Nov. 19, 1940. G. BERGFORS 2,221,962

EXERCISING MACHINE

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FIG. 1.

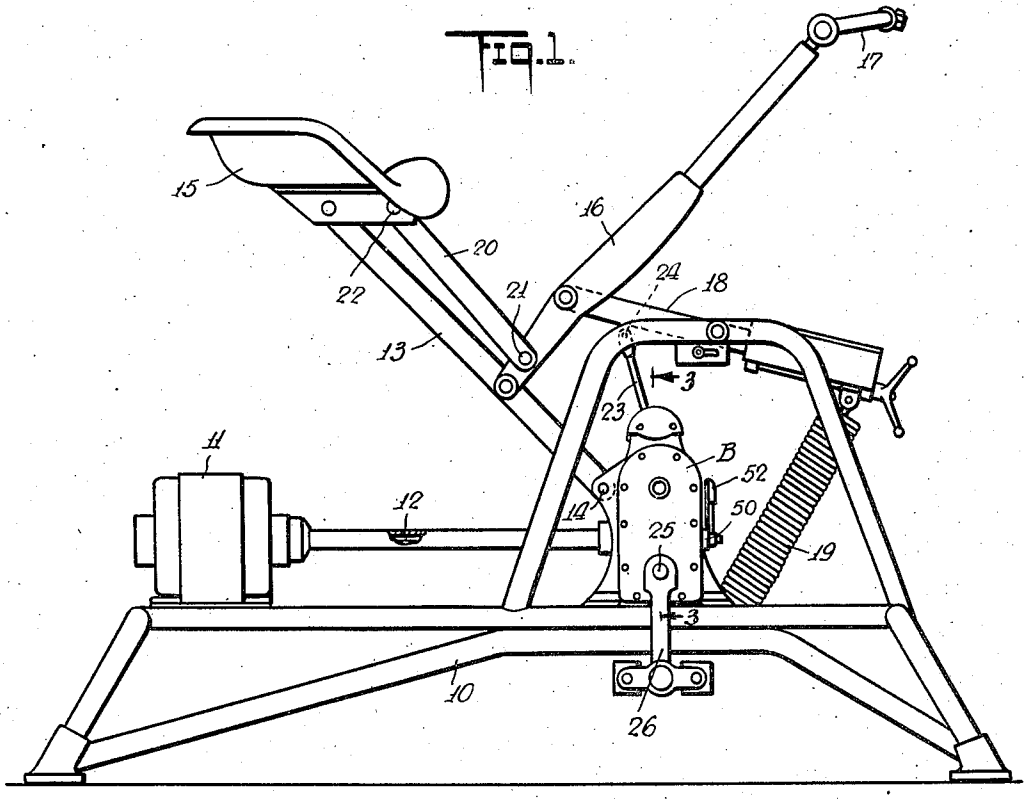


FIG. 4.

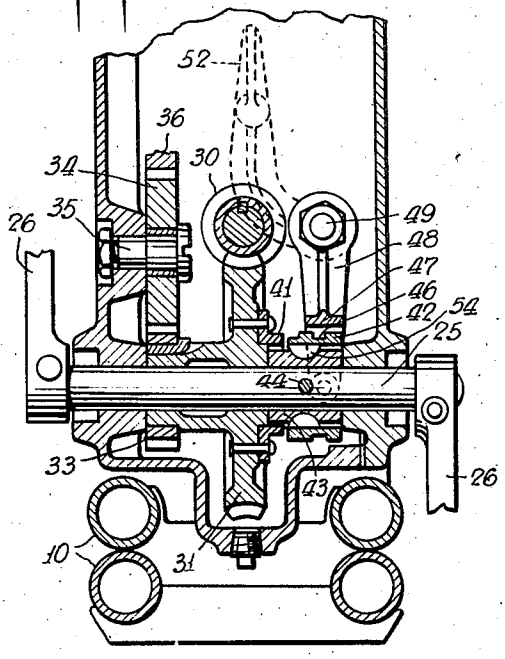


FIG. 5.

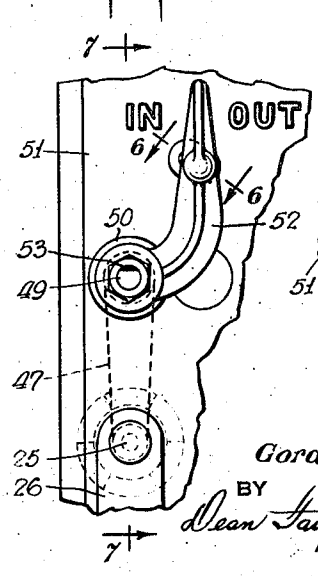
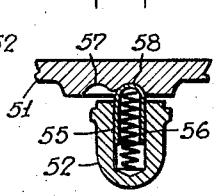


FIG. 6.



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Fig. 5.

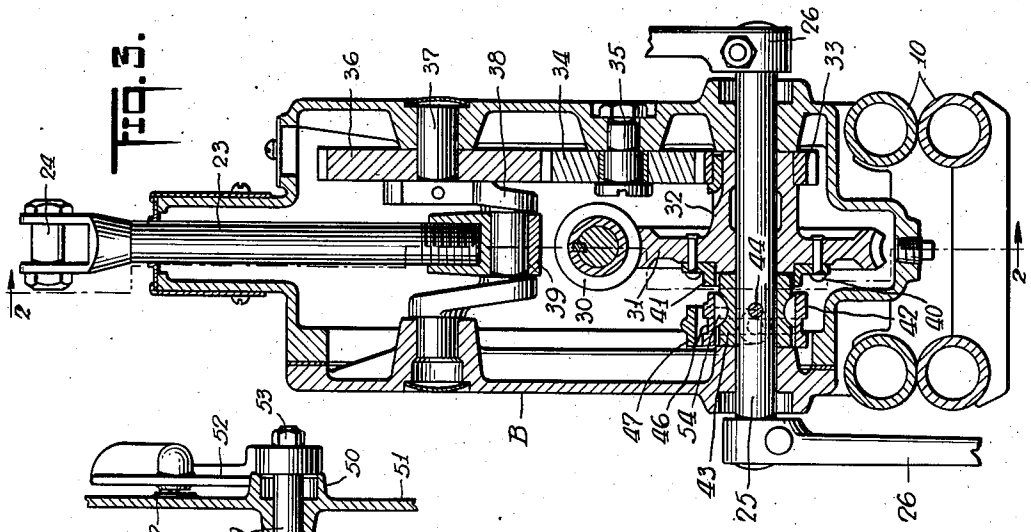


Fig. 7.

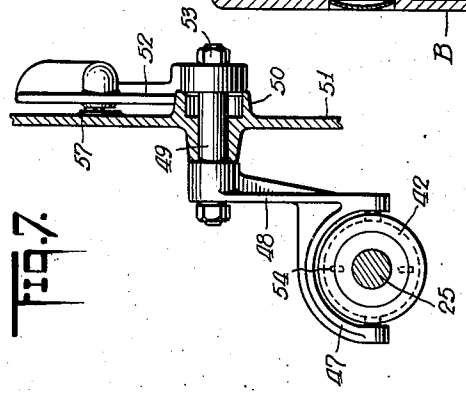
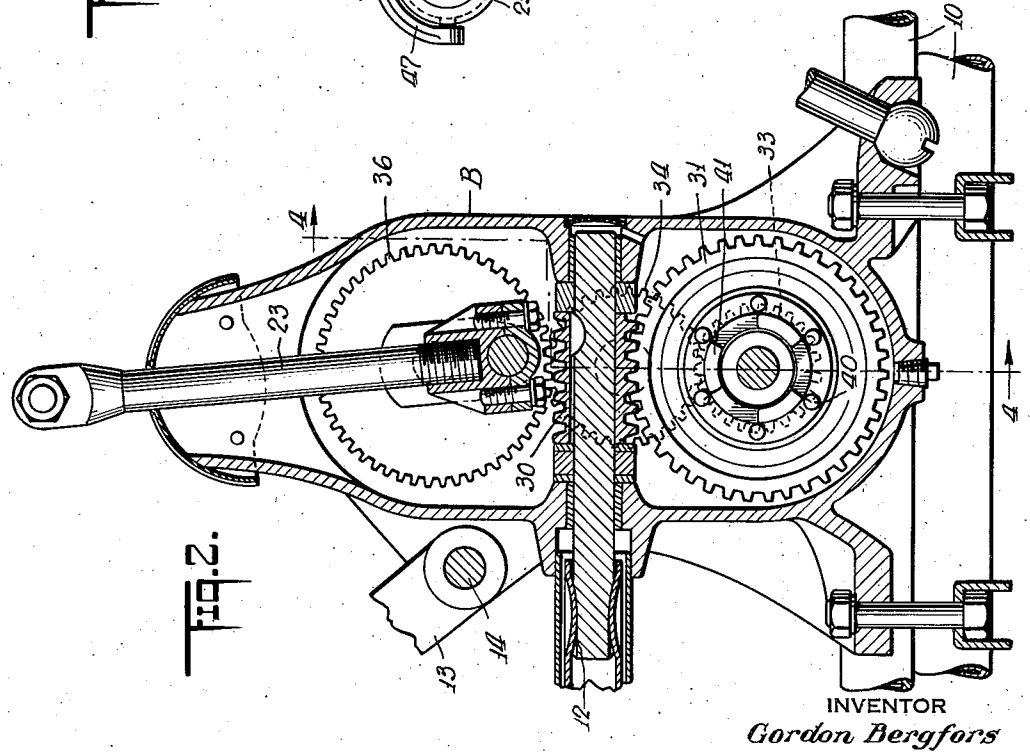


Fig. 2.



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EXERCISING MACHINE

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Application March 27, 1940, Serial No. 326,147

4 Claims. (Cl. 128—25)

The present invention relates to exercising machines and constitutes an improvement upon that of the prior patent to Harold J. Marlowe, No. 2,107,449, granted February 8, 1938.

As conducive to a clear understanding of the invention, it is noted that the machine of the said prior patent, operates as indicated in the specification thereof, to exercise those muscles commonly used in bicycling and in horseback riding, as well as those used in operating a rowing machine. Depending upon the individual requirements or preference of the user, it may be desirable to simulate by the passive exercise imparted by the machine, a choice of movements of the body, in which the various other bodily movements are imparted either concurrently with or in the absence of the bicycling operation, so that the pedals are positively driven or remain idle depending on the will or wish of the user.

Among the objects of the invention are to provide an exercising machine of the foregoing type, characterized by lending itself to the greater variety of exercise above noted and this without interfering with the efficacy of use in each of the settings, and without the likelihood of loosening, jamming and binding as a result of the increased number of alternative settings.

In the accompanying drawings in which are shown one of various possible embodiments of the several features of the invention,

Fig. 1 is a side elevation of the machine,

Fig. 2 is a view on a larger scale and in longitudinal cross-section taken on line 2—2 of Fig. 3,

Fig. 3 is a transverse sectional view through the gear box taken on line 3—3 of Fig. 1,

Fig. 4 is a transverse sectional view taken on line 4—4 of Fig. 2,

Fig. 5 is a fragmentary front view of the transmission box showing the clutch operating handle,

Fig. 6 is a detail sectional view taken on line 6—6 of Fig. 5, and

Fig. 7 is a sectional view taken on line 7—7 of Fig. 5.

Referring now to the drawings, the general construction of the frame shown in Fig. 1 corresponds closely to that of the prior Marlowe patent. It will therefore, be but briefly indicated here, that the machine comprises a base frame 10 which may be made of tube stock, upon the rear of which is mounted a fractional horsepower motor 11, the drive shaft 12 of which extends into a transmission box B also mounted on the frame. The transmission box has pivoted thereon at 14 a bar 13 carrying seat 15. Upon bar 13 is pivoted a bar 16 extending obliquely forward, for carrying the bicycle handle bars 17. To bar 16 in turn is pivoted a control bar 18 extending forward therefrom and resisted by a strong coil spring 19 affixed at its lower end with respect to the frame. The seat 15 may be kept on an even keel by a pitman bar 20 pivoted to the bar 16 at 21 and to the forward part of the seat at 22. From the transmission box B, the power of the motor is conveyed by way of a connecting rod 23 pivoted at 24 to the control bar 18. The transmission box also bears in its side walls the shaft 25, upon the outer ends of which the bicycle pedals 26 are affixed. The pedals may be driven or not driven from the transmission as more fully set forth hereinafter.

Referring now to the details of the transmission construction, the drive shaft 12 protrudes into the transmission box in which it bears at its ends and has keyed thereon a worm 30, which meshes with a worm wheel 31 that has a unitary hub 32 which freely encircles the transverse pedal carrying shaft 25 of the transmission box.

Rigid with worm wheel 31 and at the end of the hub 32 thereof is a pinion 33 which meshes with an idler gear 34 having a stub bearing mount 35 in the side wall of the transmission casing and in turn, meshing with a gear 36, drivingly connected to and mounted upon a crankshaft 37 which extends transversely across the transmission box and bears at 38 in the lateral walls of said box. Upon the crankshaft the lower end of the connecting rod 23 above referred to has a bearing mount 39.

According to the present invention, the worm wheel 31 has affixed thereto as by screws or bolts 40 a toothed clutch member 41, desirably with rectangular teeth. The coacting slidable clutch sleeve member 42 has a sliding key fit 54 upon a hub 43 pinned as at 44 to the pedal shaft 25. The sliding clutch member has a peripheral groove 46 with which coacts the yoke 47 of a clutch setting member. That yoke has an upstanding arm 48 through which extends a pivot pin 49 that protrudes through a boss 50 in the front wall 51 of the transmission box. To the outer end of pivot pin 49 is rigidly affixed or keyed the extremity of the clutch operating handle 52, which is attached in place by a lock nut 53. The clutch operating handle is preferably curved inwardly, so that it will not protrude beyond the side wall of the transmission box when thrown to the left, and also to afford room laterally thereof for the legend "In" at the left. The handle 52 as shown carries a spring-pressed detent, including a cup 55 with a coil spring 56 thereon coacting with

either of the two detent depressions 57 and 58 in the front of the transmission box, and by which the clutch is maintained against inadvertent shifting from either of its two set positions. Desirably, the casing in addition to the legend "In" bears the legend "Out" as shown, for indicating the respective clutch settings.

The power from the motor is conveyed by way of the worm 30 and worm wheel 31 through the pinion 33, idler gear 34 and the gear 36 to drive the connecting rod 23 and thereby effect the movement of seat and handle as set forth in said prior patent. With lever 52 in the "in" position, the clutch 41, 42 is closed. The worm wheel 31 through clutch member 41 therefore drives the coacting clutch sleeve member 42, and through the key connection 54 to the hub 43 drives shaft 25, and with it pedals 26 are positively driven.

When the clutch setting lever 52 is thrown to the "out" position, its yoke 47 shifts the clutch sleeve 42 out of engagement with respect to the clutch element 41 on the worm wheel 31. As a consequence, while the worm wheel continues to be positively turned and to transmit its torque by way of the pinion 33 on its hub to the crank shaft 37 from which are operated the seat and the handle bar, no drive from the worm wheel takes place to the shaft 25 that carries the pedals. The user, accordingly, can rest his feet upon the pedals without exercising the legs, while the body, trunk and arms receive the full workout as a result of the relative movement of seat and handle bar set forth in the prior Marlowe patent.

The clutch setting yoke is devoid of any associated spring that might tend to bias the clutch to either open or closed position and impose added frictional load or drag upon the motor. The clutch is impositively held by the detent of the handle to be maintained in pre-set position whether in or out, as desired.

The clutch set handle is so located at the front of the transmission box that, while it is readily accessible for setting, it is in inobtrusive position with respect to the movements of the user, who cannot inadvertently brush against it in the course of operation and change the setting thereof.

As many changes could be made in the above apparatus and many apparently widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an exercising machine of the type comprising a base, a source of power, a transmission box, a seat, handle bars and pedals, said pedals and at least one of the other elements being mechanically inter-connected with the transmission for concurrent operation therefrom, and a clutch having a setting handle upon the transmission box for selectively connecting and disconnecting the pedals with respect to the driving transmission.

2. In an exercising machine of the type comprising a base, a source of power, a transmission box, a seat, handle bars and pedals, said transmission box comprising a worm, a motor in driving relation thereto, a worm wheel driven therefrom, a shaft therethrough having pedals at the ends thereof, a releasable clutch driving connection between said pedal shaft and said worm wheel, comprising a toothed clutch element rigid with said worm wheel, a coacting clutch sleeve mounted on said shaft, a clutch operating handle protruding from the casing and a yoke actuated from said handle and coacting with said movable clutch element.

3. In an exercising machine of the type comprising a base, a source of power, a transmission box, a seat, handle bars and pedals, the combination of a transmission box having a worm therein extending longitudinally of the machine and directly connected to the driving motor, a worm wheel therebelow meshing therewith, a shaft for said pedals through said worm wheel, said worm wheel having a hub freely riding upon said shaft, a pinion rigid with said worm wheel and said hub, a crankshaft mounted in said casing above said worm and operable from said pinion, and clutch means for selectively connecting said worm wheel into and out of driving relation to said pedal shaft, said clutch means comprising a toothed clutch collar rigidly affixed concentrically with respect to said worm wheel, a complementary toothed collar slidable with respect to said shaft, a yoke on said clutch collar, a pivot pin for said yoke bearing in the wall of the transmission casing, and a clutch operating handle affixed to the outer end of said pivot pin.

4. The combination recited in claim 3 in which the clutch operating handle is mounted at the forward face of the transmission box and carries a spring-pressed detent, the said wall having corresponding depressions.

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