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EXERCISING MACHINE

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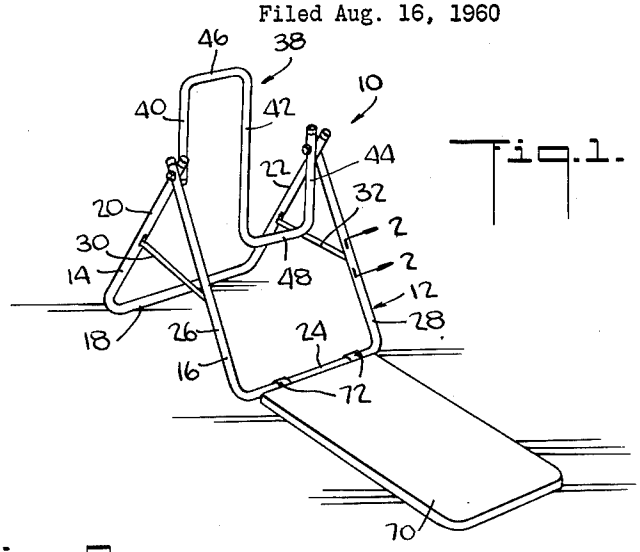


Fig. 1.

Fig. 5.

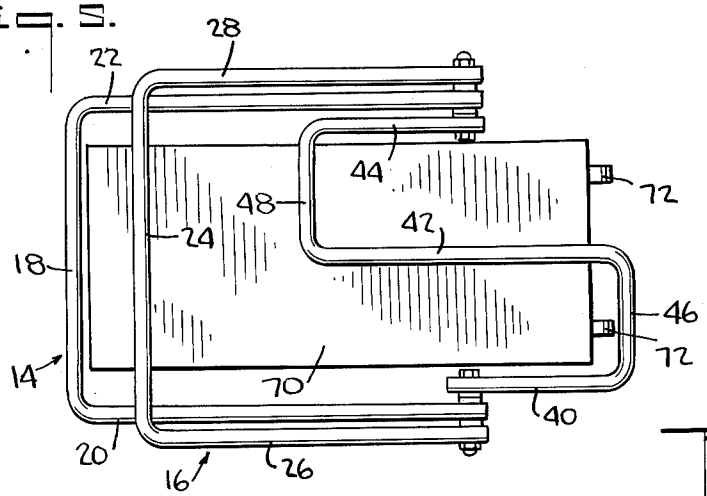


Fig. 2.

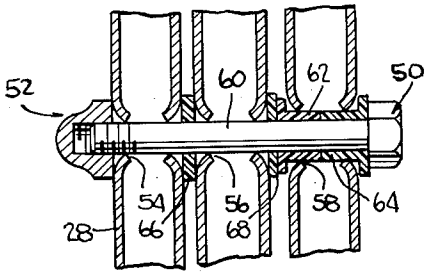


Fig. 4.

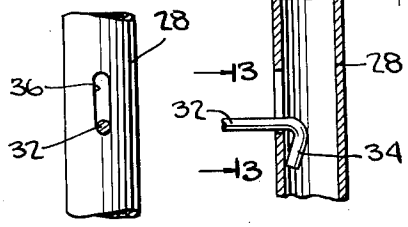


Fig. 3.

INVENTORS
SIDNEY LEVINE
LAWRENCE J. SCHMERZLER

BY

ATTORNEYS

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EXERCISING MACHINE

Sidney Levine, West Orange, and Lawrence J. Schmerzler, Livingston, N.J., assignors to Imperial Electronics, Inc., Newark, N.J., a corporation of New Jersey

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This invention relates to an exercising machine.

It is an object of our invention to provide a rugged, versatile, easily usable exercising machine which constitutes a minimum of simple parts and can be made at a very low cost.

It is another object of our invention to provide an exercising machine which is so constructed that it can be collapsed and partially disassembled into substantially flat condition so as to render it peculiarly compact for shipment and yet which is easily reerected for use.

It is another object of our invention to provide an exercising machine which despite its extreme simplicity is easily stabilized for operational functioning.

It is another object of our invention to provide an exercising machine which is extremely clean of line, i.e. uncluttered, and has an attractive appearance.

Other objects of our invention in part will be obvious and in part will be pointed out hereinafter.

Our invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts which will be exemplified in the machine hereinafter described, and of which the scope of application will be indicated in the appended claims.

In the accompanying drawings, in which is shown one of the various possible embodiments of our invention.

FIG. 1 is a perspective view of an exercising machine constructed in accordance with our invention and erected for use;

FIG. 2 is a sectional view through one of the bail frames forming a part of our exerciser the section being so taken along the line 2—2 of FIG. 1 as to show the means for detachably holding the exercise machine in erected, i.e. operating or open, position;

FIG. 3 is a sectional view taken substantially along the line of 3—3 of FIG. 2;

FIG. 4 is a sectional view through one of the bearings of our exercise machine, and

FIG. 5 is a top view of the exercise machine as it appears when collapsed into flat condition for shipment.

Referring now in detail to the drawings, the reference numeral 10 denotes an exercise machine constructed in accordance with our invention. Said machine essentially comprises an open triangular stand 12 composed of two U-shaped bail frames 14, 16 of any sturdy structural material. We prefer to employ hollow tubing, e.g. hollow steel tubing, which for the sake of appearance has its external surfaces plated, e.g. chrome-plated. The bail frame 14 is formed to include a base 18 and a pair of side arms 20, 22. The bail frame 16 is formed to include a base 24 and a pair of side arms 26, 28. In each bail frame the side arms are parallel to one another and are perpendicular to the base, being joined to the base by curves of substantial radius, e.g. about 1½" radius, to facilitate bending of the tubing when it is formed into a U-shaped frame. Although our invention will function satisfactorily if the two bail frames are of identical heights, that is to say have pairs of side arms 20, 22 and 26, 28 of the same length, we prefer that said bail frames be of different heights to facilitate collapse of the stand 12 when not in use.

To enable the two bail frames to be joined together in a manner soon to be described so as to form the stand 12, one of the bail frames, for example the bail frame

14, is made slightly narrower than the other bail frame by an amount which is substantially equal to twice the diameter of the tubing used in the frames. This enables one of the bail frames to have the ends of its side arms located wholly within the space between the ends of the side arms of the other bail frame. If it is desired to have the stand 12 fold absolutely flat, the narrower bail frame is constructed to have the lesser height of the two bail frames. However in the preferred form of our invention shown in the illustrated drawings this arrangement is not employed; rather, the narrower of the two bail frames is the higher (longer) of said frames. This prevents the bail frames from folding completely flat when the stand is collapsed as shown in FIG. 5. In such collapsed condition the shorter but wider bail frame 16 has its base 24 resting on the side arms 20, 22 of the narrower, longer bail frame 14. The effect of this is to elevate the base 24 slightly above the plane of the bail frame 14 for a purpose which soon will be apparent.

The ends of the side arms of the bail frames are pivotally joined to one another at opposite sides of the stand by hinging means which is described in detail hereinafter, the axes of the hinging means at the opposite sides of the stand being in registry.

Suitable means is included to selectively maintain the stand open, i.e. erect, for use, said means being of a detachable nature, e.g. disengageable with the stand, to permit ready collapse of said stand and, moreover and preferably, being of particularly simple construction so as to make its use particularly easy and to keep the cost of the exercise machine low.

Specifically, the means to selectively hold the stand in erect position comprises two separator rods 30, 32. The rods are identical and each is provided with a hook 34 at each end thereof. Each side arm of each bail frame is formed to include a longitudinal slot 36, said slots being located on the facing surfaces of the side arms. Each slot is sufficiently wide and long to enable the hooked end of a separator rod to be inserted therethrough.

To place the stand in operative condition the bail frames are swung apart and the ends of the separator rods are inserted in the slots, the hooks protruding downwardly and being displaced downwardly after insertion so as to prevent accidental withdrawal of the separator rods. The separator rods can be removed by a reverse operation when it is desired to collapse the stand 12.

The exercise machine further includes a crank 38 which, like the bail frames, preferably is formed from tubing. The crank is shaped to include three reaches, to wit, the reaches 40, 42 and 44, as well as two spans 46, 48. The three reaches 40, 42 and 44 are parallel to one another, the center reach 42 being located midway between the outer reaches 40, 44 and being approximately twice as long as said outer reaches. One end of the outer reach 40 is joined to one end of the center reach 42 by the span 46 and one end of the other outer reach 44 is joined to the other end of the center reach 42 by the span 48. The spans 46, 48 are parallel to one another and are perpendicular to the reaches 40, 42 and 44. By virtue of this arrangement the crank 38 in effect comprises two oppositely facing U-shaped sections which are joined to one another at the center reach in the approximate shape of an S. The two opposite sections and more particularly the spans 46, 48 are 180° apart from one another and will hereinafter be sometimes referred to as "pedals."

The other end of the reach 40 and other end of the reach 44 are rotatably connected to the opposite sides of the stand 12 by the same hinging means as is employed to join the two bail frames 14, 16 to one another whereby to permit the crank to be revolved with respect to the stand. The aforesaid hinging means desirably is constructed to permit ease of assembly, cleanness of appear-

ance, low cost, easy rotation, freedom from wear, and, if desired, variation of frictional restraint opposing rotation. One hinging means is provided at each side of the frame so that the description of either one of said means is sufficient, the two hinging means having a common axis of rotation. A hinging means is shown in FIG. 4. Basically, it comprises a bolt 50 and a cap nut 52. Referring to the left hand side of the exercise machine the side arm 28, the associated side arm 20 and the associated outer reach 40 are in juxtaposition and are formed adjacent their free ends with apertures 54, 56, 58, respectively, through which the shank 60 of the bolt 50 extends, the longitudinal axis of the bolt being perpendicular to the longitudinal axes of the said side arms and the outer reach. The apertures 54, 56 in the side arms nicely, i.e. snugly, receive the shank of the bolt; however the aperture 58 in the associated outer reach 40' is slightly larger than the shank of the bolt and has frictionally fitted therein a sleeve which is split intermediate its end to provide a pair of sleeve portions 62, 64. Said sleeve snugly receives the shank of the bolt 50. One sleeve portion rotatably extends into the aperture 58 from one side of the outer reach 40 and the other sleeve portion rotatably extends into the aperture 58 from the other side of the reach 40. As indicated, and as is clearly shown in FIG. 4, the outer end of each sleeve portion is outwardly flanged, i.e. headed, the two sleeve portions being in axial registry and jointly forming a sleeve bearing that is interposed between the shank 60 of the bolt 50 and aperture 58 in the crank 38. The sleeve portions 62, 64 are made of a durable low friction material to facilitate rotation of the crank and enable the exercise machine to be extensively used without showing signs of wear. A suitable material for the sleeve portions 62, 64 is nylon, i.e. a polyamide resin.

We further find it desirable in order to facilitate opening and closing the stand 12 and easy rotation of the crank, to provide anti-friction members between the ends of juxtaposed side arms and between each outer reach and its juxtaposed side arm. As illustrated herein, said anti-friction means comprises a washer 66 between juxtaposed side arms and a washer 68 between each outer reach and its juxtaposed side arm. Each washer encircles the shank 60 of the bolt 50 and is formed of a durable material having a low coefficient of friction, e.g. nylon. Alternative materials which are sataisfactory for use in our exercise machine are fluorocarbon resins such as "Teflon," and brass. We prefer the use of synthetic plastic materials because of their better appearance and select nylon rather than "Teflon" because the somewhat higher coefficient of friction of nylon does not interfere with easy operation of the exercise machine and nylon can be obtained in the desired shapes more easily and at a lower cost.

The overall flange-to-flange length of the two sleeve portions 62, 64 is slightly in excess of the width, i.e. the diameter or breadth, of the tubing from which the reach 40 is formed so that when the cap nut 52 is tightened on the bolt 50 the two unflanged ends of the sleeve portion will abut within the reach 40 but one or the other flanges of the sleeves will be spaced from the reach 40 whereby upon initial tightening of said nut and bolt (meeting a substantial resistance to tightening) no frictional restraint is imposed upon rotation of the crank. However if the nut and bolt are deliberately tightened to a further extent and upon the expenditure of a noticeably heightened effort, the sleeve portions 62, 64 can be made to bulge slightly whereby to cause their flanged ends to bear against opposite sides of the reach 40. This will provide a frictional restraint which can be varied as desired by turning the nut 52 relative to the bolt 50. However, such frictional restraint will not be created accidentally because in normal tightening of the nut and bolt a marked resistance to tightening is experienced when the inner ends of the two sleeve portions abut and before any bulging of the sleeve portions is experienced.

Finally the exercise machine includes a body rest member, e.g. a panel, 70 which is employed to stabilize, i.e. hold in place, the stand 12 while the exercise machine is being used. The body rest panel 70 can be formed of any type of material. Desirably it is made of a form-maintaining material, such for example as plywood or light pine board which are suitably covered. However, the body rest panel can alternatively be made of flexible material, e.g. cloth. The body rest panel may be formed to any contour and as here shown is oblong. One side e.g. a short side, of the body rest panel 70 has permanently secured thereto, as by rivets a pair of spaced U-shaped grips 72 which in use of the exercise machine are adapted to be hooked onto a base, e.g. the base 24, of a U-shaped bail frame.

It will be appreciated that, as has been mentioned above, the exercise machine can be collapsed into an almost flat position for shipping purposes, this being illustrated in FIG. 5. In such position the reaches 40, 42 and 44 and the spans 46, 48 of the crank are turned to lie in the plane of the longer bail frame 14. The other bail frame is swung down until its base 24 strikes the side arms 20, 22 of the narrower bail frame 14. Then the body rest panel 70 is inserted into the open space defined by the bail frame 14, the crank 38 being slightly tilted to receive the same. The wider bail frame 16 is at this time held above the body rest panel by its aforesaid abutment with the side arms of the bail 14.

The exercise machine, after assembly as indicated, can be used in several manners, the same being basically divisable into three categories which we shall classify as recumbent, sitting and standing.

In one recumbent exercise the user lies down with his buttocks on the body rest panel, if he wishes he may place a pillow beneath his head. He adjusts his torso so that his legs are a proper distance from the crank, places his feet on the pedals, one on each pedal, i.e. on the spans 46, 48, and with his feet acting in cooperation rotates the crank at a comfortable rate of speed. It will be observed that the weight of the body stabilizes the stand 12. In another recumbent exercise both feet are placed on the pedals as described herein above but instead of rotating the crank in cooperation, the feet are pushed in the same direction so that they oppose one another through the 180° crank. A further recumbent exercise duplicates the first exercise but, instead of permitting the crank to rotate freely the nuts and bolts are tightened on opposite sides of the machine to an extent sufficient to provide a noticeable frictional restraint which must be overcome as the crank is turned.

Other recumbent exercises are duplicates of the first three but with the user lying face down so that his lower abdomen and pelvis are disposed on the body rest panel.

A variety of sitting exercises also can be practiced with our machine. In a typical exercise the user sits on the body rest panel with his feet thrust through the stand 12 below the crank and with his hands on the pedals. His hands can be either palms up or palms down and he can rotate the crank freely or with restraint or he can, through the crank, oppose the effect of one arm against the other.

The exercise machine also can be employed with the user standing on the body rest panel and grasping the pedals, preferably without bending his knees. The crank then can be used in any of the three manners described above.

It will thus be seen that we have provided an exercising machine which achieves the several objects of our invention, and is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of our above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. An exercising machine comprising a stand including a transversely extending base and raised portions at opposite sides of the base, said base and raised portions mutually defining an open topped cradle, said base being adapted to be placed on a supporting surface, an S-shaped crank located intermediate and substantially filling the space between said raised portions, means supporting said crank from adjacent the tops of said raised portions for 360° rotation about a transversely extending longitudinal axis, the open top of said cradle being bridged solely by said crank, a body rest member adapted to be placed on said supporting surface, and means removably pivotally connecting said body rest member to said base.

2. An exercising machine comprising two U-shaped bail frames each constituting a transversely extending base and a pair of side arms, hinging means at each side of the machine rotatably connecting the side arms of each bail frame at such side of the machine to one another, the axes of rotation of the two hinging means being in alignment, said bail frames and hinging means thereby forming a stand having a transversely extending base and raised portions at opposite sides of the base with the base and raised portions mutually defining an open topped cradle, said base being adapted to be placed on a supporting surface, means detachably holding the bail frames in mutually open position to form the aforesaid cradle, an S-shaped crank located intermediate and substantially filling the space between said raised portions, said hinging means supporting said crank from adjacent the tops of said raised portions for 360° rotation about a transversely extending longitudinal axis coincident with the axes of rotation of said hinging means, the open top of said cradle being bridged solely by said crank, a body rest member adapted to be placed on said supporting surface, and means pivotally connecting said body rest member to said base.

3. An exercising machine as set forth in claim 2 wherein the S-shaped crank includes a pair of outer reaches, a center reach and two spans, each span joining a different end of the center reach to an end of a different outer reach, each outer reach being immediately adjacent a different raised portion of the cradle, and said outer reaches constituting the portions of the crank that are rotatably connected to the raised portions of the cradle.

4. An exercising machine as set forth in claim 2 wherein one of the bail frames has a narrower base and longer side arms than the other.

5. An exercising machine as set forth in claim 2 wherein each hinging means comprises an opening in a raised portion and an opening adjacent an end of the crank, an elongated threaded member extending through said openings, a bearing sleeve surrounding said threaded member where it extends through the opening in the crank, said bearing sleeve being split intermediate its length to form two portions, the combined length of the two portions being in excess of the length of the associated opening in the crank, and a nut screwed on said member whereby initial tightening of the nut does not bind the crank, said sleeve being formed of a synthetic yieldable plastic material whereby when the nut is tightened further the sleeve will bulge so as to selectively restrain rotation of the crank.

6. An exercising machine comprising a stand including a transversely extending base and raised portions at opposite sides of the base, said base and raised portions mutually defining an open topped cradle, said base being adapted to be placed on a supporting surface, an S-shaped crank located intermediate and substantially filling the space between said raised portions, means supporting said crank from adjacent the tops of said raised portions for 360° rotation about a transversely extending longitudinal axis, the open top of said cradle being bridged solely by said crank, a body rest member adapted to be placed on said supporting surface, and means connecting said body rest member to said base, said body rest member being in the form of a panel.

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