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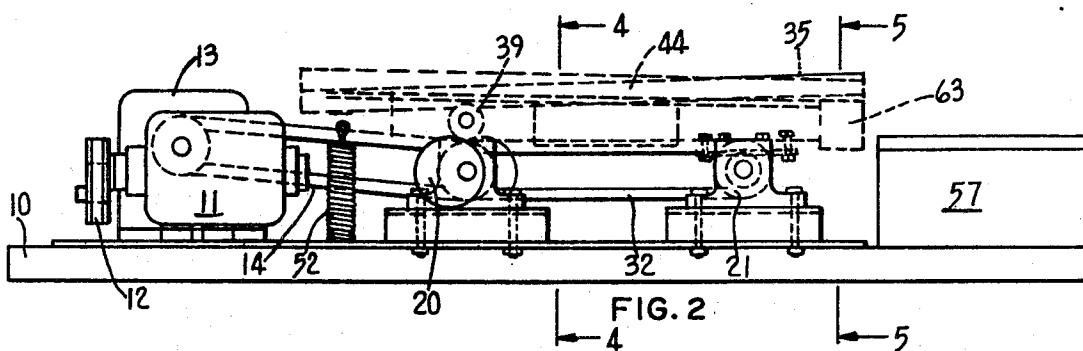
[54] **WALKING EXERCISE MACHINE**
3 Claims, 5 Drawing Figs.

[52] U.S. Cl. 128/25
 [51] Int. Cl. A61h 1/02
 [50] Field of Search 128/24-
 —25, 33, 48, 49

[56] **References Cited**

UNITED STATES PATENTS
 3,316,898 5/1967 Brown 128/25

ABSTRACT: A machine for exercising legs by simulating a walking motion comprises a base carrying a rearwardly-positioned rotatable shaft riding in bearings, and a forwardly-positioned shaft and bearings. The rearward shaft carries a pair of cams having edge surfaces. A pair of flat foot boards have their forward ends attached to the forwardly-positioned bearings. Under the rear portions of each of the footboards is attached a rotatable cam follower designed to ride on the cam surface. The cams are positioned so that one footboard is raised thereby while the other is lowered, thus simulating walking. The forward ends of the footboards are attached to bearing sleeves riding on the forward shaft and in line with the cams. A spring is attached to the back of each footboard and the base to insure contact of the cam follower with the cam surface.



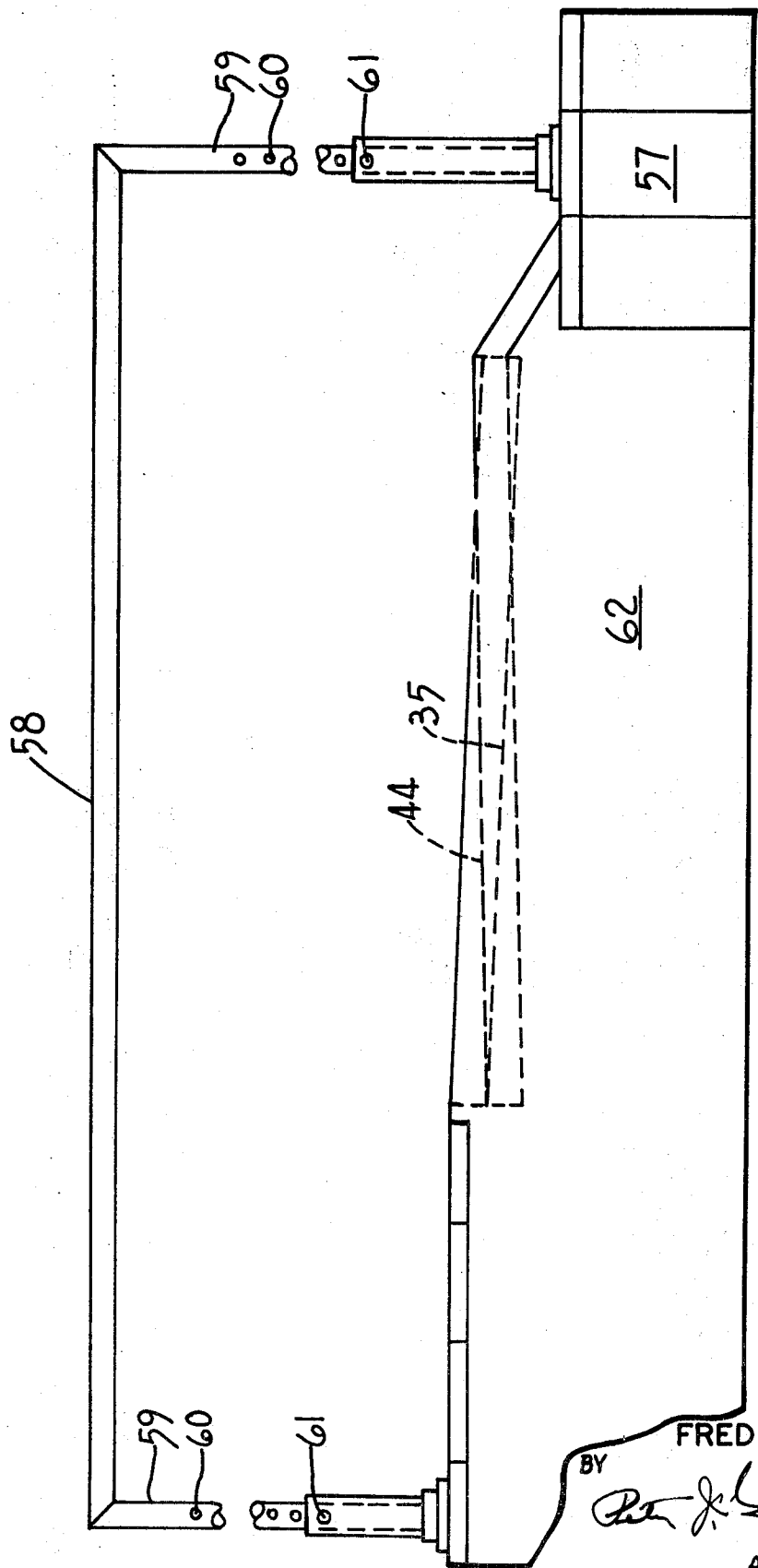
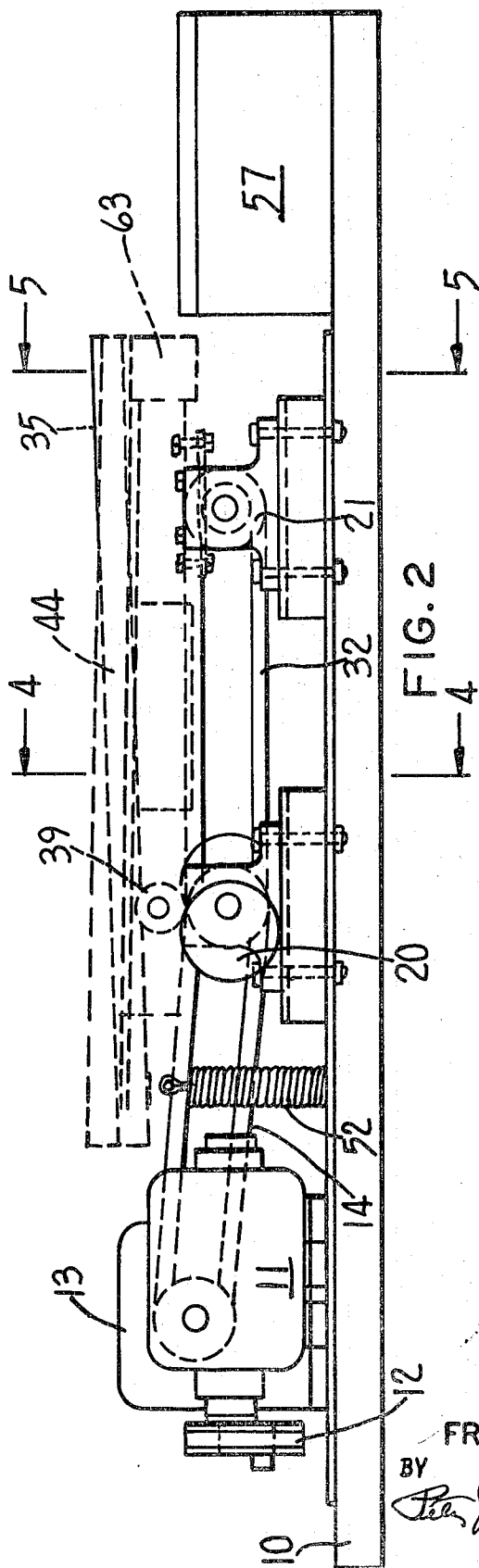


FIG. 1

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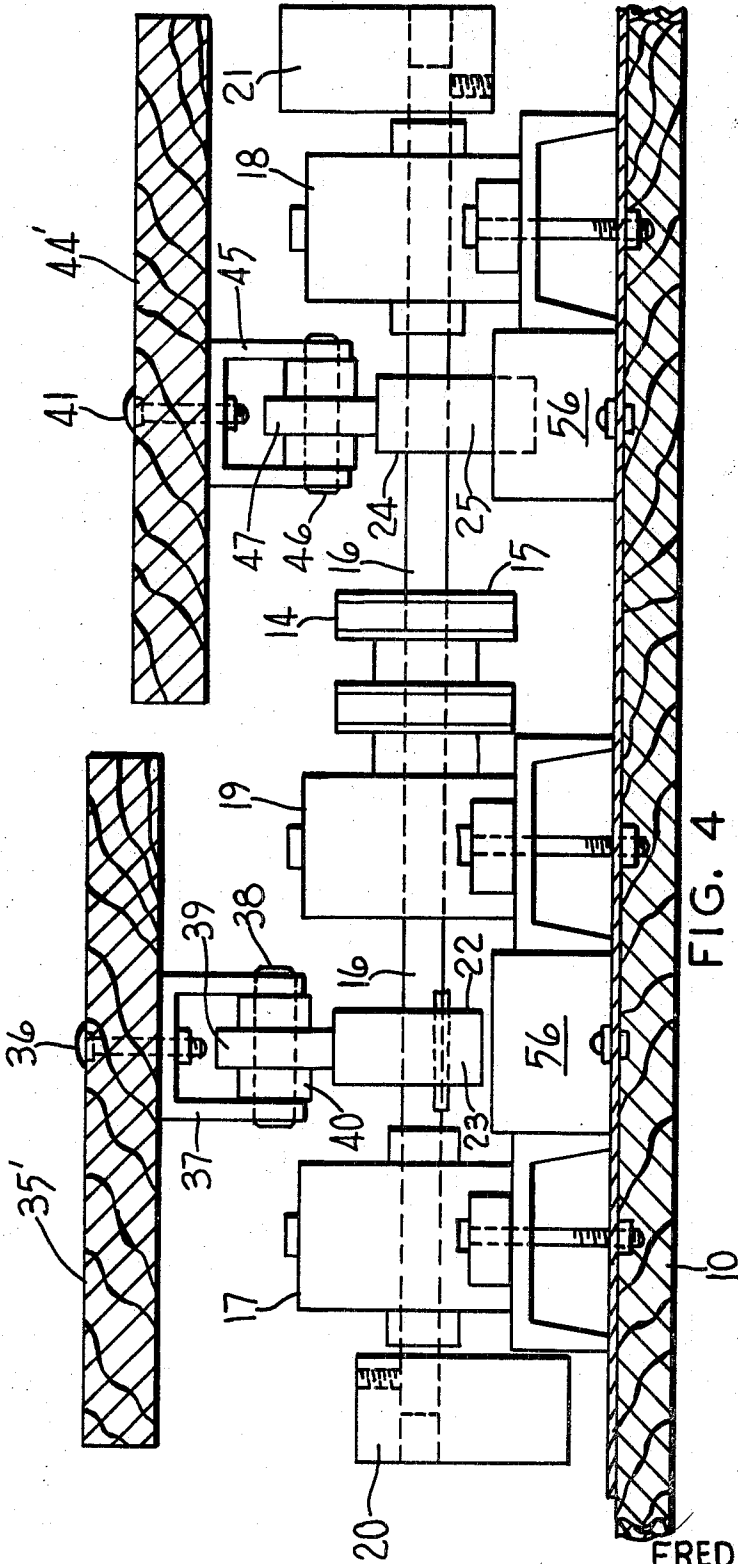


FIG. 4

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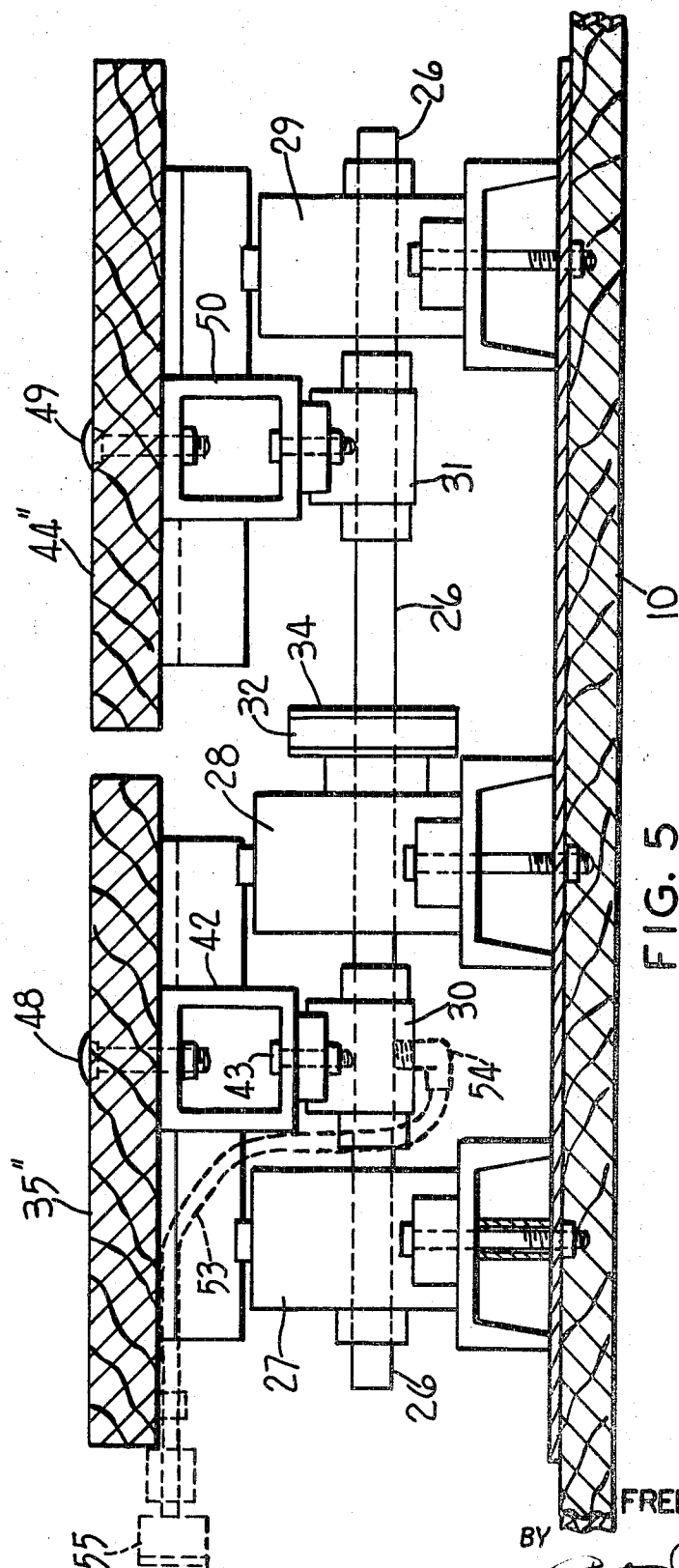


FIG. 5

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WALKING EXERCISE MACHINE

BACKGROUND OF THE INVENTION

Those recovering from leg injuries or sicknesses affecting the legs require exercising of these limbs during and after the recovery period. Various devices have been proposed in the prior art as aids for exercising the feet and legs. For example, U.S. Pat. No. 2,969,060 employs a complicated unit of springs and rollers, which is expensive and requires considerable maintenance. U.S. Pat. No. 2,826,192 employs a pair of treadles which possess dangerous features in the event the feet dislodge out of their retaining elements. U.S. Pat. No. 2,892,455 does provide a desirable vertical reciprocating action for the legs, but it employs a forward footboard pivot which has a tendency to "freeze" during use which results in vibration at the pivot point, thereby disconcerting the exerciser and reducing the useful life of the unit. Furthermore, it employs a slide feature behind the pivot which renders the unit unsafe for approach and requires the lifting of the person by means of a harness for placement on the machine, or for removing the person from the machine.

SUMMARY OF THE INVENTION

According to the present invention, it is possible for the person exercising to move from a platform and to stand on a pair of vertically-moving footboards, and to gradually move ahead when greater amplitude of movement is desired. The bottom of the rear ends of the footboards are each provided with a rotatable cam follower which rides on a rotatable cam that provides the alternating reciprocating vertical movement. The forward ends of the footboards are each attached to a bearing sleeve riding on a rotatable shaft. The latter eliminates possible "freezing" of the bearing, and both the cam shaft and the bearing shaft are driven by one motor. A spring holds down each cam follower against the cam surface.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more readily understood by reference to the accompanying drawings in which a preferred embodiment is described, and in which:

FIG. 1 depicts a side elevational view of a preferred embodiment of the invention;

FIG. 2 shows a similar view of the same unit with handrails and posts removed and with side covers removed;

FIG. 3 illustrates a top or plan view of the same unit as shown in FIG. 2, with footboards and cam followers removed;

FIG. 4 presents a cross-sectional rear view taken along the plane of line 4-4 in FIG. 2, and

FIG. 5 presents a cross-sectional front view taken along the plane of line 5-5 in FIG. 2.

The same numerals refer to similar parts in the various figures.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, and first particularly to FIGS. 1-3, numeral 10 represents a base, on which is mounted motor 11 which is connected by belt drive 12 to speed reducer 13. The latter is connected by belt drive 14 to pulley 15 on driven rear shaft 16. The latter shaft is mounted in end bearings 17 and 18, and in center bearing 19. Balancing flywheels 20 and 21 are attached to the ends of shaft 16.

Mounted on shaft 16 between bearings 17 and 19, is cam 22 having a flat edge periphery 23. Mounted on shaft 16, between bearings 18 and 19, is cam 24 having a flat edge periphery 25.

Mounted forwardly of shaft 16, and in parallel relation thereto, and on bearings 27, 28 and 29, is forward shaft 26. A small bearing sleeve 30 is mounted on shaft 26 between bearings 27 and 28. Also, a similar bearing sleeve 31 is mounted on the same shaft between bearings 28 and 29. Shaft 26 is rotated by belt drive 32 disposed between pulley 33 on shaft 16 and pulley 34 on shaft 26.

Footboard 35 (FIG. 4) is a long flat board. On the bottom of its rearward end 35' is attached, by means of bolts 36, an inverted channel member 37, which carries pin 38 serving as a shaft on which is mounted rotatable cam follower 39. The latter is designed to ride on cam surface 23. Space collars 40 serve to center the cam follower 39 to hold it on cam surface 23.

The bottom of the forward end 35'' of footboard 35 (FIG. 5) is attached, by means of bolt 48, to square member 42 (which is made by welding two angle irons). The latter member is attached, at its lower portion, by bolt 43, to smaller bearing sleeve 30 which rides on shaft 26, and which is in line with cam 22.

Footboard 44 is disposed in spaced parallel relation to footboard 35, and similarly, the bottom of its rearward end 44' is connected, by means of bolt 41, to channel member 45, through which pin 46 is driven to hold cam follower 47 which is designed to ride on cam surface 25. The forward end 44'' of footboard 44 is likewise attached by bolt 49 to square member 50, the bottom of which is attached, by bolt 51, to sleeve 31 riding on shaft 26. Sleeve 31 is in line with cam 24.

From the foregoing, it is thus seen that, when motor 11 is started, belt 14 will rotate rearward shaft 16, while belt 32 will rotate forward shaft 26. As shaft 16 rotates, cams 22 and 24 will cause the rear portions of footboards 35 and 44 to reciprocate vertically in alternating relation, i.e., when footboard end 35' is up, then footboard end 44' will be down, and vice versa.

During this running period, the forward ends of footboards 35 and 44 will not move vertically, but they will oscillate on their bearings 30 and 31 (through which shaft 26 is rotated). By rotation of shaft 26, there is no danger of the "freezing" of bearings 30 and 31 on their pivoting means, and the reciprocating action of the footboards is smooth, with no tendency toward jerkiness. A spring 52 (FIG. 2) is attached to each of the rearward ends of footboards 35 and 44 to insure contact between the cams and their followers, and to limit the vertical movement of the footboards.

A grease line 53 (FIG. 5) is desirably connected to bearing 30 at 54, and it serves to lubricate the bearing. Grease may be introduced by a gun through fitting 55. Bearing 31 may be similarly serviced. Also, drip pans 56 (FIG. 4) may be provided, wherever necessary, to catch excess lubricant.

As is apparent from FIG. 1, a step or platform 57 may be provided to lead the person into the machine. Also, a rail 58 may be installed to enable the person to hold thereon during the exercising operation. The vertical supports 59 of the rails may be provided with height adjustments, such as holes 60 and pins 61. The sides of the machine may be covered with a rubber sheet 62 which may be mounted on frame support 63 (FIG. 2).

When in operation, the person, whose legs are to be exercised, is placed on platform 57, after which he steps onto the forward ends 35'' and 44'' of the footboards (one foot on each board). The motor 11 is started, and the exercising begins. As the person makes his way on the footboards, his legs rise higher, thus raising the person's feet and legs to move in simulation of walking.

I claim:

1. A walking exercise machine, of the type described, comprising:
 - a base;
 - a first rotatable shaft and bearings in which said shaft is mounted on the rearward portion of said base;
 - a second rotatable shaft, positioned in parallel relation to said first shaft, and including bearings in which said second shaft is mounted on the forward portion of said base;
 - a cam having a flat edge face and mounted on said rearward shaft alongside a bearing near each side of said base;
 - a pair of bearing sleeves disposed on said forward shaft in line with said cams;
 - a pair of flat footboards, each having its forward portion attached to one of said bearing sleeves;

a rotatable cam follower mounted under the rearward portion of each footboard and designed to ride on said cam face disposed underneath;
driving means mounted on said base for driving said shafts; and
said cams being adjusted in alternating sequence arrangement so that one cam raises its footboard as the other lowers its footboard, whereby a walking effect is

produced on the legs of a person standing thereon.

2. A machine, according to claim 1, having a spring with one end attached to each footboard rearwardly of said cam follower, and its other end attached to said base.

3. A machine, according to claim 1, having a balancing flywheel attached to each end of the rearward shaft.

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