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(54) **NESTED WEIGHT PLATES FOR BARBELLS AND DUMBBELLS**

(52) **U.S. Cl.**
CPC *A63B 21/0724* (2013.01)
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(57) **ABSTRACT**

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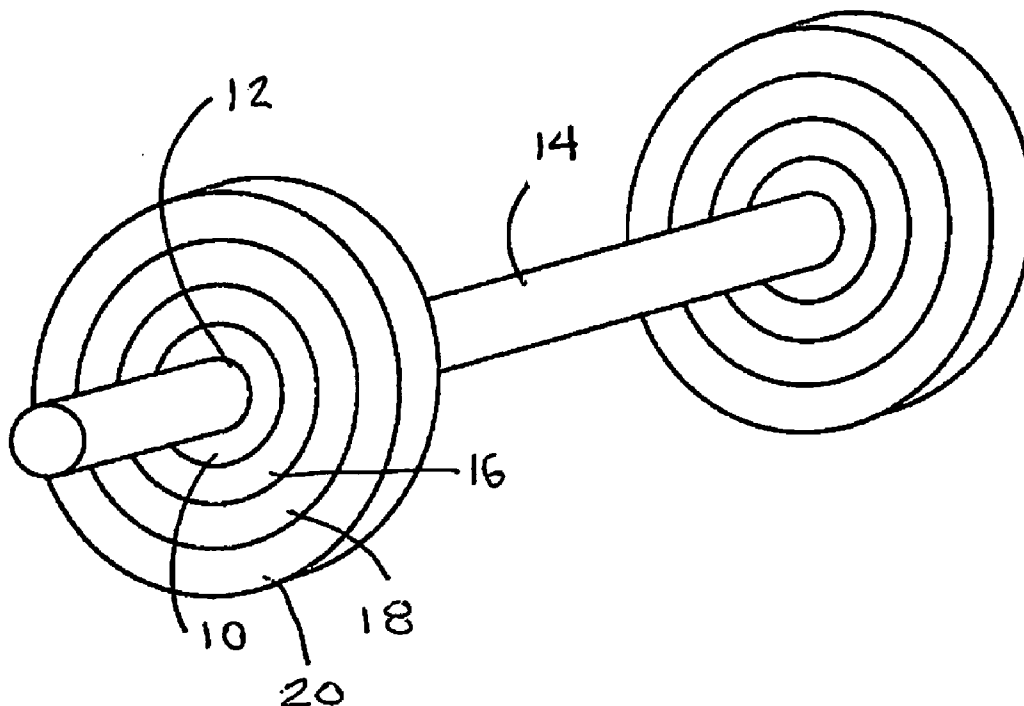
A weight plate system for a barbell or dumbbell includes a first plate adapted to be mounted directly on the bar of a barbell or dumbbell, with the plate having an outer perimeter spaced outwardly from the bar when mounted thereon. A second plate includes a center hole adapted for receiving the outer periphery of the first plate whereby the second plate is mounted in concentric relationship with the first plate. The center hole of the second plate defines an inner periphery of the second plate which is mated with the outer periphery of the first plate. The adjacent first and second plates have seating channels on the outer and inner periphery, respectively, for maintaining the plates in seated relationship. A locking system maintains the plates in the assembled relationship. Multiple plates can be mounted in concentric relationship in this manner.

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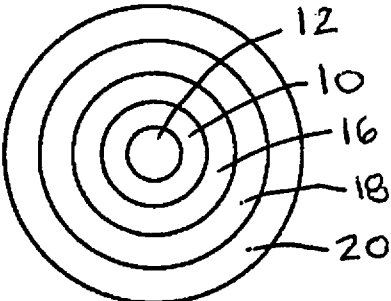


Fig 1

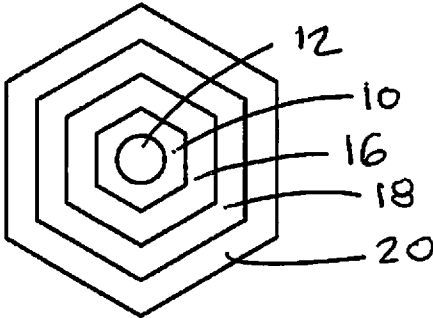


Fig 2

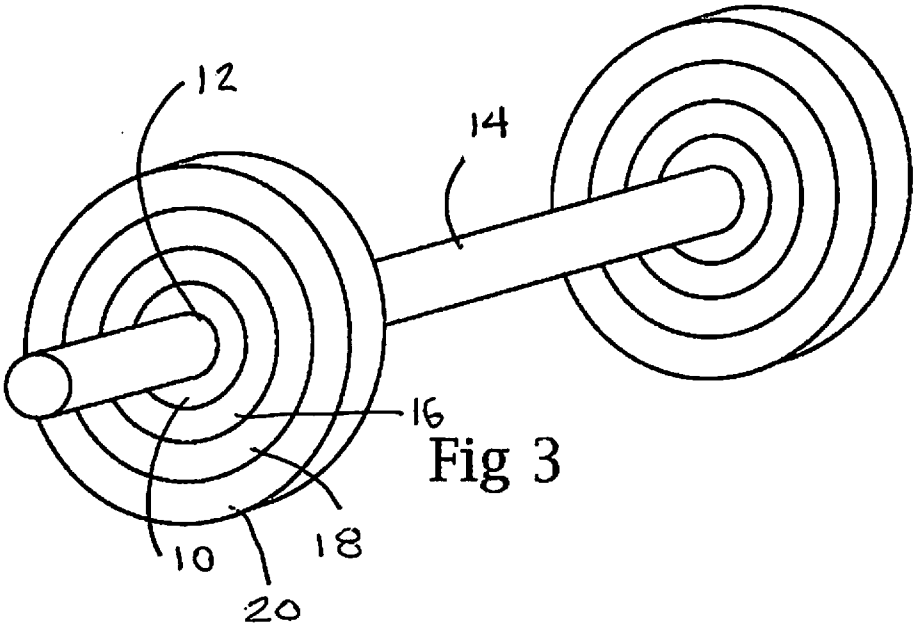


Fig 3

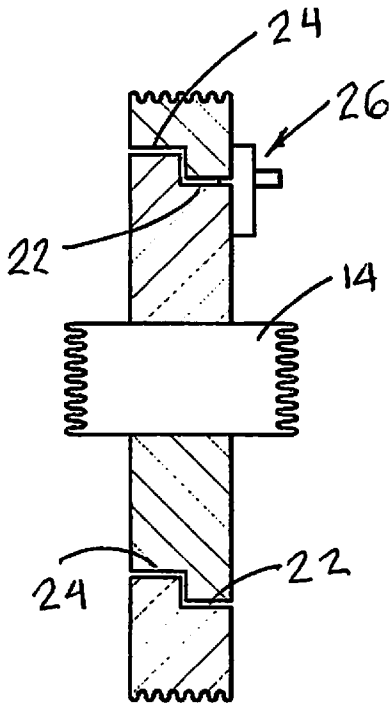


Fig 4

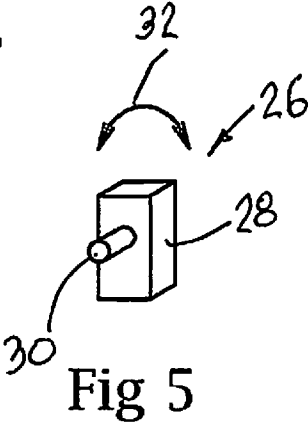


Fig 5

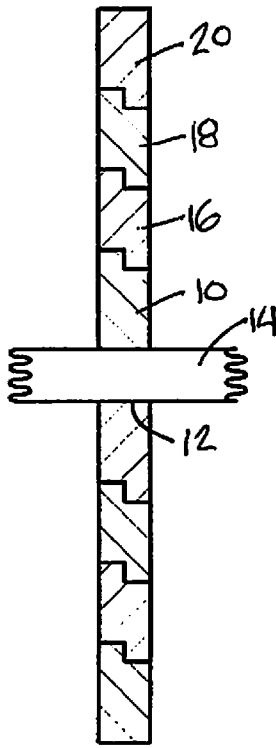


Fig 6

NESTED WEIGHT PLATES FOR BARBELLS AND DUMBBELLS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The invention is generally related to weight lifting exercise apparatus and is specifically directed to barbells and dumbbells having adjustable weight systems.

[0003] 2. Discussion of the Prior Art

[0004] Dumbbells and barbells have been around for many years and are commonly used for building body strength. A barbell is a piece of exercise equipment used in weight training, weightlifting and powerlifting. Barbells typically range in length from 4 feet to above 8 feet. The central bar or grip portion typically varies in diameter from one to two inches, and is often engraved with a knurled crosshatch pattern to help lifters get a good grip. Disc weight plates slide onto the outer portions of the bar to obtain the desired total weight. Typically the plates are secured with collars to prevent them from sliding off during the exercise. The total weight of the barbell varies based on the type and number of plates loaded onto the ends of the bar.

[0005] Dumbbells and barbells are available in various configurations. For example, such systems and devices can be categorized as fixed dumbbells and as adjustable dumbbells and barbells. A fixed dumbbell has a pair of weights permanently mounted on a handle. Because each fixed dumbbell has a predetermined weight, a set of different dumbbells is required in order to have different weights. Adjustable dumbbells permit adjusting and/or replacing the weight plates on a single bar.

[0006] An adjustable system typically comprises a set of weight plates that allow the user to select and change the desired weights during an exercise. Typically, the weight plates comprise individual disc-shaped weights with holes in the center to receive an end of the bar. In order to achieve a desired weight, a plurality of plates are selected and placed individually on the bar and secured thereto using a lock system such as, by way of example, a locking plate or locking collar.

[0007] U.S. Pat. No. 7,429,235, issued to Lin, discloses a dumbbell having a hollow grip bar with a connecting end. A weight adjusting mechanism includes a screw rod extending into the grip bar and operable to rotate relative to the grip bar about a rotation axis, with a weight carrier extending into the grip bar and threadably engaging the screw rod to permit in and out movement axially upon rotation of the screw rod. The weight carrier is adapted for carrying weight components and extends outwardly through the connecting end of the grip bar. A plurality of weights, each of which is formed with an elongate notch, include an enlarged central portion for extension of the weight-supporting part of the weight carrier.

[0008] U.S. Pat. No. 7,291,098, issued to Krull, discloses a dumbbell having a handle member with weight plates maintained in spaced relationship at opposite ends thereof. Weight selectors are rotatable into and out of engagement with different combinations of the weight plates to secure a desired amount of mass to the handle. The weight selectors occupy respective upwardly closed notches in the weights to secure the weights to the handle member.

[0009] U.S. Pat. No. 7,090,625, issued to Chermack, discloses an adjustable dumbbell featuring a handle containing an internal selection mechanism within series of nested weight units. The selection device is operated by a single

action, in this case by turning a knob, which extends or retracts bars contained in the handle to attach a desired number of weight units to the handle.

[0010] U.S. Pat. No. 6,261,022, issued to Dalebout et al., discloses a weight lifting system featuring one or more weight plates and a weight lifting bar configured to selectively engage the one or more weight plates. Each weight plate has an upstanding first end, an upstanding second end, and at least one and preferably a pair of cross members extending therebetween. The weight lifting bar includes a handle having a grip and a cross member coupled to the grip. A gripping member is rotatably coupled to the cross member. Upon rotation of the gripping member, the handle selectively grips the cross members of a selected weight or weights.

[0011] While the prior art adjustable dumbbells provide convenient choices for the users, there remains a need for better design of adjustable barbells and dumbbells.

SUMMARY OF THE INVENTION

[0012] The weight plate system of the subject invention includes a first plate adapted to be mounted directly on the bar of a barbell or dumbbell, with the plate having an outer perimeter spaced outwardly from the bar when mounted thereon. The first plate may be secured in place with a typical locking collar. A second plate includes a center hole adapted for receiving the outer periphery of the first plate whereby the second plate is mounted in concentric relationship with the first plate. The center hole of the second plate defines an inner periphery of the second plate which is mated with the outer periphery of the first plate. The adjacent first and second plates have seating channels on the outer and inner periphery, respectively, for maintaining the plates in seated relationship. A locking system maintains the plates in the assembled relationship. Multiple plates can be mounted in concentric relationship in this manner.

[0013] The subject invention is directed to a weight plate system for adjustable weight barbell and dumbbell devices wherein the plates are concentrically mounted in a common vertical plane on the bar or handle portion of the device. Specifically, the plates are nested in a manner that the first plate is mounted on the device directly on the bar in typical fashion. The next plate is sized with a central opening to fit on the perimeter of the first plate and is positioned radially outward therefrom. Multiple plates can be mounted in this manner with each succeeding plate being sized to fit over the outer perimeter of the preceding plate, placing all of the plates in a concentric arrangement in a common vertical plane perpendicular to the bar axis.

[0014] Each plate has a circumferential seating channel extending around its outer perimeter, and with the exception of the first, bar mounted plate, a mating circumferential seating channel on its inner perimeter for seating and securing the plates in position. A simple locking mechanism can be mounted on the plates for engaging and locking adjacent plates in place on the device.

[0015] In the exemplary embodiment the seating channels are forward and reverse facing mated L's. However it should be understood that alternate seating systems may be used without departing from the scope and spirit of the invention.

[0016] The locking system may be a simple swing bar mounted on a pivot pin on one plate and movable into and out of engagement with the succeeding, adjacent plate. Various other locking systems may also be employed.

[0017] The plate configuration is a matter of choice. In the exemplary embodiment circular disc plates and octagonal plates are shown.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0018] FIG. 1 is a diagrammatic view of nested circular disc plates.
- [0019] FIG. 2 is a diagrammatic view of nested octagonal plates.
- [0020] FIG. 3 illustrates nested circular disc plates on a typical barbell.
- [0021] FIG. 4 is a fragmentary view showing the relationship of adjacent plates and the seating channels, along with the locking mechanism for securing adjacent plates.
- [0022] FIG. 5 is an enlarged, fragmentary view of the locking mechanism.
- [0023] FIG. 6 is a sectional view taken along lines 6-6 of FIG. 1, showing the nesting arrangement of a plurality of circular disc plates.

DETAILED DESCRIPTION

[0024] The nested weight plate system of the subject invention is shown utilizing circular disc plates in FIG. 1 and octagonal plates in FIG. 2. The type of plate utilized is strictly a matter of choice and is not limited to circular (FIG. 1) or octagonal plate (FIG. 2) configurations. Typically, the first installed plate 10 has a central hole 12 adapted for receiving a standard barbell rod or handle 14 (see FIG. 3). Various plates 16, 18, 20 and so on, of selected weights, may be mounted directly on the succeeding plate in a concentric relationship, as shown. The weight of each plate in the system may be controlled by density and content, as well as size, permitting multiple weight combinations using a single system. The plates nested in this manner are in a coplanar relationship concentric about the bar and keep a constant center of gravity relative to the bar.

[0025] As best shown in FIGS. 4 and 6, each weight has a seating channel 22 on its inner periphery and a mated seating channel 24 on its outer periphery. This permits the plates to be placed accurately in position and holds them in place once seated. It will be understood that the innermost plate 10 does not require an inner peripheral channel and that the outer plate 20 does not require an outer peripheral channel.

[0026] In the exemplary embodiment left and right L channels are used to provide the mating and seating assembly. Of course, the particular seating system is a matter of choice and modification or alteration of this system is within the scope of the invention.

[0027] Once seated, a locking system is desired to maintain the nested plates in the assembled relationship. This is best illustrated in FIGS. 4 and 5. As there shown, a lock mechanism 16 includes a pivot pin 30 which is mounted near the outer peripheral channel 22 of each plate (plate 10 as shown). A lock bar 28 is mounted on the pivot pin and is movable as

indicated by the arrow 32 into and out of engagement with the adjacent plate, in this case plate 16. This assures that the plates stay in assembled, nested relationship during use. Other locking systems may be utilized without departing from the invention.

[0028] While certain embodiments and features of the invention have been described in detail herein, it should be understood that the invention all modifications and enhancements within the scope and spirit of the accompanying claims.

What is claimed is:

- 1. A weight plate system for an exercise device having a bar for supporting the plates, the system comprising:
 - a. A first plate adapted to be mounted directly on the bar, the plate having an outer perimeter spaced outwardly from the bar when mounted thereon;
 - b. A second plate having a center hole adapted for receiving the outer periphery of the first plate whereby the second plate is mounted in concentric relationship with the first plate when mounted thereon.
- 2. The system of claim 1, wherein the center hole of the second plate defines an inner periphery of the second plate which is mated with the outer periphery of the first plate when mounted thereon.
- 3. The system of claim 2, wherein the adjacent first and second plates have seating channels on the outer and inner periphery, respectively, for maintaining the plates in seated relationship.
- 4. The system of claim 3, wherein the seating channels are mated left and right L-channels on the respective plates.
- 5. The system of claim 3, including additional plates, wherein the outer periphery of the outermost plated does not include an outer periphery channel.
- 6. The system of claim 1, wherein each plate comprises a circular disc.
- 7. The system of claim 1, wherein each plate comprises an octagonal plate.
- 8. The system of claim 1, further comprising a locking system for locking the plates in assembled relationship.
- 9. The system of claim 8, wherein the locking system includes an element which is moveable between a multiple plate engaging and disengaging position.
- 10. The system of claim 8, the locking system further comprising
 - a. A pivot pin mounted in a preceding plate;
 - b. A locking bar mounted for rotational movement about the pivot pin, wherein the locking bar engages and locks a succeeding plate in position when in the engaging position and disengages and unlocks the succeeding plate when in the disengaging position.
- 11. The system of claim 1, wherein the exercise device is a barbell.
- 12. The system of claim 1, wherein the exercise device is a dumbbell.

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