United States Patent [19]

Brethen

[11] **3,874,660**

[45] **Apr. 1, 1975**

[54] **EXERCISE DEVICE**

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[22] Filed: **July 20, 1973**

[21] Appl. No.: **381,210**

[52] **U.S. Cl.** **272/81,** 272/84

[51] **Int. Cl.** **A63b 23/00**

[58] **Field of Search** ..... 272/81, 84, 67; 273/193 A, 273/81 R

[56] **References Cited**

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Attorney, Agent, or Firm—Hofgren, Wegner, Allen, Stellman & McCord

[57] **ABSTRACT**

A device for use in performing isometric exercises having a handle and a weight at one end of the handle offset from the longitudinal, turning axis of the handle. The handle defines a plurality of grasping positions for varying the effective torque of the weight relative to the user's hands. The mass of the weight is selectively adjustable.

8 Claims, 4 Drawing Figures

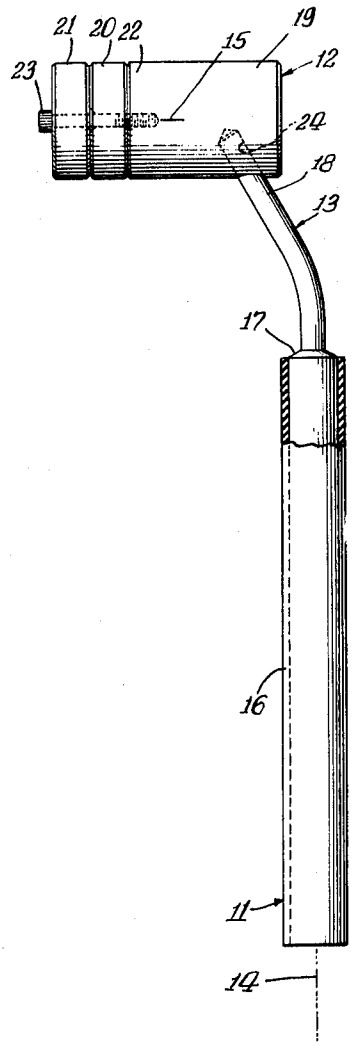


Fig. 1.

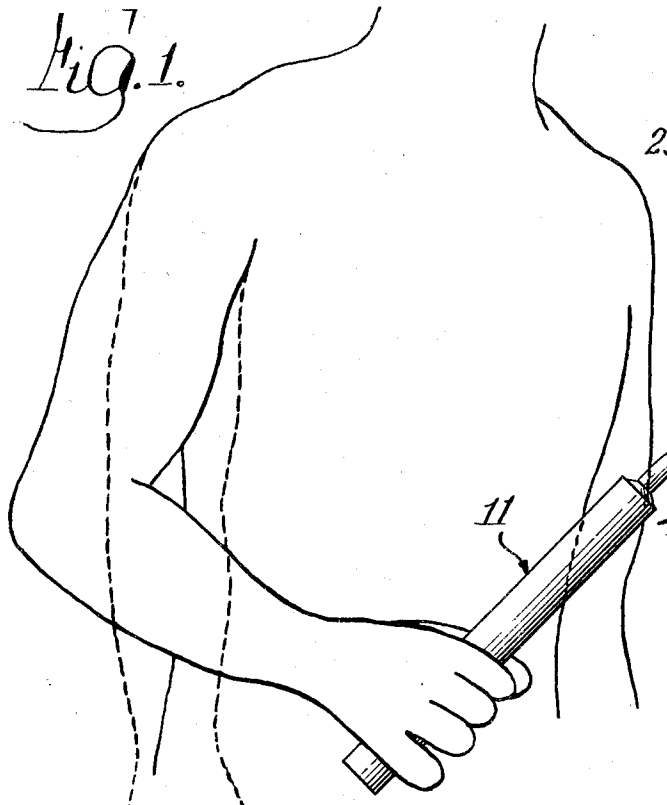


Fig. 2.

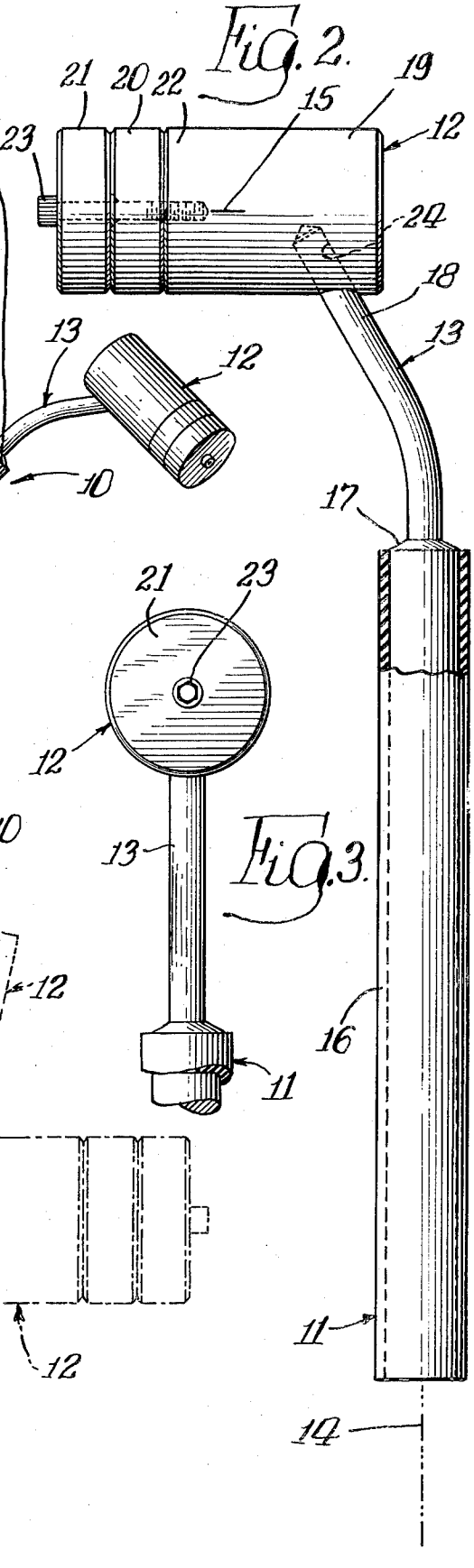
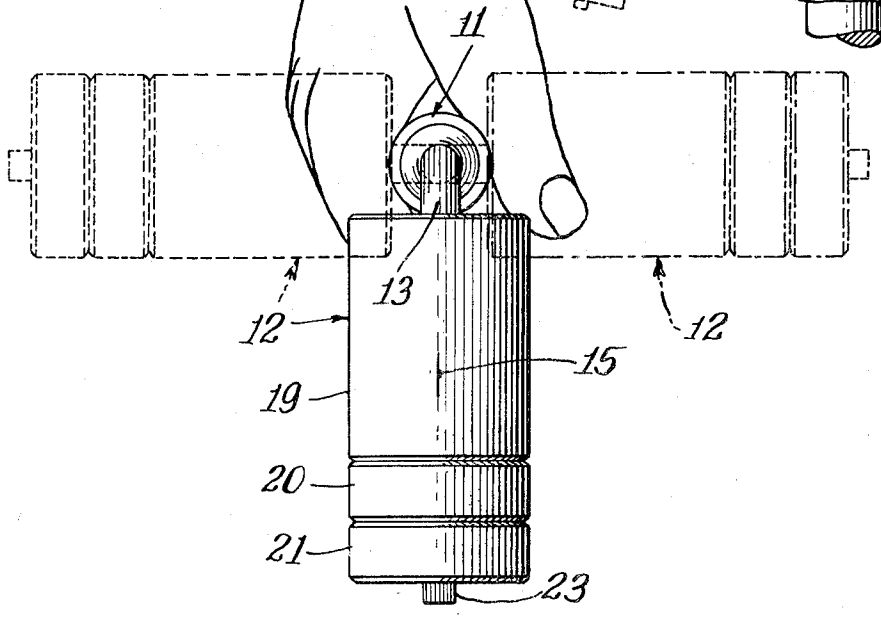


Fig. 3.

Fig. 4.



EXERCISE DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to exercise devices, and in particular to exercise devices for use in performing isometric exercises.

2. Description of the Prior Art

A number of devices have been utilized in connection with exercising. One conventional form of such device is that of a gymnastic, or Indian, club in which a weight is mounted at one end of a handle. An early form of such a club is shown in U.S. Letters Pat. No. 578,230 issued to R. R. Gibson wherein a weight is adjustably mounted to a stem having a handle at one end. A modified form of such an Indian club is shown in U.S. Letters Pat. No. 1,658,108 to T. E. Vaughn wherein an arm developer is provided with a stem, a gripping handle at one end of the stem, and a sleeve adjustably mounted on the stem for adjustably carrying the weight.

Another form of exercise device somewhat similar to the Indian club is the dumbbell, or barbell, device wherein a pair of weights are disposed at opposite ends of a handle, U.S. Letters Pat. No. 660,962 of D. J. Kennedy shows such a dumbbell which may be selectively rearranged to define an Indian club. Thus, in the dumbbell configuration, the handle defines a grasping portion at the center of the device, whereas in the Indian club arrangement, the handle extends in one direction from the weight. Other forms of known dumbbells are those shown in G. H. Shepherd U.S. Pat. No. 787,407, P. W. Smith U.S. Pat. No. 1,918,142, S. Trzesniewski U.S. Pat. No. 2,447,218, M. O. O'Brien U.S. Pat. No. 2,676,802, British Pat. No. 3696 of Hardy and Padmore.

A more recent form of exercise has been developed based on observations that muscle development may be effected without use of exercises involving movement of the muscles. Thus, a form of static exercise has been developed known as isometrics wherein muscles are caused to react against one another or against an immovable object for creating tension in the muscles without any substantial motion. In such exercises, the muscle fibers are caused to contract vigorously to provide the necessary tension. Retaining the contracted muscle in this condition for a period of time causes development of the muscle by utilizing an overload principle wherein the muscle reacts by slightly rebuilding itself due to an overload fatigue condition. It has been found that not only are the muscles built up but also the tendons and ligaments apparently gain additional strength.

The conventional isometric exercise is conducted by applying muscular tension acting against an immovable object such as a secured rope, bar, door jam, chair, other muscles, etc.

SUMMARY OF THE INVENTION

The present invention comprehends the provision of an improved device for use in isometric exercises substantially increasing the usefulness of the exercises in a novel and simple manner.

More specifically, the present invention comprehends providing an isometric exercise device including a manually graspable handle defining a turning axis, a weight having a preselected mass, and means connecting the weight to the handle to space the center of the mass from the axis to provide a torque acting about the axis.

By virtue of the rotational torque, different sets of the user's muscles are affected depending on the direction of extension of the weight from the axis. Thus, illustratively, if the user grasps the handle with his right hand with with the weight extending outwardly, or to the right, certain outer muscles of the user's arm and shoulder are brought into play in resisting the resultant torque. Alternatively, if the weight is disposed to extend inwardly, or to the left, different, inner muscles of the user's arm and different muscles of the shoulder are brought into play.

By selectively grasping different portions of the handle, a variation in the amount of torque produced by the weight is obtained. Similarly, a variation in the amount of torque may be obtained by holding the handle at different angles to the horizontal.

Still further, a variation in the torque may be effected in the present invention by providing the weight with selectively removable portions. Thus, the weight is not only selectively adjustable as to total mass, but also as to the location of the center of mass from the longitudinal axis of the handle providing adjustability not only in the torque as measured parallel to the handle, but also as to the rotational torque about the axis of the handle.

Thus, the present device provides an effectively infinite adjustability in the amount of torque produced which is resisted by the user's muscles substantially without any movement. Thus, the present exercise device provides increased efficacy in conducting isometric exercises. The device, in effect, becomes an extension of the user's arms and by virtue of the adjustability of the moment arm of the effective weight, provides a substantial variable increase in the effective weight of the device so that a relatively small mass may be utilized as the weight while yet providing substantial strain against a user's muscles as desired.

By virtue of the adjustability of the grasping of the handle, the user may utilize the device initially to provide relatively low reaction forces and increase them gradually during the conduction of a given exercise. Further, by virtue of the removability of portions of the weight, the user may similarly gradually increase the amount of force involved in the exercises both during individual exercise periods and over extended periods of time.

Because of the small size and relatively light total weight of the device, it may be readily transported and may be used in the home, at the office, etc. The device may be utilized while the user is engaged in other activities, such as while talking on the telephone, etc.

While the isometric exercise produced involves substantial stressing of the muscles, the avoidance of motion effectively minimizes perspiration and, thus, the device may be utilized with the user conventionally dressed and without requiring subsequent showering, etc. The device may be utilized not only while the user is stationary, but also while walking or otherwise moving and may be utilized with the user in any position such as sitting, standing, or lying down. The device may be utilized while the user is watching television, listenting to recordings, or in fact, in almost any activity.

The use of the device need only be for relatively short periods of time at intervals such as once a day while yet

such short intermittent use has been found to be highly efficacious in strengthening the user's muscles and general body tone.

The device may further be of substantial value to athletes in different activities such as weightlifting, golf, track and field events, tennis, swimming, skiing, baseball, basketball, football, etc. In using the device in connection with such games or sports, the device may be positioned by the user to simulate the position of the portion of the user's body where maximum effort is required. Thus, for example, where the device is used by a tennis player, it may be retained above the player's head with the player's arm extended as at the point of impact with the ball during service. The device may be held in different desired positions, as the different positions in a golf stroke, and in particular, may be positioned slightly above the ball striking position so as to provide maximum strength increase to the muscles substantially in the impact arrangement.

The device may be utilized by men or women with equal facility by virtue of the adjustability of the effectiveness of the weight. It has been found that such isometric exercises are particularly advantageous for women as they tend to firm flabby muscles without producing bulging muscles.

The present exercise device is extremely simple and economical of construction while yet providing the above discussed highly desirable features.

BRIEF DESCRIPTION OF THE DRAWING

Other features and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawing wherein:

FIG. **1** is a fragmentary perspective view of a user utilizing an exercise device embodying the invention;

FIG. **2** is a side elevation thereof with a portion broken away to facilitate illustration of the construction of the device;

FIG. **3** is a fragmentary end view thereof; and

FIG. **4** is a top plan view illustrating the disposition of the weight in different rotational positions about the axis of the handle for exercising different muscles of the user's arm and body.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the exemplary embodiment of the invention as disclosed in the drawing, an exercise device generally designated **10** is shown to comprise a manually graspable handle **11**, a weight **12**, and a connecting means **13** connecting the weight to one end of the handle.

As illustrated in FIG. **2**, handle **11** is elongated and defines a longitudinal axis **14**. The handle has a substantial length permitting the user to grasp the handle selectively at an infinite number of positions along the length thereof to vary correspondingly the moment arm from the portion of the handle so grasped to the center of mass **15** of the weight **12**. The handle is preferably covered with a soft cover **16** for facilitated use of the device. The handle may be formed of a rigid material, such as metal, and connector **13** may similarly be formed of a rigid material, such as metal, suitably secured to one end **17** of the handle.

As shown in FIG. **2**, connector **13** defines a turned distal portion **18** which displaces the center of mass **15** of weight **12** substantially from the longitudinal axis **14** of the handle thereby providing effectively a rotational torque by the weight about the handle axis when the user holds the handle, as illustrated in broken lines in FIG. **4**. The rotational torque may be selectively eliminated by disposing the center of mass **15** vertically above or below the longitudinal axis, as shown in full lines in FIG. **4**, as desired by the user. Positioning the weight at different angles relative to the vertical, obviously produces different effective torques as desired by the user with the maximum torque being that effected by the full outward disposition of the weight as shown in broken lines in FIG. **4**.

As shown in FIG. **2**, weight **12** may comprise a primary portion **19** and auxiliary portions **20** and **21** selectively secured to one end **22** of the primary portion by suitable means, such as screw **23** which permits the auxiliary portion to be removed in a direction perpendicular to the axis **14** of the handle portion **17**. Thus, auxiliary portions **20** and **21** are selectively removable to vary the total mass of weight **12** as well as the spacing of the center of mass from the handle axis **14**. Thus, further adjustability in the use of the device is provided increasing the usefulness by persons having a wide range of strength and muscle development requirements. As illustrated in FIG. **2**, the primary portion **19** of weight **12** may be secured to the distal end **18** of connector **13** by receiving end **18** in a suitable recess **24** in the weight. End **18** may be suitably secured in recess **24** as by epoxy adhesive, etc. One form of exercise device found to provide excellent isometric exercising utilized a weight having a primary portion of 3 pounds mass with the auxiliary weights having a weight of approximately ¾ pounds each. The handle was approximately 12 inches long with the connector extending approximately 4 inches from end **17** of the handle and with the center of mass of the complete weight **12** spaced approximately 3 inches from the axis **14**. These parameters are illustrative only and as discussed above, may be varied suitably as desired.

The use of the isometric exercise device may be coordinated with isotonic exercises as desired by the user. However, as the isometric exercise device may be utilized almost anywhere and at any time in the normal activies of the user, it has been found that a major use of the device is for use in conducting isometric exercises independently of other exercises. It has been found that such isometric exercising provides substantial improvement in muscle tone, weight control, and overall body conditioning to provide an improved physical fitness of the user in a simple, safe manner.

The foregoing disclosure of specific embodiments is illustrative of the broad inventive concepts comprehended by the invention.

I claim:

1. A device for use in isometric exercises, comprising: a manually graspable handle having a grasping portion defining a turning axis and only a single connecting portion turned from said grasping portion; a weight having a preselected mass; and means connecting the weight eccentrically to said handle connecting portion to extend outwardly from the distal end of the handle connecting portion and space the center of said mass from said grasping portion axis beyond the distal end of the connecting portion to provide a preselected torque acting about said axis, said weight comprising a plurality of separable portions at the outer end of the weight spaced from said handle connecting portion for selectively adjusting the spacing of the center of gravity of

said mass substantially perpendicularly from said axis while substantially maintaining the spacing of the center of gravity from the grasping portion in a direction parallel to said axis.

2. The exercise device of claim **1** including means removably securing said weight portions to each other in a direction substantially perpendicular to said axis permitting the weight to have a selectively variable mass.

3. The exercise device of claim **1** wherein means are provided for securing said weight portions to each other.

4. The exercise device of claim **1** wherein means are provided for securing said weight portions to each other in a direction substantially perpendicular to said axis.

5. The exercise device of claim **1** wherein one weight portion is fixedly secured to said handle connecting portion and a second weight portion is removably secured to said one weight portion by securing means comprising a screw element extending through the removable weight portion and threaded to the weight portion fixedly secured to the handle connecting portion.

6. The exercise device of claim **1** wherein one weight portion is fixedly secured to said handle connecting portion and a second weight portion is removably secured to said one weight portion by securing means, said one weight portion having a weight of at least approximately four times that of the removable weight portion.

7. A device for use in isometric exercises comprising: a manually graspable handle having a grasping portion defining a turning axis and only a single connecting portion turned from said grasping portion; a weight having a preselected mass; and means connecting the weight eccentrically to said handle connecting portion to extend outwardly from the distal end of the handle connecting portion and space the center of said mass from said grasping portion axis beyond the distal end of the connecting portion to provide a preselected torque acting about said axis, said weight comprising a plurality of separable portions at the outer end of the weight spaced from said handle connecting portion for selectively adjusting the spacing of the center of gravity of said mass substantially perpendicularly from said axis while substantially maintaining the spacing of the center of gravity from the grasping portion in a direction parallel to said axis, said handle grasping portion having a length substantially greater than the width of a user's hand to permit the user to grasp the handle at any one of a plurality of different positions lengthwise thereof to provide a variable torque acting transversely to said axis.

8. The exercise device of claim **7** wherein a soft cover is provided lengthwise of substantially the entire handle grasping portion.

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