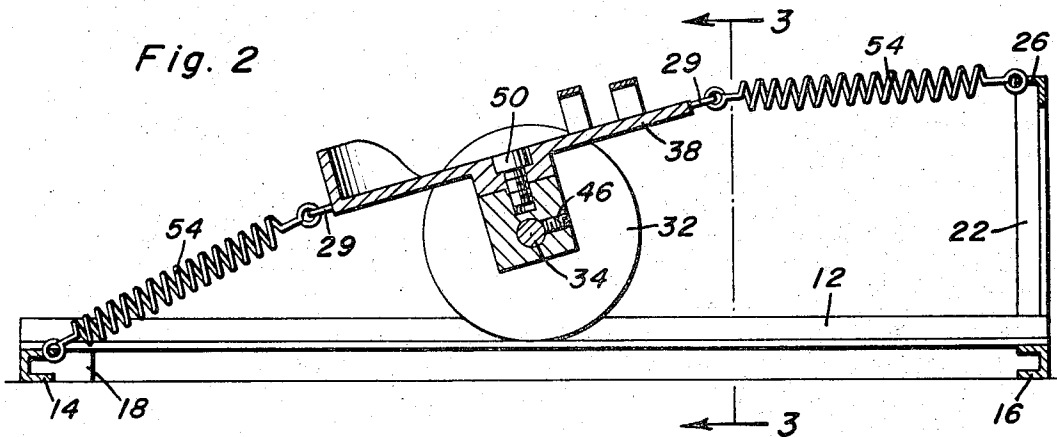
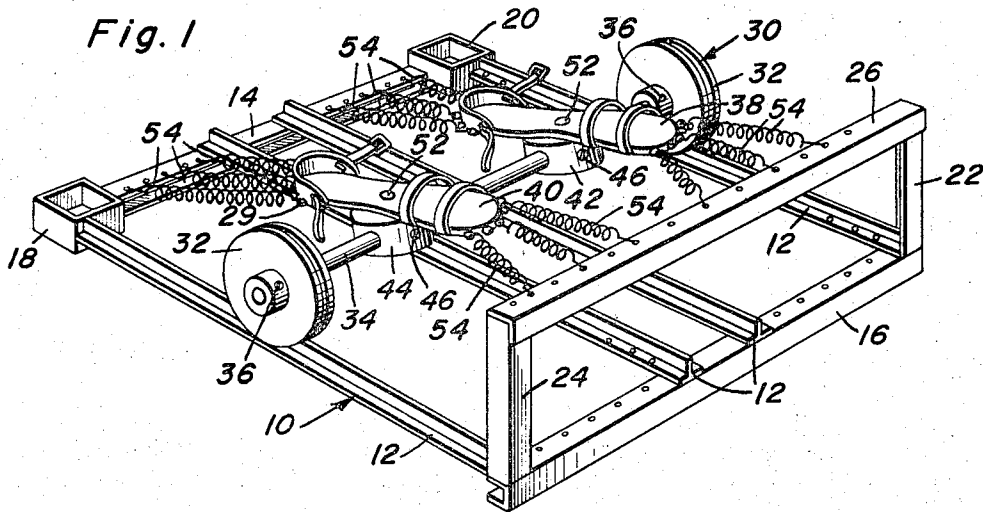
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3,421,760

EXERCISER DEVICE

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Sheet 1 of 2



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3,421,760

EXERCISER DEVICE

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3 Claims

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This invention relates generally to exercising devices, and more particularly to a device which is invaluable in the treatment of persons having weakened leg and arm muscles.

Heretofore exercising devices were generally adapted to be used for regular exercise and body building of well persons, with little if any regard for the treatment of persons having weakened leg and arm muscles; for example, who require physical therapy.

The present device permits the physio-therapist to exercise more parts of the body than has heretofore been generally possible with a single device. The present device can be set up within a few moments to give a patient assistance, resistance, or passive motion to any muscle group in the limbs and torso. This device will assist in exercising a group of muscles from the foot evertors and invertors to the wrist extensors and flexors with precise therapeutic resistance. Heretofore, such exacting degrees of therapeutic exercise had to be done specifically by therapists, or the patient would be exercising aimlessly without obtaining the proper resistance or assistance to the muscle group being exercised. By utilizing the present device the therapist has an improved means of exercising any group of muscles, or exercising different muscle groups at the same time. Additionally, the portions of the exercising device engaging the body member to be exercised are individually adjustable to the angle desired to obtain the maximum therapeutic value from the use of the exercising device.

It is an object of this invention to provide an exercising device which may be utilized in the treatment of persons having weakened leg and arm muscles.

It is another object of this invention to provide an exercising device which will permit treatment of the muscles being exercised with precise therapeutic resistance.

Still another object of this invention is to provide an exercising device which may be utilized by a person sitting in a chair astride the device, to exercise the foot, leg, thigh, and hip muscles, without the necessity of permanently anchoring the exercising device.

Still a further object of this invention is to provide an exercising device which may be adapted for use in exercising the arm, wrist, shoulder, and chest muscles.

Still a further object of this invention is to provide a body member manipulable means which may be adjusted for pronation of the hands, wrists and forearms, for example.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the exercising device with one embodiment of a body member manipulable means mounted thereon;

FIGURE 2 is a slightly enlarged lateral vertical sectional view of the device of FIGURE 1 taken substantially along the line of a plane running through one of the body member manipulable means;

FIGURE 3 is a front elevational view of one of the body member manipulable means and its associated support wheel, further showing the track upon which the wheel is mounted;

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FIGURE 4 is a perspective view of the device of FIGURE 1, further showing an embodiment of the body member manipulable means which is utilized in exercising the wrists, arms, shoulders and chest;

FIGURE 5 is a vertical sectional view taken substantially on the plane of a line passing through one of the hand manipulable means shown mounted on the present device of FIGURE 4;

FIGURE 6 is an elevational view of the present device being utilized by a person to exercise the foot, leg and hip muscles; and

FIGURE 7 is an elevational view of the embodiment of FIGURE 4 secured to a table top, or the like, and further showing the device being utilized to exercise the wrist, arm, shoulder and chest muscles.

Referring now to the drawings and FIGURES 1, 2 and 3 in particular the exercising device may be seen to include a frame indicated generally at 10, which includes a plurality of rail members 12. The rail members 12 are secured to transverse members 14 and 16, and are secured thereto in parallel relationship by means of welding, bolting or the like. The rail members 12 are preferably formed of channel members having an inverted T cross-sectional configuration, for reasons which will become clear. The outermost rail members 12 terminate short of the transverse member 14 and are secured by welding, or the like to an open top, bottomless, box-like member which is in turn secured to the transverse member 14 by welding or the like.

As seen in FIGURE 6 the box-like members 18 and 20 comprise a means of securing the exercising device in operative position adjacent a chair, or the like, by virtue of the fact that the legs of the chair or the like are inserted within the interior of the members 18 and 20.

The U-shaped transverse channel member 16 is provided with two upstanding members 22 and 24, which are secured to the transverse member 16 adjacent its ends by suitable means such as welding or the like. A cross member 26 is secured to and extends between the upright members 22 and 24, and is likewise secured thereto by suitable means such as welding, or the like. The transverse members 14 and 16 and the cross member 26 are provided with a plurality of apertures on their portions adjacent the inner edges thereof. In addition the rail member 12 may also be provided with a plurality of apertures, as seen best in FIGURES 1 and 4.

A foot manipulable means is indicated generally at 30, which in the embodiment shown in FIGURES 1 through 3 includes a pair of peripherally grooved wheels 32 which are rotatably secured adjacent the outer ends of a common shaft 34 by means of setscrews which are rotatably secured within peripheral grooves (not shown), or the like 36. The means 30 further includes a pair of shoe plates 38 and 40, which are adjustably secured to the journal blocks 42 and 44. The journal blocks 42 and 44 may be selectively positioned and secured both laterally and radially with regard to the shaft 34 by means of their respective setscrews 46 and 48, the cooperation of which is seen best in FIGURE 2. As seen best in FIGURE 2 the shoe plates 38 and 40 may be adjustably rotated and secured about the axes provided by their respective pivot bolts 50 and 52 which are threadably received in suitable tapped holes in the respective journal blocks 42 and 44. To assist in imparting resistance or assistive motion to the person utilizing the shoe plates 38 and 40 they are provided with a plurality of adjustably secured calibrated coil springs 54 which are secured to both the shoe plates 38 and 40 and an opposed pair of cross members such as 14 and 16 or 14 and 26. The calibrated springs 54 are provided with hook portions adjacent their ends so that they may be selectively positioned in appropriate apertures

and rings 29 secured to the shoe plates 38 and 40, to vary the tension on the respective springs 54. The shoe plates 38 and 40 are provided with conventional straps, or loops to secure the feet placed thereon.

Referring now to FIGURES 4 and 5 it will be seen that the frame 10 has been provided with an alternate embodiment of the body member manipulable means 30, which comprises a pair of hand manipulable means 60. The means 60 includes two identical assemblies one of which will be described. The means 60 includes a pair of wheels 32, which wheels are rotatably secured adjacent the ends of their common shaft 35. The shaft 35 is substantially shorter than the shaft 34 of the device of FIGURE 1 and accordingly the wheels 32 of the means 60 track on adjacent track members 12. The hand manipulable means 60 includes a journal block 45 which is selectively positionable laterally and radially of the shaft 35 and securable thereon by means of setscrew 49. The handle 41 is rotatably secured to the journal block 45 by means of a pivot bolt 51 which is threadably received in a suitable threaded hole in the journal block 45. The journal block 45 and the base portion of the handle 41, are provided with a plurality of closed rings which are preferably welded to the journal block 45 and the handle 41 about the periphery thereof, to provide a means for anchoring the end of the calibrated springs 55 which are utilized to selectively tension the hand manipulable means 60 between the transverse members 14 and 16 or 14 and 26.

As seen best in FIGURE 4 the calibrated springs 55 may be selectively secured, or hooked in suitable apertures in the cross members or rails 12. As seen best in FIGURE 7 the frame 10 may be further provided with a plurality of C-clamps, or the like to facilitate securing the exercising device of FIGURES 4 and 5 to a suitable support means such as a table, or the like.

Referring now to the operation of the device in FIGURES 1, 2, 3 and 6 the exercising device would be placed on the floor with the front legs of the chair positioned within the securing means 18 and 20. Under the direction and control of the physiotherapist, the patient is seated in the chair with his feet secured in the respective shoe plates 38 and 40. As stated previously the force required to expand or contract the springs 54 is known and accordingly, the tension may be decreased or increased by selectively positioning the hook end of the springs 54 in suitable apertures in both the cross members 14 and 26 and the rail members 12. Each shoe plate is thus individually adjustable to the tension required and may also be angularly adjusted about both the horizontal axes provided by the shaft 34 and the substantially vertical axes provided by the respective bolts 50 and 52. By pushing with his feet, the patient is pushing against the resistance of the springs. Both legs may be used in unison by mounting both the journal blocks 42 and 44 on a single shaft such as 34, or the journal blocks 42 and 44 may be mounted on a shorter shaft such as 35 so that each leg may be exercised individually in a walking motion. The lateral adjustment of the journal blocks 42 and 44 with regard to their respective shafts is utilized when it is desirous of exercising the thigh and hip muscles.

Referring now to the utilization of the embodiment illustrated in FIGURES 4, 5 and 7 it may be seen from the foregoing that the hand manipulable means 60 may be utilized in a manner similar to that of the device of FIGURES 1, 2, 3 and 6 to exercise the wrist, arms, shoulder, head and chest muscles. The springs 55 of the hand manipulable means 60 may be selectively tensioned in a manner identical to that of the tensioning of the spring 54. The journal block 45 may be selectively positioned about the circumference of the shaft 35 as well as being selectively secured laterally with regard to the shaft 35.

In addition, the hand grip means 41 may be rotated about the axis provided by the pivot bolt 51 and selectively secured to the journal block 45 by tightening of the bolt 51 for pronation of the hands, wrists, and forearms. Although shown mounted on separate shafts, it will be understood that the hand manipulable means 60 may be mounted on a common shaft, such as shaft 34, so that the wrist, arm, shoulder and chest may be exercised in unison in a manner similar to that provided by the utilization of the exercising device of FIGURE 1.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination an exercising device comprising a frame including a plurality of spaced-apart track members, said track members being rigidly secured in parallel spaced-apart relationship by a pair of transverse frame members secured adjacent the ends of said track members, a pair of vertically disposed upstanding members secured adjacent the ends of one of said transverse frame members, a cross member secured to and extending between said upstanding members in spaced-apart relationship from said one of said transverse frame members, a body member manipulable means adapted to track upon said track members to traverse said track members under the influence of a person utilizing the device, resilient means operatively associated with said body member manipulable means to resist the traversing motion of said manipulable means, said resilient means being secured to the laterally opposed sides of said manipulable means, said resilient means being connectable to the other of said transverse frame members and to said one of said transverse frame members and/or said cross member to resist the movement of the manipulable means, said resilient means being selectively positionable and securable on said members to vary the tension on the manipulable means resiliently retained therebetween.

2. The structure of claim 1 wherein said track members are formed of inverted T channel members and said body member manipulable means includes at least two wheels adapted to track on two of said inverted T track members, said wheels being rotatably secured on a common shaft, and at least one body member engageable means selectively positionable on said common shaft.

3. The structure of claim 1 wherein said cross member and said transverse frame members are provided with a plurality of apertures to permit operatively positioning the ends of said resilient means to vary the tension on said resilient means.

References Cited

UNITED STATES PATENTS

42,516	4/1864	Taylor	128—25
1,470,403	10/1923	Thalken	272—57
1,509,793	9/1924	Thompson	272—57 X
2,017,213	10/1935	Laborda	272—79 X
2,638,089	5/1953	Murphy	128—25
2,682,402	6/1954	McCarthy	272—83

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