ABSTRACT: An opposing hand operated exerciser having pairs of hand grips which are moved toward and away from each other so that one hand provides a force which opposes the other hand whereby both hands and forearms are exercised. The hand grips are secured to rigid members, as rectangular frames or arms, movably associated with each other. The frames are slidably connected to each other with U-shaped members. The arms have midportions which are pivotally connected to each other.
OPPOSING HAND-OPERATED EXERCISE APPARATUS

BACKGROUND OF INVENTION

Many isometric exercising apparatuses have been developed to build and maintain muscle tone. One type of exercising devices that have been developed for exercising the hand and forearm muscles is a one-handed squeezetype exerciser, commonly in the form of a flat rubber grip which is repeatedly squeezed. Another one-hand squeeze exerciser is a pair of hand grips attached to the ends of a torsion coil spring used to hold the grips in spaced and relatively angular positions. In use, this grip is squeezed or compressed against the force of the torsion spring to exercise the hand and forearm muscles. Two-hand exercising devices have an expandable spring or elastic member attached at its ends to hand grips. In use, these exercisers do not provide for the repeated contraction and expansion of the hand and forearm muscles. They are designed for exercising the back and shoulder muscles. The hand grip exerciser of the present invention utilizes the sequential strength of both hands to provide repetitive exercise for both the hand and forearm muscles.

SUMMARY OF INVENTION

The invention relates to a hand exercising having a pair of members which are moved relative to each other so that the strength of one hand opposes the strength of the other hand whereby the hand and forearm muscles in each hand are concurrently exercised. Each member has a pair of spaced hand grip members connected with a rigid means. Adjacent hand grip members on the first and second members are positioned in a spaced relation with respect to each other and move toward and away from each other. The rigid means cooperate with coating means to movably associate the first member with respect to the second member whereby corresponding pairs of hand grip members are selectively movable toward and away from each other.

IN THE DRAWING

FIG. 1 is a perspective view of a hand exerciser constructed according to the invention;
FIG. 2 is an enlarged sectional view taken along the line 2-2 of FIG. 1;
FIG. 3 is a partially sectioned view showing a modified side connection between the frame members of the hand exerciser of FIG. 1;
FIG. 4 is a perspective view of another hand exerciser constructed according to the invention; and
FIG. 5 is a perspective view of still another hand exerciser constructed according to the invention.

Referring to the drawing, there is shown in FIG. 1 a two-hand exerciser indicated generally at 10 structurally embodying the exercising principle of opposing the strength of one hand against the strength of the other hand to provide for sequential contraction and tension exercising of the hands and forearms. Modifications of two-hand exerciser structures which utilize the opposing hand strength principle are shown in FIGS. 4 and 5. These exercisers are indicated generally at 11 and 12 respectively.

The two-hand exerciser of the invention all have a pair of relatively movable hand grip members or grips for each hand. Each pair of hand grip members move toward and away from each other in response to sequential compressive forces exerted by one hand and then the other hand. Each exerciser has a first member for mounting the first pair of spaced hand grip members. A first rigid means connects the hand grip members. Associated with the first member is a second member having a pair of spaced hand grip members connected with a second rigid means. A coating means movably associates the first rigid means with the second rigid means to movably locate the hand grip members in pairs for each hand.

Referring to FIG. 1, hand exerciser 10 comprises a first member indicated generally at 13 movably coordinated with a second or inner member indicated generally at 14. Member 13 has a pair of spaced cylindrical hand grips 16 and 17 connected to linear rigid side members 18 and 19. The side members 18 and 19 have inwardly turned ends 22 and 23 respectively which project into holes extended axially into the opposite ends of the hand grips 16 and 17. Ends 22 and 23 have a relatively tight or friction fit within the hand grips so as to form with the side members 18 and 19 a rectangular-shaped frame locating the hand grip members 16 and 17 in spaced relatively parallel relationship to each other. The adjacent ends of the hand grip members 16 and 17 are connected with the linear rigid side members 18 and 19.

Located within the confines of the rectangular frame of the first member 13 is a second or inner member 14 comprising a pair of hand grip members 24 and 26 connected at opposite ends to rigid linear side members 27 and 28. The hand grip members 24 and 26 extend substantially parallel to the hand grip members 16 and 17 and are slightly shorter in length so as to position the side members 27 and 28 adjacent the inside of members 18 and 19. Each side member 27 and 28 has inwardly turned ends 29 and 31 respectively which project into longitudinal openings in the ends of the hand grip members 24 and 26 to mount the hand grip members on the side members to provide an inner rectangular-shaped frame. The side members 27 and 28 are about one-half the length of the side members 18 and 19 so that the inner or second member 14 can be linearly moved within the first member 13. This allows the pairs of hand grip members 24 and 26 to be moved inward and away from each other by the rigidity of the hand grip members 16 and 27 and 28. The rigid means are shown in FIG. 2, the guides 32 and 33 are U-shaped or channel members positioned about the rigid side members 27 and 28. The pins 34 and 36 project through suitable openings in the guides and side members 27 and 28. The guides 32 and 33 slidably receive the side members 27 and 28 of the first member. The guides 32 and 33 can be spot welded to side members 27 and 28. The guides 32 and 33 slidably mount the second member 14 on the rigid side members 18 and 19.

FIG. 3 shows a longer and modified guide 37 for slidably mounting the inner member on the rigid side members 18. The guide 37 is a U-shaped member which has a length sufficient to extend between the adjacent ends of inner hand grip members 24 and 26. One end of the guide 37 is shown in FIG. 3. The opposite end of guide 37 is identical in structure. Opposite ends of guides 37 have holes 38 so that the ends 29 of the side members 27 can project through the holes 38 into holes 39 in the hand grip members 24 and 26 to mount the side member 27 as well as the guide 37 in assembled relation with the hand grip members. By extending the length of guide 37, the fastening pins 34 and 36 can be eliminated. The opposite guide slidably connecting the inner member to the outer member is identical to guide 37.

An example of a specific construction of hand exerciser 10 the hand grips 16, 17, 24, and 26 are cylindrical wood members connected to side members 18 and 19 formed from metal rods secured to U-shaped metal guides 32 and 33. The side members 18 and 19 are about twice as long as the inner side members 27 and 28.

In use, the adjacent pairs of hand grip members 16, 24, and 26 are gripped by the right and left hand respectively. The outer hand grip members 16 and 17 lie in the palm of the hands and the forefingers of each hand extend about the inner hand grip members 24 and 26. In closing one hand the adjacent hand grip members are moved toward each other. The opposite pair of hand grip members move away from each other and the opposite hand. In this manner, the force of one hand opposes the force of the opposite hand as the inner member or frame 14 is repetitively moved in opposite directions so that the muscles of one hand and forearm work against the muscles in the other hand and forearm. By varying the strength of the grip of the hand on the pairs of hand grip members the tension and exer-
cising intensity on the muscles can be varied as desired. This also provides the hand exerciser with versatility in that it can be used by people of all ages, including women, to provide effective and beneficial physical exercise to the hand and forearm muscles.

Referring to FIG. 4, there is shown hand exerciser 11 comprising a first member indicated generally at 41 movably associated with a second member indicated generally at 42 to provide a device by which the strength of one hand and forearm opposes the strength of the opposite hand and forearm. The first member 41 comprises an elongated lever 43 having spaced hand grip members 44 and 46 on opposite ends of the outer side of the lever. The second member is similar to the first member and has an elongated lever 47 with hand grip members 48 and 49 at the opposite ends of the lever. The midportions of the levers 43 and 47 have side-by-side projections 51 and 52. The projections have transversely aligned holes receiving a transverse pivot pin 53.

In use, adjacent pairs of hand grip members 44, 48, and 46, 49 are gripped by the opposite hands so that the compression or squeezing force of one hand acts against the compression or squeezing force of the opposite hand. By sequentially increasing and reducing the grip of one hand on the hand grip members, opposite ends of the levers 43 and 47 move toward and away from each other as indicated by arrows 54 and 56.

Referring to FIG. 5, there is shown hand exerciser 12 having a first member indicated generally at 57 pivotally related to a second member 58 so that the strength of one hand is utilized to oppose the strength of the opposite hand. The first member 57 comprises a pair of generally V-shaped rigid levers or plate means 59 and 61 spaced in substantially parallel relation with respect to each other. Hand grip members 62 and 63 extend between opposite ends of the levers 59 and 61. Pins 64 attach the ends of the levers to the ends of the hand grip members to provide a generally four-sided frame.

The second member 58 identical to the first member comprises a pair of generally V-shaped levers or rigid plate members 66 and 67 secured at their opposite ends to hand grip members 68 and 69 by pins 71. The midportions or apices of the levers 59, 61, 66, and 67 are located in side-by-side relation and have aligned holes receiving transverse pivot pins 72 and 73.

In use, adjacent hand grip members 62, 68 and 63, 69 are grasped by the opposite hands whereby the strength of one hand is opposed by the strength of the opposite hand. By sequentially varying the tension applied to adjacent hand grip members, the hand grip members can be sequentially moved toward and away from each other as indicated by arrows 74 and 76. The amount of tension and muscular exertion necessary to move the adjacent hand grip members may be varied by either increasing or decreasing the holding force of the hands on the pairs of hand grip members 62, 68 and 63, 69.

While there have been shown the preferred embodiments of the two-hand exercisers it is to be understood that various changes, substitutions in materials, reversal of parts, and changes in the size and shape of the exercisers shown and described may be made by those skilled in the art without departing from the spirit of the invention. For example, the guides 32 and 33 shown in FIG. 1 may be inverted and secured to the outside rigid members 18 and 19 or formed directly into the side members to form slide and groove side members.

FIGS. 4 and 5 the pivots between the levers may be oscillating pivots. The invention is defined in the following claims.

1. An exercise apparatus comprising: a first member having a first pair of spaced hand grip means and first rigid means connecting the hand grip means comprising a first generally rectangular frame; a second member having a second pair of spaced hand grip means and second rigid means connecting the second pair of spaced hand grip means comprising a second generally rectangular frame, and coating means slidable coupling the portions of said frames connecting the hand grip means and positioning the first hand grip means adjacent the second hand grip means whereby corresponding hand grip means are selectively movable toward and away from each other, said coating means are U-shaped members secured to one frame and slidably associated with the other frame.

2. The exercise apparatus of claim 1 wherein said coating means includes elongated linear U-shaped members secured to one of the rigid means and slidably associated with the other rigid means.

3. The exercise apparatus of claim 1 wherein said U-shaped members are secured to the second frame and slidably associated with the first frame.

4. The exercise apparatus of claim 1 wherein the first rigid means includes first elongated linear members holding the first hand grip means in spaced generally parallel relation, the second rigid means includes second elongated linear members holding the second hand grip means in spaced generally parallel relation, said second members being shorter than the first members.

5. The exercise apparatus of claim 4 wherein said first members are about twice as long as the second members.

6. The exercise apparatus of claim 4 wherein the first hand grip means and the second hand grip means are cylindrical members substantially parallel to each other.

7. The exercise apparatus of claim 6 wherein the hand grip means have larger diameters than the first elongated linear members and the second elongated linear members.

8. The exercise apparatus of claim 4 wherein the first elongated linear members and the second elongated linear members are metal rods attached to the first hand grip means and the second hand grip means, respectively.

9. The exercise apparatus of claim 1 wherein the first generally rectangular frame is about twice as long as the second generally rectangular frame.

10. An exercise apparatus comprising: a first generally rectangular frame having a first pair of spaced hand grip means and first rigid means connecting the hand grip means, a second generally rectangular frame smaller than the first frame and entirely surrounded by the first frame, said second frame having a second pair of spaced hand grip means and second rigid means connecting the second pair of spaced hand grip means, and members secured to one of the rigid means slidably associated with the other rigid means to movably position the second frame means within the first frame, whereby corresponding hand grip means are selectively movable toward and away from each other.

11. The exercise apparatus of claim 10 wherein all of the hand grip means are generally parallel to each other.