

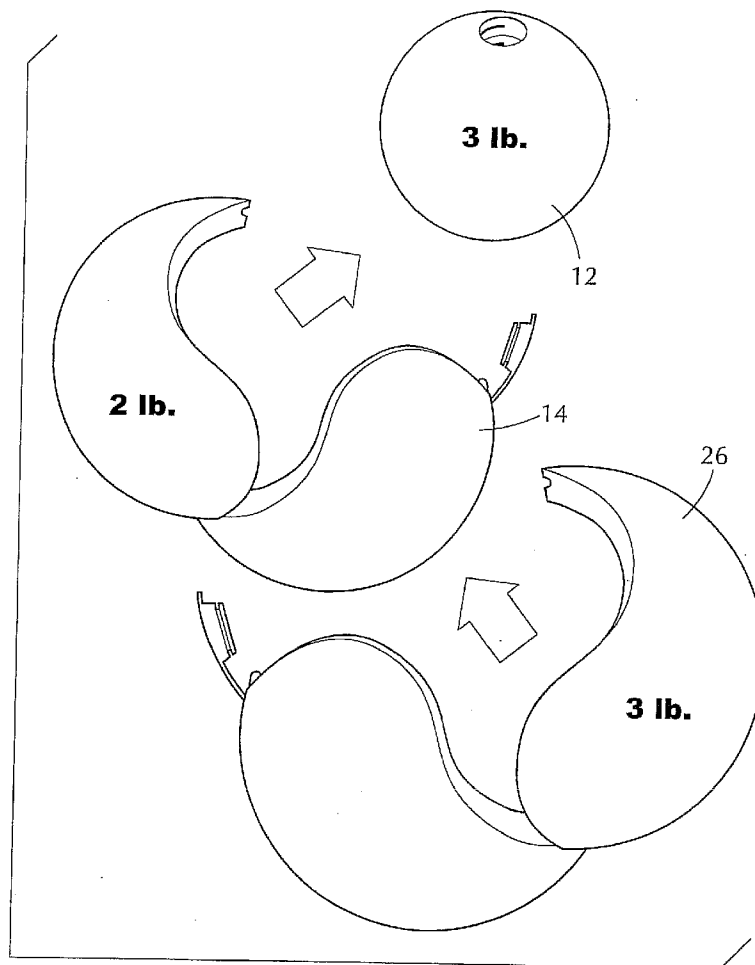


US 20070298938A1

(19) **United States**(12) **Patent Application Publication**
Greenberg et al.(10) **Pub. No.: US 2007/0298938 A1**(43) **Pub. Date: Dec. 27, 2007**(54) **EXERCISE DEVICE CONSTRUCTION****Publication Classification**(76) Inventors: **Andrew D. Greenberg**, Palm
Beach Gardens, FL (US); **Gregory**
J. Lynch, St. Paul, MN (US);
Traci Cunningham, Palm Beach
Gardens, FL (US); **Michael**
Lindars, Portland, OR (US);
Collin Lewis, Logan, UT (US)(51) **Int. Cl.**
A63B 21/075 (2006.01)(52) **U.S. Cl.** **482/106; 482/93**(57) **ABSTRACT**

An exercise device comprising a core element which may be generally spherical and interchangeable shells or covers which are mounted in an overlying relationship with the core to vary the total weight. The covers may have a two-part hinged construction or be segmented with the segments of each cover being interlocking. In one embodiment, the covers are sized to allow each cover to be mounted or nested one upon another in order to vary the weight. The cover may include two spherical panels having at least an outer wall element. Weight blocks, which can be mounted to the outer wall element or placed in a space between the outer wall element and an inner wall element, allow the mass of the cover to be adjusted. The exercise device may have attachment means to attach it to a bar unit, such as a barbell, or may be used as a free-standing exercise ball.

Correspondence Address:

SCHWEITZER CORNMAN GROSS & BOND-
ELL LLP
292 MADISON AVENUE - 19th FLOOR
NEW YORK, NY 10017(21) Appl. No.: **11/755,191**(22) Filed: **May 30, 2007****Related U.S. Application Data**(60) Provisional application No. 60/816,165, filed on Jun.
23, 2006.

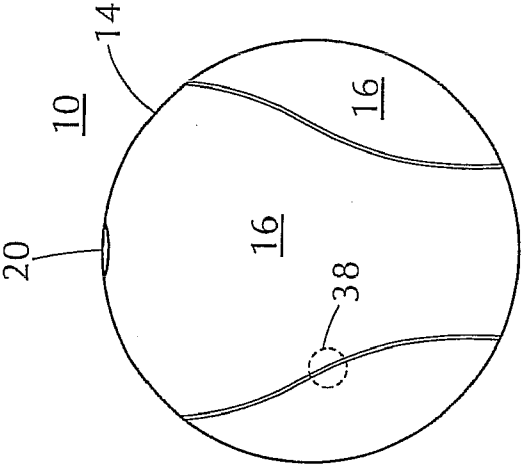


FIG. 1

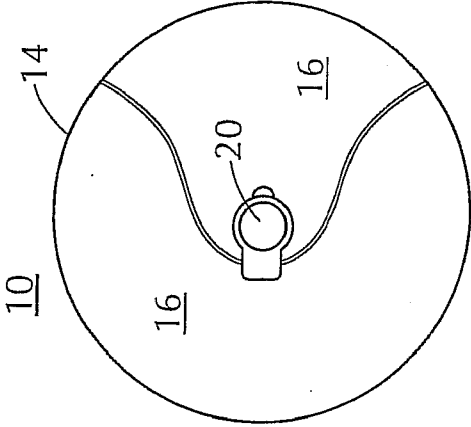


FIG. 2

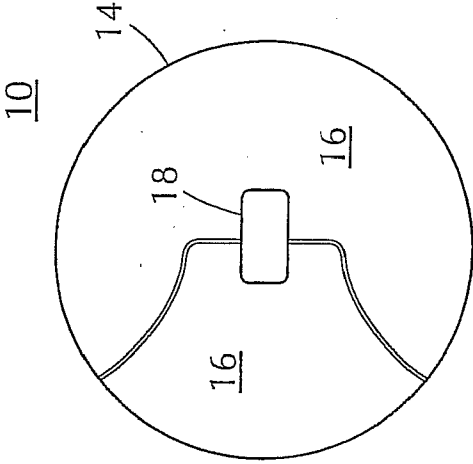


FIG. 3

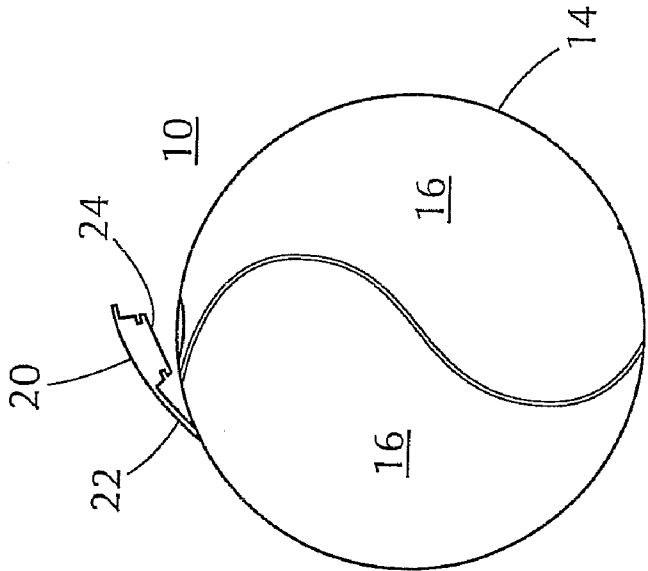


FIG. 4

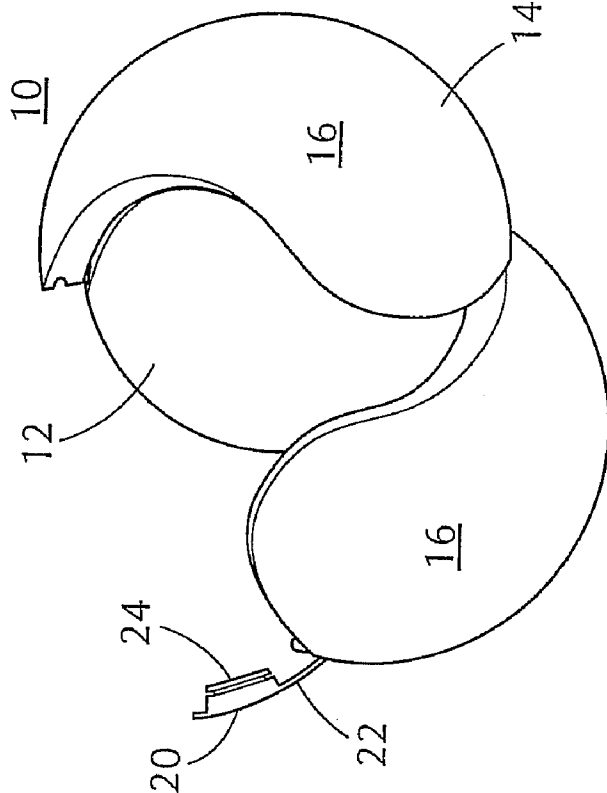


FIG. 5

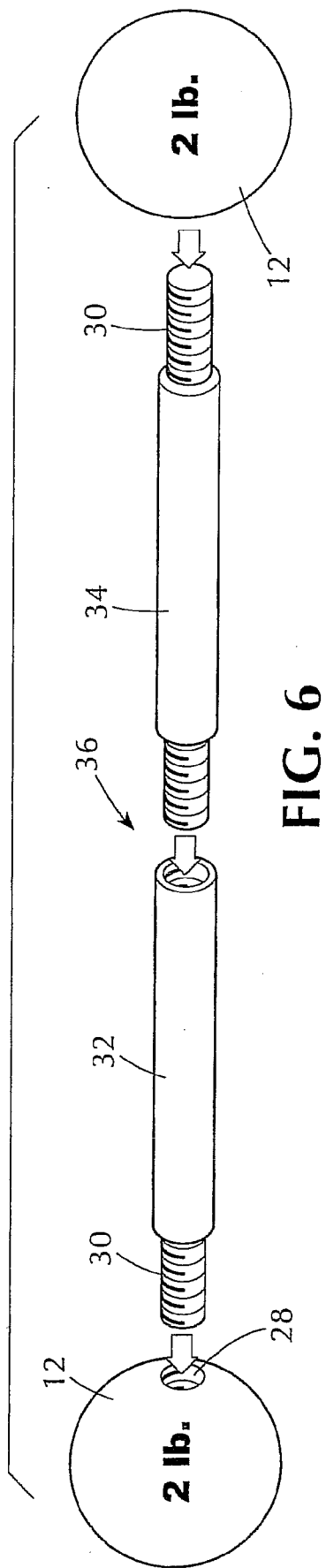


FIG. 6

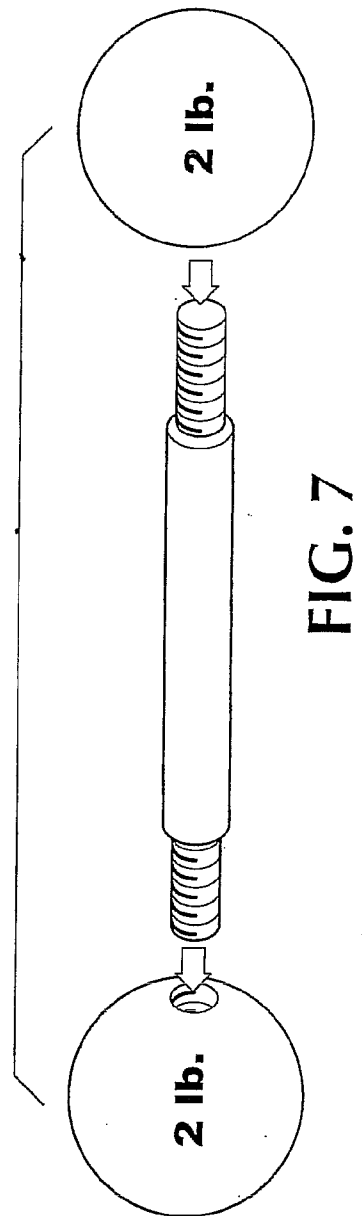


FIG. 7

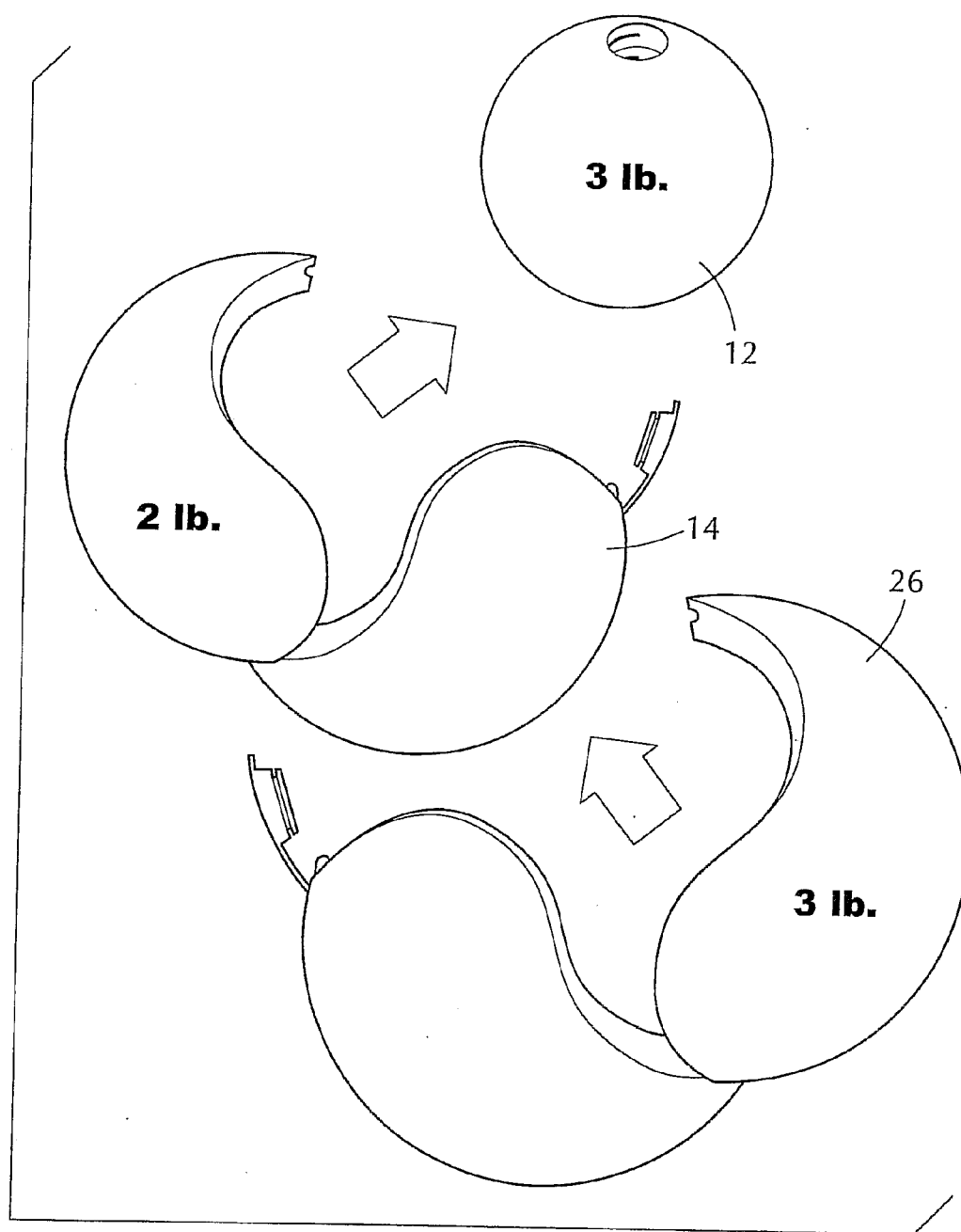
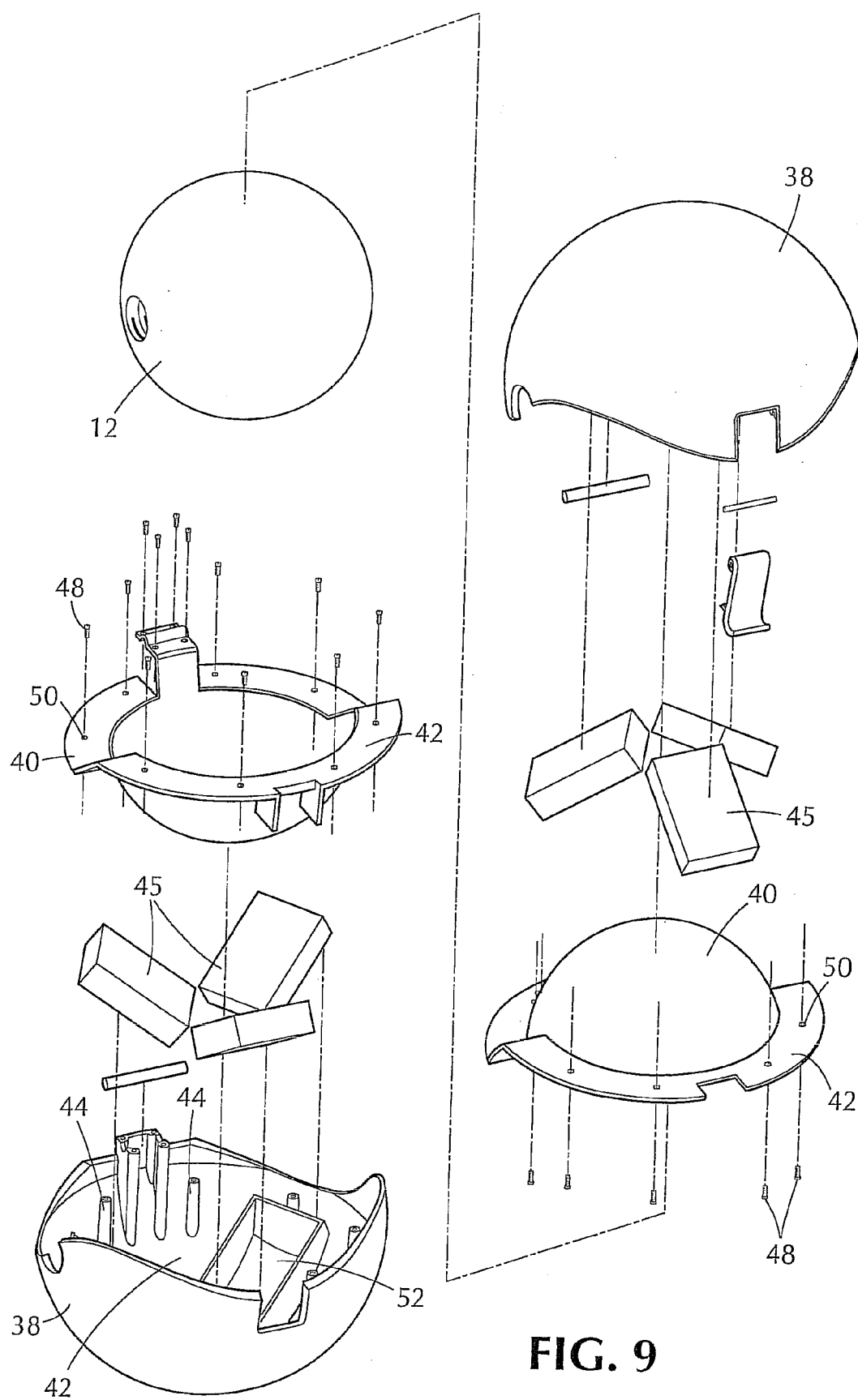


FIG. 8



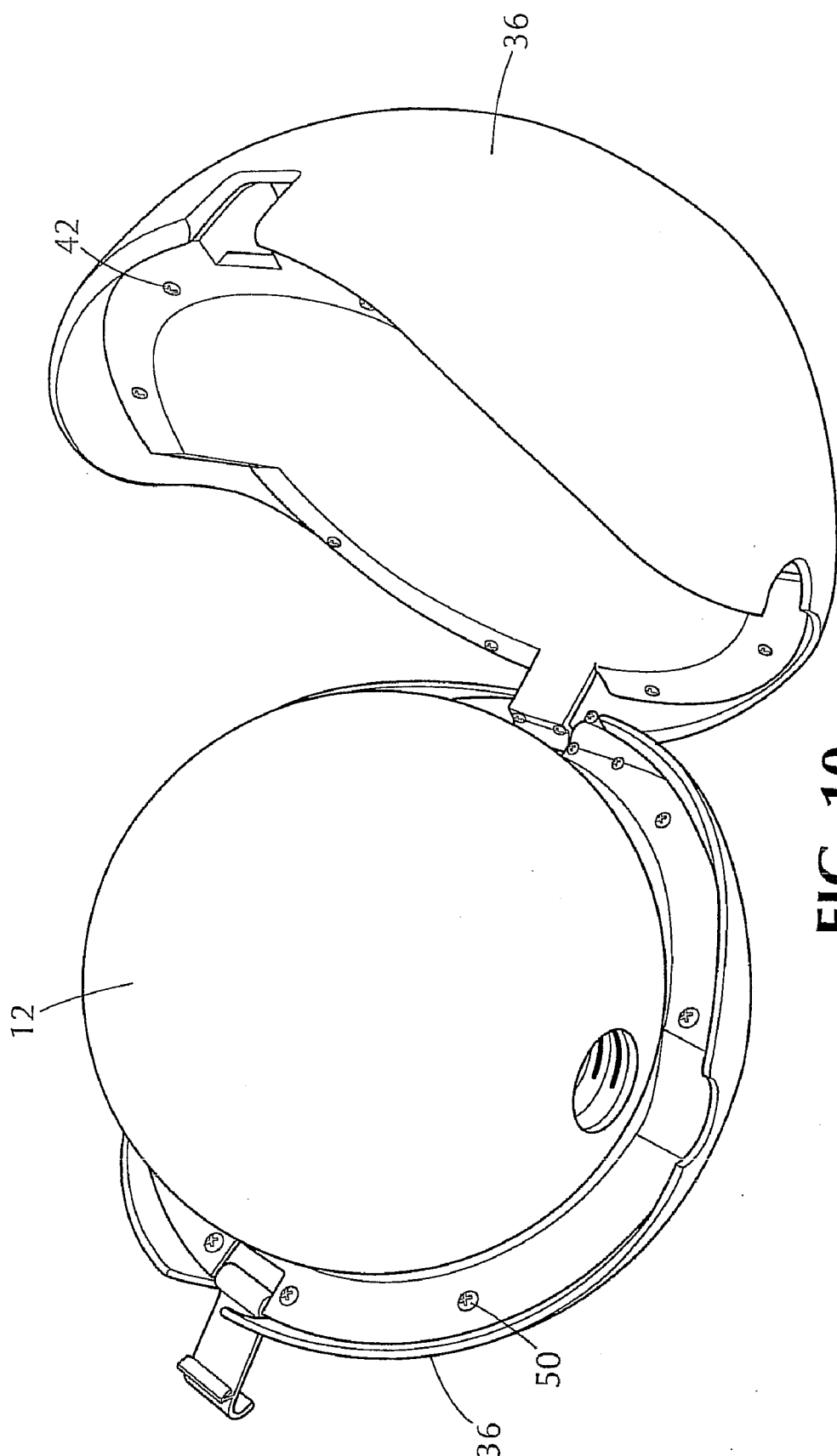


FIG. 10

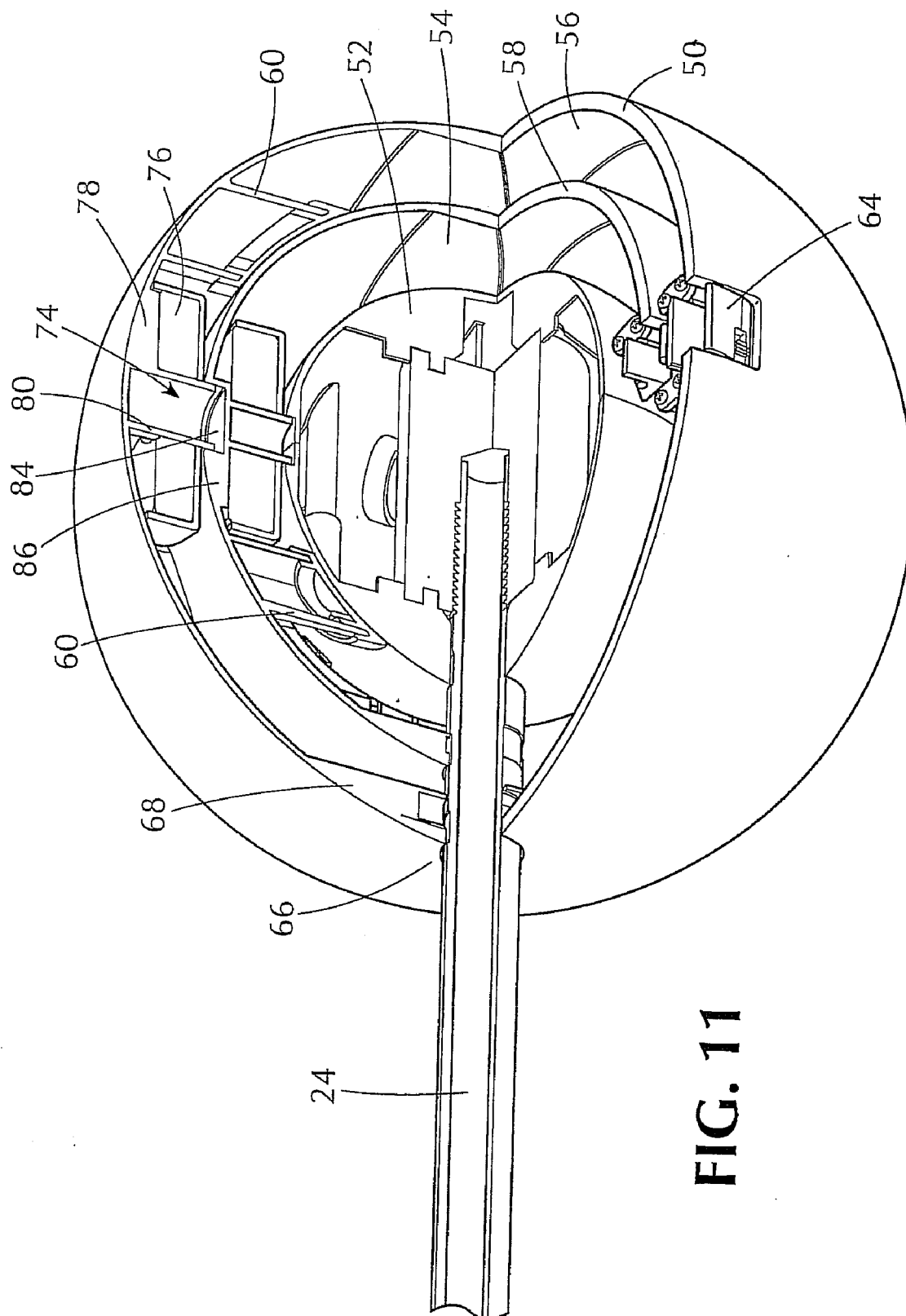


FIG. 11

EXERCISE DEVICE CONSTRUCTION

[0001] The present application claims the benefit of U.S. Provisional Application 60/816,165 filed Jun. 23, 2006.

[0002] The present invention relates to an adjustable weight exercise device construction.

BACKGROUND OF THE INVENTION

[0003] Numerous fitness and exercise routines or regimens utilize weighted devices which are manipulated by the user. Such well known devices include dumbbells and barbells, exercise or medicine balls, kettle bells, and the like. As the various muscles and muscle groups of an individual are of different size and strength, and different exercises are directed to different muscles and muscle groups, the weight or mass of the exercise device used by the user must be varied in accordance with the exercise performed. A weight appropriate for use in connection with a leg exercise, for example, may be much too heavy for use in an arm exercise. In addition, as the user becomes more fit, the appropriate weight for a given exercise normally increases.

[0004] One way by which such variation is accommodated is by providing a series of weight elements of different weights or masses. Dumbbells, for example, are often provided in sets in a series of fixed weight increments. (Eg., 5 lb, 7.5 lb, 10 lb, etc.). Thus, an individual is required to purchase a full range of such incremental weight units to accommodate his or her needs in performing various exercise routines.

[0005] Another mechanism for providing weight adjustment is to provide a series of weight element sub-units which may be mounted together to provide a particular desired weight. Such a mechanism is exemplified by barbell and dumbbell constructions in which individual weight plates are mounted on the barbell or dumbbell bar in the desired combination and locked in place by an appropriate clamping device.

[0006] Alternatively, adjustable weight exercise devices have been provided in which a hollow shell is filled with a relatively dense flowable material, such as sand or water, to a desired degree and then sealed or capped. Marks or indicia on the shell may be provided to provide some indication of the corresponding mass or weight when the shell is filled to a certain level.

[0007] All the foregoing, however, suffer from various shortcomings. Either a plurality of complete weight elements must be obtained and maintained, or the user must be prepared to fill and empty receptacles with risks of spillage, breakage and the like. The use of weight plates require clamps which may be difficult or inconvenient to tighten securely and can be lost.

[0008] It is accordingly a purpose of the present invention to provide an exercise device construction allowing weight or mass adjustment to be effected in a simple and convenient manner.

[0009] A further purpose of the present invention is to provide an adjustable weight exercise device adaptable to incorporation in a variety of device formats, such as an exercise ball, barbell or dumbbell.

[0010] Yet a further purpose of the present invention is to provide an adjustable exercise apparatus of economical construction and assembly.

BRIEF DESCRIPTION OF THE INVENTION

[0011] In accordance with the foregoing and other objects and purposes, an exercise device of the present invention comprises a core element which may, for example, be generally spherical. The core may be provided with means to allow it to be interconnected with other elements, such as a bar, to form an adjustable weight barbell or dumbbell system.

[0012] In contradistinction to prior exercise devices in which the exercise device is in the form of a single hollow element variably filled with a mass to change its weight and then plugged, the present invention provides a plurality of overlying shell or cover weight elements that are mountable on the exterior of the core to vary the total weight. A shell or cover elements may comprise, for example, a plurality of panels or gores that may be assembled together about the entire periphery of the core. Alternatively, the shell or cover element may be of a two-part hinged panel construction which, when the two panels are separated or pivoted apart, allow the shell to be placed about the core and, when closed, cause the shell to closely embrace the enclosed core. The shell panels are constructed of an appropriate material, such as metal-filled plastic, the mounting of the shell on the core adding to the weight or the mass of the core in accordance with the specific construction and dimension of the shell. Complimentary fastening means may be located on the core and shell to allow the shell to be rigidly but removably mounted on the core. Alternatively, the individual panel of the shell may interlock with each other in a manner that retains them on the enclosed core.

[0013] A plurality of shells may be provided, each shell having a different mass to provide a different degree of augmentation to the weight or mass of the core. The shells may be interchangeable upon the core, or alternatively may be constructed in graduating sizes to allow the shells to be mounted or nested one upon another on the core for weight augmentation. In such a construction, a shell is either mounted upon the core or upon a previously-mounted shell in accordance with the weight requirements and desires of the user.

[0014] The shell element may comprise an outer wall element. A plurality of weight blocks allow the weight or mass of the shell element to be varied. The weight blocks may be mounted to the outer wall element or may be located in a framed aperture located between the outer wall element and an inner wall element.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] A fuller understanding of the present invention will be accomplished upon consideration of the following detailed description of preferred, but nonetheless illustrative embodiments of the invention, when reviewed in connection with the annexed drawings, wherein:

[0016] FIG. 1 is a front elevation view of an exercise device of the invention, showing a shell mounted on a core;

[0017] FIG. 2 is a top plan view of the exercise device;

[0018] FIG. 3 is a bottom plan view thereof;

[0019] FIG. 4 is a front elevation view of the exercise device showing a cover upon a core, with a lock device for the cover in an unlocked position;

[0020] FIG. 5 is a perspective view of the exercise device showing the cover in an open orientation;

[0021] FIG. 6 is a perspective view of an exercise device in accordance with the invention embodied in a barbell-like construction;

[0022] FIG. 7 is a perspective view of the exercise device of FIG. 6 configured as a dumbbell;

[0023] FIG. 8 is a perspective view of an exercise device of the invention depicting the nesting of cover elements upon a core;

[0024] FIG. 9 is an exploded view of the embodiment of the exercise device wherein the cover comprises two spherical panels which form a receiving aperture therebetween;

[0025] FIG. 10 is a perspective view of a core element resting inside the embodiment of the exercise device wherein the cover comprises two spherical panels having inner and outer wall elements which form a hollow surface therebetween for receiving weight blocks; and

[0026] FIG. 11 is a partially cut away perspective view of an assembled weight device of the invention depicting a core and first and second shells of an alternative embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0027] With initial reference to FIGS. 1-5, an exercise device 10 of the present invention may be in the form of a sphere or ball, although other shapes may be employed. The exercise device 10 includes a core element 12 and an overlying cover or shell element 14. The core is constructed of any appropriate material, such as metal or a filled plastic composition, chosen to provide a desired weight or mass for the core when the core is utilized as an exercise unit without a shell. The core may also be of any appropriate diameter, chosen for the particular intended use of the exercise device. For use as a free-standing exercise ball, for example, the core may have a diameter of anywhere from 4 to 12 inches, while for use as the core of a barbell or dumbbell construction cores at the lower range of such sizes may be preferred. The core may be solid or hollow as appropriate for its size and desired weight.

[0028] Shell 14 is constructed as a relatively thin body, having an inner surface or alternative means preferably configured to allow it to rest closely against the outer surface of the core element 12. Typically, the outer surface of the shell will be of the same general shape as that of the core. As depicted in the figures, the shell 14 may be formed of two or more panels or sections 16 which together envelop substantially all of the core. While the figures depict the shell 14 fully covering the core, it is anticipated that other shell arrangements, covering less than substantially all of the core surface, can be employed. The individual shell panels or portions 16 may be substantially identical, as shown in the figures, or may be of differing shapes.

[0029] Means are provided to retain the shell upon the core. When the shell covers more than 50% of the core surface, such means can be in the form of elements holding the shell sections together, without a mechanical coupling to the core itself. Thus, as shown in the figures, such retention means may be in the form of a hinge 18 and a lock 20. Such a hinge and lock system may be effectively utilized when

two individual shell portions or panels 16 are used. The hinge 18 connects the two panels 16 together, while allowing them to pivot apart, as depicted in FIG. 5, so that they may be placed upon or removed from the core 12. The lock 20, located diametrically across the cover from the hinge, allows the individual shell portions 16 to be retained together in a closed orientation, thereby retaining the shell upon the core 12. The lock element 20 may comprise a pivoting lock arm 22 mounted adjacent an edge of a first cover element portion 16 and bearing a plug 24 at an end thereof, and a bore 26 adjacent a corresponding edge of the second cover element 16 to accommodate the plug in a snug, friction-fit manner to retain the shell portions elements together. Other lock constructions as known in the art can similarly be employed.

[0030] Alternative retaining means can also be employed. For example, the inner surfaces of the shell portions 16 and the outer surface of the core 12 may be provided with complimentary hook-and-loop fastener elements, whereby the shell portions 16 are retained directly upon the core. The cover portions may be provided with interlocking means to join them together in the manner of puzzle parts to retain them upon the core.

[0031] As with the core, the shell portions or panels may be manufactured from any appropriate material. Both the core and the individual shell portions may be fabricated from a cast metal-filled epoxy plastic formulation, as known in the art. Such a construction can allow the weight of the shell to be chosen based upon the extent and nature of the metal fill. The thickness of the shell can be chosen in accordance with the shell's diameter and desired weight, and typically is expected to be in the range of 1 to 2 inches.

[0032] With further reference to FIG. 8, an exercise device of the present invention may incorporate, in addition to a core element 12 and a shell 14, one or more further shells 26. The shells 26 may be fabricated in a manner analogous to that of shell 14, but of shape and size such that they fit over the outer surface of the shell 14 or a previously-mounted further shell 26. Thus, and as depicted in the Figure, use of the core element 12 provides an exercise device of a first weight, such as 3 lbs; adding the first shell 14 thereto provides a total weight of 5 lbs; and further addition of the shell 26 provides a total weight of 8 lbs. Various combinations of core and shells may be provided to give great flexibility in the construction of weight elements of varying weights for a full range of exercise needs.

[0033] The combination of core 12 and shells 14, 26 may be incorporated into other exercise devices. As depicted in FIG. 6, cores 12 may each be provided with a bore, such as threaded receiving bore 28 into which a complimentary threaded end 30 of a handle, shown in the form of a bar unit 32 or 34, is received. A single core and attached bar/handle may be used as is, or the bar units 32 and 34 may have complimentary joining means 36 at the ends opposite from those having the threaded couplings 30, allowing the two bar units to be coupled together to produce an extended length bar, in the nature of a barbell bar. Shell elements 14 (and 26) may be provided with a bore 38, depicted in phantom in FIG. 1, to accommodate the threaded end 30 of a bar unit when the shell is mounted on the core. The bore 38 may preferably be located along the line of intersection between two of the individual shell portions 16 to facilitate mounting of the shells upon a previously assembled barbell, and allowing the shells to be mounted upon and removed from the core without disassembling the barbell construction. Other con-

nection means, such as bayonet type connections, snap-fit connectors, and the like may be used in place of threaded connections.

[0034] When the complimentary joining means **36** of the bar units **32, 34** are in the form of a threaded receiving bore and threaded end having the same size and thread pitch as the bore **28** and threaded end **30**, the bar unit **34**, having two threaded ends, may be used to engage a pair of core elements as depicted in FIG. 7, whereby the length of the bar is shortened and the resulting construction is in the nature of a dumbbell. Once again, the overall weight of the dumbbell may be adjusted by the placing of one or more cover elements on the cores.

[0035] A first preferred embodiment of the invention is depicted in FIGS. 9 and 10. As seen therein, the shells **14** or **26** may comprise two hemispherical sections **36** each having an outer wall element **38** and an inner wall element **40**. The inner wall element has a peripheral flange **42**, which rests on a series of standoffs **44** molded in the interior of the outer wall element **38**. Screws **48** extend through bores in the flange and engage the standoffs to connect the inner and outer wall elements **38, 40** together. A hollow space **42** is formed between the wall elements, allowing a plurality of weight blocks **45** to be installed in receiving pockets or apertures **52** located on the inner surface of the outer wall. This allows the mass of the shell to be adjustable, and allows the panel shells to be made of a rigid, tough material without significant concerns regarding its density, as the mounted weights **45** are chosen as appropriate for the intended weight of the shell. Because the weight blocks **45** are internal to the shell, they may be of any appropriate material without undue concern regarding their appearance. Thus, for example, the weight blocks **45** may be chosen of an appropriate metal or metal alloy, and need not have a highly finished surface appearance. The weights may be user accessible, allowing them to be interchanged by the user upon separating the inner and outer wall elements **38, 40** or the wall elements may be permanently joined together to prevent separation and user access to their contents.

[0036] FIG. 11 depicts an alternative construction for the invention and shows a cut away assembly of a core **52** and first and second overlying shells **54, 56**. As depicted therein, each of the shells have a pair of hinged outer wall element **58**. Rather than having complete inner walls, the shells each have a series of inwardly-directed pedestals **60** which may be fabricated integrally with the outer wall elements. The pedestals **60** are capped with covers **62**, with both the distal ends of the pedestals and the covers contoured to provide a mating surface for outer surface of the core or another shell about which the shell is mounted. Hinge **64** is mounted to the interior surfaces of the outer wall element to maintain a smooth outer surface for the shell.

[0037] The outer wall elements **58** may be provided with a thickened inner flange section **68** through which mounting bores **66** for bar unit **24** and the like extend. As shown, the bores are located at the mating interface between the two hinged wall elements of the shell. The end of the bar unit threads into an inner block **70** of core **52**, which block may be supported within the core by internal support flanges **72**. The block **70** may be of a different material form the surrounding portions of the core, thus allowing the block material to be chosen with proper regard for strength requirements, which may be different from or incompatible with those desired for the surrounding core portions. The

size of the block **70** may also be chosen with consideration of the desired overall weight for the core. The end of the bar unit may be of a stepped construction as shown, wherein the mounting bore of each size shell are different, with larger shells having larger bores.

[0038] The shells may also be provided with internal mounting pedestals **74** for weight units **76**. Each of the pedestals may have a planar base portion **78** and a central cylindrical stem **80**, upon which the ring-shaped weight units are mounted. A cover **82** hold the weight in position. The cover may be of a removable configuration to allow weight interchange. Preferably the pedestals are arranged evenly about the shell for a balanced weight distribution, and may be two in number, positioned perpendicularly to the hinged edge of the wall element. The pedestal stems **80** may have a length such that they extend inwardly a greater distance than the height of the positioning pedestals **60**. In such a case the outer wall of the adjacent inner shell, such as first shell **54** in the figure, is provided with a mating depression **84** to accommodate the pedestal end. The portion of the outer wall in which the depression is located may be internally thickened at **86** to provide the needed support for the depression. The thickenings may preferably be incorporated into the pedestal bases **78** for the weight units **76** of the shell. The engagement of the pedestal ends with the depression provides an alignment system for the shell units and provides additional rigidity to the assembled system.

[0039] Other adaptations and modifications to the embodiments of the invention as presented herein will be apparent to those skilled in the art. For example, a core element may be provided with a removable integral handle to form a kettle bell-type exercise device. In such a case, the overlying covers would be provided with appropriate cut-out portions to allow them to be mounted on the core without interference with the handles.

We claim:

1. An adjustable-weight exercise device comprising a core adapted for use as an exercise weight of a first weight and having an outer surface, and a removable shell adapted and constructed to fit in a generally abutting relationship upon the outer surface, the combination of core and shell having a total weight substantially different from the weight of the core.
2. The exercise device of claim 1, wherein the core is generally spherical.
3. The exercise device of claim 1, wherein the shell comprises a plurality of shell segments.
4. The exercise device of claim 3, wherein the segments have means for interlocking the segments upon the core.
5. The exercise device of claim 3, further comprising means for retaining the segments upon the core.
6. The exercise device of claim 5, wherein the retaining means comprise a hinge and a lock between two segments.
7. The exercise device of claim 4, wherein the interlocking means comprise a hinge and a lock between two segments.
8. The exercise device of claim 1, wherein the core has mounting means for a handle.
9. The exercise device of claim 8, wherein the handle mounting means is a threaded coupling.
10. The exercise device of claim 8, further comprising a handle, wherein the handle is in the form of a bar.

11. The exercise device of claim **10**, wherein the bar has two ends, each of the ends being affixable to a handle mounting means.

12. The exercise device of claim **11**, wherein the bar is a barbell bar.

13. The exercise device of claim **11**, wherein the bar is a dumbbell bar.

14. The exercise device of claim **10**, wherein the bar comprises two interconnectable bar units.

15. An exercise device, comprising a core of a first weight and a plurality of interchangeable shells mountable upon an exterior of the core to vary the total weight of the exercise device.

16. The exercise device of claim **15**, wherein a shell substantially covers the entirety of the core exterior.

17. An exercise device comprising a core of a first weight and an outer surface and at least one of shells mountable upon the core, each shell having an outer surface, each of said shells being shaped and dimensioned to be mountable upon the outer surface of the core or the outer surface of another shell, whereby an exercise device construction of a chosen total weight may be constructed of said core and at least one of the shells.

18. The exercise device of claim **17**, wherein each of the shells is of a different weight.

19. The exercise device of claim **17**, wherein said at least one shell comprises two spherical portions, the portions having an outer wall element and an inner wall element with a peripheral flange; the outer wall element having an interior surface with supporting means extended therefrom for sup-

porting the flange of the inner wall; securement means for securing said inner wall element to said outer wall element, and a hollow space between the inner and outer wall elements adapted to receive a plurality of weighted bodies.

20. The exercise device of claim **19**, wherein the supporting means comprises a plurality of standoffs.

21. The exercise device of claim **19**, wherein the interior surface of the outer wall element includes frames forming receiving apertures for the weighted bodies.

22. The exercise device of claim **17**, wherein said at least one shell comprises two spherical portions, the portions having an outer wall element having an interior surface with at least one means extended inwardly therefrom to support the shell upon the core or another of the at least one shells; at least one weight body; and support means for mounting the weight body upon the interior surface.

23. The exercise device of claim **22** wherein the support means comprise a pedestal with a distal end contoured to engage a surface against which it abuts.

24. The exercise device of claim **22** further comprising means for aligning a shell with respect to the core or shell to which it is mounted.

25. The exercise device of claim **24** wherein the alignment means comprise the weight body support means.

26. The exercise device of claim **25** wherein the weight body support means is a pedestal and the alignment means further comprise a depression on the core or a shell dimensioned to receive an end of the weight support pedestal.

* * * * *