Jan. 29, 1924. 1,482,173

C. E. WILLARD

EXERCISING APPARATUS

Filed Sept. 13, 1922 3 Sheets-Sheet 1

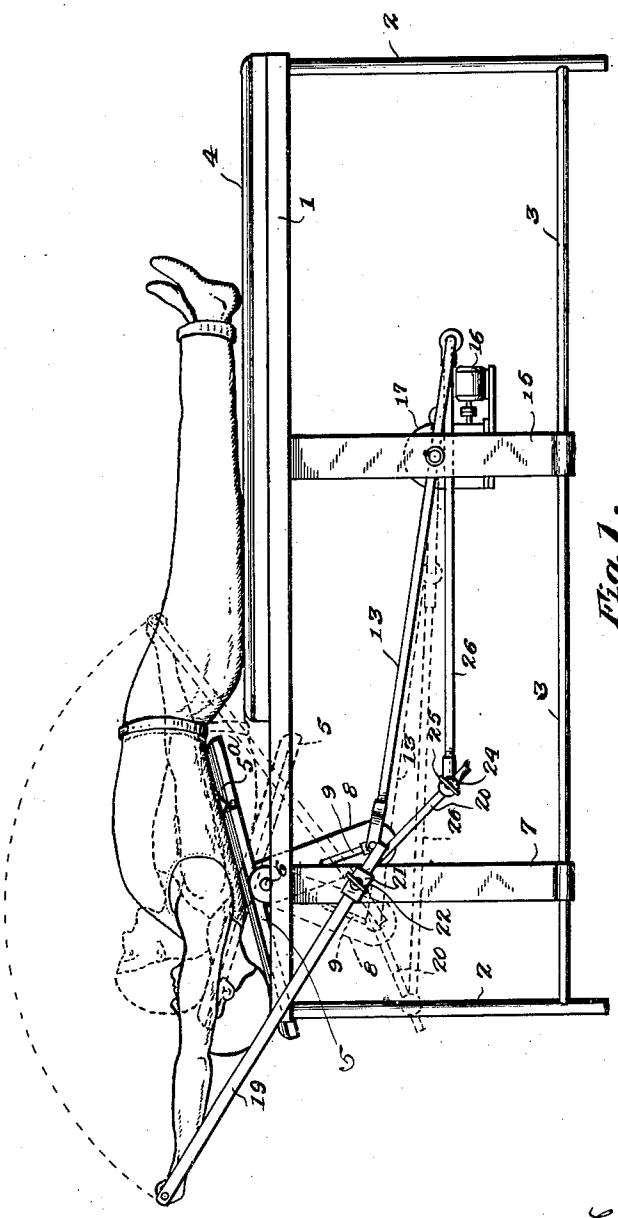


Fig. 1.

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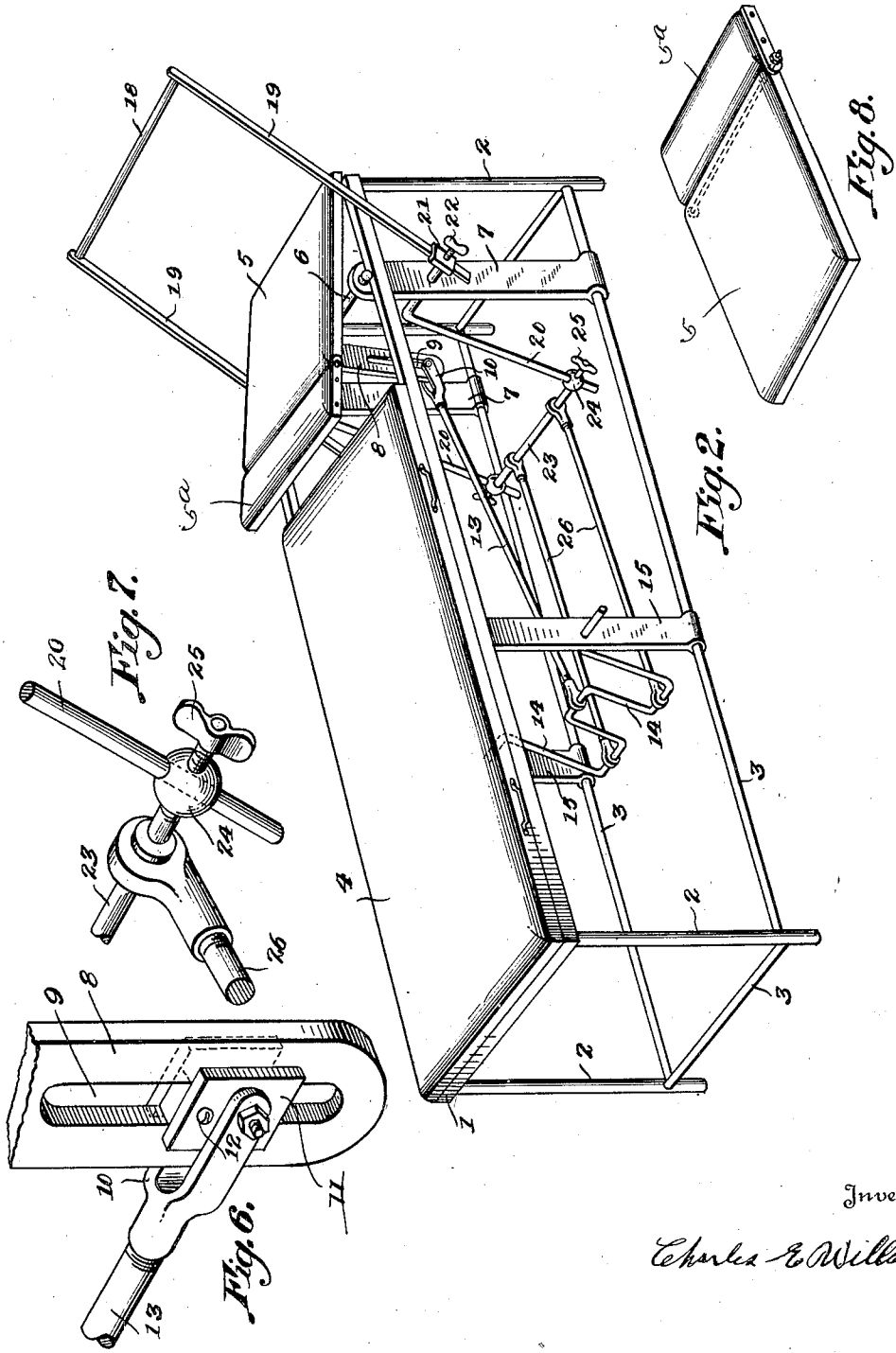


Fig. 2.

Fig. 8.

Fig. 7.

Fig. 6.

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Filed Sept. 13, 1922 3 Sheets-Sheet 3

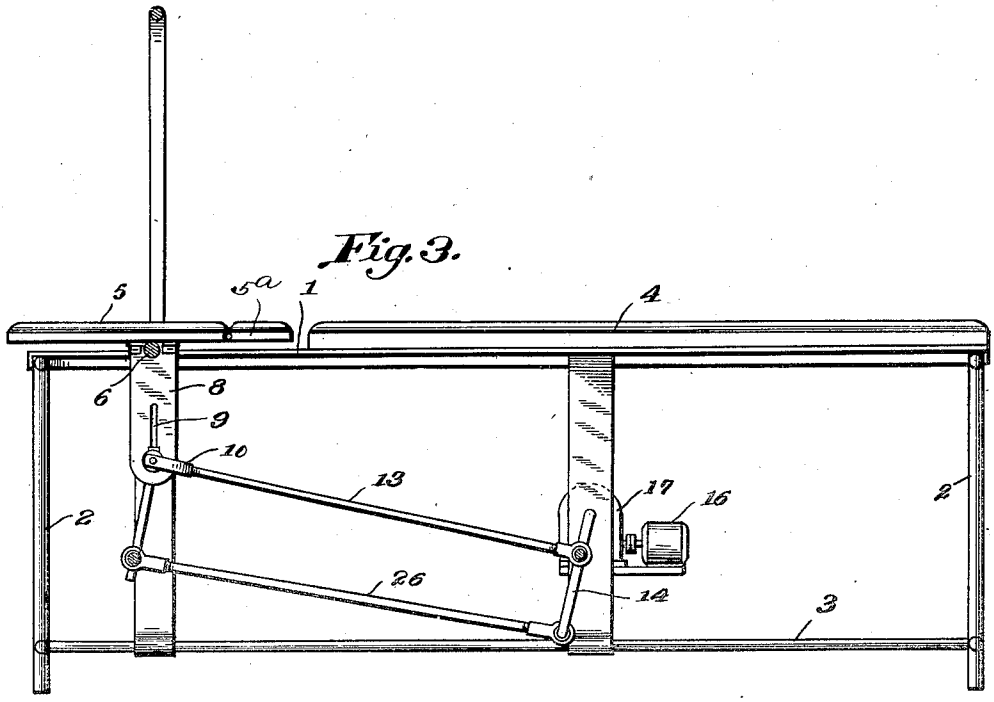


Fig. 3.

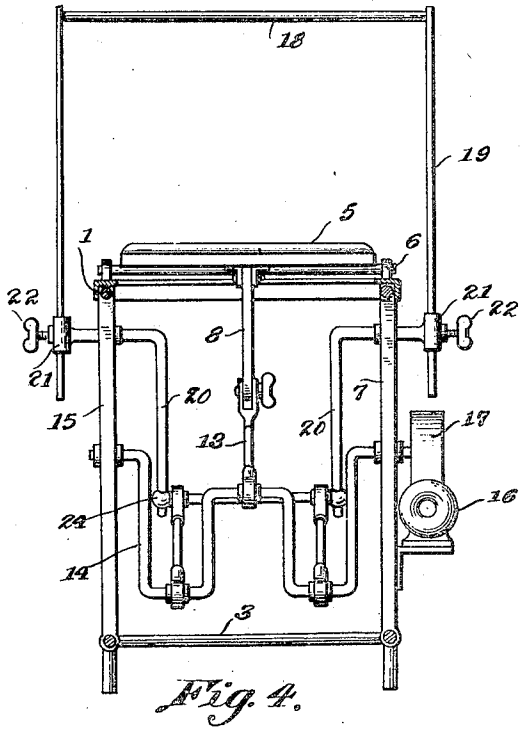


Fig. 4.

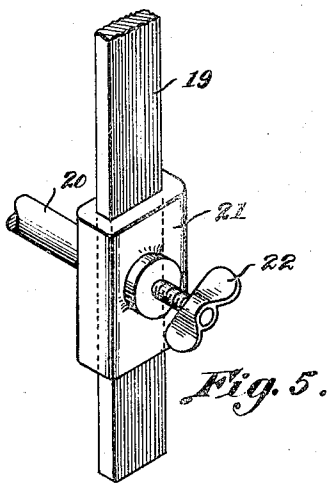


Fig. 5.

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Patented Jan. 29, 1924. 1,482,173

UNITED STATES PATENT OFFICE.

CHARLES E. WILLARD, OF WASHINGTON, DISTRICT OF COLUMBIA.

EXERCISING APPARATUS.

Application filed September 18, 1922. Serial No. 588,038.

To all whom it may concern:

Be it known that I, CHARLES E. WILLARD, a citizen of the United States, residing at Washington, in the District of Columbia, have invented a new and useful Exercising Apparatus, of which the following is a specification.

The invention relates to an exercising apparatus in which the body of the patient remains passive during the operation of the device, all of the movements of the trunk and limbs being produced by the device itself.

One object of the invention is the correction of curvature of the spine, especially the posterior curvature.

Additional objects are the development of the lungs by producing an increase of the chest cavity; the strengthening of the respiratory muscles and the muscles of the back, abdomen, shoulders and arms; exercising the internal viscera; and to provide a device which will be useful in conjunction with a pulmotor for producing artificial respiration.

Many other uses and applications of the device will become apparent to those skilled in the treatment of disease in the following description of the apparatus.

One form of the invention is illustrated in the accompanying drawings in which—

Fig. 1 is a side elevation of the device in use, showing the patient in position during the operation of the device.

Fig. 2 is a perspective view of the device showing the movable parts in an intermediate position, certain parts of the device being omitted for sake of clearness in showing the operating rods.

Fig. 3 is a side elevation showing the parts in approximately the same position as in Fig. 2.

Fig. 4 is a rear elevation clearly showing the motor and main operating parts of the device.

Fig. 5 is a detail view illustrating the adjustment feature for the arm rod.

Fig. 6 is a detail view of the adjustment for the movable section of the table.

Fig. 7 is a detail view of a further adjustable connection to produce a change in the degree of oscillation of the arm bar.

Fig. 8 is a detail view showing the adjustable portion of the rocking section of the table.

The apparatus consists of a table comprising a top frame section indicated by numeral 1 supported by legs 2. The rods 3 are provided joining the legs to strengthen the frame.

The top of the table is made in two sections, a stationary section 4 and a movable section 5. The movable section 5 is rigidly mounted on a rod 6 which is journalled in standards 7, 7 connected to the rods 3 and top frame member 1. This movable or pivoted section 5 has attached to its underside a link 8 which is provided with a slot 9. (See Figs. 2 and 3).

The movable section 5 is given a rocking motion by means of the following mechanism: A yoke member 10 is adjustably connected to the link 8 by a block 11 to which the yoke 10 is pivoted as shown in Fig. 6. The block 11 is slidable along the slot 9 and may be secured against movement in said slot by a bolt 12. The yoke 10 has threaded into it a rod 13 which is pivotally connected at its opposite end to a crank member 14 as clearly shown in Figs. 2 and 4. The crank member 14 is journalled in bearings in the standards 15, 15 which are connected to the frame in the same manner as standards 7, 7. It will be noted that the standards 7, 7 and 15, 15 serve the double purpose of supporting the bearings for the movable parts and giving the frame additional strength. The crank member 14 may be given a turning movement by any well known means such as a hand crank. In the preferred form of the device I provide a motor 16 mounted on a bracket on the frame which is adapted to turn the crank member through suitable gearing (not shown) enclosed in a casing 17.

A hand bar 18 is mounted for swinging movement over the table. This bar 18 is connected at each end to rods 19 which are each adapted to be adjustably secured to a rocker arm 20 by means of a member 21 (see Fig. 5) rigidly attached to the rocker arm. The members 21 are provided with apertures through which the rods 19 may slide and the rods 19 may be secured in any desired extended position by means of a thumb screw 22. To the lower ends of the rocker arms 20 is connected a rod 23 which may be adjustably secured to the rocker arm as clearly shown in Fig. 7 by means of the member 24 into which the rod 23 is threaded and which is slidable on rocker arm 20. The thumb screw 25 serves

to hold member 24 fixedly on said rocker arm.

Links 26 connect rod 23 with the crank member 14 mentioned above. It will be noted that the crank portion to which rods 26 are connected is farther from the axis of the crank than the portion to which rod 13 is connected.

It may be found desirable to provide an adjustable section in the rocking portion 5, this is illustrated in Figs. 1, 2 and 8, the adjustable section being indicated by numeral 5a. This section is pivotally connected to the main section and may be held in various angular positions by any suitable mechanism.

The operation of the device is as follows:

The patient lies flat on his back on the table with the upper portion of his body on the movable section of the table and the lower portion of his body on the stationary section of the table. The rod 18 is grasped by the hands, or if the patient is unable to grasp the rod the hands can be secured to the same in any suitable manner.

The motor 16 is put in motion thus revolving the crank member 14 which in turn causes both the movable table section 5 and the arm rod 18 to rock on their pivot shafts due to the connections described above between said members. The rocking section 5 while in motion first raises the body at the waist and at the same time lowers the head and shoulders while the arm rod moves to a position to fully extend the arms above the head as shown in full lines in Fig. 1. This movement tends to expand the chest cavity to its greatest extent and at the same time draws up the internal organs and stretches the abdominal muscles. The movement further tends to produce flexibility of the spinal column, which is very material in the treatment of spinal curvature.

Continued movement of the rocking section 5 and the arm rod 18 lifts up the head and shoulders of the patient and moves the arms to a position as shown in dotted lines in Fig. 1. This movement allows the muscles to relax and tends to decrease the chest cavity so that all the air possible will be expelled from the lungs. These movements will be continued as long as found desirable.

It will be readily seen that the device may be operated by the patient himself as the controlling switch for the motor may be placed in any convenient position on the table.

It will also be apparent that the device may be adjusted to suit the needs of the patient since the oscillation of the arm rod and the rocking section 5 may be varied within wide limits.

I am aware that numerous changes may be made in the details of the device without departing from the spirit of the invention and I do not wish to be limited to the details shown except as set forth in the following claims:

I claim:

1. An exercising apparatus comprising a table adapted to support a patient in a prone position, said table comprising a stationary section and a movably mounted section, an arm bar mounted on said table and adapted to have a swinging movement thereover, and common means for swinging the arm bar and moving the movable section.

2. An exercising apparatus comprising a table adapted to support a patient in a prone position, said table comprising a stationary section and a pivotally mounted section, the latter adapted to support approximately the upper half of the patient's body, an arm bar mounted on said table on a pivot located below the pivotally mounted section and adapted to have a swinging movement over the said section.

3. An exercising apparatus as set forth in claim 2 in which the pivotally mounted section may be adjusted for varying degrees of oscillation.

4. An exercising apparatus as set forth in claim 2 in which the arm bar may be adjusted for different degrees of oscillation.

5. An exercising apparatus as set forth in claim 2 in which the arm bar may be adjusted to swing at various distances from its pivot.

6. An exercising apparatus as set forth in claim 2 in which the pivotally mounted section is provided with an adjustable portion.

7. An exercising apparatus as set forth in claim 2 combined with means for swinging the arm bar.

8. An exercising apparatus as set forth in claim 2 combined with common means for swinging the arm bar and rocking the pivotally mounted section.

9. An exercising apparatus as set forth in claim 2 combined with means for rocking the pivotally mounted section.

10. An exercising apparatus comprising a table adapted to support a patient in prone position, said table comprising a stationary section and a movably mounted section, an arm bar mounted on said table and adapted to have a swinging movement thereover, and means for swinging the arm bar and moving the movable section in synchronism.

CHARLES E. WILLARD.