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[54] **EXERCISING DEVICE CONTAINING ROTATABLE WEIGHTS**

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[51] **Int. Cl.** **A63b 11/04**

[58] **Field of Search** ..... 272/57 J, 60, 79 R, 84; 280/11.1; 16/24, 25

[56] **References Cited**

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904,088	11/1908	Rother	280/11.1 BR
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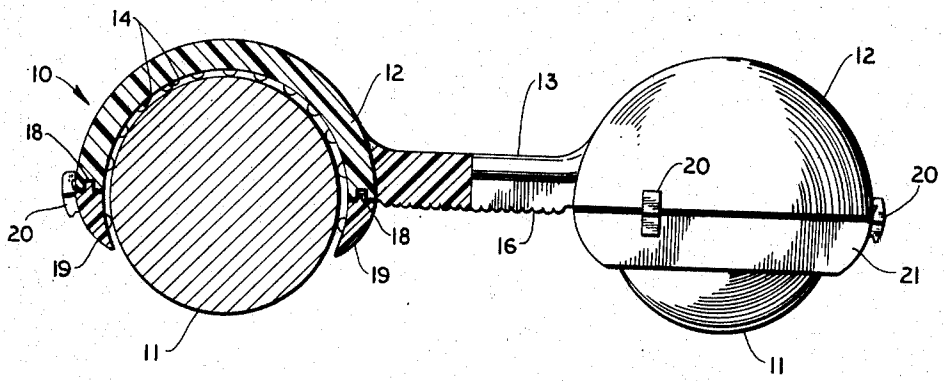
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[57] **ABSTRACT**

An exercising device is described which contains spherically-shaped weights which are rotatable, allowing the device to be used by rolling the device along a surface such as a floor or wall in addition to lifting in the conventional manner.

5 Claims, 3 Drawing Figures



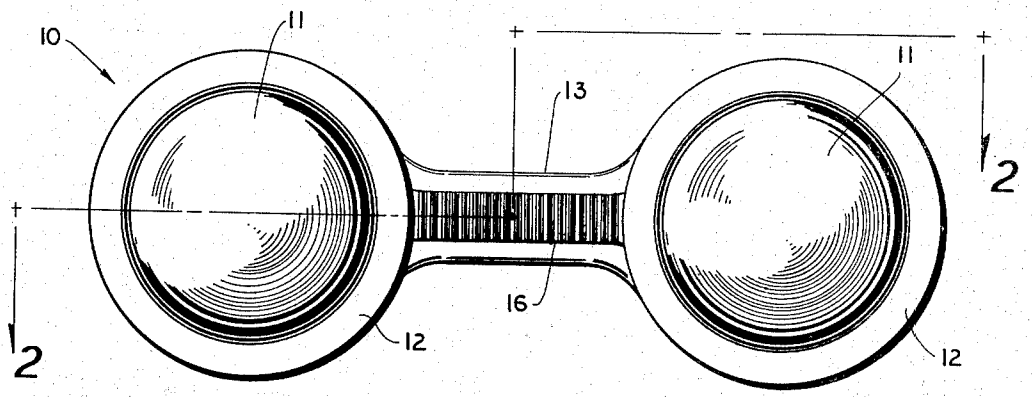


FIG 1

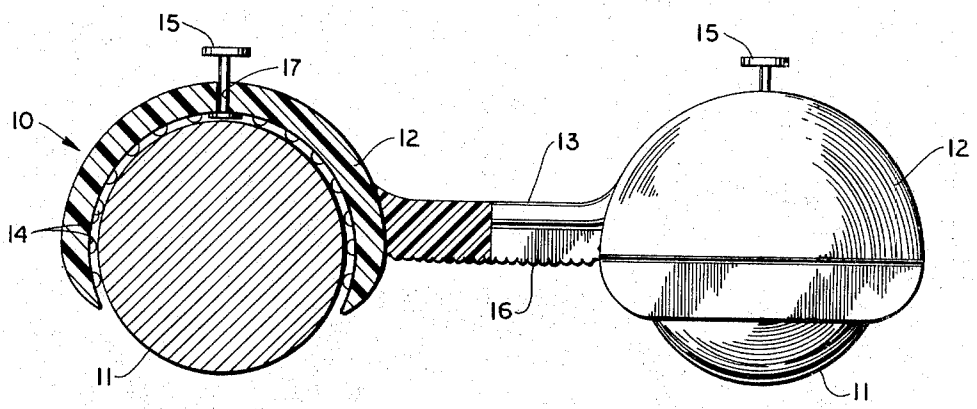


FIG 2

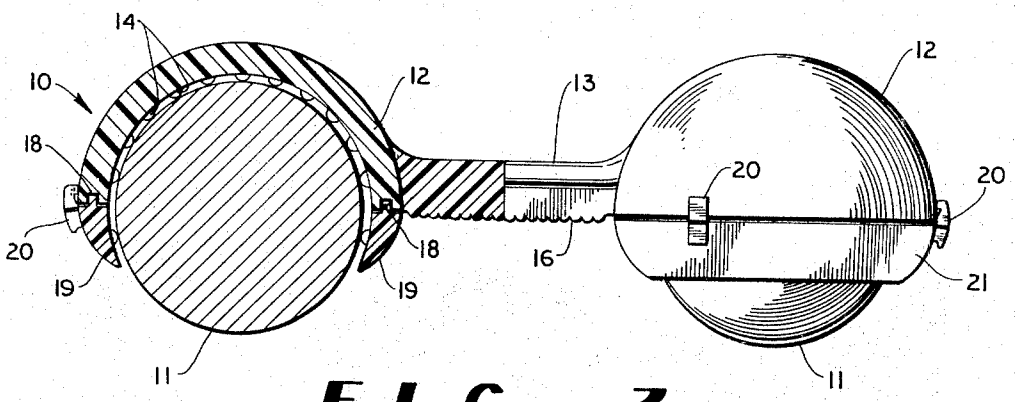


FIG 3

EXERCISING DEVICE CONTAINING ROTATABLE WEIGHTS

This invention relates to an improved exercising device. More specifically, this invention is directed to an exercising device which can be used either by rolling the device along a surface such as a floor or wall in any direction or by lifting the device in the manner long known to the art of exercising.

Exercising devices in use today range from the very complex equipment found in gymnasiums and health spas to the simple exercising devices such as the dumb-bell and bar-bell normally found in homes and offices. The very complex equipment has the advantage that a single piece of equipment is capable of functioning in different ways. For example, exercises for the arms, legs, chest, and shoulders can often be performed on a single piece of equipment. Along with the advantage of multiple functionality, the use of complex equipment has some serious drawbacks. Because of the intricate nature of the complex equipment, mechanical failure is commonplace, and it is also difficult for people to use the devices without proper professional instructions. The simple exercising devices such as the dumb-bell and bar-bell are advantageous for use in the home or office because of the size and ease of use of such devices. Mechanical failure is also very seldom encountered when using these simple devices. However, these simple exercising devices have normally been used only for a limited number of exercises and the exercises have normally entailed lifting the devices.

Efforts have been made to modify the simple exercising devices such as the dumb-bell and bar-bell in order to make the devices more functional with regard to the number and type of exercises for which the devices can be used. For example, U. S. Pat. No. 1,438,804, U. S. Pat. No. 2,821,394, and U. S. Pat. No. 3,134,590 all disclose simple exercising devices in which rotatable discs are attached to the ends of a handle. Exercises that do not require lifting can be performed by pushing these devices along a surface such as a floor or wall. Because the edges of the discs are in one plane, however, it is difficult to change the direction in which the devices are being pushed without lifting the devices off the surface and turning the devices in the desired direction.

It is, therefore, an object of the present invention to provide an improved exercising device of the dumb-bell type.

It is another object of the present invention to provide an exercising device of the dumb-bell type that is capable of undergoing omnidirectional movement after the device comes into contact with a surface such as a floor or wall, capable of being used in exercises requiring lifting and capable of being altered as to weight.

These objects and other features and advantages of the present invention will be more clearly understood upon consideration of the following specification and the accompanying drawing pertaining to a disclosed embodiment of the invention, in which:

FIG. 1 is a top view of an exercising device constructed in accordance with the present invention;

FIG. 2 is a side view, partly in section, taken along line 2—2 of the exercising device of FIG. 1;

FIG. 3 is a side view, partly in section, of an alternative embodiment of an exercising device constructed in accordance with the present invention.

In accordance with the present invention, there is provided an exercising device comprising a handle, a hemispherically-shaped cup attached to each end of the handle, and a spherically-shaped weight contained within each cup. The term "hemispherically-shaped cup," both here and throughout the specification, refers either to a cup that is in the shape of a hemisphere in that the side walls of the cup extend exactly to the greatest circumferential distance around the cup or to a cup which the side walls extend past the greatest circumferential distance around the cup. Each spherically-shaped weight forms a universal joint with the hemispherically-shaped cup, allowing the weight to rotate freely in any direction. The universal action obtained with this particular construction allows the exercising device to be pushed in any direction along a surface such as a floor or wall.

Referring more particularly to FIGS. 1 and 2, there is shown an exercising device **10** constructed in accordance with the preferred embodiments of the present invention in which spherically-shaped weights **11** are held within hemispherically-shaped cups **12** attached to the ends of handle **13**. The inside surfaces of cups **12** have small nodes **14** projecting above the inside surfaces of the cups **12**, and the nodes **14** support the weights **11** away from the surfaces and keep the weights **11** within the cups **12**. Projecting through holes **17** immediately opposite the openings for the weights **11** are extractors **15** which serve to force the weights **11** out of cups **12** when changing weights.

The spherically-shaped weights **11** useful in the present invention can be of any suitable composition and construction. Preferably the weights **11** are made of plastic and have holes into which metal plugs can be inserted in order to increase the weight. In this manner a weight **11** of a given circumference can have various weights, depending upon the amount of metal inserted into the holes. Of course, the weights **11** can be solid plastic, solid metal, plastic-coated metal, and the like. The spherically-shaped weights **11** should have a smooth and polished finish in order to decrease the friction between the weights **11** and the nodes **14** and also between the weights **11** and a surface when the exercising device is used by pushing along the surface.

The hemispherically-shaped cups **12** are preferably either molded hard rubber or plastic but may be any suitable material that is hard and resilient. The cups **12** can be attached to handle **13** by any suitable means, but preferably the cups **12** and handle **13** are molded as a single piece, resulting in a construction that is sturdy and resistant to damage. As shown in FIG. **2**, the rims of cups **12** preferably extend beyond the greatest circumferential distance around the cup, and the circumference of each of the rims is less than the circumference of each of weights **11**. The cups **12** must have rims that are somewhat elastic and capable of expanding to allow the weights **11** to fit into the cups **12** and then retract. The rims can then partially surround and hold the weights **11** within the cups **12**.

Within the cups **12** are a number of nodes **14** that project above the inside surface of the cups **12** and support the weights **11** away from the surface of the cups **12**. By supporting the weights **11** in this manner, the friction created between the cups **12** and weights **11** when the weights **11** rotate is minimized. The nodes **14** are all the same height and the top of all the nodes form a hemispherically-shaped surface with a diameter equal

to or slightly larger than the diameter of the spherically-shaped weights **11**, allowing the weights **11** to rotate with ease within the cups **12**. As shown in FIG. **2** there are some nodes very near the rim of cups **12**, and these nodes tend to hold the weights **11** within the cups **12** because these nodes are at positions on the inside surfaces of cups **12** wherein the circumference parallel to the rims is smaller than the circumference of weights **11**. The nodes **14** are also positioned at a distance from extractors **15** such that there is no interference between the nodes **14** and extractors **15**. Preferably, nodes **14** are produced by molding at the same time the cups **12** and handle **13** are molded as a single piece in accordance with the preferred embodiment of the present invention, although the nodes **14** can be individually made and attached in any suitable manner to the inside surfaces of cups **12**.

The handle **13** can be of any suitable material, but preferably the handle **13** is of the same preferred composition as the cups **12**, being either hard rubber or plastic. Handle **13** can be of any cross-sectional shape, including round, square, oval, and irregular, and preferably has a gripping area **16** formed by a series of grooves within the surface. The length of the handle **13** can vary, depending upon the particular use for the exercising device. For example, if the exercising device is intended for use in exercises that require both hands, such as the exercises normally performed with a large bar-bell, the handle **13** will be relatively long, that is, from about 24 inches to about 84 inches. If the exercising device is intended for use in exercises that require only one hand, such as the exercises normally performed with a small dumb-bell, the handle **13** will be relatively short, that is, from about 8 inches to about 20 inches.

The extractors **15** that project through holes **17** in the walls of cups **12** are preferably of a very stiff material such as metal, hard rubber, plastic and the like. Preferably the extractors **15** are I-shaped plugs as shown in FIG. **2** in which both ends of the plugs are wider than the holes **17** in order to prevent the plugs from becoming disengaged from the cups **12**. The ends of the plugs that are inside the cups **12** should have a thickness which is less than the height of nodes **14**, allowing the weights **11** to rotate freely without interference from the plugs. The plugs should be located on the cups **12** immediately opposite the rims through which the weights **11** are inserted in order to allow pressure to be asserted against the weights **11** in a direction perpendicular to the plane formed by the rims of cups **12**. While the weights **11** are within the cups **12**, the ends of plugs within cups **12** remain between weights **11** and the inside surfaces of cups **12** and do not interfere with the rotation of weights **11**. Of course, the extractors **15** can be of other suitable shapes and designs other than I-shaped plugs. In order to use the extractors **15** to remove weights **11** from cups **12**, pressure is applied to the ends of extractors **15** outside cups **12** in a direction towards the center of cups **12**, and the resulting pressure applied to the weights **11** causes the weights to be pushed past the elastic rim and be removed from the cups.

When preparing to use the exercising device **10**, the proper weights **11** for the specific exercise are chosen and pressed through the openings in cups **12** until the rims snap around weights **11**, holding the weights securely in place. If the device is to be used for performing exercises in which the device is to be lifted, the exercises are performed in the normal manner. If the device is to be used for performing exercises in which the device is in contact with a surface such as a floor or wall, the device is positioned so that the weights **11** are in contact with the surface. Preferably, the rims of the cups **12** should be parallel to the surface in order to evenly distribute the weight on nodes **14**. The exercise can be performed without lifting the device off the surface because the weights **11** are freely rotatable in any direction. After finishing an exercise, the weights **11** can be removed by applying pressure to the plugs **15** in order to snap the weights **11** out of cups **12**.

An alternative embodiment of the present invention is shown in FIG. **3** and is directed to another means of retaining the spherically-shaped weights within cups **12**. The cups **12** are hemispheres and have side walls that extend exactly to the greatest circumferential distance around the cups **12**. The rims of cups **12** have a diameter that is greater than the diameter of the weights **11** in order to allow the weights **11** to be placed in the cups **12** without expandin the rims. In the rim of each cup **12** there are three sockets **18** (only two of which are shown) for receiving individual retention members **19** that are arcuate and that extend around a portion of each weight **11** to hold the weight **11** within the cup **12**. Of course, more than three sockets **18** can be used if desired. The retention members **19** can be held to the cups **12** by connector **20**. Instead of having individual retention members **19** are shown in the portion of FIG. **3** that is in section, the exercising device could have ring members **21** in which the largest diameter is equal to the diameter of cups **12** and the smallest diameter is less than the diameter of weights **11**. The ring members **21** can be held to the cups **12** by means of connectors **20** or any other suitable means.

Another alternative embodiment of the present invention is directed to a means for attaching the exercising device to the foot so that exercises involving the use of the leg muscles can be performed. A strap or other suitable holding member can be attached at the points at each end of the handle **13** where the handle **13** contacts the underside of the cups **12** opposite the openings for the weights **11**. The foot can be inserted between the handle **13** and the strap and leg exercises performed in the normal manner. Of course, it is possible to attach the exercising device directly to the bottom of a shoe to be worn during exercising. The exercising device can be attached to the shoe by any conventional means such as screws, adhesives, and the like.

The invention and many of its attendant advantages will be understood from the foregoing description and it will be apparent that various changes may be made in the form, construction, and arrangement of the parts of the invention without departing from the spirit and scope thereof or sacrificing all of its material advantages, the embodiments hereinbefore described being merely for purposes of illustration.

What is claimed is:

1. An exercising device comprising a generally rectilinear handle, a hemispherically-shaped cup attached to each end of said handle with the openings of both cups facing in the same direction, a spherically-shaped weight contained within each of said cups, and means for retaining each of said weights within its cup whereby each weight can rotate in any direction, the

longitudinal axis of said handle passing generally through the center portion of each of said spherically-shaped weights.

2. An exercising device as in claim **1**, wherein a plurality of nodes project above the inside surface of each of said cups in order to support each of said weights away from the surface of its cup.

3. An exercising device as in claim **1**, wherein an extractor for removing its weight from each cup extends through a hole in each of said cups, each hole being opposite the opening formed by the rim in each cup for each weight.

4. An exercising device as in claim **1**, wherein the means for retaining each weight within each cup is the rim of each cup which extends beyond the greatest circumferential distance around each cup and each rim has a circumference which is smaller than the circumference of each weight.

5. An exercising device as in claim **1**, wherein the means for retaining each weight within each cup is a plurality of retention members which are attached to the rim of each cup by means of a plurality of sockets within each rim.

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