

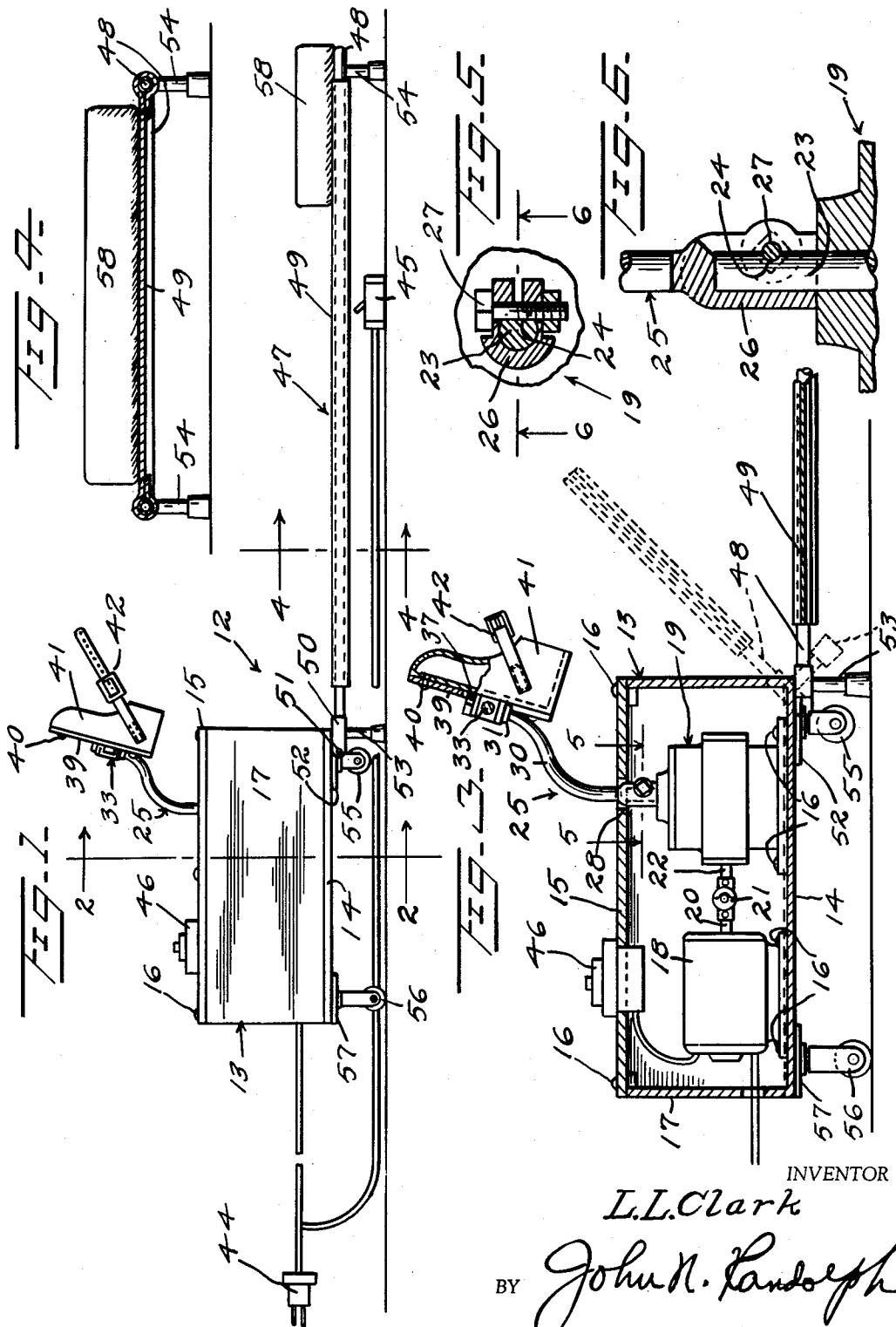
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L. LE R. CLARK
EXERCISING MACHINE

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2 Sheets-Sheet 1



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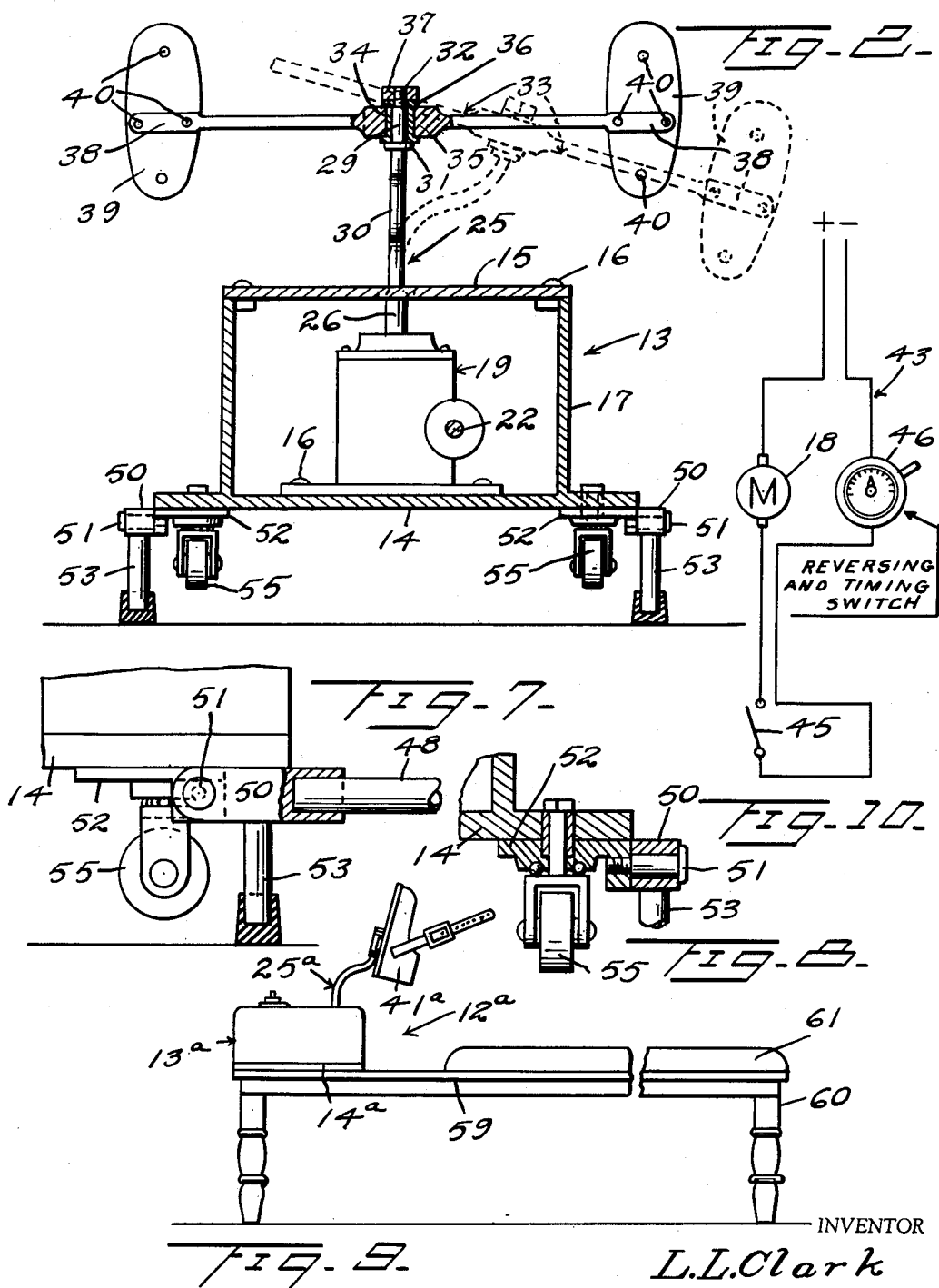
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EXERCISING MACHINE

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This invention relates to a novel power-driven machine of extremely simple construction for relaxing and exercising the legs, hips and ankles and which readily adapts itself to such treatment of the legs of paralytics.

More particularly, it is an aim of the present invention to provide a machine having a single rotary driven shaft, one end of which revolves in a circular path and which carries means attached to the feet of the user for effecting the exercising and relaxation of the legs, hips and ankles, due to the unique configuration of the revolving shaft part.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, illustrating presently preferred embodiments thereof, and wherein:

Figure 1 is a side elevational view of a presently preferred embodiment of the exercising machine;

Figure 2 is an enlarged cross sectional view, taken substantially along a plane as indicated by the line 2—2 of Figure 1;

Figure 3 is an enlarged fragmentary longitudinal sectional view of one end of the machine;

Figure 4 is an enlarged cross sectional view, taken substantially along a plane as indicated by the line 4—4 of Figure 1;

Figure 5 is an enlarged fragmentary horizontal sectional view, taken substantially along a plane as indicated by the line 5—5 of Figure 3;

Figure 6 is a fragmentary vertical sectional view of a portion of the machine, taken substantially along a plane as indicated by the line 6—6 of Figure 5;

Figure 7 is a fragmentary side elevational view of a portion of the frame of the machine, partly in section;

Figure 8 is a fragmentary transverse sectional view of the parts shown in Figure 7;

Figure 9 is a fragmentary side elevational view, similar to Figure 1, of a modified form of the invention, and

Figure 10 is a diagrammatic view illustrating an electric circuit of the machine.

Referring more specifically to the drawings, and first with reference to Figures 1 to 8 and 10, the exercising machine in its entirety is designated generally 12 and includes an elongated boxlike housing 13 having a bottom 14 constituting a base of the machine and a removable top wall or cover 15 which may be detachably secured by suitable fastenings 16 to the upright surrounding walls 17 of the casing.

A conventional reversible electric motor 18 is disposed within the casing 13 and is secured to the upper side of the casing bottom or base 14 as by additional fastenings 16. The housing of a conventional reduction gear unit 19 is likewise disposed within the casing 13 and is secured by additional fastenings 16 to the base 14. The motor 18 is spaced from the reduction gear unit 19 and has an armature shaft 20 projecting therefrom toward said unit 19 and which is connected by a coupling 21 to an input shaft 22 which projects from the unit 19. The reduction gear unit 19 has an upwardly extending output shaft 23

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an upper end of which is disposed above the housing of the unit 19 and is provided with a transverse groove 24, as seen in Figures 5 and 6.

A shaft 25 has a longitudinal split socket 26 constituting one end thereof and which fits detachably over the exposed upper end of the output shaft 23. The socket 26 is clamped by a nut and bolt fastening 27 to the output shaft 23. The bolt of the fastening 27 has a part engaging in the groove 24 to secure the shaft 25 to the shaft 23 for rotation therewith. The shaft 25 extends outwardly through an opening 28 in the cover 15, in which said shaft is loosely disposed for rotation. The shaft 25 has an upper free end 29 forming a crank which is offset relative to the other shaft end 26 and which is additionally disposed at an angle relatively to the axis of the shaft end or socket 26 so that the free end or crank portion 29 is inclined upwardly and outwardly with respect to the shaft end 26. The shaft 25 has a reversely bent intermediate portion 30 connecting the socket end 26 thereof to the crank portion 29. The shaft 25 is provided with a collar or enlargement 31 disposed immediately beneath the crank portion 29 and said crank portion 29 has a restricted extension at its upper free end which is threaded to form a stem 32, as best seen in Figure 2.

A crosshead or crossarm 33 is provided intermediate of its ends with an opening 34 preferably containing a bushing 35 which is journaled on the crank 29 to turnably mount the crossarm 33 intermediate of its ends on said crank 29. Said crossarm or its bushing 35 rests swivelly on the collar 31 and is retained in engagement with the crank 29 by a washer and nut 36 and 37, respectively, which engage the threaded stem 32. The crossarm 33 is supported by the shaft 25 with its axis at a right angle to the crank. Said crossarm has end portions 38 to which foot engaging plates 39 are secured by fastenings 40. The plates 39 are preferably spaced apart a distance of about 18 to 20 inches. The plates 39 are disposed crosswise of the arm 33 and are disposed coplanar with one another and substantially in a plane parallel to the plane of the axis of the crank 29. Flexible shoe or sandal-like members 41 are secured to the forward sides of the plates 39 by additional fastenings 40 and said members 41 are provided with strap and buckle means 42 for securing the feet of the user therein. Thus, the plates 39 and the shoe or sandal members 41 combine to form foot engaging members whereby the feet of the user are detachably connected to the ends of the crossarm 33.

The electric motor 18 is interposed in an electric circuit, designated generally 43, and best illustrated in Figure 10, which is provided with a conventional electric plug 44 which is adapted to be plugged into a conventional domestic outlet, not shown, for supplying electric current to the motor 18. Interposed in the circuit 43 is a manually actuated make and break switch 45 and a conventional reversing and timing switch 46. The switch 46 can be set to permit the motor 18 to operate for a given period of time, assuming that the switch 45 is closed and for thereafter interrupting the circuit of the motor 18. Additionally, the switch 46 automatically at regulated time intervals effects a reversing of the motor 18 so that the shaft 25 will be revolved in one direction for a certain period of time and thereafter revolved in the other direction, with this reversing of direction of rotation of the shaft 25 being repeated a number of times during the period of time that the motor 18 is maintained energized.

The casing 13 is shown connected to an elongated body support 47 comprising a low cot having an elongated U-shape frame 48 across which is stretched a covering or webbing 49. The ends of the legs of the frame 48, constituting the inner end of the cot like support 47 are

secured in sockets 50 which are pivotally connected by pivot pins 51 to transversely spaced brackets 52, which are secured to the underside of the base 14, as best seen in Figure 2. The sockets 50 straddle the base 14 and casing 13 and swingably support the inner end of the cot 47 for vertical swinging movement relative to the casing 13. The sockets 50 are provided with depending legs 53 which are disposed at substantially a right angle to said sockets and to the frame 48. The other, outer end of the frame 48 is provided with similar depending legs 54. The legs 53 and 54 are adapted to rest on a supporting surface, such as a floor for supporting the cot in substantially a horizontal plane. The casing 13 is provided with caster wheels including a pair of caster wheels 55 which are swivelly supported by and disposed beneath the brackets 52 and a second pair of caster wheels 56, which are swivelly mounted beneath the other end of the casing 13 and connected to a second pair of brackets 57. The caster wheels 56 extend downwardly to below the level of the caster wheels 55. When the support 47 is in a horizontal position, as seen in Figure 1, the caster wheels 55 are elevated out of contact with the supporting surface of the legs 53 and 54 and the caster wheels 56, so that the machine 12 will remain immovable while in use. By swinging the support 47 upwardly on its pivots 51 to or above its dotted line position of Figure 3, the legs 53 will be elevated so that the caster wheels 55 will be disposed in engagement with the supporting surface of the wheels 56 to enable the machine 12 to be readily rolled or moved on said caster wheels 55 and 56.

In utilizing the machine 12, the user lies in a prone position with his or her back resting on the cot 47. The feet are placed in the shoe or sandal members 41 and are secured therein by the strap fastening means 42. The head of the user may rest on a pillow 58, which may be disposed on the outer end of the cot 47, or if the cot is made shorter, the pillow may rest on the floor beyond the right-hand end of the cot 47, as seen in Figure 1, to support the head.

Assuming that the electric plug 44 is connected to a conventional electrical outlet, not shown, and that the switch 46 has been set for a desired time for operation of the motor 18, the switch 45 is positioned adjacent a side of the cot 47, as seen in Figure 1, convenient to the user of the machine 12. Upon closing of the switch 45, the motor 18 will be energized to revolve the shaft 25 in one direction or the other. Assuming that the shaft 25 turns clockwise initially, as viewed from above, as the crank 29 swings to the right from its inner or forward position of Figure 2 through an arc of 90°, it will be readily apparent that the crossarm 33 will be tilted downwardly and to the right and that the foot plates 39 will then be disposed in vertical planes rather than being tilted as seen in Figure 1. As the shaft 25 completes another 90° turn so as to be disposed opposite to its position of Figure 1, the crossarm 33 will have resumed a horizontal position and the foot plates 39 will have been tilted so as to extend upwardly and to the left or opposite to their positions of Figure 1. When the shaft has completed another 90° of its cycle of rotation and so that the crank 29 is to the left of its position of Figure 2, the crossarm 33 will be tilted downwardly from right to left and the foot plates 39 will again be in vertical planes, after which following another 90° turn of the shaft 25, the parts will have returned to their positions as seen in Figures 1 and 3. This rotation of the shaft 25 which is accomplished at the rate of 50 to 60 R. P. M. will accomplish a vigorous exercising of the legs due to the back and forth and up and down movement of the

foot plates 39. The hips will also be vigorously exercised by the transverse swinging and rocking movement of the crossarm 33 and foot plates 39 and the ankles will be exercised due to the back and forth rocking movement of the foot plates 39. It will be understood that the crank 29 will revolve in the bushing 35 of the crossarm 33 and that said crossarm will be maintained in a position substantially crosswise of the machine 12 by equal pressure of the feet against the plates 39.

In the form of the machine as illustrated in Figure 9, and designated generally 12a, the caster wheels and their brackets are omitted and the bottom 14a of the casing 13a is secured to an end of a support such as a bench top 59. The parts contained in the casing 13a correspond to the contents of the casing 13 and the parts supported by the shaft 25a, which projects rotatably from the casing 13a, correspond to the parts supported by the shaft 25, and a further description thereof is considered unnecessary. The bench top 59 may constitute a part of an elongated bench 60 having a cushion 61 extending inwardly from the other end of the bench top on which the user lies in a prone position on his or her back and with the feet secured in the sandal members 41a. The shaft 25a is operated in the same manner as the shaft 25 for effecting the same exercising of the legs, hips and ankles. It will likewise be apparent that the casing 13a can be secured to any other supporting surface, convenient to the user.

Various other modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit or scope of the invention as herein-after defined by the appended claims.

I claim as my invention:

1. In an exercising machine of the character described, a rotary driven shaft having a free end portion forming a crank, said crank being offset from the axis of rotation of the shaft, a crossarm turnably mounted intermediate of its ends on and supported solely by said crank, and foot attaching members secured to the crossarm on opposite sides of and spaced from said crank and to which the feet of the user are adapted to be secured.

2. In an exercising machine as in claim 1, said foot attaching members being elongated and having their longitudinal axes disposed substantially crosswise of the crossarm and substantially parallel to said crank, each of said foot attaching members including a substantially flat rigid plate rigidly secured to the crossarm.

3. In an exercising machine as in claim 2, said crank being disposed at an incline relative to the axis of rotation of the shaft and in a direction outwardly and away from said shaft whereby said end portions of the crossarm and said foot attaching members will be rocked and tilted about different pivotal axes as said shaft is revolved in either direction and said crank turns in said crossarm.

4. In an exercising machine as in claim 1, a reversible electric motor connected to and driving said shaft, a starter switch interposed in the electric circuit of said motor, and a timing and reversing switch interposed in the motor circuit for regulating the time said shaft is driven and for intermittently reversing the direction of rotation thereof.

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