

UNITED STATES PATENT OFFICE.

JOHN S. ADDLEMAN, OF CLEVELAND, OHIO.

EXERCISING APPARATUS.

No. 837,270.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN S. ADDLEMAN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Exercising Apparatus; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in exercising apparatus; and the invention consists in an apparatus provided with a single transverse foot-crank and a hand-crank directly above the same and means to assist the pedal over the dead-centers of the crank as they reach the bottom of their rotation, all substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my new machine, and Fig. 2 is a front elevation thereof. Fig. 3 is a detail showing a joint in the connecting-links; and Fig. 4 is a detail in section, showing a removable bearing for the cranks, all as herein-after fully described.

The exerciser thus shown is designed to accommodate two persons facing each other; but this is only a simple form of the machine, which may be extended so as to provide exercising means for a number of persons occupying positions relatively as shown and side by side in an extended machine.

A new and original conception herein is the single crank or pedal A, which is mounted in the center of the lower portion of frame B, at the three several points 1, 2, and 3, respectively, the bearings 1 and 3 for said crank being in the sides of the main frame and bearing 2 in the top of a central standard or post 4. By the use of a single foot-crank for two persons I minimize friction and cheapen manufacture and obtain a much more satisfactory action than could be by two cranks, in which there always was tendency to work against each other if not hung with the greatest exactness. I have planned also to make this machine of the knockdown type or variety, and therefore the main frame itself is separably connected with bolts or other means here and there, and the foot-crank A, with its opposite sides *a*, is intended to be removable from the main frame whenever occasion requires. To this end said crank is supported in said frame in such a way that it can

be removed with convenience at any time, and the means employed are lateral pivot projections 5 on the outer crank-arms *a*, which are engaged in bearing-plugs C, threaded into the sides of main frame A, and are provided with cavities on their inside projecting inwardly beyond the main frame and of a size adapted to receive the pivots 5 of the cranks. This enables the said bearings C to be screwed outward to release the crank and inward to secure it in place and is a very desirable improvement. I might provide roller-bearings at this point, if I preferred, and such bearings might also be provided at other points in the machine, if deemed desirable, to reduce or relieve friction.

D and D' represent two foot-bars which are supported centrally on crank A and at their ends by means of connecting-links G, which engage with the hand-crank at the top and with the ends and outer edges of the pedal-bars, as shown. The said bars D and D' rest or are supported upon the cross-ports or crank-foot A and in such manner as to have as little friction as good mechanics will afford and are confined upon such cross-ports of the cranks by bottom-plates *d*, which are fastened by screws or other suitable means at their ends to said bars and so as to be removable and permit the foot-bars to be removed from the machine.

The links G are pivotally engaged at *g* at their outer or upper ends and have shouldered offset portions 8, which are adapted to overlap and abut when the joint is closed and are further provided with notches 9 oppositely in their edges of a size adapted to engage over offset or shouldered portion 10 on each of the outer hand-crank arms or sides 12, which form pivots for said links. This gives a construction which is practically as effective as if the said diverging links G were made in one piece, but is a more convenient and desirable construction, because it enables me to readily detach the said bars or links G from the cranks whenever desirable. The lower ends of said links are detachably connected with the ends and outsides of the foot-bars by means of screw and nut or its equivalent.

A further and important improvement original in this machine is found in the means for overcoming the dead-center point or drop of the respective cranks when they are down at their lowest point. I have found that in a machine of this kind there is a constant tendency to inertia when the cranks

reach the bottom of their movements, with the weight of the operators thereon, because there is no balance-wheel or the like to carry the cranks over, except as the weight of the persons may serve this purpose, and this I have entirely overcome and obviated by providing means which serve to throw the cranks across their dead-centers. These means comprise a spring H of a strap or strip form for each foot-bar, which is connected at its ends with the main frame and is free to spring between its ends. This affords a cushioning effect to the foot-bar as it descends and approaches the bottom of its stroke, and each foot-bar is provided with a roller 14 at its ends and bottom adapted to strike spring H as the lowest point is reached and cause the spring to both cushion and facilitate travel over the dead-center. To this end the spring-bar is provided with a rocker-shaped downward curve or depression *h* at each end, adapted to receive roller 14 as it rides over the same, and the said depression or curve is designed to be substantially on the arc of rotation of the foot-crank, so as to utilize whatever momentum there is to swing the parts across the dead-center, as described. The downward momentum is transferred to the roller and the spring and converted thereby into a forward movement which the curve of the spring accelerates.

It is practical to materially reduce the depressions *h* in the spring strips or pieces H, and the construction of said springs might be varied and still be the substantial equivalent of what is shown in function and effect, the chief object being to have auxiliary means of a springy character to facilitate movement across the dead-centers and to take the rise on the other side.

What I claim is—

1. An exercising device comprising a main frame, a foot-crank mounted centrally in the lower portion of said frame and a hand-crank in the upper portion thereof, directly over said foot-crank, foot-bars resting midway between their ends on said foot-cranks, and links connecting the hand-crank with the extremities of said foot-bars.

2. In exercising devices, a main frame, a hand-crank in the top thereof and a foot-crank in the bottom thereof directly beneath the said hand-crank, in combination with foot-bars pivotally supported at their middle on said foot-crank and links connecting the hand-crank with the ends of said foot-bars having hinge-joints at their top and constructed to engage operatively upon the sides of said hand-cranks.

3. An exercising device having a foot-crank in its bottom and center and a hand-crank in its top and center, foot-bars loosely

mounted at their middle on said foot-crank and links detachably connected with the ends of said foot-bars and pivotally connected at their top, said links constructed oppositely below their pivot connection to engage on pivots on said hand-cranks and adapted to lock temporarily thereon.

4. A machine having a set of foot-bars and foot-cranks on which said bars are mounted, in combination with springs in the bottom of the machine engaged by said bars in their lowest plane of movement and adapted to carry said bars and cranks across their dead-centers.

5. The main frame and the cranks and foot-bars therein having rollers on their bottoms, in combination with a spring beneath each foot-bar constructed to be engaged by said rollers as said cranks rotate.

6. The main frame and the cranks and foot-bars therein having rollers at their ends, in combination with springs beneath said foot-bars having curved depressions corresponding substantially to the arc of rotation of said cranks and adapted to be traversed by said rollers.

7. The main frame and the foot-crank centrally thereof at the bottom and foot-bars mounted at their middle on said crank and provided with rollers at their bottom and ends, in combination with a spring for each foot-bar having a curved depression for each roller on said bar, and hand-cranks and connections therefrom to said foot-bars.

8. A frame and cranks therein one above the other, a bar supported on the lower crank, links pivotally united at their top and constructed below said pivot to overlap and having opposite cavities engaged over a pivot portion on the upper of said cranks, and the lower ends of said links connected with the extremities of said bar.

9. In a machine substantially as described, a pair of supporting-links pivotally connected at one end and diverging therefrom to their opposite ends, said links constructed with abutting shoulders below their pivot and open recesses oppositely to engage over a pivot-point.

10. In a machine substantially as described, a horizontally-disposed flat spring, in combination with cranks and a horizontally-disposed bar supported on said cranks and provided with rollers to traverse said spring.

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN S. ADDLEMAN.

Witnesses:

R. B. MOSER,
C. A. SELL.