

July 14, 1953

H. N. MAGIDA

2,645,482

FOOT ACTUATED EXERCISING DEVICE

Filed May 19, 1952

2 Sheets-Sheet 1

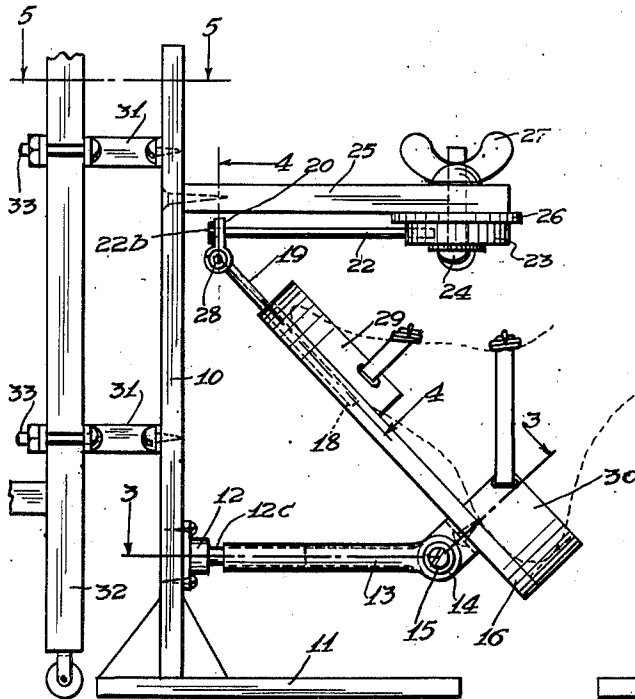


Fig. 1

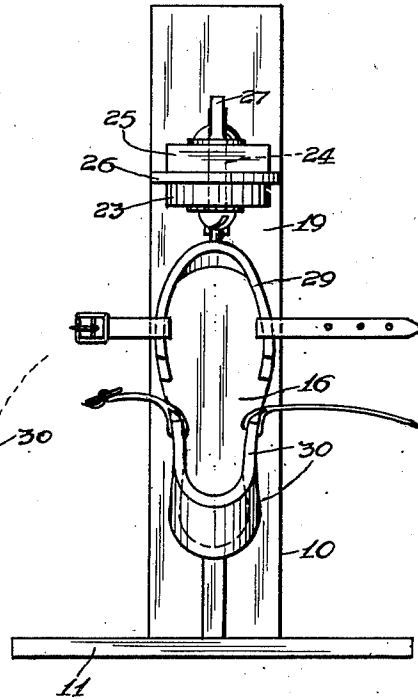


Fig. 2

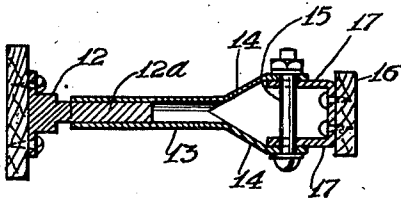


Fig. 3

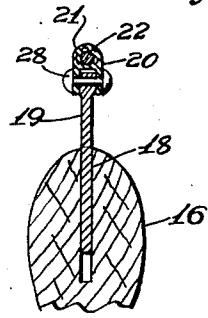


Fig. 4

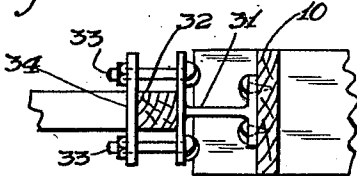


Fig. 5

INVENTOR,
Herbert N. Magida
BY Edward W. Weiskel
Attorney

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H. N. MAGIDA

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2 Sheets-Sheet 2

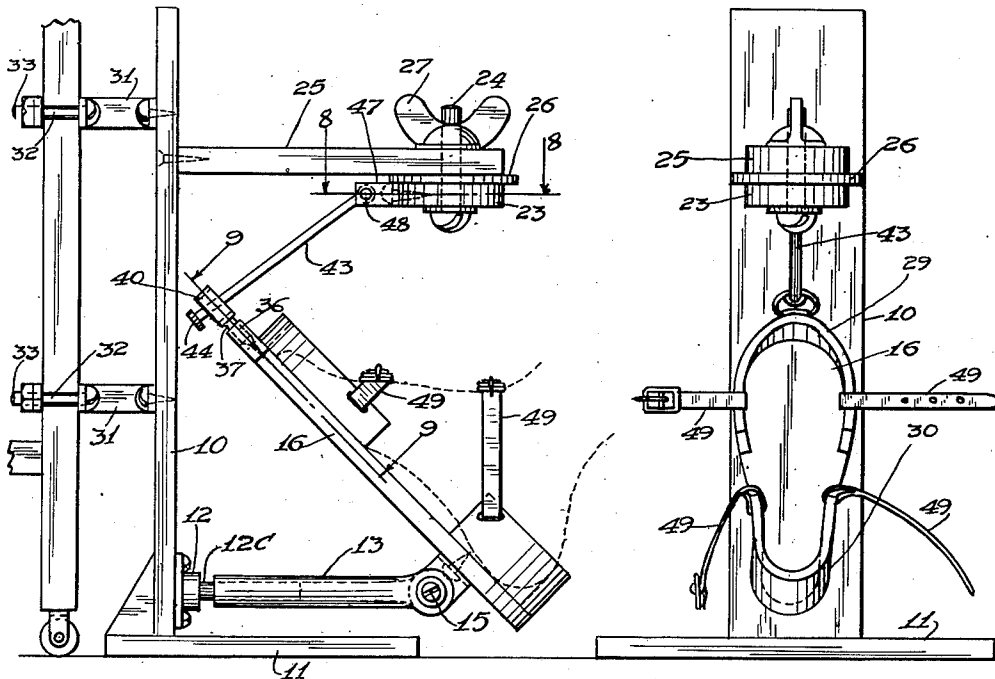


Fig. 6

Fig. 7

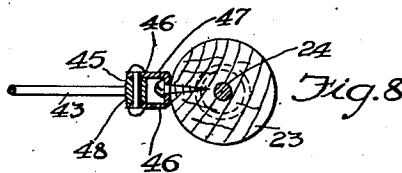


Fig. 8

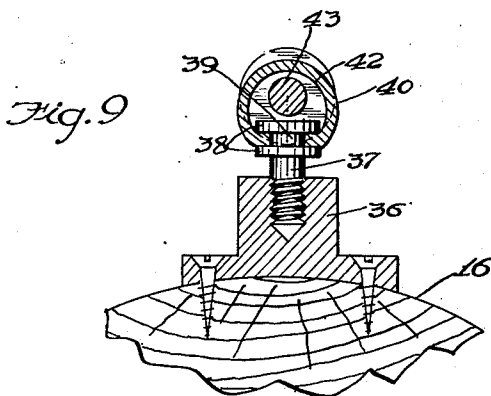


Fig. 9

INVENTOR,
Herbert N. Magida
BY Edward W. Weirant
Attorney

UNITED STATES PATENT OFFICE

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FOOT ACTUATED EXERCISING DEVICE

Herbert N. Magida, Chicago, Ill.

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10 Claims. (Cl. 272-57)

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This invention relates to a foot actuated exercising device and concerns itself with a foot piece which is mounted for gyratory motion with provision for limited reciprocating movement and especially adapted for a person in bed or in a reclining position to strengthen the foot muscles and certain leg muscles.

It is an object of this invention to provide such an exercising device which can readily be attached to a bed post or a frame member of a bed frame whereby a convalescent person can exercise his feet and legs while in bed and in a reclining position.

In accordance with this invention, a foot piece or foot engaging member is pivotally mounted for a partial gyratory motion or a complete gyratory motion in which the foot piece moves toward and from the person using the device.

The invention comprises the novel structure and combination of parts hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawing, which illustrates a preferred form of this invention and in which similar reference numerals refer to similar features in the different views:

Fig. 1 is a side elevational view of an exercising device involving this invention;

Fig. 2 is a front elevational view of the same, Fig. 3 is a sectional view taken upon the line 3-3 of Fig. 1,

Fig. 4 is a sectional view taken upon the line 4-4 of Fig. 1 looking in the direction of the arrows,

Fig. 5 is a sectional view taken upon the line 5-5 of Fig. 1 looking in the direction of the arrows,

Fig. 6 is a side elevational view of a modified form of this invention,

Fig. 7 is a front elevational view of the device shown in Fig. 6,

Fig. 8 is a sectional view taken upon the line 8-8 of Fig. 6 looking in the direction of the arrows and

Fig. 9 is a sectional view taken upon the line 9-9 of Fig. 6.

In referring now to drawing, especially to Figs. 1 to 5, there is shown, an exercising device or apparatus comprising a standard 10 having a supporting base 11. Secured adjacent the lower end of the standard, there is secured upon the front face thereof, a casting 12 having a forwardly projecting cylindrical bearing rod 12a for receiving a tubular rod 13 in telescopic relation thereover. The forward end of this tubular rod is formed as

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a yoke having side arms 14. A pivot bolt 15 extends thru said arms 14. A foot piece 16 having bearing clips 17 upon its bottom adjacent the heel portion thereof is supported in pivotal relation upon said bolt 15 with the clips 17 pivoted upon the bolt 15. As a result, the foot piece can pivot on the bolt and can gyrate with the tube 13 around the bearing rod 12a.

The forward end of the foot piece 16 is provided with a bearing bore 18 (Fig. 4) in which a link 19 is slidably mounted. This link or rod 19 has a connector 20 pivoted thereto at its far end and this connector 20 is provided with a slide way or aperture 21 thru which a radius rod 22 extends; the radius rod 22 having a head 22b at its free end to prevent the same from being withdrawn from the connector.

The radius rod 22 is secured in a rotatable disk 23 which rotates upon a pivot bolt 24 which extends thru a lateral arm or beam 25 on the standard 10. Between the disk 23 and the arm 25, there is a friction disk or pad 26. A wing nut 27 on the bolt 24 serves to tighten the disk 23 against the friction pad to provide resistance to the rotary movements of the disk. In use, the rod 19 can pivot on the pivot pin 28 and the connector 20 can turn and slide on the radius rod 22 making it possible for the foot piece to rotate the friction disk 23 in a complete circle.

As it may require some lateral pressure on the foot piece to produce a gyratory action, the said foot piece is provided with partial uppers 29 adjacent the forward part thereof and partial uppers 30 at the heel portion of the foot piece.

In order that the exercising device may be attached to a support such as the leg of a bed, the standard is provided with attaching straps or brackets 31 secured to a bed post 32 by bolts 33 and a bridge piece 34.

In use, the foot of a person in reclining position can be positioned upon the foot piece 16 which can be actuated so as to gyrate and rotate friction disk 23; during such rotation, the rod 19 will slide in its bore, the connector 20 can pivot and slide on the radius rod 22 thus allowing the foot piece to move to and from the user for effecting a universal exercising of the muscles involved.

In the modification shown in Figs. 6 to 9, the parts are the same as in the first form as indicated by the reference numerals with the exception of the operative connection between the foot piece 16 and the friction disk 23. In this modified form, there is a socket 36 secured upon the end of the foot piece 16. A bolt 37 is adjustably threaded in this socket and has spaced flanges 38 upon its

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outer end which provide a bearing groove 39 therebetween. A substantially cylindrical connector 40 is provided with a bearing aperture which surrounds the bolt 37 in the groove 39 and swivels thereon. This connector has a central passage 42 thru which a radius rod 43 freely passes. The radius rod 43 is provided with a terminal head 44 to prevent withdrawal of the rod from the connector.

The radius rod 43 is provided with a hub 45 which extends between the sides of a clevis 47 secured to the disk 23, preferably the periphery thereof. The hub 45 is mounted upon a pivot pin 48 extending thru the clevis. As a result, the radius rod 43 can swing and slide in the connector 40 to provide for a gyratory movement of the foot piece in a conical path as in the first form. In order to hold a foot upon the foot piece during such gyratory movements, the said foot piece may be provided with suitable straps 49.

In this modified form, the sleeve 13 rotates and slides on the bearing rod 12c as in the first form, but the rod 37 does not reciprocate as the rod 19 in the first form. Instead, the radius rod 43 swings to compensate for the variation in the arc produced by the foot piece 16 and the swivel connection of the connector 40 with the bolt 37 allows for the necessary turning movement during the gyratory action.

It will be observed that the foot actuated member 16 reclines from the pivot 15 at substantially an angle of 45 degrees with the upper end connected to the friction disk thru suitable pivotal and slidable connection with the result that the foot actuated member can gyrate and rotate disk 23. As the foot piece gyrates upon pivot 15, the forward part of the foot piece will generate a surface corresponding to a cone or a conical surface. This movement in a substantial conical path produces a substantially universal exercising action.

As is evident, the exercising device as constructed is well adapted for providing beneficial exercise to a convalescent reclining in bed or on a sofa or the like; it can be used by a person even reclining in a chair which may be moved to a location where the device can be set up.

I am aware that many changes may be made and various details of construction may be modified without departing from the principles of this invention, so I do not propose limiting the patent granted thereon otherwise than necessitated by the appended claims.

I claim:

1. In a foot actuated exercising device, a standard, a bearing rod extending from said standard, a tubular member rotatably and slidably mounted upon said bearing rod, a foot actuated member pivoted to the outer end of said tubular member, an arm extending from said standard above said bearing rod, a disk rotatably mounted upon said arm, a friction pad bearing against said disk, a radius rod extending from said disk, a connector slidably mounted upon said radius rod, a reciprocable rod mounted upon said foot actuated member and a pivotal connection between said reciprocable rod and said connector.

2. In a foot actuated exercising device, a standard, a bearing rod projecting from said standard, a tubular member rotatable on said bearing rod for slidable movements thereof, a foot actuated member pivotally mounted upon said tubular member, an arm extending from said standard above said bearing rod, a disk rotatably mounted upon said arm, a friction pad bearing against said disk, a radius rod extending from said disk, and

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a pivotal and slidable connection between said radius rod and said foot actuated member whereby said foot actuated member may partake of a gyratory and forward and backward motion.

3. In a foot actuated exercising device, a standard, a member extending at right angles to said standard, means for supporting said member for rotary and slidable movements, a foot actuated piece pivotally connected to said member, a second member extending from said standard in parallel relation with said first member, a disk rotatably mounted upon said second member, a radius rod supported by said disk, and means connecting said radius rod and said foot actuated piece whereby said foot actuated piece may partake of a gyratory and pivotal motion with respect to said first mentioned member.

4. In a foot actuated exercising device, a support, an arm extending from said support, a disk rotatably mounted upon said arm, a rotary arm mounted upon said support in spaced relation to said first mentioned arm, a foot actuated member pivoted upon said rotary arm and extending at an angle of substantially forty-five degrees thereto and pivotal and slidable connections between said foot actuated member and said friction disk whereby gyratory movements of said foot actuated member will generate a conical path.

5. In a foot actuated exercising device, a support, an arm extending from said support, a disk rotatably mounted upon said arm, a friction pad bearing against said disk, a radius rod extending from said disk, a foot actuated member having a toe portion, pivotal and slidable connections between said radius rod and toe portion and means on said support for pivotally supporting the heel portion of said foot actuated member at an inclination whereby said foot actuated member can be gyrated in the path of a cone.

6. In a foot actuated exercising device, a support, an arm extending from said support, a disk rotatably mounted upon said arm, a friction pad bearing against said disk, a rod carried by said disk, a rotatable arm on said support in spaced relation to the first mentioned arm, a foot actuated member having a toe portion and a heel portion, a slidable connection between said rod and toe portion and a pivotal connection between said heel portion and said rotatable arm for the purpose set forth.

7. In an exercising device, an anchoring support having a horizontally extending portion, an element carried by said horizontally extending portion of said support, said element having a friction surface, a contact member rotatable about a vertical axis and adapted to make sliding frictional contact with said friction surface, means for forcing said rotatable contact member against said friction surface, a frame member having toe and heel engaging portions, coupling means connecting said toe engaging portion of said frame member to said rotatable contact member for coupling movement of said frame member to said contact member, said coupling means enabling said toe engaging portion of said frame member and said contact member to be rotated about said vertical axis, and coupling means separated from said first mentioned coupling means joining said heel engaging portion of said frame member to said anchoring support, said latter means enabling said heel engaging portion to pivot about at least two orthogonal axes.

8. In an exercising device, an anchoring sup-

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port having a horizontally extending portion, an element carried by said horizontally extending portion of said support, said element having a friction surface, a contact member rotatable about a vertical axis and adapted to make sliding frictional contact with said friction surface, means for forcing said rotatable contact member against said friction surface, a frame member having a toe engaging portion, coupling means connecting said toe engaging portion of said frame member to said rotatable contact member for coupling movement of said frame member to said contact member, said coupling means enabling said toe engaging portion of said frame member and said contact member to be rotated about a vertical axis.

9. The combination of claim 8 wherein the said friction surface and contact member have aligned apertures therein, a pivot bolt having a head at one end and a threaded portion at the other end extending within said apertures, a nut in threaded relation with said bolt forcing said rotatable contact member against said friction surface, said contact member being rotatable about said pivot bolt.

10. In an exercising device, an anchoring support, an element carried by said support, said element having a friction surface, a rotatable

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contact member adapted to make sliding frictional contact with said friction surface, means for forcing said rotatable contact member against said friction surface, a frame member having toe and heel engaging portions, coupling means connecting said toe engaging portion of said frame member to said rotatable contact member for coupling movement of said frame member to said contact member, said coupling means enabling said toe engaging portion of said frame member and said contact member to be rotated relative to said anchoring support, and coupling means separated from said first mentioned coupling means joining said heel engaging portion of said frame member to said anchoring support, said latter means enabling said heel engaging portion to pivot about at least two orthogonal axes.

HERBERT N. MAGIDA.

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