United States Patent

[11] 3,620,210

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[54] **SACROILIAC ROTATOR**
3 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **128/74,** 269/322
[51] **Int. Cl.** **A61f 5/00**
[50] **Field of Search** 128/74, 46, 33, 70; 269/325, 324, 326, 322, 323

[56] **References Cited**

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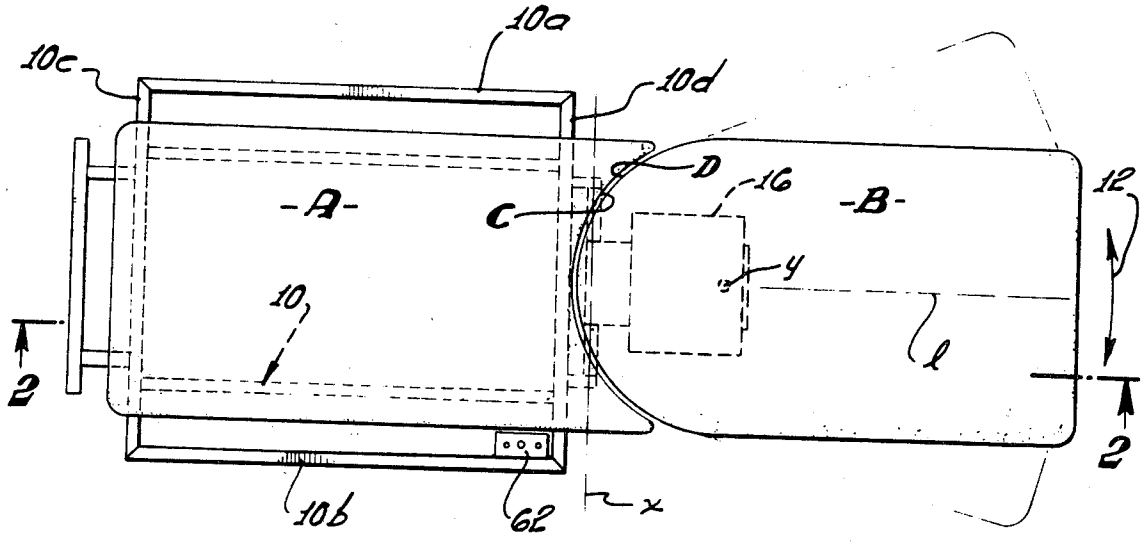
Assistant Examiner—J. Yasko
Attorney—Flam and Flam

ABSTRACT: The sacroiliac rotator comprises a pair of adjoining parts A and B upon which the user, supine or prone, lies. The juncture between the parts falls approximately at the pelvic or sacroiliac region. Motion is imparted to one of the parts B in order to cause relative rotation of the upper and lower portions of the body about a center falling generally in the sacroiliac region. The part A has an arcuate recess or concavity C that fits the arcuate protuberance or convexity D of the part B. The opposite end of the part B is given a circular motion in a generally vertical plane in such manner that the arcuate parts C and D remain substantially in contiguous relationship. For this purpose, the horizontal axis *x* of up and down movement falls substantially at the crest of the companion parts, while the vertical axis *y* of sidewise movement falls substantially at the center of the arcuate parts. For this purpose, a special bracket E is provided.



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SHEET 1 OF 2

FIG. 1.

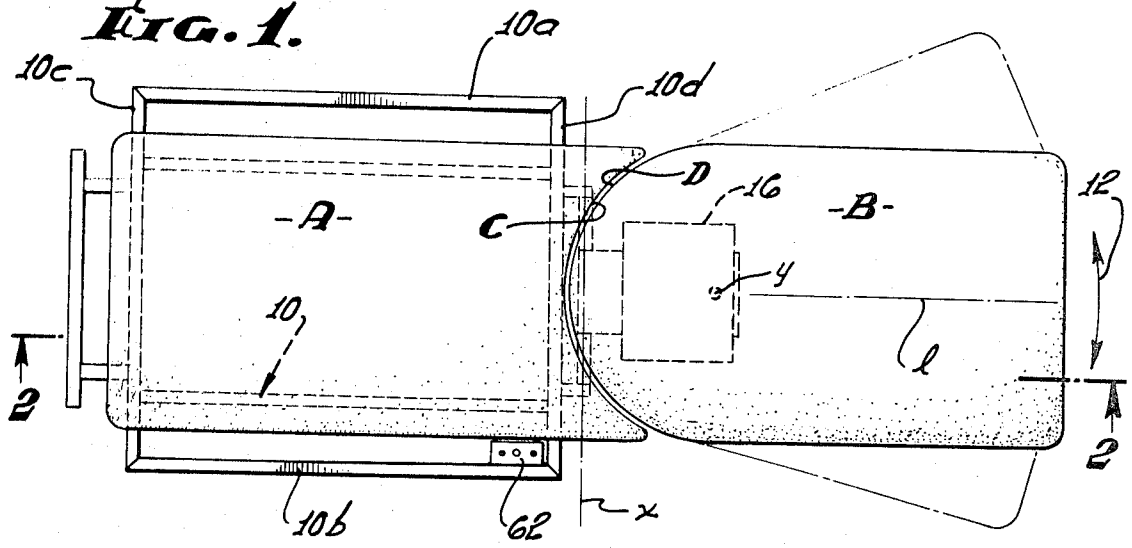

FIG. 2.

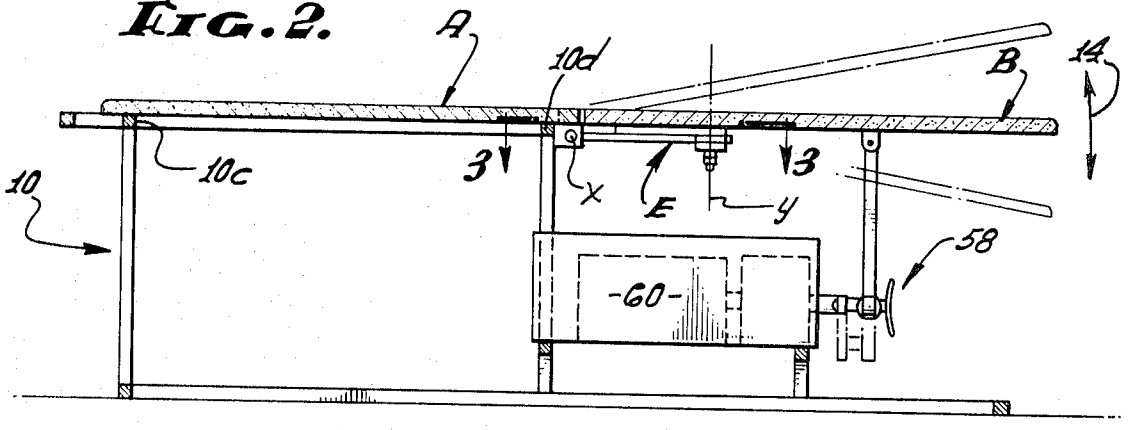

FIG. 6.

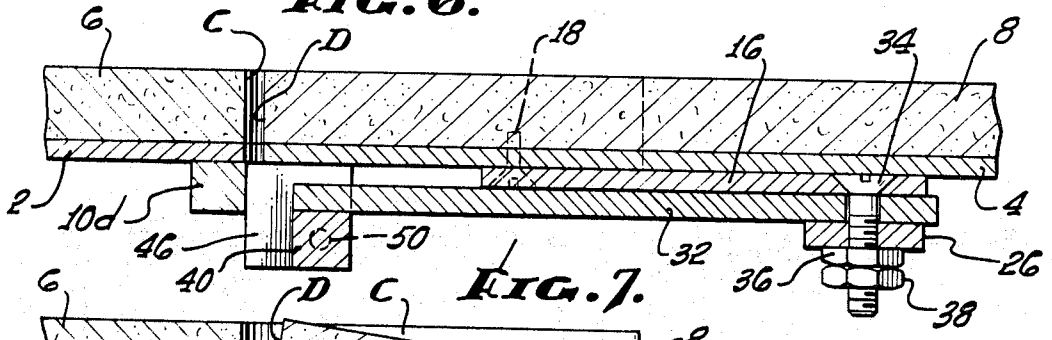

FIG. 7.

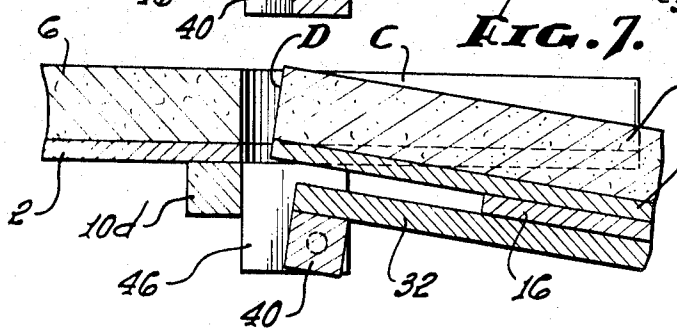

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FIG. 3.

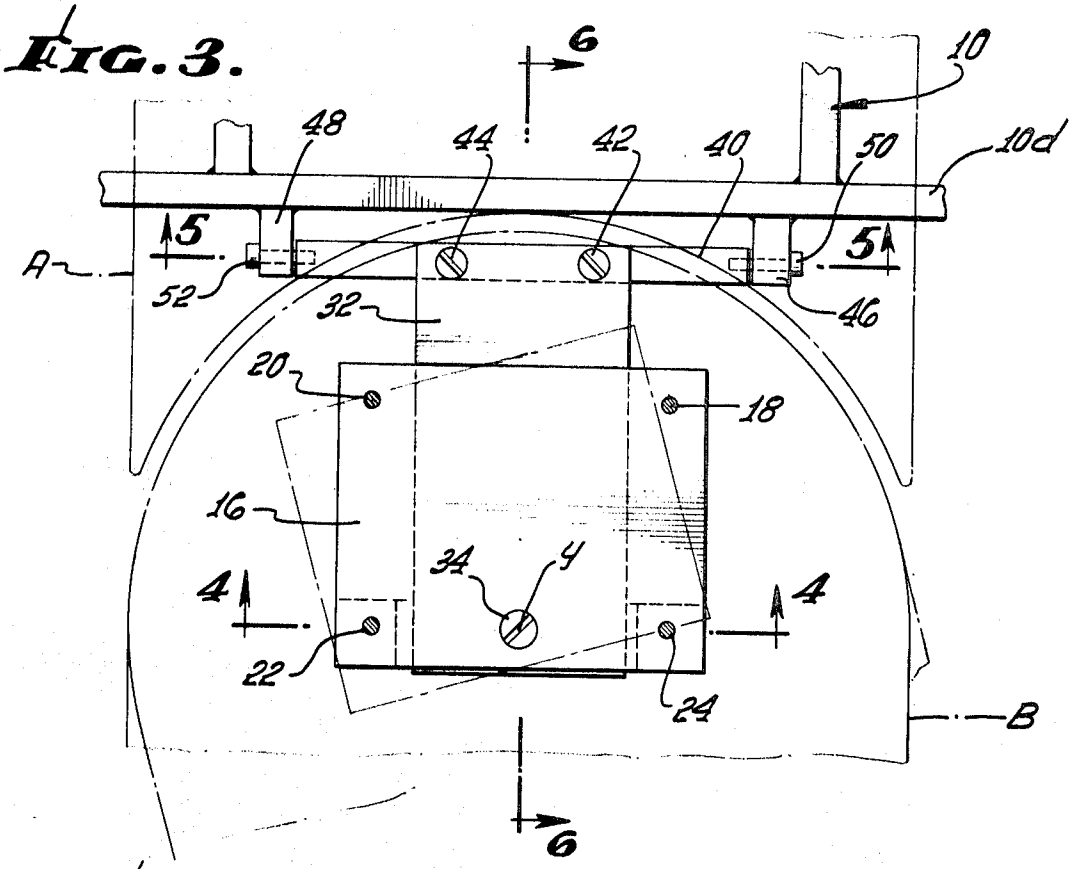


FIG. 4.

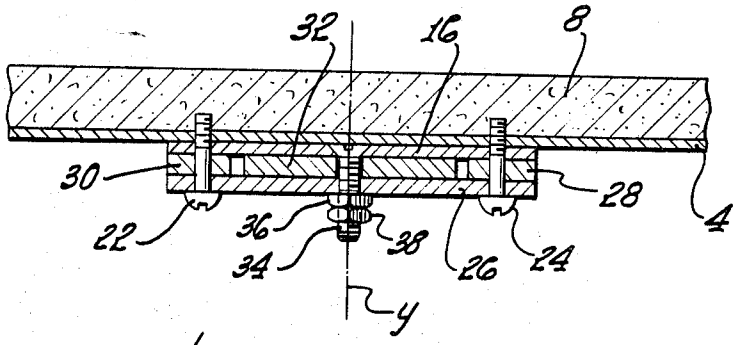
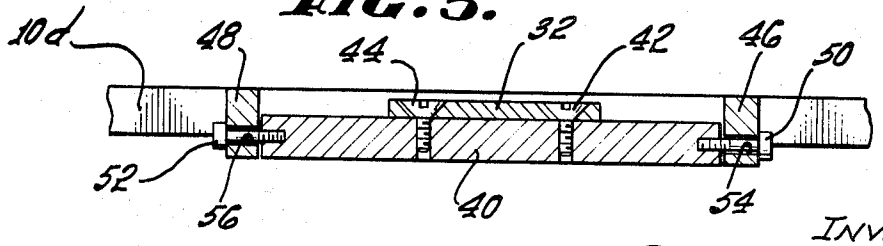


FIG. 5.



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SACROILIAC ROTATOR

BACKGROUND OF THE INVENTION

This invention relates to exercising equipment, and more particularly, to a body manipulating table primarily for therapeutic purposes in which a generally conical motion is imparted, say, to the lower portion of the body with the axis of such movement substantially horizontal and in substantial alignment with the user's spine. A device of this type is shown and described in U.S. Pat. No. 2,494,746 issued Jan. 17, 1950 to Arthur Larron Colston.

In known apparatus of this type, two adjoining table or platform parts are provided, one being stationary and the other being movable. The end of the movable part remote from the stationary part is given a circular motion by a crank mechanism while the movable part is confined for two modes of movement: first, movement about a transverse horizontal axis and second, movement about a vertical axis passing through the horizontal axis and approximately midway between the sides of the table.

If the intersection of the horizontal and vertical axes is at the contiguous end of the movable part, as in said Colston patent, then wedge-shaped clearance spaces must be provided on opposite sides of the table to allow for side-to-side movement. If the wedge-shaped clearance is small, as in Colston, there is a danger of pinching the body. If the wedge-shaped clearance is large, the body of the user is not well supported.

If the intersection of the horizontal and vertical axes is moved away from the contiguous end of the movable part, then the companion table parts may be arcuately formed with the center of the arcs coinciding with the vertical axis. No wedge-shaped space opens or closes. However, the contiguous end of the movable part moves up and down, causing discomfort.

BRIEF SUMMARY OF THE INVENTION

The primary object of this invention is to solve the foregoing problems and to provide an exercising table of this character in which the table parts have companion close fitting arcuate ends movable about a vertical axis centered on the arcuate ends and in which the ends of the movable part is not perceptably cranked up and down. In order to accomplish this result, I provide a mounting bracket for the movable part in which the horizontal axis and the vertical axis are offset or skew, the horizontal axis falling substantially at the contiguous end of the movable part with the vertical axis located at the center of the companion arcuate ends.

This invention possesses many other advantages and has other objects which may be made more clearly apparent from a consideration of one embodiment of the invention. For this purpose, there is shown a form in the drawings accompanying and forming a part of the present specification, and which drawings are to scale. This form will now be described in detail, illustrating the general principles of the invention; but it is to be understood that this detailed description is not to be taken in a limiting sense, since the scope of this invention is best defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plane view of an exercising table incorporating the present invention.

FIG. 2 is a vertical sectional view taken along a plane corresponding to line 2—2 of FIG. 1.

FIG. 3 is an enlarged fragmentary elevational view of the swivel mechanism beneath the table parts, and taken along the plane indicated by line 3—3 of FIG. 2.

FIGS. 4 and 5 are further enlarged fragmentary sectional views taken along the planes indicated by lines 4—4 and 5—5 of FIG. 3 illustrating the manner of attachment and mounting of parts of the swivel mechanism.

FIGS. 6 and 7 are enlarged fragmentary sectional views taken along the plane indicated by line 6—6 of FIG. 3 and illustrating the movable part in different angular positions about it horizontal axis of movement.

DETAILED DESCRIPTION

In FIGS. 1 and 2 there is shown an exercising table comprising a stationary part A and a movable part B. Both parts include steel base plates 2 and 4 (FIG. 6) and pads 6 and 8 suitably secured to the base plates. A frame 10 (FIGS. 1 and 2) made of solid rectangular steel supports the parts A and B and associated mechanism. Four elements 10*a*, 10*b*, and 10*d* of the frame provide an elevated platform for the stationary table part A, ends of the part A projecting beyond and overhanging the frame elements 10*c* and 10*d*.

One overhanging end C of the stationary part A is formed arcuately about a center located beyond the end and falling along the center line 1. The movable part B has its companion end D formed as an arcuate projection about a center that nominally coincides. The parts A and B are supported in a manner hereinafter to be described whereby the companion ends remain substantially in close opposed relationship at all times, movement of the part B notwithstanding.

The stationary part A in normal use supports the upper torso of the body while the movable part B supports the lower torso and legs. While the reverse arrangement is not uncommon in use, the end of the stationary part A remote from the part B is referred to as the head of the table, and the end of the movable part B remote from the part A is referred to as the foot of the table.

The part B is supported so as to be confined for two, and only two, modes of movement. One of the modes of movement is a sidewise angular movement as indicated by the double-headed arrow 12 (FIG. 1) about an axis *y* perpendicular to the supporting plane of the movable part B and passing through the center of its arcuate projection D. The other mode of movement is a hinge type up and down movement (indicated by the double-headed arrow 14 in FIG. 2) about a horizontal axis *x* located just beneath the part A. The axis *x* extends transversely across opposite sides of the recess defined by the arcuate end C. These two modes of movement are determined by a bracket mechanism shown in detail in FIGS. 3 through 6.

The mechanism includes a pivot plate 16 attached to the underside of the part B near its arcuate end D. The head end of the pivot plate 16 is attached by two flat-head machine screws 18 and 20 on opposite sides (see FIGS. 3 and 6). The foot end of the plate 16 is attached by two machine screws 22 and 24 (FIGS. 3 and 4) on opposite sides. The screws 22 and 24 pass through a bar or strap 26 and small spacer blocks 28 and 30 respectively. The plate 16 is in face to face contact with a hinge bracket 32 (FIGS. 3, 4 and 6) and pivots about the axis *y* perpendicular to both and as indicated in phantom lines in FIG. 3. The foot end of the hinge bracket 32 (FIGS. 4 and 6) projects into the space between the bar or strap 26 and the plate 16. A pivot pin in the form of a large flat-head machine screw 34 passes through aligned apertures in the plate 16, hinge bracket 32 and bar or strap 26 thus to define the pivot axis *y*. Nuts 36 and 38 secure the screw 34 in position. The screws 18 and 20 have sufficient lateral clearance with the side surfaces of the hinge bracket 32 to allow such angular movement.

The head end of the hinge bracket 32 is secured to the center of a pivot bar 40 (FIGS. 3, 5 and 6) by the aid of a pair of flat-head screws 42 and 44 (FIGS. 3 and 5). The pivot bar in turn is mounted for angular movement about the horizontal axis *x*. For this purpose, the pivot bar 40 fits between two bracket arms or lugs 46 and 48 that project from the frame element 10*d*. Screws 50 and 52 have cylindrical shank portions supported in bearing recesses 54 and 56 of the lugs 46 and 48 and have threaded ends received in recesses at the ends of the pivot bar. The recesses 54 and 56 locate the axis *x*. The parts are so dimensioned that when assembled, the axis *y* falls at the center of the arcuate cavity C as well as at the center of the arcuate projection D.

The horizontal axis *x* is located close to but slightly beyond the trough of the concave arcuate recess C. Accordingly, there is relatively little vertical displacement at the very end of

the part B. Furthermore, there is very little vertical displacement at the sides of the recess C (FIG. 7). Since the axis y falls at the common center of the ends C and D, the arcuate ends C and D remain in closed opposed relationship.

In order to impart movement to the part B, a crank mechanism **58** is provided. The crank mechanism **58** is of a type shown and described in Colston U.S. Pat. No. 2,494,746. The crank mechanism **58** is operated by a motor and transmission mechanism **60** supported on the frame **10** beneath the part B. This mechanism may be started, stopped and reversed by operating buttons projecting from a control box **62**. (FIG. 1).

We claim:

1. In an isometronic exercising table:

a. a first table part having a supporting surface and having one end formed substantially as a concave arc about a center located beyond the end;

b. a hinge bracket;

c. means mounting said hinge bracket for movement about an axis fixed with respect to said first table part and extending transversely of said one end of said first table part and so that said hinge bracket projects beyond said one end;

d. a second table part having a supporting surface and having one end formed substantially as a convex projection about a center;

e. means pivotally connecting said hinge bracket to said second table part for pivotal movement about an axis passing substantially through the said center of said convex projection and substantially perpendicular to its said supporting surface;

f. said pivotally connecting means and said mounting means being so located that said axis of pivotal movement passes substantially through the said center of said concave arc;

g. frame means supporting one of said table parts; and

h. means imparting movement to the other of said table parts.

2. The combination as set forth in claim **1** in which said fixed axis extends substantially across the sides of said arc whereby very little relative displacement results between said parts at the center of said arc as well as at the sides of said arc.

3. In an isometronic exercising table:

a. a frame;

b. a first table part supported on the frame, said first table part having a supporting surface and having one end formed substantially as a concave arc about a center located beyond said one end;

c. a pair of bracket arms mounted on the frame and located beneath said one end of said first table part;

d. a pivot bar supported between the bracket arms for movement about a substantially horizontal axis immediately beneath said first table part so that the center of said concave arc lies on one side of said horizontal axis and the ends of said concave arc lie on the other;

e. a hinge bracket secured to said pivot bar;

f. a second table part having a supporting surface and having one end formed substantially as a concave projection;

g. a pivot plate attached to the under side of said second table part and in face-to-face contact with said hinge bracket;

h. a pivot pin connecting said pivot plate to said hinge bracket for movement of said second table part about an axis located substantially at the center of said arcuate projection;

i. said pivot pin and said pivot bar being located so that said axis of pivotal movement passes substantially through the said center of said concave arc; and

j. a crank mechanism for imparting substantially circular movement to the end of said second table part.

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