

Aug. 14, 1945.

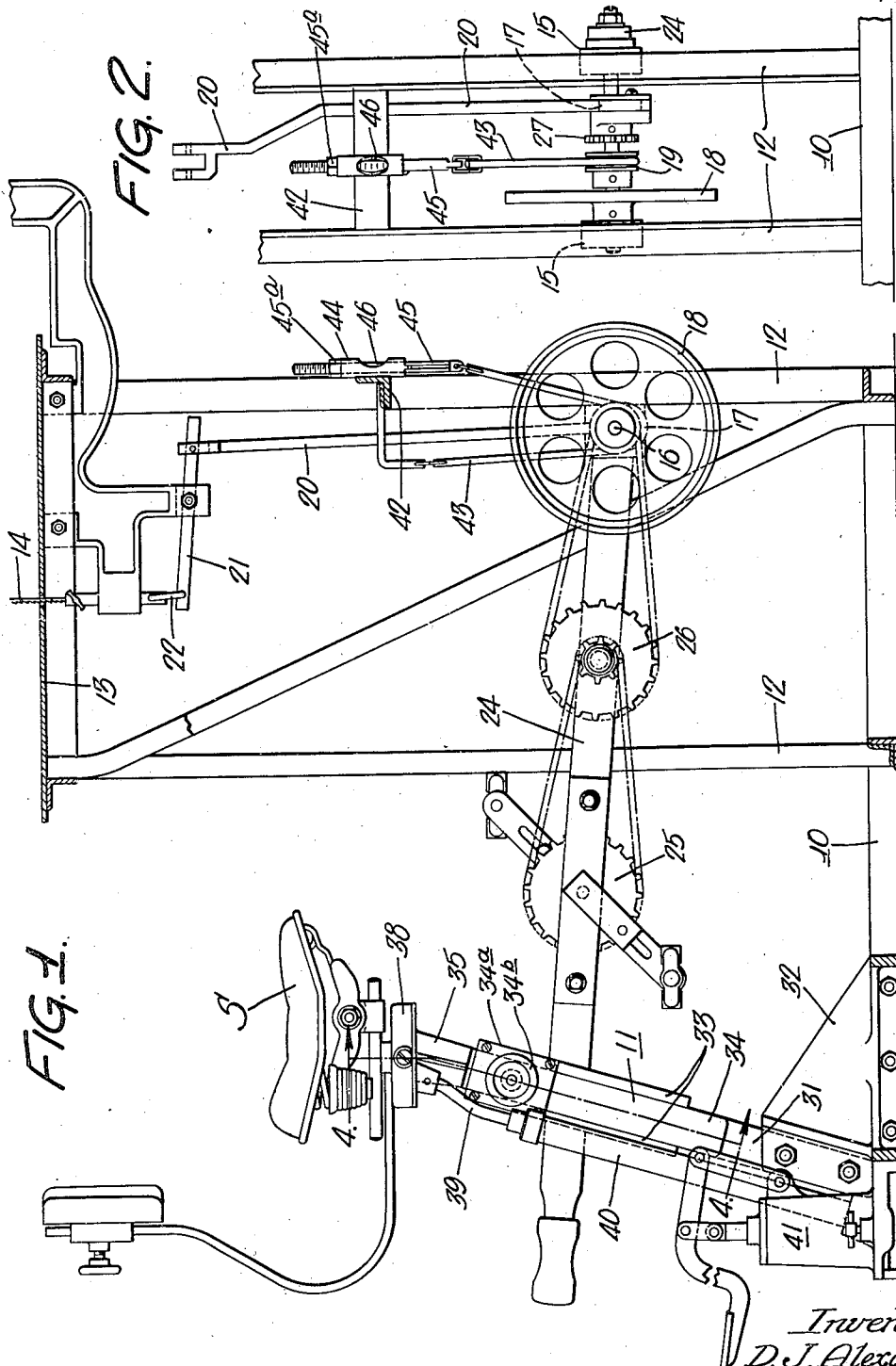
D. J. ALEXANDER

2,382,841

PHYSIOTHERAPEUTIC APPARATUS

Filed Aug. 29, 1944

3 Sheets-Sheet 1



Inventor:
D. J. Alexander
by his Attorneys
Houder & Houder

Aug. 14, 1945.

D. J. ALEXANDER

2,382,841

PHYSIOTHERAPEUTIC APPARATUS

Filed Aug. 29, 1944

3 Sheets-Sheet 2

FIG. 4.

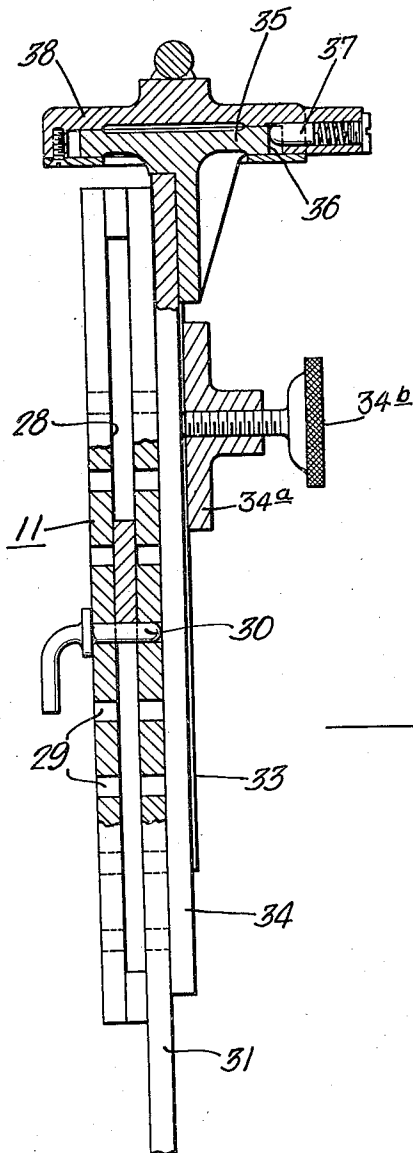
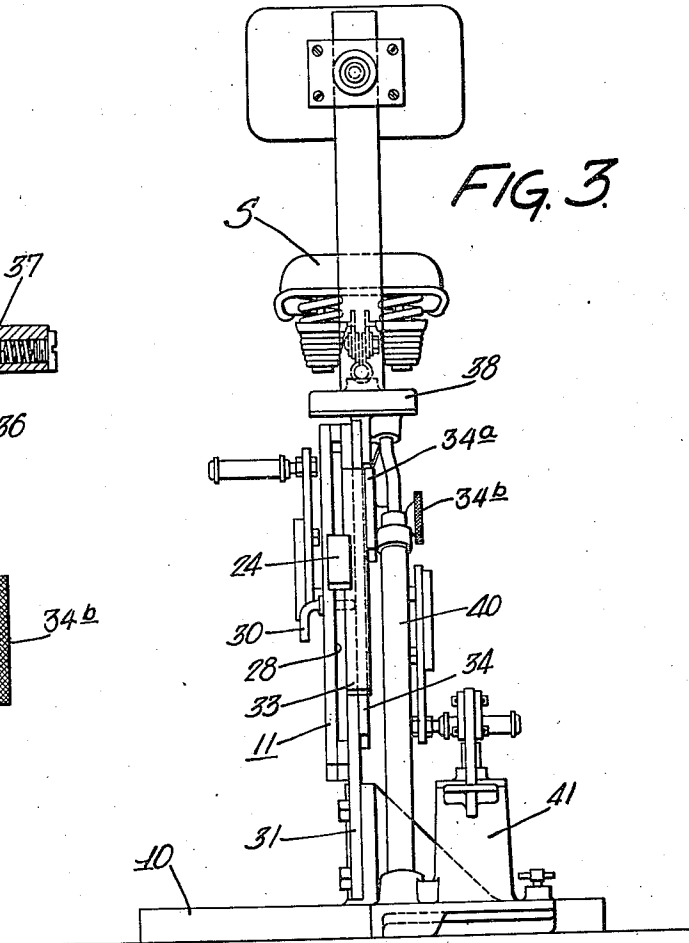


FIG. 3.



Inventor:
D. J. Alexander
by his Attorneys
Houson & Houson

Aug. 14, 1945.

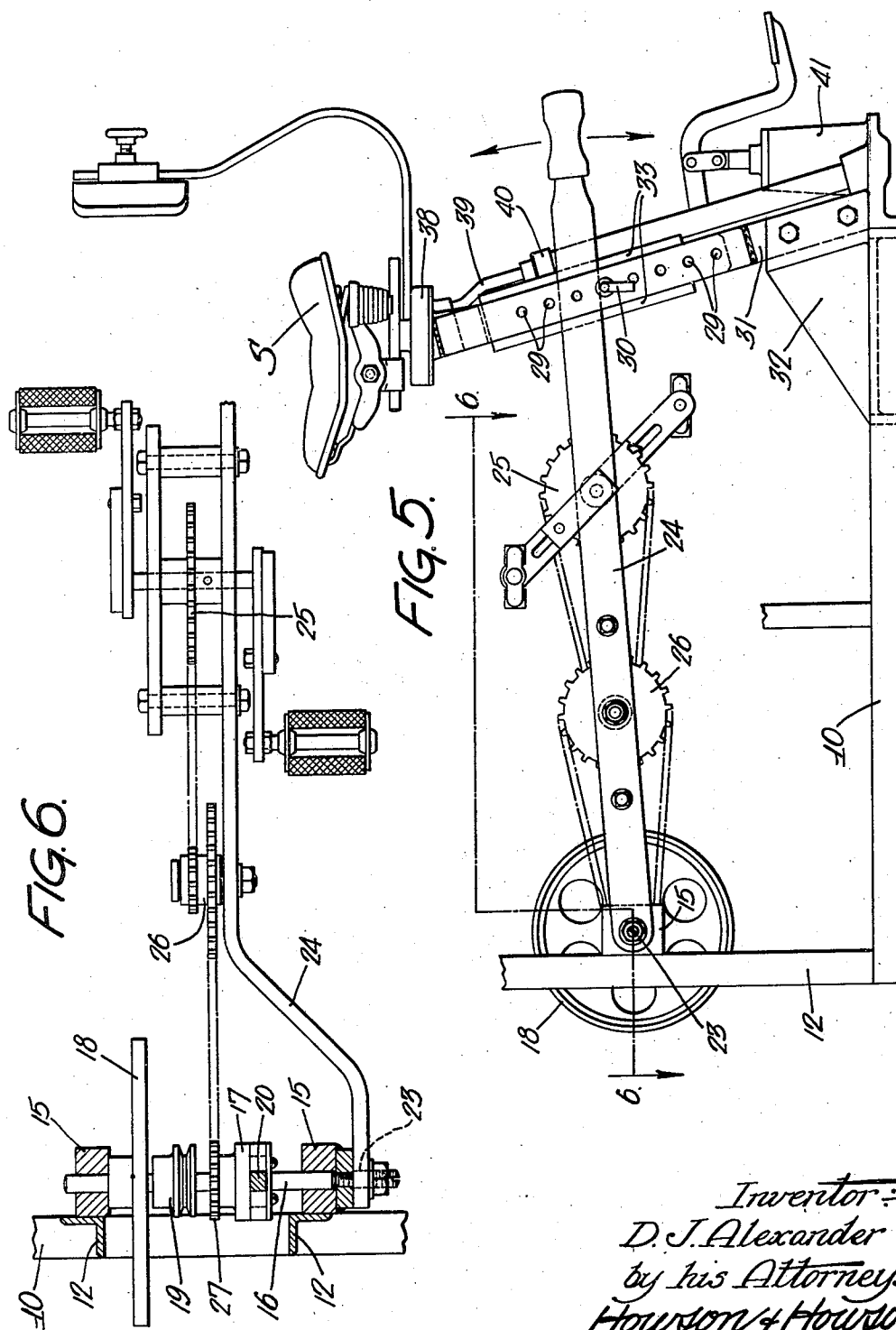
D. J. ALEXANDER

2,382,841

PHYSIOTHERAPEUTIC APPARATUS

Filed Aug. 29, 1944

3 Sheets-Sheet 3



Inventor:
D. J. Alexander
by his Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE

2,382,841

PHYSIOTHERAPEUTIC APPARATUS

David James Alexander, Philadelphia, Pa.

Application August 29, 1944, Serial No. 551,697

8 Claims. (Cl. 272-73)

This invention relates to physiotherapeutic apparatus and more particularly to apparatus for use in the exercise of damaged leg muscles and nervous systems.

An important object of the present invention is to provide a pedal-operated machine such as a woodworking machine offering means for entertaining and instructing the patient while the exercise is being taken and which is so constructed that the type of leg movement required may be varied at will without disturbing the position of the patient or interrupt operation of the machine.

Another object of the invention is the provision of a construction such that the patient may be readily mounted to operating position at the machine.

Another object of the invention is the provision of an arrangement which may be very readily and easily manufactured and in which the adjustments are of such nature that they may be readily made by a mechanically unskilled person.

These and other objects I attain by the constructions shown in the accompanying drawings wherein for the purpose of illustration I have shown preferred embodiments of my invention and wherein:

Fig. 1 is a view partially in side elevation and partially in section of an apparatus constructed in accordance with my invention;

Fig. 2 is a fragmentary end elevation of the apparatus;

Fig. 3 is an end elevation of the opposite end of the apparatus;

Fig. 4 is a detailed sectional view through the seat support taken on line 4-4 of Fig. 1;

Fig. 5 is a fragmentary elevation of the machine as viewed from the opposite side of Fig. 1, and

Fig. 6 is a section of line 6-6 of Fig. 5.

Referring now more particularly to the drawings, the numeral 10 designates a suitable base from one end of which arises a seat support generally designated at 11 and from the opposite end of which arise standards 12, the upper ends of which support a work table 13 of what is at present illustrated as a jigsaw, the blade of which is shown at 14. A pair of standards 12 which are remote from seat support 11 mount bearings 15 for a shaft 16, this shaft mounting an eccentric 17, a flywheel 18 and a brake drum 19. The strap 20 of eccentric 17 is shown as connected at its upper end to a rocking lever 21 which is linked at 22 at the lower end of the saw to operate the same. Mounted upon a pivot

23 coaxial with the shaft 16 is a support arm 24. This support arm mounts a pedal-operated sprocket 25 being connected through a completed sprocket 26 to a sprocket 27 secured to shaft 16. The outer end of the arm 24 is vertically adjustable in a slot 28 in seat support 11, the walls of the slot being apertured as at 29 for interchangeable reception of a suitable pin 30 adjustably limiting downward movement of the rear end of the support arm.

The seat support comprises a rigid standard 31 fixedly mounted in a suitable casting 32 secured to the base 10, this standard forming one wall of the slot 28. Secured to the side edges of the standard and projecting to the opposite side of the standard from the slot are guide plates 33 combining with the standard to produce a U-shaped guide slidably receiving a bar 34. Bar 34 is retained in the guide by a plate 34a bridging plates 33 and bearing a clamping screw 34b for holding bar 34 in adjusted position. The upper end of bar 34 mounts a circular head 35, the periphery of which is notched at suitable intervals as at 36 for the reception of a spring detent 37 carried by a rotatable seat mount 38 bearing seat S. Secured to the lower surface of the head 35 is a plunger 39 of the piston of a pressure cylinder 40 into which pressure may be introduced by a foot operated pressure pump 41.

In use of the apparatus, the seat mount is rotated so that it faces oppositely to its illustrated position in Fig. 1 and the bar 34 is moved to its lowermost position at which time the patient, even though badly handicapped, may seat himself, following which the attendant, by operating pump 41, may elevate the seat to its desired height. Following this the seat may be rotated to face the patient toward the work table 13. The arm 24 is then adjusted to the position desired for the treatment. It will be noted that this may be very readily accomplished due to the fact that the coaxial arrangement of shaft 16 and pivot 23 eliminates all necessity for any adjustment of the driving connection between the pedal operated sprocket 25 and the shaft. This permits of an instantaneous shift of the position of the arm 24 during operation of the machine when, as is often the case, it is desired to vary the treatment during the treating period.

Since in many instances it is desirable to likewise regulate the amount of force necessary to operate the device, a braking apparatus, of which the drum 19 has been heretofore referred to, is provided. As at present shown, the standards

mounting the bearings for shaft 16 are connected by a cross bar 42 to which is secured one end of a strap 43 passing about the brake drum and upon which is mounted a tube 44 through which a bar 45 is slidably and non-rotatably mounted. The strap is secured to this bar and vertical adjustment of the bar may be obtained by nut 45a threaded upon the bar and abutting the upper end of the tube. For convenience in determining the tension of the strap 43, the bar is preferably graduated and the tube apertured as at 46 to provide a convenient reading point.

Since the construction illustrated is obviously of considerable modification without departing from the spirit of my invention, I do not wish to be understood as limiting myself thereto except as hereinafter claimed.

I claim:

1. In physiotherapeutic apparatus an implement to be driven and driving means therefor comprising a rotatable shaft operatively connected to the implement, a seat support spaced from the shaft, an arm pivoted at one end coaxially with the shaft and at its opposite end vertically adjustably engaged with the seat support and pedal operated driving means for the shaft carried by said arm.

2. In physiotherapeutic apparatus an implement to be driven and driving means therefor comprising a rotatable shaft operatively connected to the implement, a seat support spaced from the shaft, an arm pivoted at one end coaxially with the shaft and at its opposite end vertically adjustably engaged with the seat support, pedal operated driving means for the shaft carried by said arm and adjustable braking means for said shaft.

3. In physiotherapeutic apparatus an implement to be driven and driving means therefor comprising a rotatable shaft operatively connected to the implement, a seat support spaced from the shaft, an arm pivoted at one end coaxially with the shaft and at its opposite end vertically adjustably engaged with the seat support, pedal operated driving means for the shaft carried by said arm, said seat support being vertically extensible, power operated means for extending said seat support and a seat rotatably engaged with the upper end of the seat support.

4. In physiotherapeutic apparatus an implement to be driven and driving means therefor comprising a rotatable shaft operatively connected to the implement, a seat support spaced from the shaft, an arm pivoted at one end coaxially with the shaft and at its opposite end vertically adjustably engaged with the seat support and pedal operated driving means for the

shaft carried by said arm, adjustable braking means for said shaft, said support being vertically extensible, power operated means for extending said seat support and a seat rotatably engaged with the upper end of the seat support.

5. In physiotherapeutic apparatus an implement to be driven and driving means therefor comprising a rotatable shaft operatively connected to the implement, a sprocket on said shaft, a seat support spaced from the shaft, an arm pivoted at one end coaxially with the shaft and at its opposite end vertically adjustably engaged with the seat support, a pedal operated sprocket on said arm, and a driving connection between the last named sprocket and the sprocket of the shaft.

6. In physiotherapeutic apparatus an implement to be driven and driving means therefor comprising a rotatable shaft operatively connected to the implement, a sprocket on said shaft, a seat support spaced from the shaft, an arm pivoted at one end coaxially with the shaft and at its opposite end vertically adjustably engaged with the seat support, a pedal operated sprocket on said arm, a driving connection between the last named sprocket and the sprocket of the shaft and adjustable braking means for said shaft.

7. In physiotherapeutic apparatus an implement to be driven and driving means therefor comprising a rotatable shaft operatively connected to the implement, a sprocket on said shaft, a seat support spaced from the shaft, an arm pivoted at one end coaxially with the shaft and at its opposite end vertically adjustably engaged with the seat support, a pedal operated sprocket on said arm, a driving connection between the last named sprocket and the sprocket of the shaft, said seat support being vertically extensible, power operated means for extending said seat support and a seat rotatably engaged with the upper end of the seat support.

8. In physiotherapeutic apparatus an implement to be driven and driving means therefor comprising a rotatable shaft operatively connected to the implement, a sprocket on said shaft, a seat support spaced from the shaft, an arm pivoted at one end coaxially with the shaft and at its opposite end vertically adjustably engaged with the seat support, a pedal operated sprocket on said arm, a driving connection between the last named sprocket and the sprocket of the shaft, said seat support being vertically extensible, power operated means for extending said seat support, a seat rotatably engaged with the upper end of the seat support and adjustable braking means for said shaft.

DAVID JAMES ALEXANDER.