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Chen

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(54) **ADJUSTABLE DUMBBELL HAVING EASILY ADJUSTING STRUCTURE**

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(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 331 days.

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(51) **Int. Cl.⁷** **A63B 21/072**

(52) **U.S. Cl.** **482/108; 482/107; 482/908**

(58) **Field of Search** **482/93, 94, 106–109, 482/98, 908**

(57) **ABSTRACT**

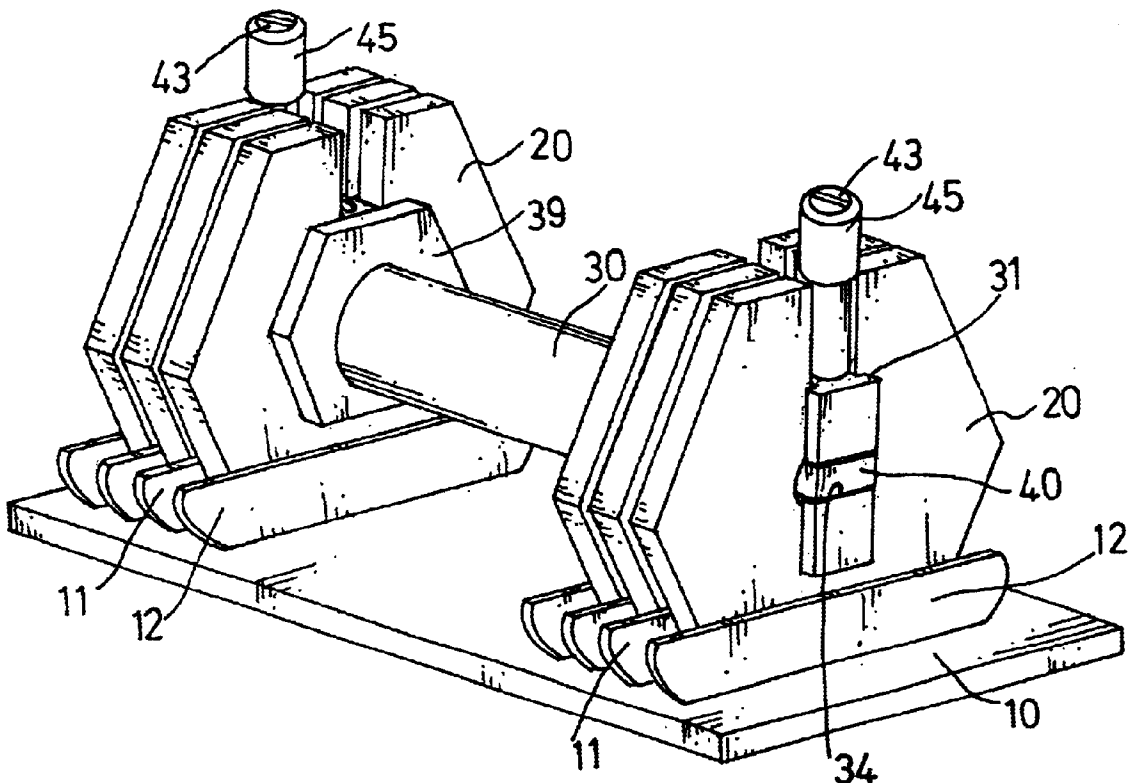
An adjustable dumbbell includes one or more weights engaged onto a rod, and a latch slidably engaged in the rod and movable to engage with one or more of the weights for selectively or adjustably securing the weights to the rod. The weights each has a groove for receiving the rod, and each has a channel communicating with the groove for receiving the latch. A fastener is secured to the latch and slidably engaged in the rod for moving the latch relative to the rod. A barrel is slidably engaged on the fastener and a spring may bias the barrel to engage with the rod.

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12 Claims, 2 Drawing Sheets



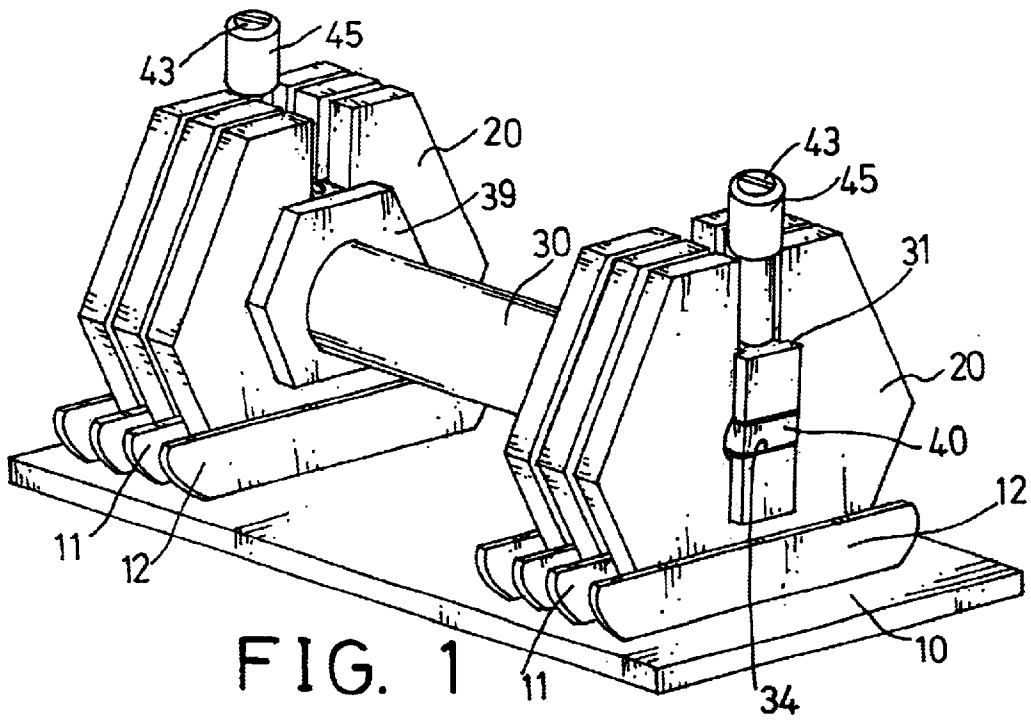


FIG. 1

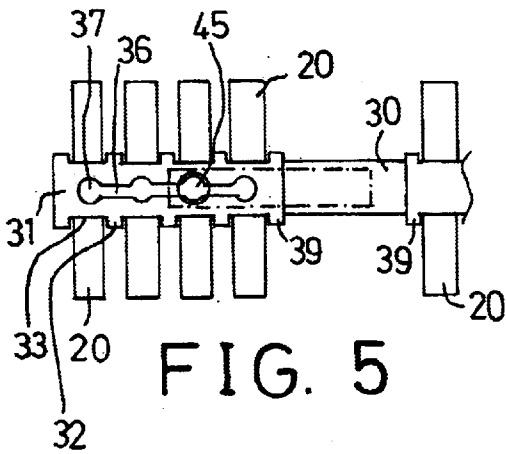


FIG. 5

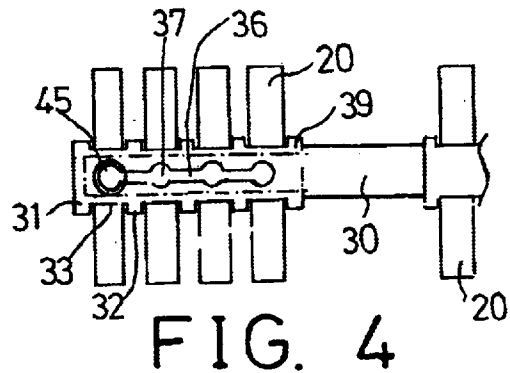


FIG. 4

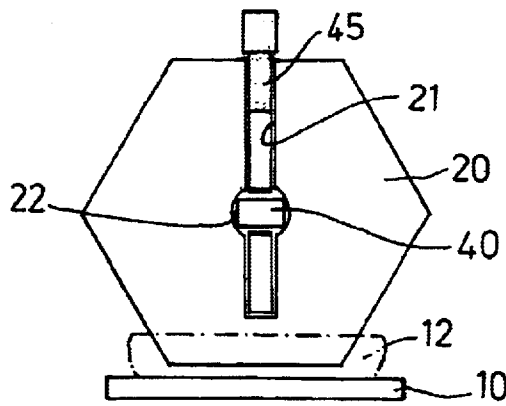


FIG. 3

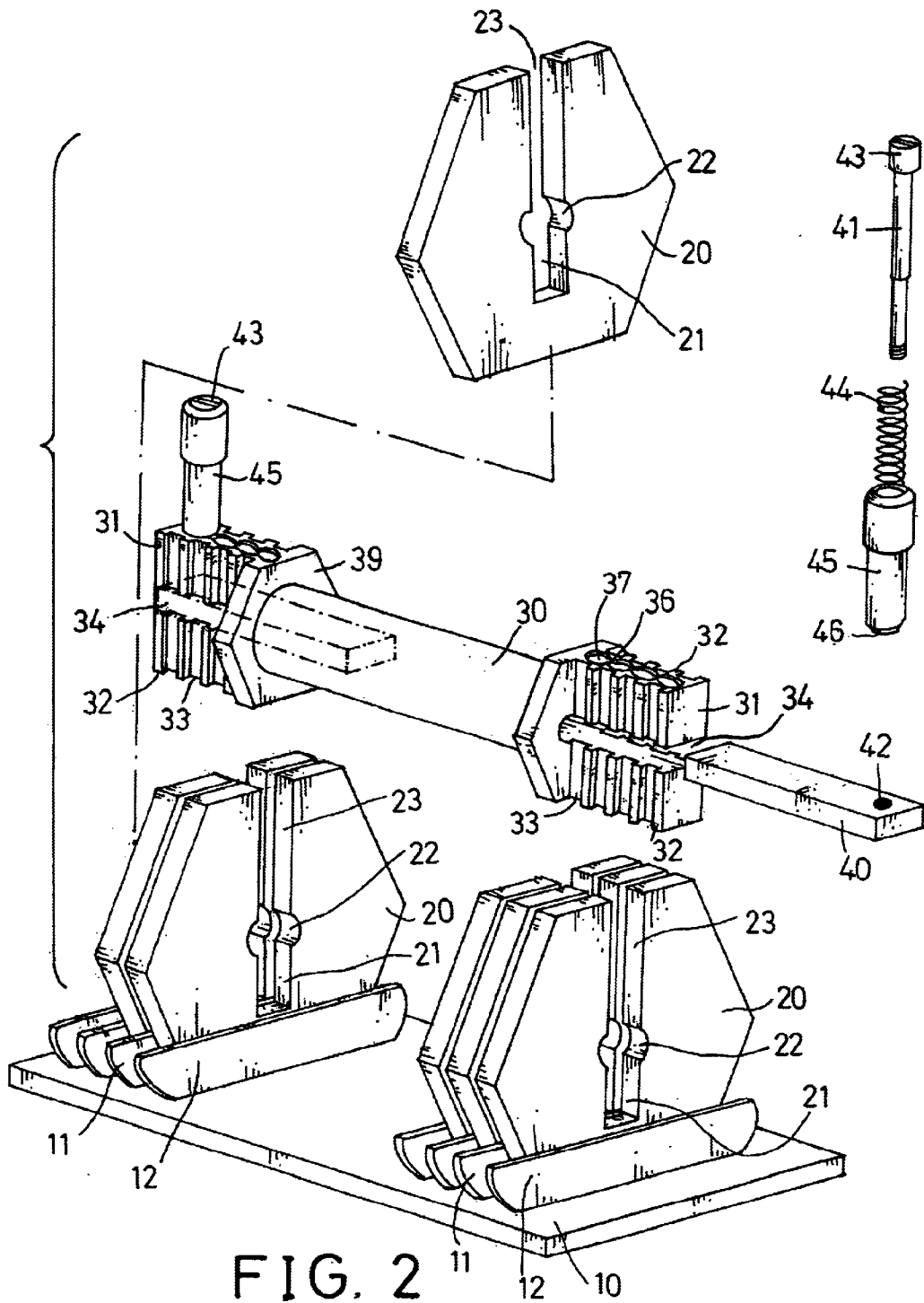


FIG. 2

ADJUSTABLE DUMBBELL HAVING EASILY ADJUSTING STRUCTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a dumbbell, and more particularly to an adjustable dumbbell having an easily and quickly adjustable structure.

2. Description of the Prior Art

Various kinds of typical dumbbells have been developed. U.S. Pat. No. 4,566,690 to Schook, and U.S. Pat. No. 5,407,413 to Kupferman discloses two of the typical dumbbells each including one or more weight rings that may be selectively or adjustably secured together for adjusting the weight of the dumbbells.

In U.S. Pat. No. 4,566,690 to Schook, the weight rings each includes an outer thread for threading with the inner threads of the other weight rings and for securing the weight rings together. It takes time to thread the weight rings together.

In U.S. Pat. No. 5,407,413 to Kupferman, the weight rings are engaged on a core or a rod and each includes a number of posts for engaging into the holes of the other weight rings. It is also required to secure the weight rings one by one. In addition, the weight rings may be rotated and disengaged from each other while in use.

The present invention has arisen to mitigate and/or obviate the afore-described disadvantages of the conventional dumbbells.

SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide an adjustable dumbbell including an easily and quickly adjustable structure.

In accordance with one aspect of the invention, there is provided an adjustable dumbbell comprising a rod including a first end, at least one weight engaged onto the first end of the rod, and a latch slidably engaged in the first end of the rod and movable to engage with the weight for selectively securing the weight to the first end of the rod.

The weight includes a groove formed therein for receiving the first end of the rod, the first end of the rod includes a pair of slots formed therein for receiving the weight.

The weight includes a channel formed therein and communicating with the groove thereof and having a width greater than that of the groove of the weight, for receiving the latch.

The first end of the rod includes a conduit formed therein for slidably receiving the latch. The first end of the rod includes a passage formed therein and communicating with the conduit thereof, the latch includes a fastener secured thereto and slidably engaged in the passage of the rod for moving the latch relative to the rod.

The first end of the rod includes at least one aperture formed therein and communicating with the passage of the rod, the latch further includes a barrel slidably engaged on the fastener and having a catch for engaging into the aperture of the rod.

A device may further be provided for biasing the catch of the barrel to engage with the aperture of the rod.

The rod includes a second end, at least one second weight engaged onto the second end of the rod, and a second latch slidably engaged in the second end of the rod and movable

to engage with the second weight for selectively securing the second weight to the second end of the rod.

The second weight includes a groove formed therein for receiving the second end of the rod, the second end of the rod includes a pair of slots formed therein for receiving the second weight.

The second weight includes a channel formed therein and communicating with the groove thereof and having a width greater than that of the groove of the second weight, for receiving the second latch.

The second end of the rod includes a conduit formed therein for slidably receiving the second latch. The second end of the rod includes a passage formed therein and communicating with the conduit thereof, the second latch includes a fastener secured thereto and slidably engaged in the passage of the rod for moving the second latch relative to the rod.

The second end of the rod includes at least one second aperture formed therein and communicating with the passage of the rod, the second latch further includes a barrel slidably engaged on the fastener and having a catch for engaging into the second aperture of the rod. A device is further provided for biasing the catch of the barrel to engage with the second aperture of the rod.

A device is further provided for supporting the weight and includes a base having at least one socket recess formed therein for receiving and supporting the weight. The base includes at least one pair of walls provided therein for defining the socket recess therein.

Further objectives and advantages of the present invention will become apparent from a careful reading of a detailed description provided hereinbelow, with appropriate reference to accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an adjustable dumbbell in accordance with the present invention;

FIG. 2 is a partial exploded view of the adjustable dumbbell;

FIG. 3 is an end view of the adjustable dumbbell; and

FIGS. 4 and 5 are partial top plane views illustrating the operation of the adjustable dumbbell.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, and initially to FIGS. 1-4, an adjustable dumbbell in accordance with the present invention comprises a base **10** including a number of socket recesses **11** formed in the upper portion thereof and formed and defined by a number of partitions or walls **12**. A number of weights **20** each includes a lower portion engageable or receivable in the socket recesses **11** of the base **10**, for allowing the weights **20** to be supported on the base **10** and to be supported in an erected position. The weights **20** each includes a groove, such as a vertical groove **21** formed therein and having an open top **23**, and each includes a lateral channel **22** formed therein and communicating with or intersecting with the vertical groove **21** thereof. The lateral channel **22** of the weight **20** includes a width greater than that of the groove **21** of the weight.

A rod **30** includes one or two ends each having a block **31** provided thereon for engaging into the grooves **21** of the weights **20**, best shown in FIGS. 1 and 3. The blocks **31** each includes one or more pairs of slots **33** formed therein and

defined by one or more pairs of projections **32**, for receiving the weights **20** respectively, best shown in FIGS. **4**, **5**, and for stably retaining the weights **20** in the slots **33** of the block **31**. The rod **30** includes one or both ends each having a conduit **34** laterally formed therein and preferably formed in the middle portion of the block **31**. The conduits **34** of the rod **30** each includes a length greater than that of the blocks **31**. The blocks **31** each includes a passage **36** formed therein and communicating with the conduit **34** thereof, and each includes one or more apertures **37** formed therein and spaced away from each other and communicating with the passage **36** of the blocks **31**. The apertures **37** each includes a diameter greater than the width of the passage **36** of the block **31**.

A latch **40** is slidably received in each of the conduits **34** of the blocks **31** and each includes a hole **42**, such as a screw hole **42** formed therein, preferably formed in the outer end thereof. A fastener, such as a bolt **41** is slidably engaged through the passage **36** of each of the blocks **31** and is engaged into or threaded and secured to the screw hole **42** of the latch **40**, such that the fastener **41** may be moved in concert with the latch **40**, and such that the latches **40** may be moved relative to the blocks **31** respectively. The fasteners **41** each includes a head **43** provided on top thereof. The fasteners **41** are limited to slide and to move along the passages **36** of the blocks **31** respectively, such that the latches **40** may also be limited to move and to slide relative to the blocks **31** and may be prevented from being disengaged from the blocks **31** and the rod **30**.

A barrel **45** is slidably engaged onto each of the fasteners **41** and each includes a catch **46** provided in the bottom thereof for engaging into the apertures **37** of the blocks **31** respectively. A spring **44** is received in and engaged with each of the barrels **45** for biasing the catches **46** of the barrels **45** to engage with either of the apertures **37** of the blocks **31**, best shown in FIGS. **4**, **5**, and for selectively or adjustably securing the latches **40** to the blocks **31** respectively. The spring **44** may be engaged between the head **43** of the fastener **41** and a peripheral shoulder formed in the barrel **45**, for biasing the catches **46** of the barrels **45** to engage with either of the apertures **37** of the blocks **31**.

As best shown in FIG. **3**, the latch **40** includes a width greater than that of the vertical grooves **21** of the weights **20**, and equals to or smaller than that of the lateral channel **22** of the weight **20**, such that the weights **20** may be secured to the block **31** when the latch **40** is engaged into the lateral channels **22** of the weights **20**. The weights may thus be stably secured to the blocks **31** by the latch **40** and the projections **32** of the blocks **31**.

In operation, as shown in FIGS. **4** and **5**, the latches **40** may be moved and adjusted relative to the blocks **31** respectively when the catches **46** of the barrels **45** are disengaged from the apertures **37** of the blocks **31** by pulling the barrels **45** away from the blocks **31** against the springs **44** respectively. For example, as shown in FIG. **A**, the latch **40** may be moved to engage into the lateral channels **22** of all of the weights **20**, in order to secure all of the weights **20**, such as four weights **20** to the block **31**.

As shown in FIG. **5**, the latch **40** may also be moved and adjusted to engage into the lateral channels **22** of some of the weights **20**, such as two of the weights **20**, in order to secure only the two weights **20** to the block **31**. At this moment, when the rod **30** is pulled away from the base **10** or the weights **20**, the block **31** may be moved outward of the vertical grooves **21** of the outer two weights **20** via the open top **23** of the weights **20**, such that the outer two weights **20**

may still be supported on the base **10** and will not be moved away from the base **10** by the rod **30** and the block **31**. Only the two inner weights **20** may be secured to the block **31** and moved away from the base **10** by the block **31** and the rod **30**.

It is to be noted that the weights **20** may also be made with a greater bottom portion or be made with a bottom portion having an increased width or area, for allowing the weights **20** to be supported on the supporting surface without the base **10**. The rod **30** preferably includes two plates **39** for engaging with the weights **20** and for stably retaining or securing the weights **20** to the rod **30** (FIGS. **1**, **4**, **5**). The weights **20** may also be made as the typical weight rings and engaged onto the blocks **31** or the rod **30**, and selectively or adjustably secured to the rod **30** or the blocks **31** by the movable or adjustable latches **40**. The weights **20** may thus be adjustably or selectively secured to the rod **30** by the latches **40**.

Accordingly, the adjustable dumbbell in accordance with the present invention includes an easily and quickly adjustable structure.

Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that numerous changes in the detailed construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

I claim:

1. An adjustable dumbbell comprising:

a rod including a first end;

at least one weight engaged onto said first end of said rod; and

a latch slidably engaged in said first end of said rod and movable to engage with said at least one weight for selectively securing said at least one weight to said first end of said rod;

wherein said at least one weight includes a groove formed therein for receiving said first end of said rod, said first end of said rod includes a pair of slots formed therein for receiving said at least one weight, said at least one weight includes a channel formed therein and communicating with said groove thereof and having a width greater than that of said groove of said at least one weight for receiving said latch, said first end of said rod includes a conduit formed therein for slidably receiving said latch, said first end of said rod includes a passage formed therein and communicating with said conduit thereof, said latch includes a fastener secured thereto and slidably engaged in said passage of said rod for moving said latch relative to said rod, said first end of said rod includes at least one aperture formed therein and communicating with said passage of said rod, and said latch further includes a barrel slidably engaged on said fastener and having a catch for engaging into said at least one aperture of said rod.

2. The adjustable dumbbell according to claim **1** further comprising means for biasing said catch of said barrel to engage with said at least one aperture of said rod.

3. The adjustable dumbbell according to claim **1**, wherein said rod includes a second end, at least one second weight engaged onto said second end of said rod, and a second latch slidably engaged in said second end of said rod and movable to engage with said at least one second weight for selectively securing said at least one second weight to said second end of said rod.

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4. The adjustable dumbbell according to claim 3, wherein said at least one second weight includes a groove formed therein for receiving said second end of said rod, said second end of said rod includes a pair of slots formed therein for receiving said at least one second weight.

5. The adjustable dumbbell according to claim 4, wherein said at least one second weight includes a channel formed therein and communicating with said groove thereof and having a width greater than that of said groove of said at least one second weight, for receiving said second latch.

6. The adjustable dumbbell according to claim 3, wherein said second end of said rod includes a conduit formed therein for slidably receiving said second latch.

7. The adjustable dumbbell according to claim 1, wherein said second end of said rod includes a passage formed therein and communicating with said conduit thereof, said second latch includes a fastener secured thereto and slidably engaged in said passage of said rod for moving said second latch relative to said rod.

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8. The adjustable dumbbell according to claim 7, wherein said second end of said rod includes at least one second aperture formed therein and communicating with said passage of said rod, said second latch further includes a barrel slidably engaged on said fastener and having a catch for engaging into said at least one second aperture of said rod.

9. The adjustable dumbbell according to claim 8 further comprising means for biasing said catch of said barrel to engage with said at least one second aperture of said rod.

10. The adjustable dumbbell according to claim 1 further comprising means for supporting said at least one weight.

11. The adjustable dumbbell according to claim 10, wherein said supporting means includes a base having at least one socket recess formed therein for receiving and supporting said at least one weight.

12. The adjustable dumbbell according to claim 11, wherein said base includes at least one pair of walls provided therein for defining said at least one socket recess therein.

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