BENCH FOR SIMULATING AND DEVELOPING SWIMMING MOVEMENTS

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Filed: Mar. 29, 1971

Appl. No.: 128,736

U.S. Cl.................272/71, 272/58, 272/DIG. 3, 272/DIG. 4

Int. Cl.........................A63b 69/10

Field of Search.................272/71, 73, 79 R, 272/80

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ABSTRACT

A horizontally disposed elongated but short bench including an extension support projecting outwardly from a first forward end thereof and having a pair of opposite side crank arms supported therefrom for swinging about a horizontal transverse axis. The bench is to be laid upon by a person in horizontal chest downward position with the chest resting upon the bench and the crank arms engaged by the hands. A rearwardly displaced portion of the bench includes opposite side vertically reciprocal foot receiving portions and the person laying upon the bench may exercise in a manner simulating various swimming strokes, the crank arms being adjustable in effective length and adjustable angularly relative to each other about their axis of rotation. Further, the foot-receiving portions may be supported either for equal inverse reciprocation or simultaneous reciprocation.

6 Claims, 11 Drawing Figures
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BENCH FOR SIMULATING AND DEVELOPING SWIMMING MOVEMENTS

Heretofore various types of exercising equipment has been designed for simulating swimming movements. However, this previous exercising equipment has not enjoyed the capability of being able to simulate both the crawl stroke and the butterfly stroke. Those strokes, other than the backstroke, are the most popular strokes and although the exercising apparatus of the instant invention has not been specifically designed to simulate the backstroke, at least a major portion of the body movements utilized in the crawl stroke are utilized in the backstroke and thus the exercising apparatus of the instant invention is at least helpful in some degree in also simulating the backstroke movements.

The main object of this invention is to provide an exercising apparatus which will be capable of reasonably accurately simulating a plurality of swimming strokes.

Another object of this invention is to provide an exercising apparatus including means whereby the resistance to arm movements by a person utilizing the exercising device may be varied as desired.

A still further object of this invention is to provide an exercising apparatus including portions thereof for simulating leg movements which may not only be utilized to simulate the flutter kick but also the dolphin kick.

A final object of this invention to be specifically enumerated herein is to provide an exercising apparatus which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a top plan view of the exercising apparatus;
FIG. 2 is a side elevational view of the exercising apparatus;
FIG. 3 is a rear elevational view of the exercising apparatus;
FIG. 4 is an enlarged fragmentary transverse vertical sectional view, taken substantially upon the plane indicated by the section line 4—4 of FIG. 2;
FIG. 5 is a fragmentary enlarged vertical sectional view, taken substantially upon the plane indicated by the section line 5—5 of FIG. 3;
FIG. 6 is an exploded perspective view of the structure by which the arm movements simulating cranks are journaled for swinging about a horizontal transverse axis;
FIG. 7 is a fragmentary exploded perspective view illustrating the manner in which one of the foot receiving supports is mounted;
FIG. 8 is an enlarged fragmentary longitudinal vertical sectional view, taken substantially upon the plane indicated by the section line 8—8 of FIG. 1;
FIG. 9 is an enlarged transverse vertical sectional view, taken substantially upon the plane indicated by the section line 9—9 of FIG. 8;

FIG. 10 is a perspective view of the exercising and swimming movement simulating apparatus of the instant invention with an alternate position of one of the arm or hand cranks illustrated in phantom lines; and
FIG. 11 is a fragmentary perspective view illustrating a modified mounting of the foot receiving supports.

Referring now more specifically to the drawings, the numeral 10 generally designates the exercising apparatus of the instant invention and includes a forward bench assembly referred to in general by the reference numeral 12. The bench assembly 12 includes a pair of side by side front to rear extending and downwardly opening inverted U-shaped frames 14. Each of the frames 14 includes front and rear legs 16 and 18 interconnected by means of an upper horizontal and longitudinally extending bight portion 20. Front and rear transverse braces 22 and 24 extend between and are secured to the front and rear legs 16 and 18. In addition, the central portions of the transverse braces 22 and 24 include enlarged portions 26 having aligned bores 28 formed therethrough and the forward end portion of an elongated, horizontally disposed and longitudinally extending connecting bar 30 is received through the bores 28, each of the enlarged portions 26 including a setscrew 32 by which the connecting bar 30 may be releasably secured in adjusted longitudinally shifted position relative to the transverse braces 22.

The bight portions 20 are spaced slightly apart and receive therebetween a pair of side by side support arms 34 and a plurality of fasteners 36 are secured to the bight portions 20 and the rear ends of the support arms 34 for support of the latter from the upper end of the frame 14. In addition, a cushioned elongated, longitudinally extending and horizontally disposed bench defining member 38 overlies the bight portions 20 and the rear ends of the support arms 34 and is secured to the latter by means of suitable fasteners 40.

An oval sleeve 42 is telescoped over the forward ends of the support arms 34 rearward of the forward ends thereof and is secured in adjusted shifted position along the support arms 34 by means of a cooperating setscrew 44 carried by the sleeve 42. The upper portion of the sleeve 42 includes a mounting boss 46 having a threaded blind bore 48 formed therein and a rearwardly and upwardly opening chin receiving cup 50 provided with a threaded depending shank portion 52 threadedly engaged in the bore 48.

A second oval sleeve 54 is telescoped over the forward ends of the support arms 34 forwardly of the sleeve 42 and is secured in longitudinally shifted position along the support arms 34 by means of a setscrew 56. In addition, the sleeve 54 includes a transverse horizontally disposed journaled portion 58 through which a support shaft 60 extends and in which the shaft 60 is rotatably journaled.

The journal 58 includes an internal friction braking mechanism (not shown) engaged with the central portion of the shaft 60 and the braking mechanism includes an adjusting screw 62 which projects upwardly of the center portion of the journal 58 and may be turned to increase or decrease the friction drag opposing rotation of the shaft 60 through the journal portion 58.

The shaft 60 has a non-circular bore 61 formed therethrough and the opposite end portions of the bore
have non-circular stub shafts 64 slidingly disposed therein and secured in adjusted position by means of setscrews 63. On each stub shaft 64 a plurality of spacing sleeves 66 are mounted for rotation therewith and secured in adjusted position therealong by means of setscrews 68. In addition, a pair of crank arms 70 are provided and include non-circular openings (not shown) in one pair of corresponding ends thereof which may be secured over the portions of the shafts 64 projecting beyond the sleeves 66 and each of the crank arms 70 includes a pair of opposite end sections 72 and 74 secured together in adjusted overlapped position by means of suitable fasteners 76 secured through selected registered apertures 78 formed through the sections 72 and 74. The free ends of the sections 74 remote from the shaft 60 include oppositely laterally outwardly directed cylindrical handgrip portions 80 which are journaled from the free ends of the section 74 in any convenient manner.

A rear support standard assembly referred to in general by the reference numeral 82 is provided and includes an upright 84 from whose lower end a horizontal transverse base 86 is supported including downturned opposite end portions 88 which defines support legs for the standard assembly 82. The central portion of the transverse member 86 includes a horizontal bore 90 through which the rear end of the connecting bar 30 is slidingly received and the central portion of the transverse member 86 includes a setscrew 92 whereby the connecting bar 30 may be secured in adjusted longitudinally shifted position relative to the transverse member 86.

The upright 84 includes a pair of vertically spaced and elongated front to rear extending slots 94 through which fasteners 96 are secured and each of the fasteners 96 rotatably journals a pulley wheel 98, there being an endless belt 100 trained about the pulleys 98. Each reach of the belt 100 has a forwardly opening and foot receiving socket defining member 102 mounted thereon by means of suitable fasteners 104. Each of the members 102 includes a generally inverted U-shaped body 106 having a transverse lower bottom wall 108 secured between the lower ends of the legs of the body and the front and rear ends of each of the members 102 are open for receiving the feet of the user of the apparatus therein. The fasteners 104 are secured through apertures 110 formed through adjacent side walls of the members 102 and apertures 112 formed in each reach of the belt 100.

In operation, and assuming that a person using the apparatus 10 wishes to exercise by simulating the crawl stroke, he may initially longitudinally shift the sleeves 42 and 54 along the support arms 34 and secure the sleeves 42 and 54 in adjusted shifted position so that when he lies upon the bench defining member 38 with his chest resting thereon, his chin will be received in the cup 50 and his hands will be able to grasp the handgrips 80 when the crank arms 72 are disposed horizontally with their free ends forwardmost. In addition, the standard assembly 82 may be adjustably shifted along the connecting bar 30 or the latter may be adjustably shifted longitudinally relative to the frame 14 in order to place the standard assembly 82 at a position rearward of the bench assembly 38 such that the feet of the user, when his legs are at least substantially straight, may have his feet received in the members 102. Then, with the crank arms 72 adjusted relative to each other as illustrated in FIGS. 1 and 2 of the drawings, the user of the apparatus 10 may use his hands to swing the handgrip 80 about the axis of rotation of the shaft 60 while simultaneously inversely reciprocating his feet up and down. On the other hand, should the user of the apparatus 10 wish to simulate the butterfly stroke with the dolphin kick, the crank arms 72 may be repositioned in the manner illustrated in FIG. 10 of the drawings and the members 102 may be supported from the same reach of the belt 100, see FIG. 11, whereby they may be reciprocated together as opposed to inversely.

The adjusting screw 62 may be tightened and loosened to increase and decrease the frictional drag on the shaft 60. In addition, the length of the crank arms 70 may be adjusted as desired according to the length of the arms of the user of the apparatus and the spacing sleeves 66 may be utilized to vary the spacing between the base ends of the crank arms 70. Still further, the elevation of the limited vertical movement of the members 102 may be adjusted by loosening, vertically shifting and re-tightening the fasteners 96, and tightening and slightly loosening the fasteners 96 will also vary the friction drag on the pulleys 98, the latter having friction washers 99 operatively associated therewith.

Accordingly, the apparatus 10 may be readily adjusted to suit the size and physique of the individual user and also adjusted to simulate not only the crawl stroke but also the butterfly stroke utilizing the dolphin kick. Further, when a person utilizing the apparatus simulates the crawl stroke, he is also simulating a major portion of the body movements utilized in the backstroke.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. An apparatus for exercising by simulating swimming strokes, said apparatus including a horizontal support having front and rear ends upon which a person may lie in face-downward position with his mid-torso portion resting upon the support, a forward mounting portion disposed outwardly of the forward end of the support, a pair of opposite side crank arms supported from said forward portion for swinging about a horizontal axis extending transversely of said support, a rear mounting portion disposed outwardly of the rear end of said support, a pair of foot engageable members supported from said rear mounting portion for guiding vertical movement, said rear mounting portion comprising an upright standard assembly, a pair of vertically spaced pulley wheels journaled from said standard assembly for rotation about an axis extending longitudinally of said horizontal support, an endless flexible member trained about said pulley wheels, said foot engageable members being mounted on the reaches of said endless flexible member whereby they are supported for inverse vertical reciprocation.
2. The combination of claim 1, wherein said horizontal support comprises a bench-type support member mounted atop a legged base assembly, said forward mounting portion being carried by an arm assembly supported from an upper portion of said base assembly and projecting forwardly therefrom, said arm assembly including means for adjustably positioning the axis of rotation of said crank arms toward and away from the forward end of said horizontal support.

3. The combination of claim 1 including means operably connected to and extending between said standard assembly and said horizontal support for adjustably positioning said standard assembly toward and away from the rear end of said horizontal support.

4. The combination of claim 1, wherein said foot engageable members include means for support from only one of the reaches of said endless flexible member extending between said pulley wheels whereby said foot engageable members may be vertically reciprocated together.

5. The combination of claim 1, wherein said standard assembly includes means supporting said pulley wheels therefrom for vertical adjustment along whereby the height of said pulley wheels and thus said endless flexible member and the foot engageable members supported therefrom may be varied relative to the elevation of the horizontal support.

6. The combination of claim 1, wherein said apparatus includes variably adjustable friction brake means operatively associated with said crank arms for applying varying frictional resistance to rotation of said crank arms.