



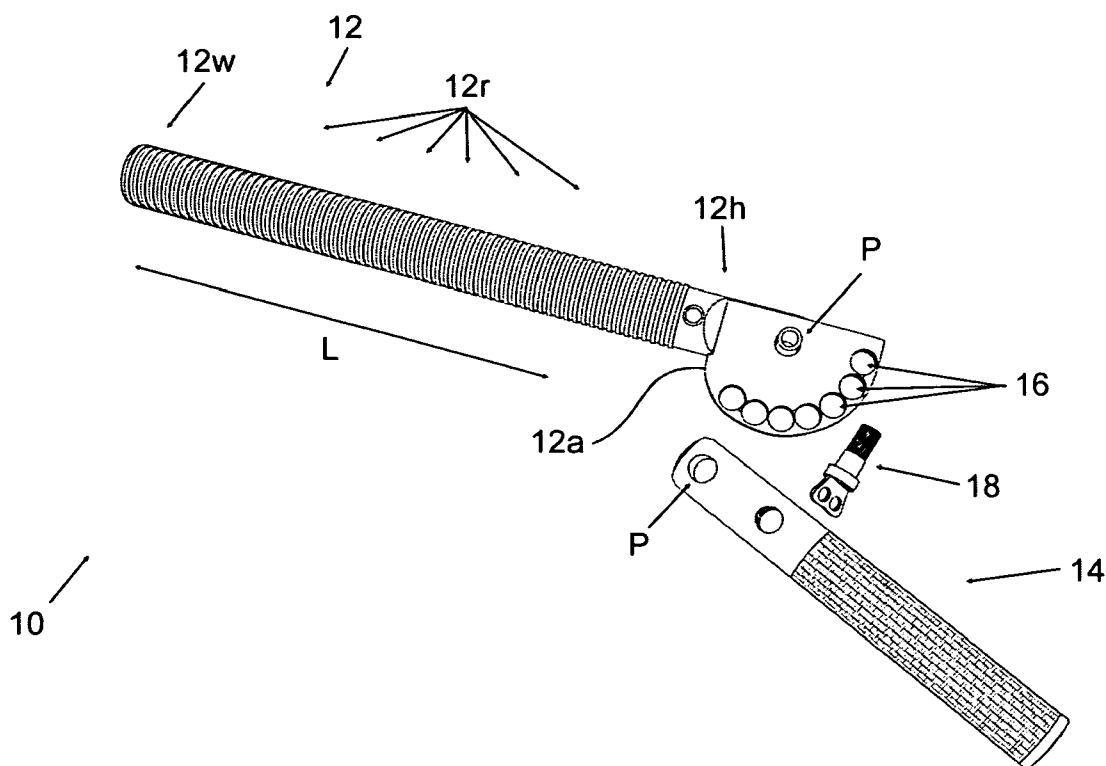
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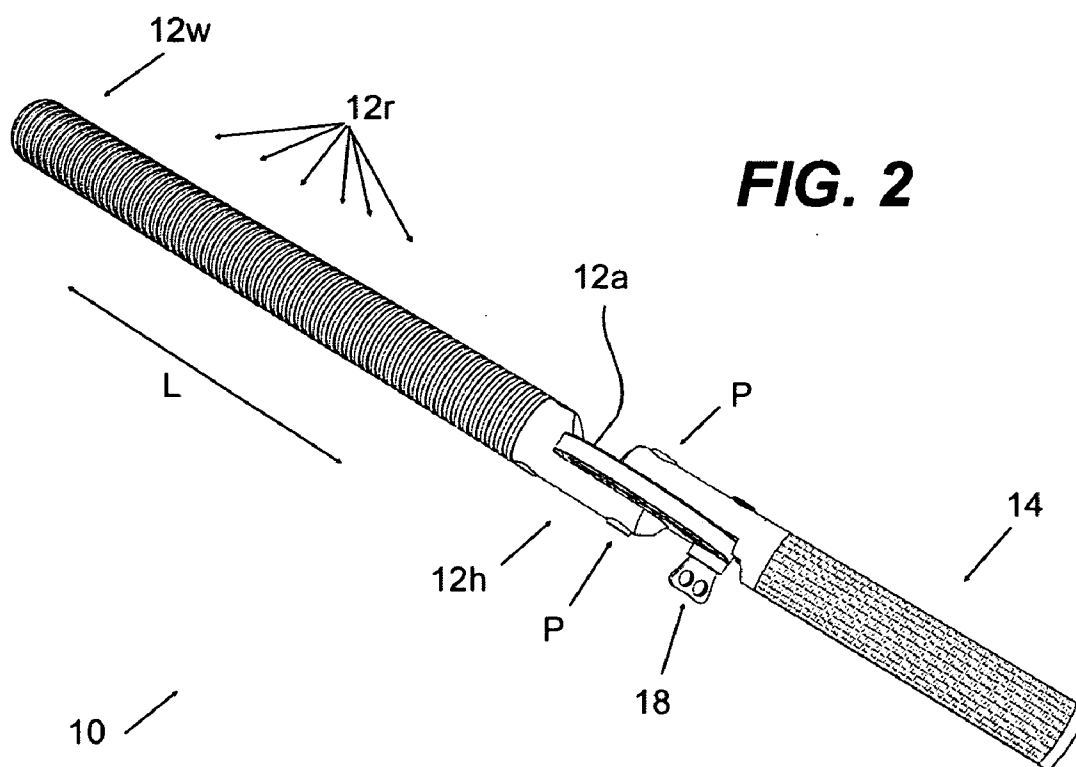
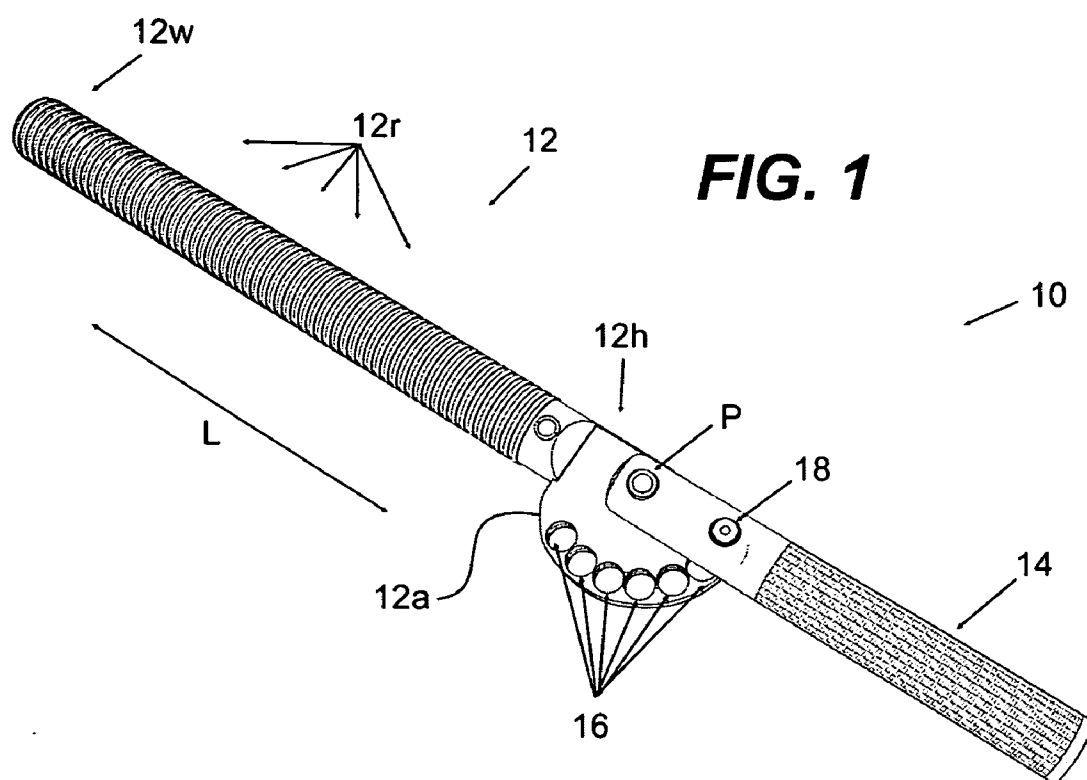
(19) **United States**(12) **Patent Application Publication****Ljevaja**(10) **Pub. No.: US 2007/0123398 A1**(43) **Pub. Date: May 31, 2007**(54) **WEIGHT LIFTING BAR**(52) **U.S. Cl. 482/107; 482/108**(76) **Inventor: Michael Ljevaja, Edmonton (CA)**

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(21) **Appl. No.: 11/288,363**(22) **Filed: Nov. 29, 2005****Publication Classification**(51) **Int. Cl.****A63B 21/072 (2006.01)****A63B 21/075 (2006.01)**(57) **ABSTRACT**

In one aspect, the invention provides a weight lifting bar comprising a weight carrying member and a grip. The weight carrying member has a longitudinal axis and a handle end. The grip is pivotally connected at a pivot point near the handle end. Preferably, the grip can be selectively secured to the weight carrying member after a desired angular relationship between the grip and the weight carrying member is selected. In another aspect, the invention provides means to selectively secure a weight along a weight carrying member having a longitudinal axis and an outer surface.





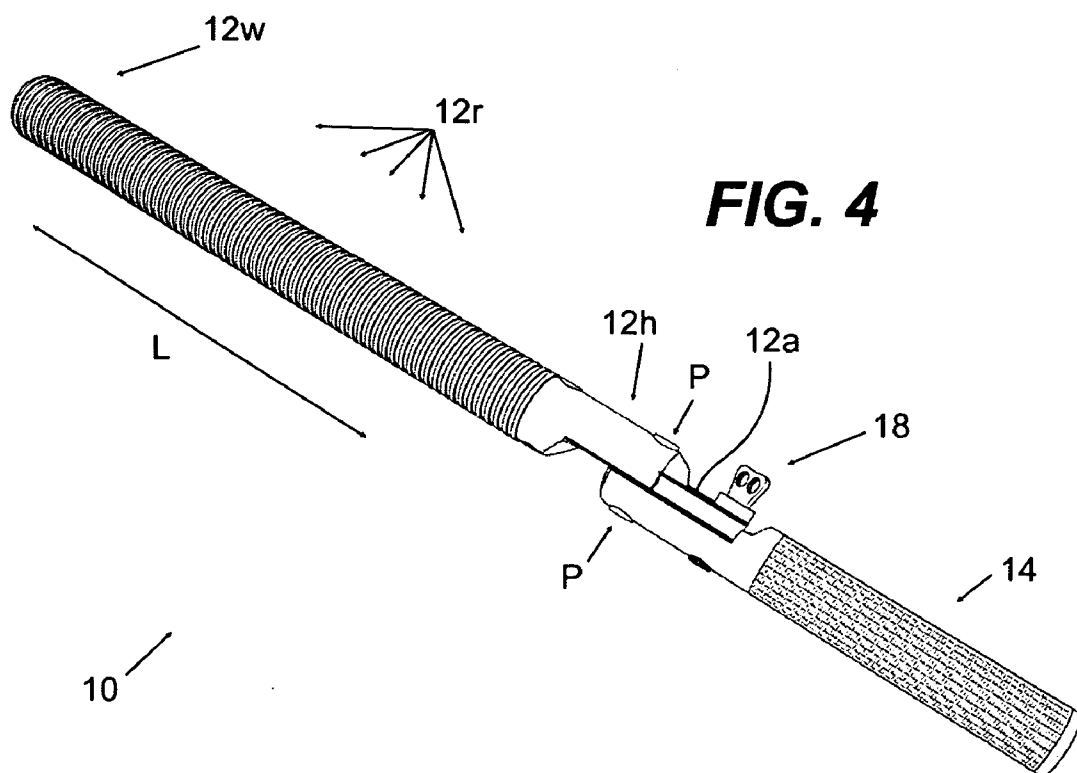
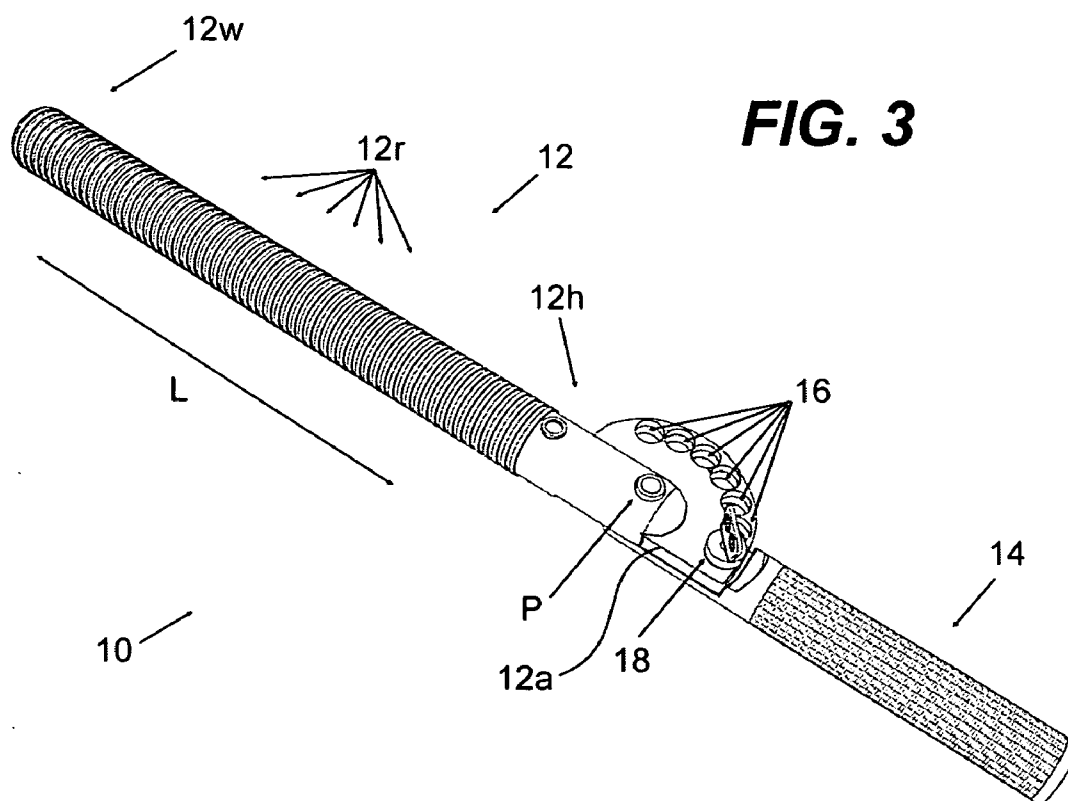


FIG. 5

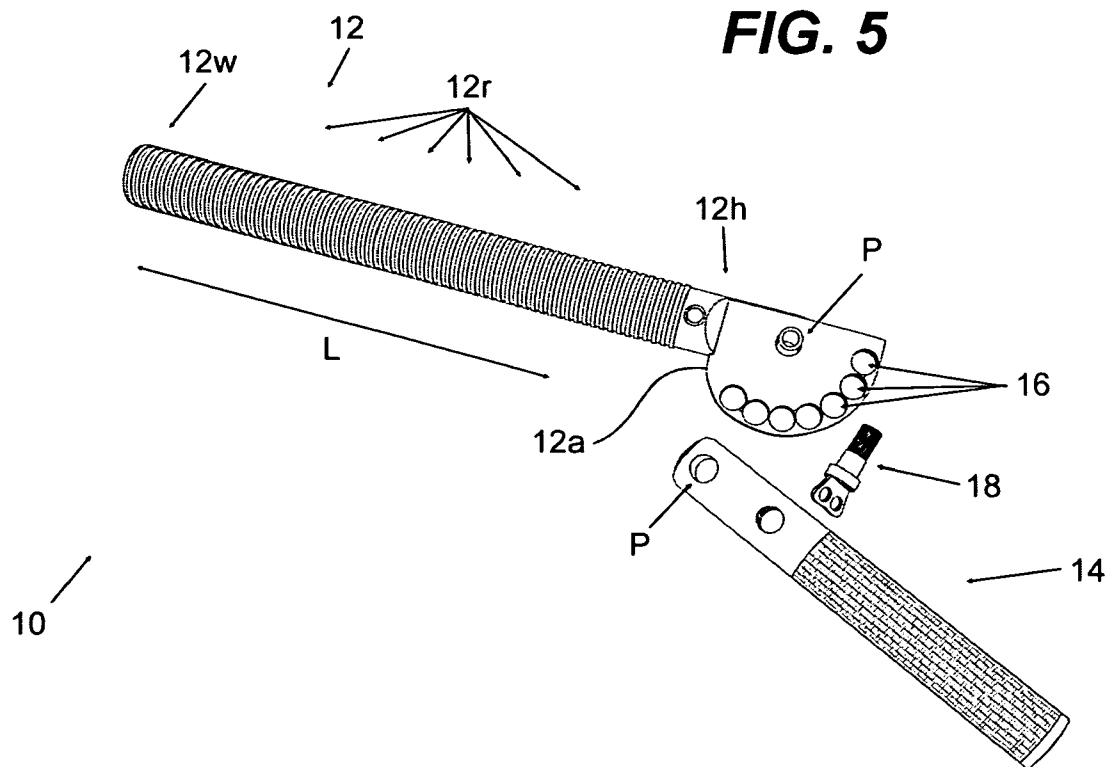
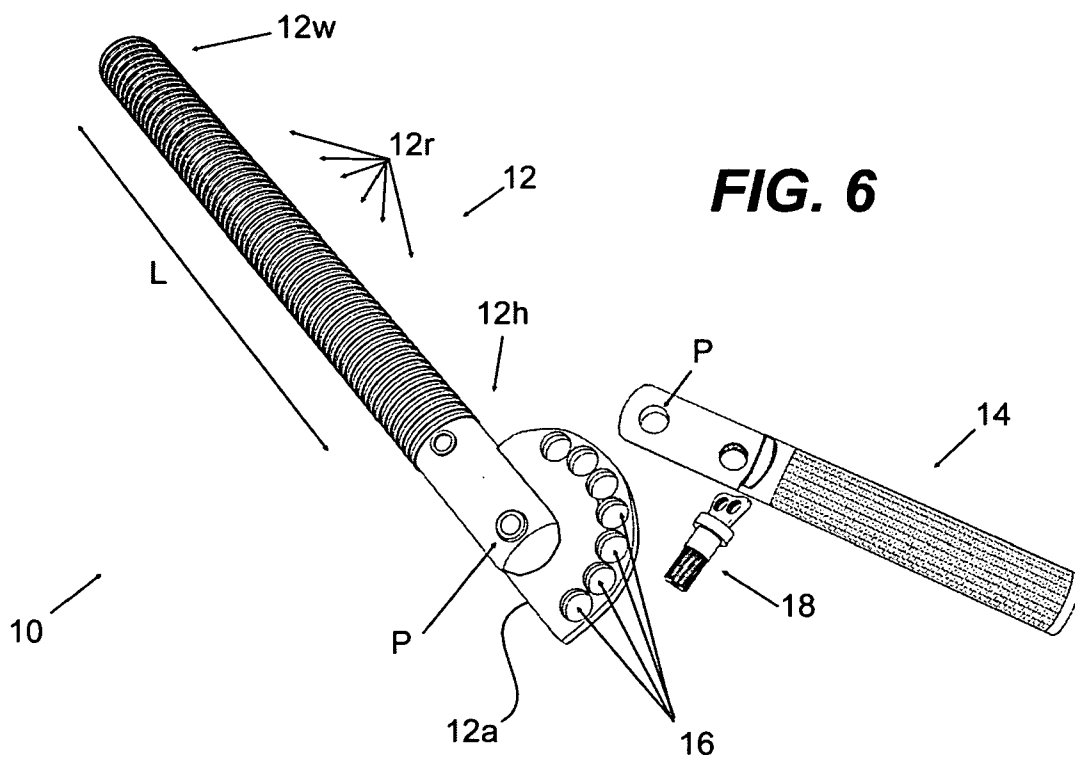


FIG. 6



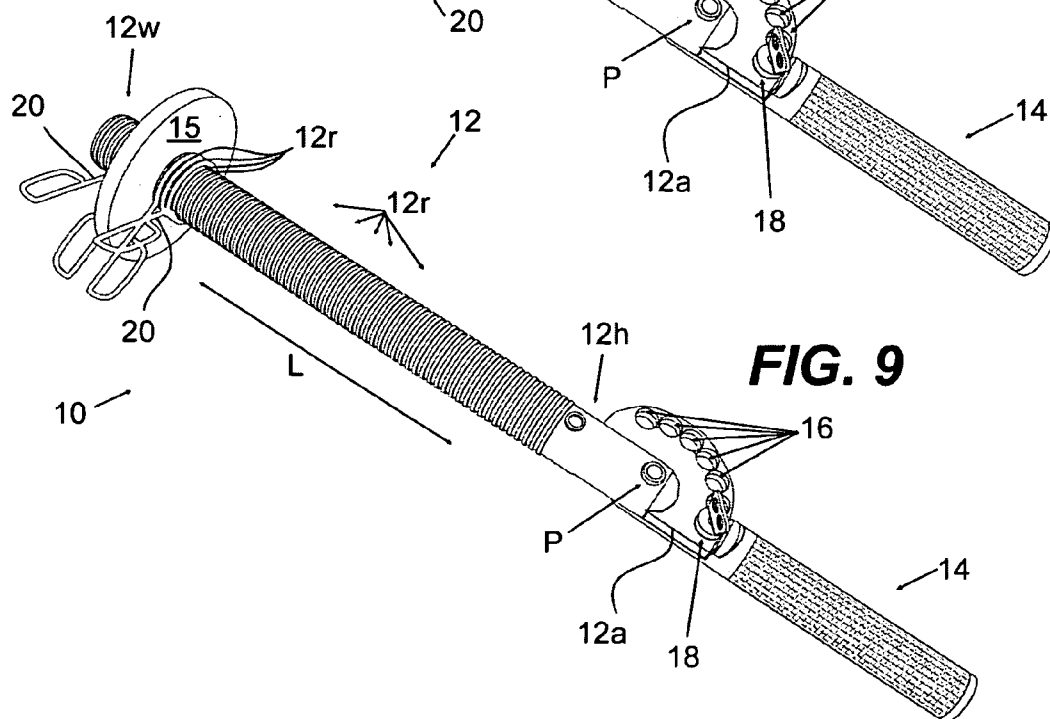
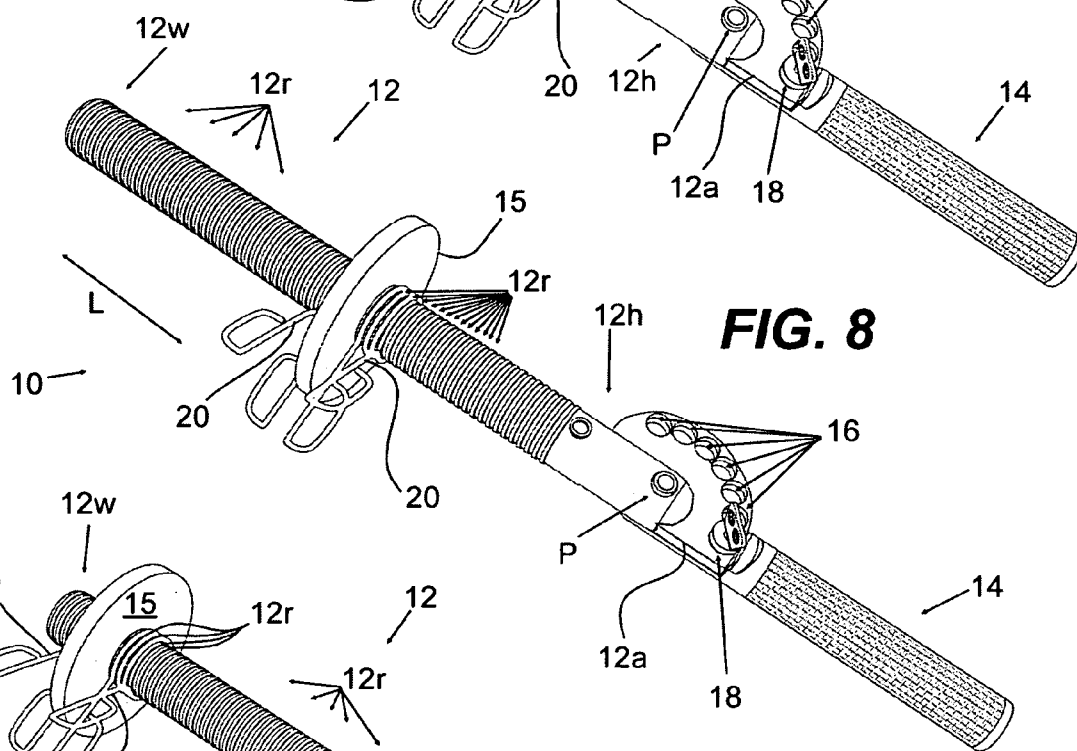
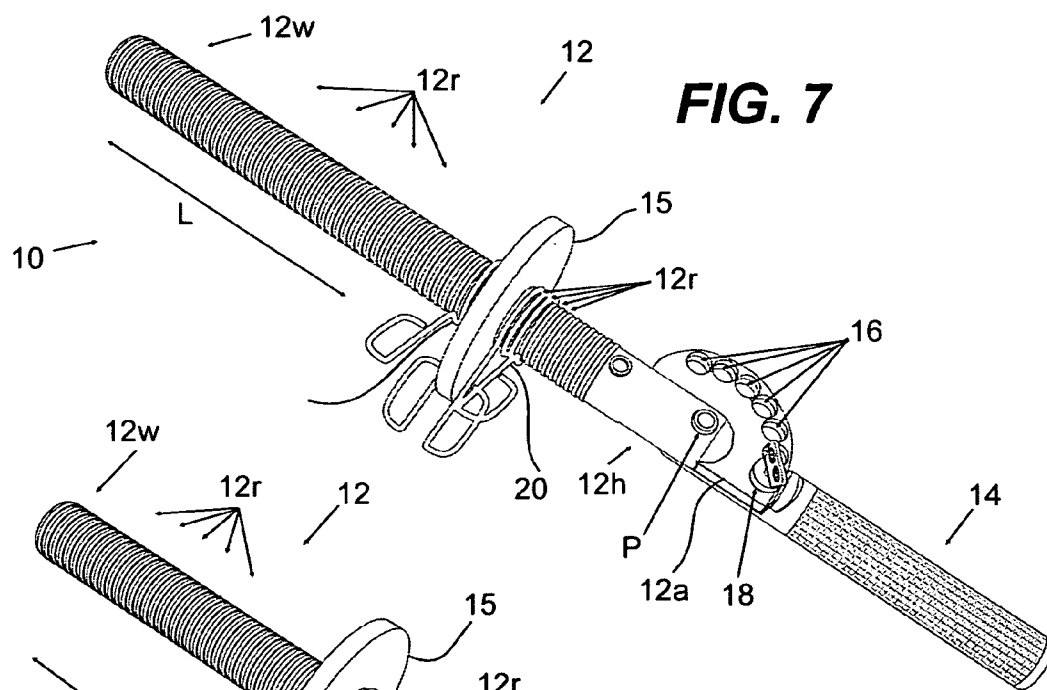


FIG. 10

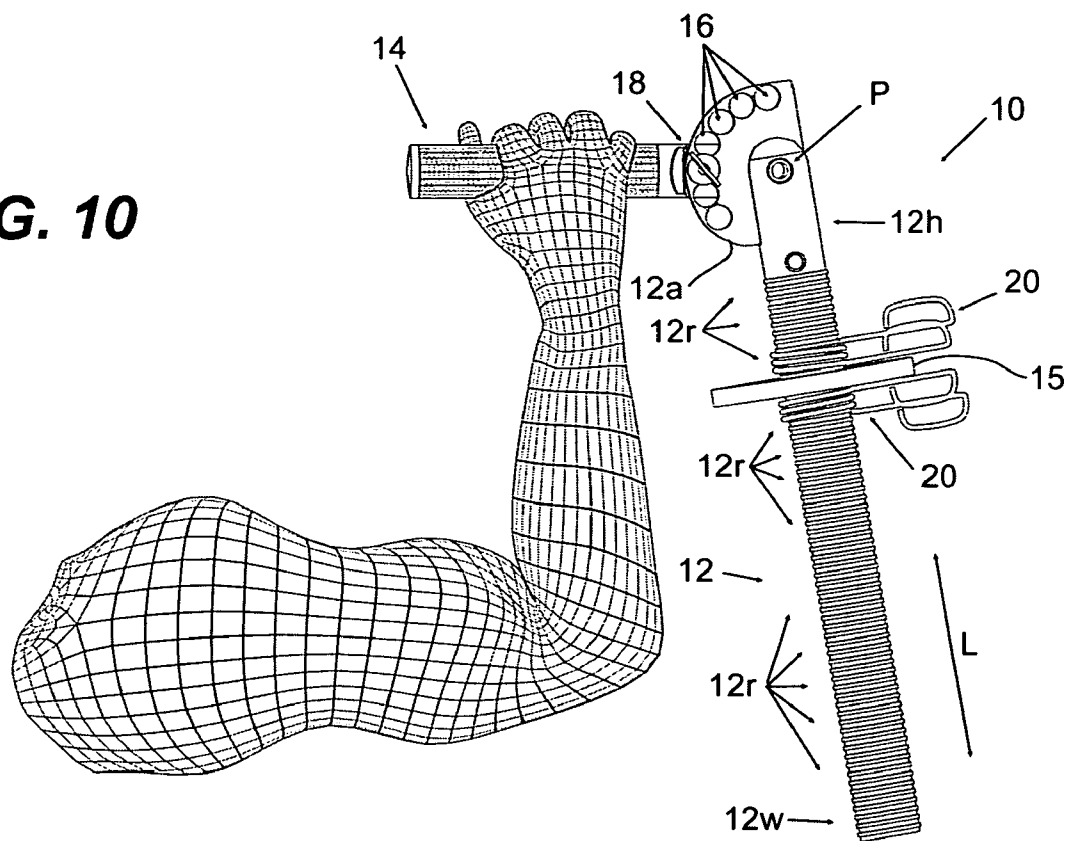


FIG. 11

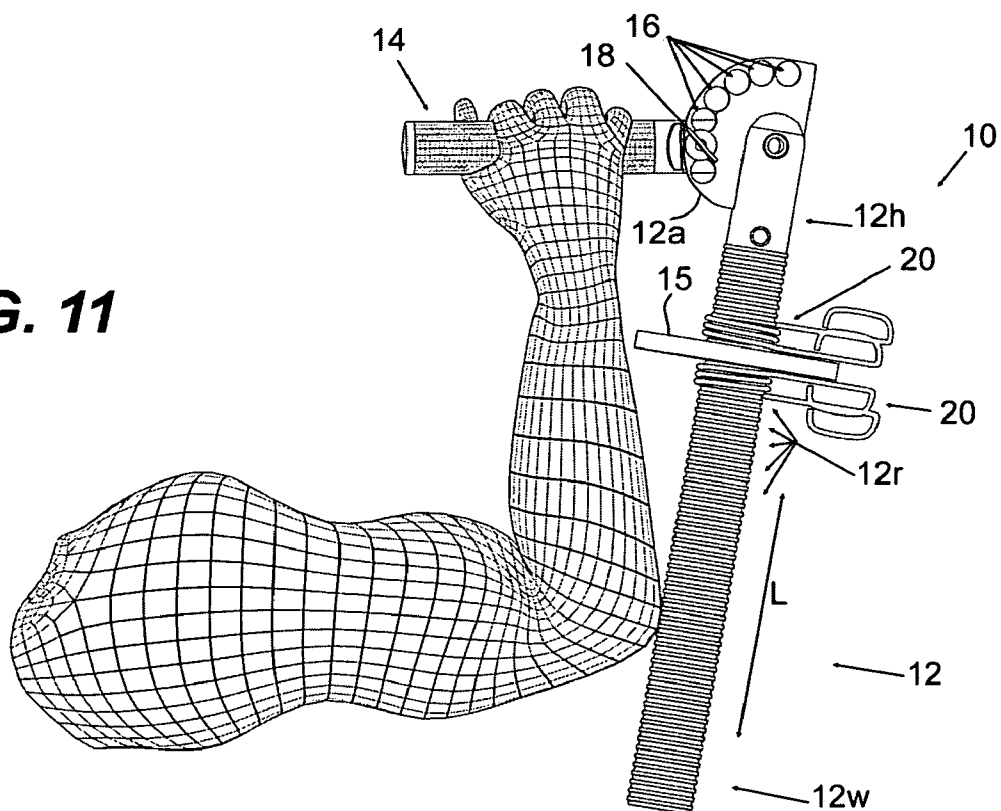


FIG. 12

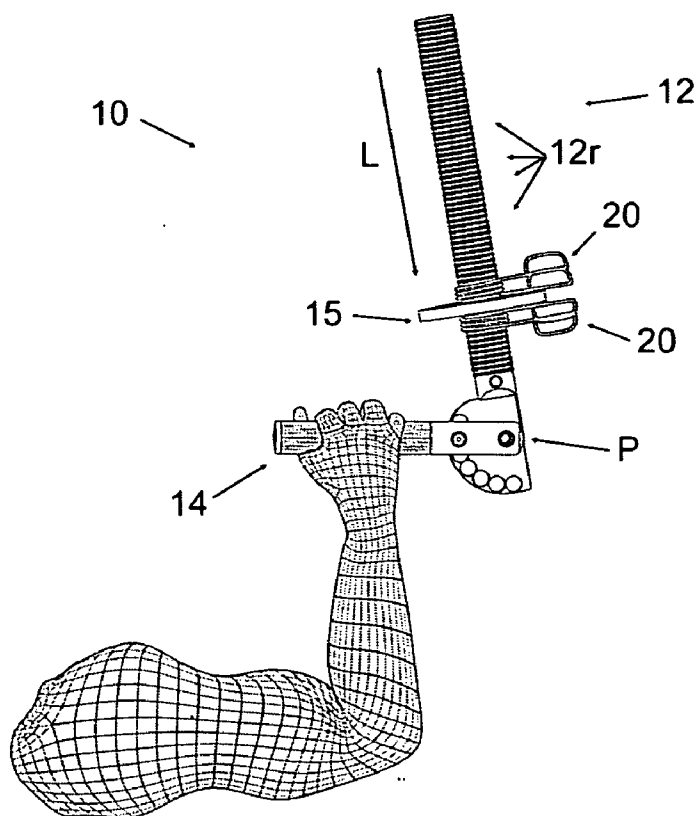
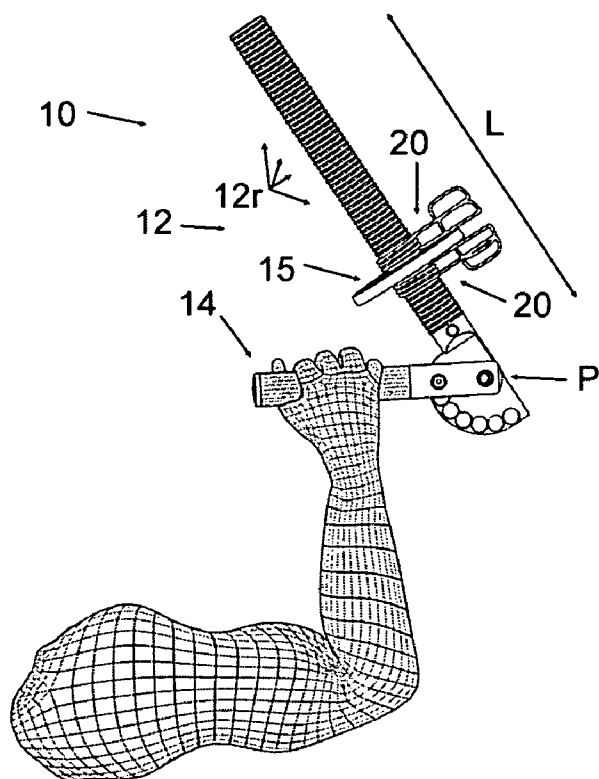
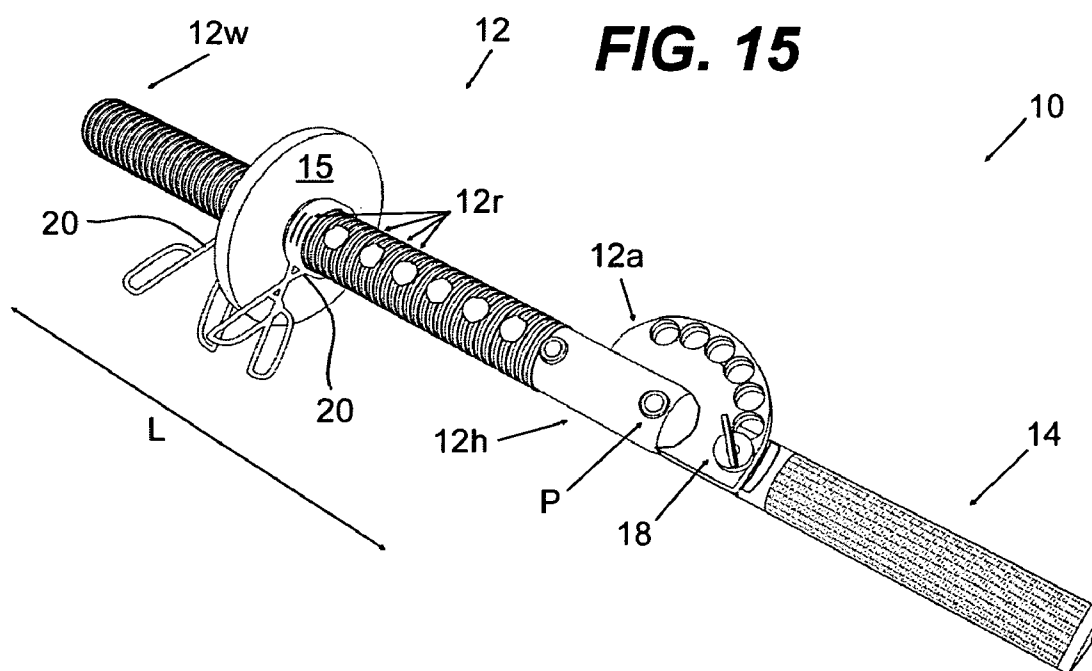
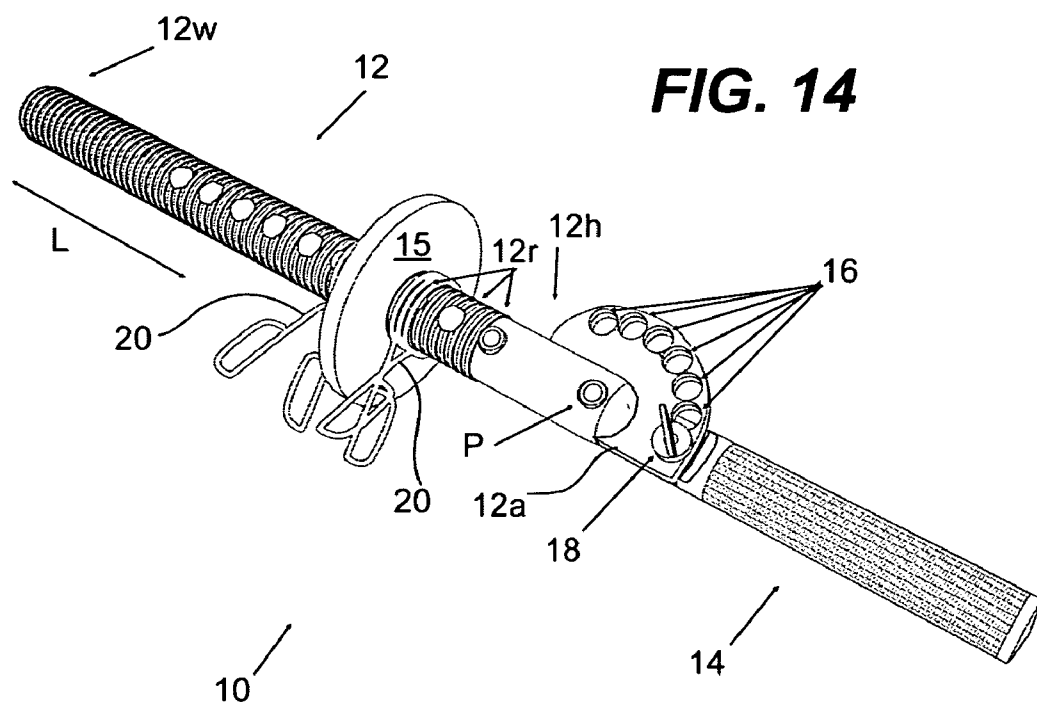


FIG. 13





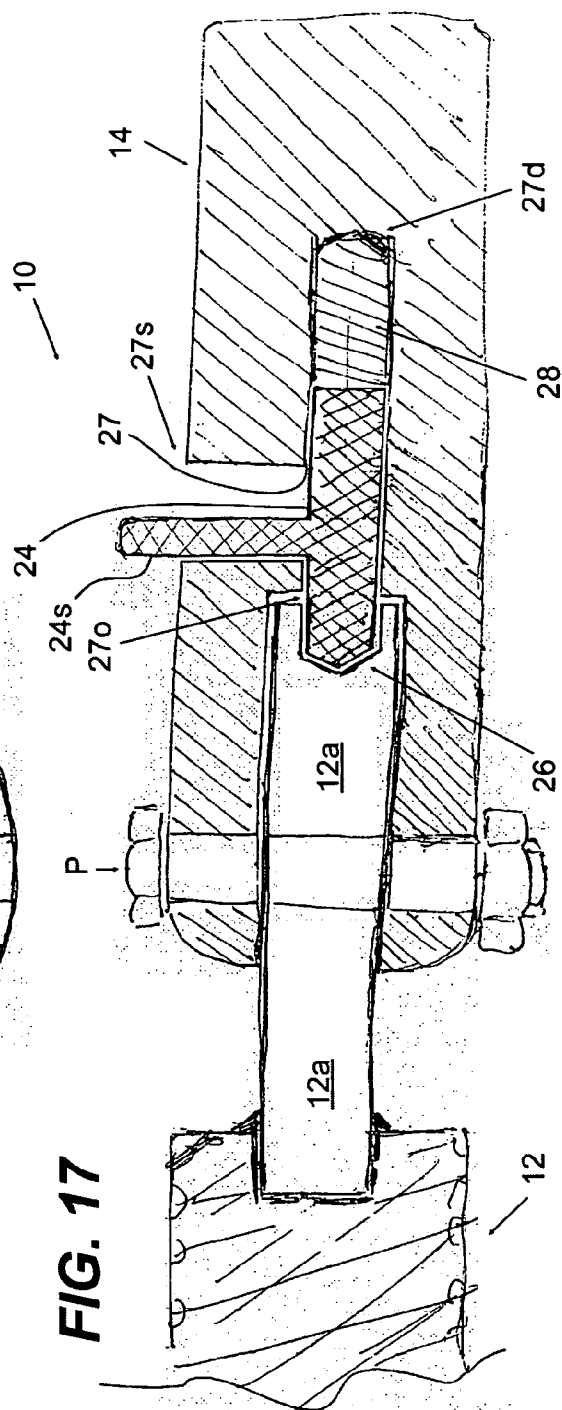
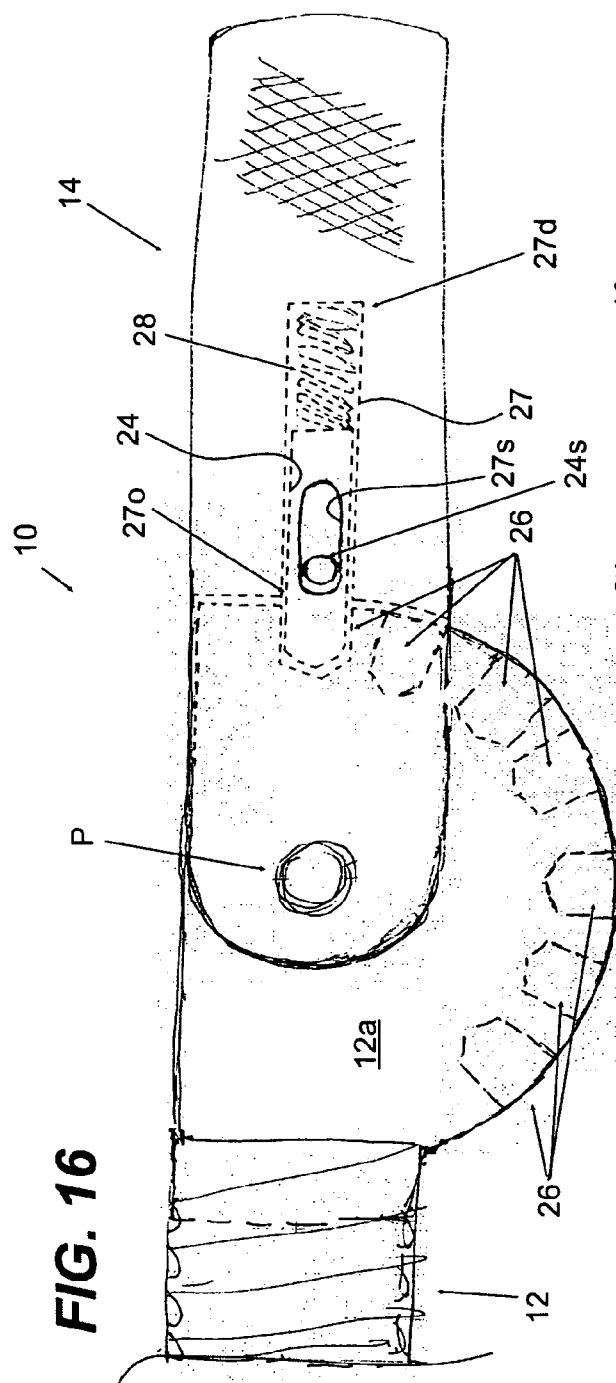


Fig. 18

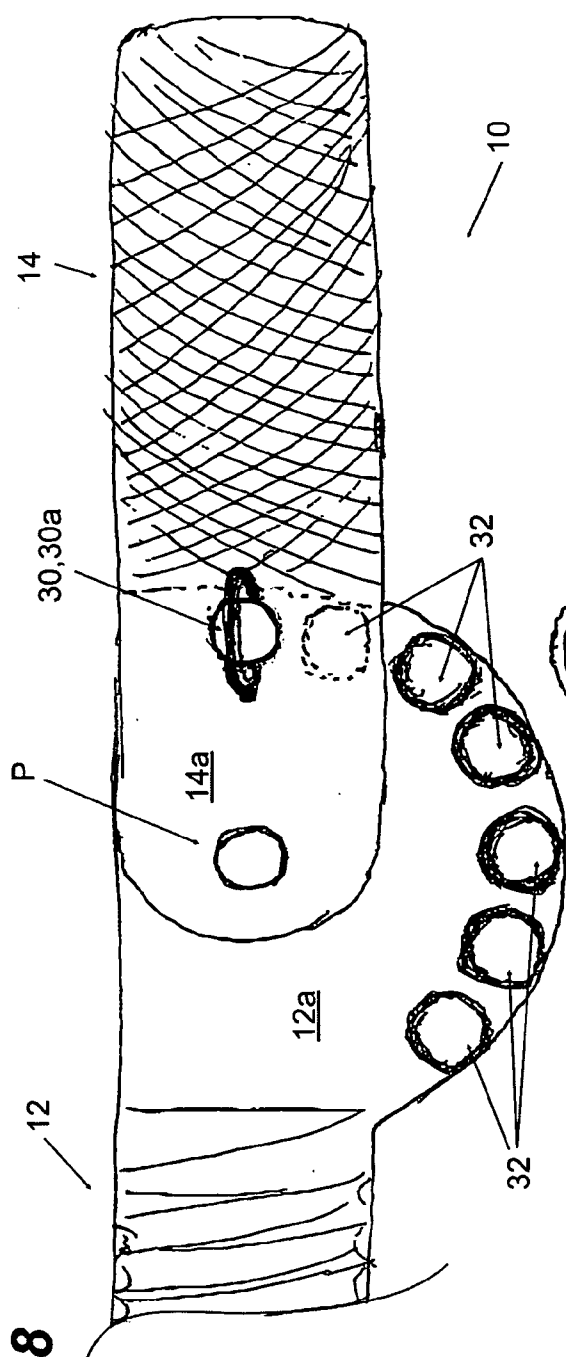
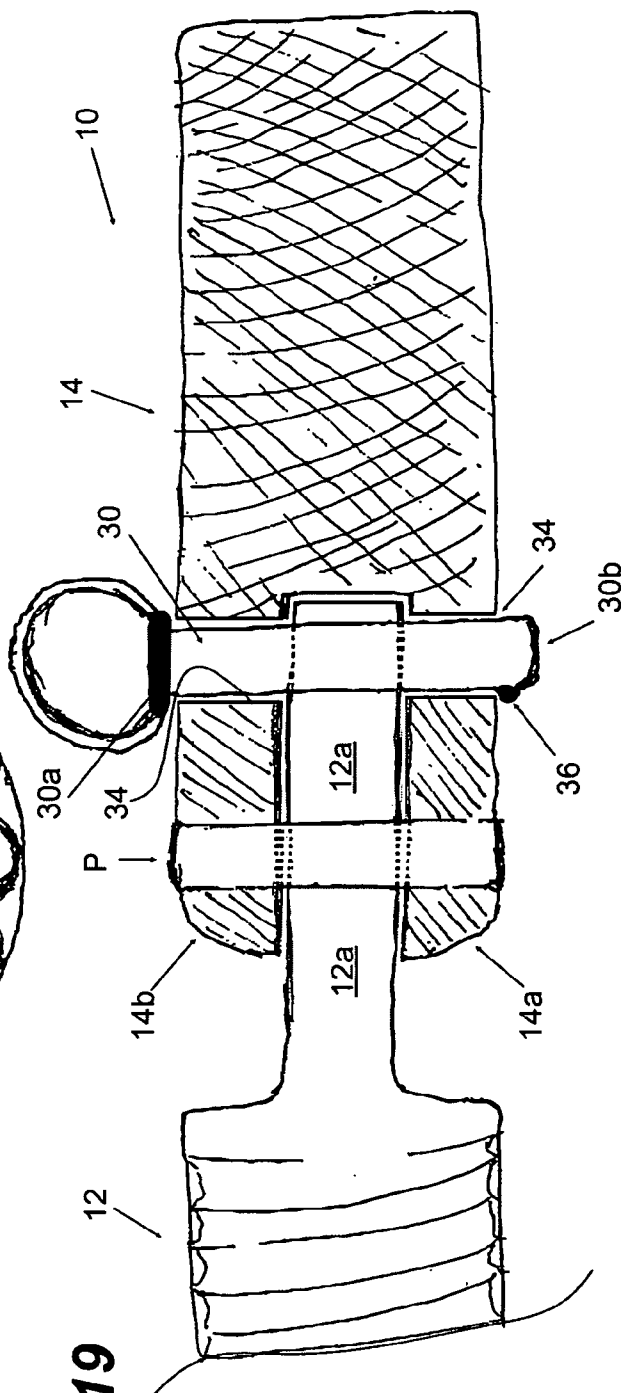


Fig. 19



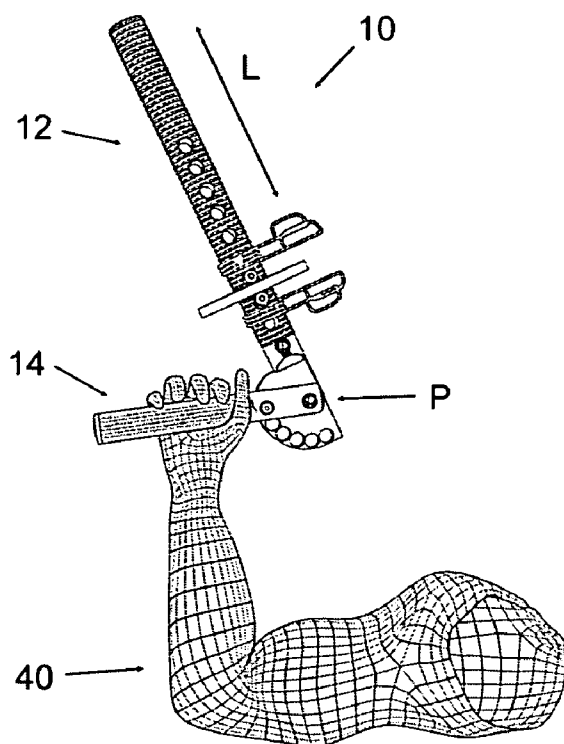
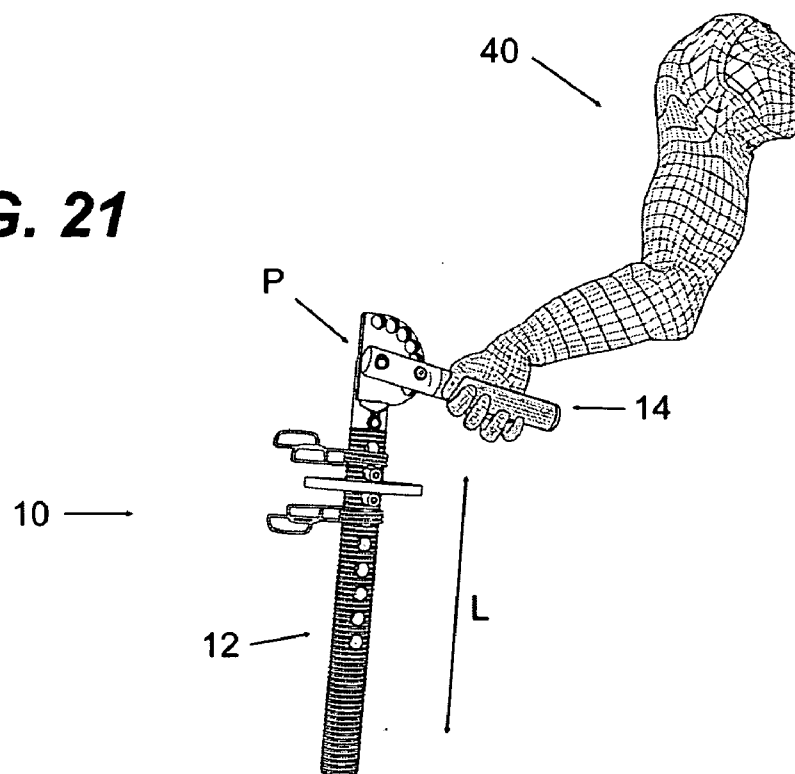
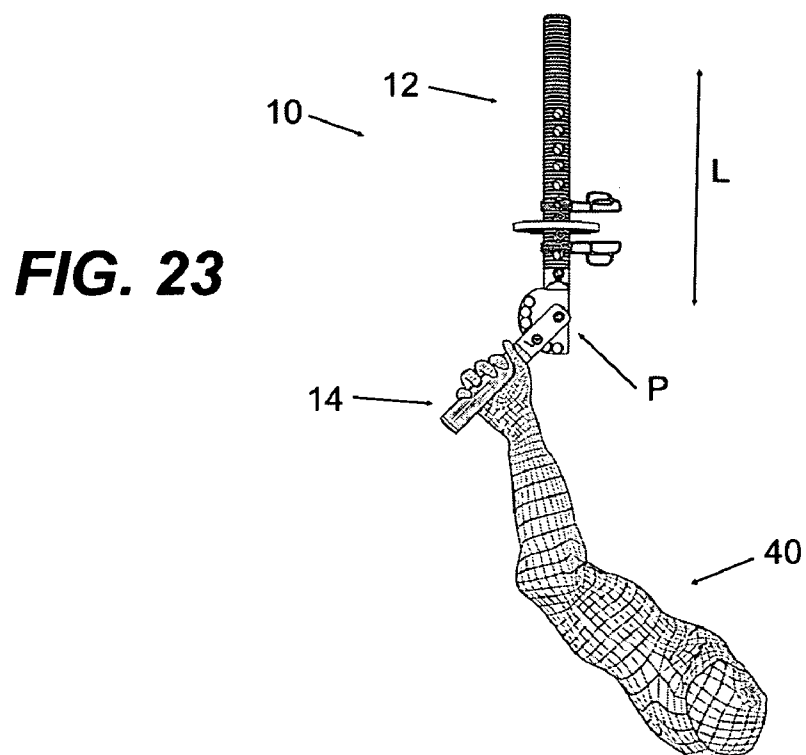
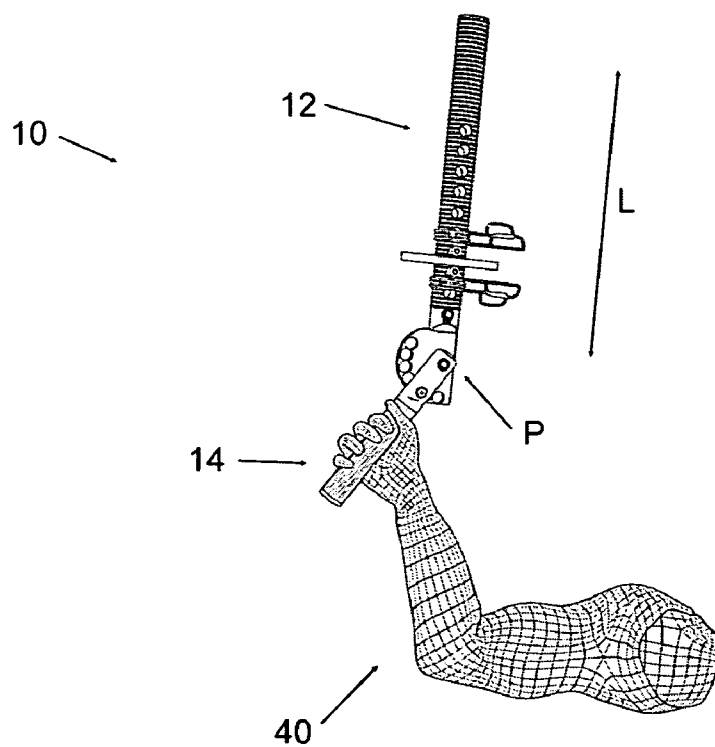


FIG. 20

FIG. 21





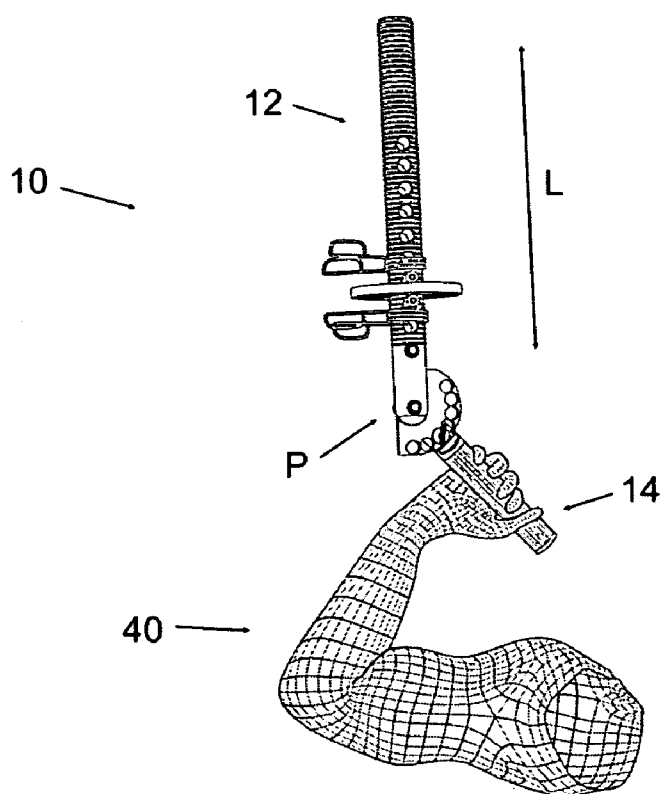
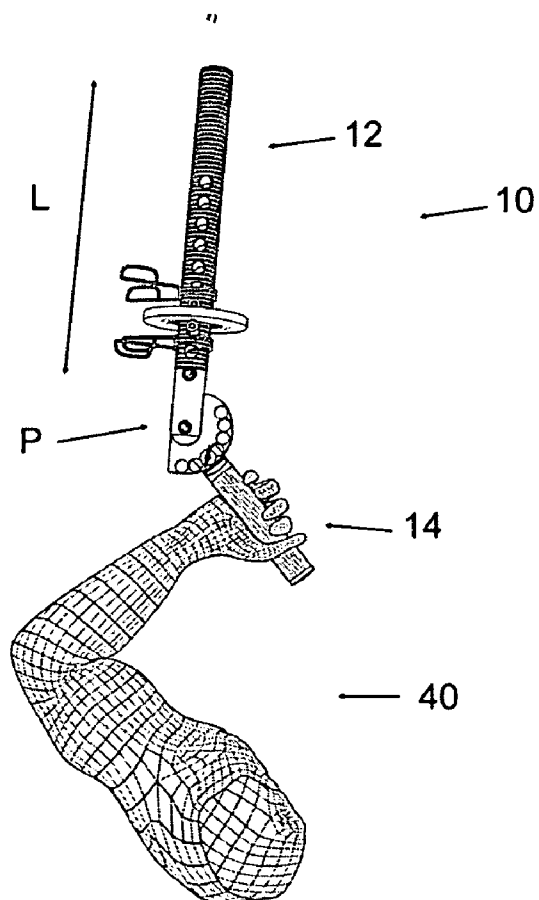


FIG. 25



WEIGHT LIFTING BAR

FIELD OF THE INVENTION

[0001] The invention relates to exercise devices. More particularly, the invention relates to exercise devices employing weight securing means for releasably securing one or more weights at selected locations along the longitudinal axis of a support so to vary the exercise load. The invention also relates to exercise devices including a handle which can be angularly adjusted relative to the support.

BACKGROUND OF THE INVENTION

[0002] Weight training typically involves the use of barbells and dumbbells. Both may consist of solid bars with opposite ends mounting removable weight training plates. The middle portion of the bar functions as a handle. The plates are supplied in sets with various weight increments. Additional plates must be added if the user wants to increase the amount of weight on the bar. Likewise, plates may be removed if the user wishes to decrease the amount of weight on the bar.

[0003] Prior art exercise devices utilize a variety of methods for removably fastening or mounting a weight on the bar, generally against a stop. Typically, a retaining collar is fastened to the weight carrying member with set screws or the like. Such collars are illustrated in Pugh's U.S. Pat. No. 4,109,908. Another method is to utilize a retaining collar or retaining weight having an internally threaded aperture, so that the collar or weight can be threaded onto external threads on a weight carrying member; see, for example U.S. Pat. No. 4,345,756 to Hoagland and U.S. Pat. No. 5,281,192 to Nelson. A third type of securing means involves securing a weight with a spring clip or spring collar, such as those distributed by Sport Supply Group, Inc. of Dallas, Tex., United States of America. Each of these securing means rely on a certain frictional engagement which may not hold when using heavy weights or require cumbersome threading of threaded weights or threaded collars onto a externally threaded weight carrying member.

[0004] The effective amount of weight on a bar can also be increased by extending the mass of the weight beyond the arms of the user. A typical example is the "swingbell". The swingbell consists of a bar having a set of weights mounted at one end. The free end of the bar is grasped at the other end. The mass of the weight thus extends outward from the user's arm. The relationship of weight and distance from the hand increases the leverage of the weight against the user's arms. The increase is a factor of the distance between the user's palm and the center of mass for the weights. A device similar to a swingbell is shown in U.S. Pat. No. 1,658,108.

[0005] During weight training it is also often desirable to allow for angular adjustment of the handle portion relative to the weight carrying portion of the bar. Such angular adjustment of the handle, relative to the remainder of the barbell or dumbbell, changes the dynamics of the exercise and allows the user to perform lifting exercises benefiting different muscle groups using a single device and a single set of weights. Otherwise, for each different angle of handle grip, the exerciser would require a separate bar.

[0006] Prior art exercise devices employ a variety of means for adjustably positioning a handle. For example,

Harper's U.S. Pat. No. 4,607,840 discloses the use of set screws to adjust and secure a handgrip. Ammon's U.S. Pat. No. 4,589,655 discloses the use of a pair of set screws and a number of apertures to vary the distance between arcuate members of a frame. It also discloses the use of a plurality of holes for receiving removable bolts to vary the position of a grip unit. Hayes' U.S. Pat. No. 4,377,282 discloses the use of pins which pass through holes in a sleeve to adjust the position of a grip. These devices, however, only adjustably position the handle relative to the exercise device so as to accommodate variations in the length of the user's hand or to selectively adjust the distance between the carrying portion of the bar and the handgrip. None of these devices allow for angular adjustment of a handle relative to the bar so as to permit different exercises, work different muscle groups and supply a wide range of exercise loads to the user.

[0007] Other prior art patents do teach angular adjustment of a handle or hand grip member, but these are either delicate devices generally unsuitable for use with the heavy weights used by a bodybuilder or powerlifter, or relate to barbells having a pair of handles or grip members. See, for example, U.S. Pat. No. Re. 33,218 to Twardosz, U.S. Pat. No. 3,414,260 to Gust and U.S. Pat. No. 5,211,616 to Riley Jr. The prior art devices which relate to barbells generally comprise paired handles each having an outer ring member mounted to the barbell and an inner ring member with hand grip rotatably mounted therein. Such ring members are typically unsuitable for use at the end of a dumbbell.

[0008] There is thus a continuing need to obtain some form of exercise device that will effectively increase the distance between the weight and user's hand, that will maintain the leverage produced thereby continuously during exercising, that will removably secure heavy weights and that will provide for angular adjustment of the handle.

SUMMARY OF THE INVENTION

[0009] In one aspect, the invention provides a weight lifting bar having a weight carrying member with a longitudinal axis and an outer surface. A plurality of spring collar engaging ridges project from the outer surface and are oriented substantially perpendicular to said longitudinal axis.

[0010] In another aspect, the invention provides a weight lifting bar comprising a weight carrying member and a grip. The weight carrying member has a longitudinal axis and a handle end. The grip is pivotally connected at a pivot point near the handle end. Preferably, means are provided for selectively securing the grip to said weight carrying member after the desired angular relationship between the hand grip member and the weight carrying member is selected, said means located at a point other than the pivot point.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIGS. 1-4 are perspective views of a first embodiment of the present invention;

[0012] FIGS. 5-6 are exploded perspective views of the first embodiment;

[0013] FIGS. 7-9 are a perspective views of the first embodiment of the invention showing a weight plate removably secured at different positions along the weight bar using spring collars;

[0014] FIGS. 10-13 are perspective views of the first embodiment illustrating how the invention may be used and with the handle secured at various angular positions;

[0015] FIGS. 14-15 are perspective views of a second embodiment showing a weight plate removably secured at different positions along the weight bar using spring collars;

[0016] FIGS. 16-17 are side and cross-sectional views of a third embodiment of the invention;

[0017] FIGS. 18-19 are side and cross-sectional views of a fourth embodiment of the invention; and

[0018] FIGS. 20-25 are perspective views of the second embodiment illustrating how the invention may be used with the handle at various angular positions and/or with the user's wrist also at various positions (such as extension and flexion).

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0019] Reference is to be had to the Figures in which identical reference numbers identify similar components.

[0020] Referring to FIGS. 1-13, one embodiment of the weight lifting bar 10 of the present invention is shown. In this embodiment, the bar 10 comprises a weight carrying member or support 12 having a longitudinal axis L, a handle end 12h and a weight loading end 12w. The bar 10 further comprises a grip or handle 14 pivotally connected to said member 12 at a pivot point P. Preferably, the grip 14 is pivotally connected near said handle end 12h. The weight carrying member 12 is suitable for removably carrying one or more weights 15. Preferably the weights 15 are in the form of a circular disk having a central aperture with an inside diameter which is slightly larger than the outside diameter of the weight carrying member 12 so that they can be slipped onto said member 12 at the weight loading end 12w. The grip 14 is mounted for pivotal movement relative to the longitudinal axis L of the member 12 so that the angle between the grip 14 and the weight carrying member 12 can be adjusted to accommodate different exercises and leverages.

[0021] Means are provided for selectively securing the grip 14 to the member 12 at various angles relative to the longitudinal axis L. In the specific embodiment illustrated, such means comprises an arc-shaped extension 12a of member 12 around at least a portion of pivot point P, a plurality of set screw openings 16 arranged in an arc around the pivot point P and through said extension 12a as shown. A set screw 18 is provided and is positionable through said openings 16, and threadable into the grip 14 which is pivotally connected adjacent said extension 12a as shown. When said screw 18 is positioned through one of said openings 16 and tightened into frictional engagement with said extension 12a, the grip is secured at an angle relative to the longitudinal axis L. Preferably, a lock washer (not shown) is sandwiched between extension 12a and grip 14 and positioned so as to allow set screw 18 to be slipped therethrough when said screw 18 is positioned through one of said openings 16 and tightened into frictional engagement with said extension 12. Advantageously, the lock washer (not shown) assists in preventing set screw 18 from accidentally unscrewing when using the bar 10.

[0022] Advantageously, by removing set screw 18 from the bar 10, adjusting grip 14 to a new angle, replacing set screw 18 through another of the said openings 16 and threading said screw 18 into the grip 14, the angle of the grip 14, relative to the longitudinal axis L, can be adjusted to one of a number of preset angular positions.

[0023] More advantageously, by positioning or locating the securing means some distance away from the pivot point, i.e. in this embodiment the set screw 18 and the plurality of set screw openings 16 arranged in an arc around the pivot point P, additional strength and leverage is provided to the securing means, thereby allowing the bar 10 to carry significantly heavier weights on the weight carrying member 12 (while still maintaining the grip 14 secured at an angle relative to the longitudinal axis L) as compared to the prior art.

[0024] Preferably, means are also provided for securing one or more weights 15 at various locations on the weight carrying member 12 to vary the length of the effective movement arm between the weights 15 and the grip 14 and thereby vary the leverage required to lift the device during exercise. In this embodiment, the weight carrying member 12 further comprises a plurality of ridges 12r projecting from said member 12 and oriented substantially perpendicular to said longitudinal axis L. The dimensions and frequency (or interval) of said ridges 12r will be determined by the dimensions and spacing of the spring portion of an appropriate spring collar 20 that may be slipped onto or over the weight carrying member 12. That is, the dimensions and frequency of the ridges 12r are such that they will provide significant frictional surface area for spring collar 20 to engage when said collar 20 is clamped around said member 12 while still allowing said collar 20 to be slipped over the member 12 when unclamped (see FIGS. 7-9). Preferably the ridges 12r are fully circumferential around the weight carrying member 12, although they need not be.

[0025] During exercise one or more of the weights 15 can be maintained on the weight carrying member 12 at a desired location along the longitudinal axis L by sandwiching said weights 15 between a pair of spring collars 20 (see FIGS. 7-9). Advantageously, this weight securing means provides a significantly increased frictional engagement for the traditional spring collars (compared to the typically smooth bars of the prior art), thereby enabling the user to safely use heavy weights 15 without fear of them moving along the member 12 or coming off all together.

[0026] FIGS. 10-13 provide additional graphical illustration of how device 10 may be used during exercise and how the grip 14 is selectively secured to the member 12 at various angles relative to the longitudinal axis L, thereby providing the user with varying leverages required to lift the device 10 during exercise.

Second Embodiment

[0027] Referring now to FIGS. 14-15, a second embodiment of the invention 10 is shown. These figures provide additional illustration of how the weights 15 are maintained on the weight carrying member 12 at various locations along the longitudinal axis L—by sandwiching said weights 15 between a pair of spring collars 20 which each frictionally engage one or more of the ridges 12r. In this embodiment not all the ridges 12r are fully circumferential around the weight carrying member 12.

[0028] Again, by varying the location of the weights **15** on the weight carrying member **12** the length of the effective movement arm (between the weights **15** and the grip **14**) is varied and the leverage required to lift the device **10** during exercise is likewise modified.

[0029] It will be appreciated by those skilled in the art that this weight securing means, i.e. ridges **12r** for spring collars **20**, could also be utilized on weight carrying members **12** that are part of larger exercise devices or equipment, other than just barbells or dumbbells, including equipment such as leg press machines and the like.

Third Embodiment

[0030] Referring now to FIGS. **16-17**, a third embodiment of the invention **10** is shown. In this embodiment the means for selectively securing the grip **14** to the member **12**, at various angles relative to the longitudinal axis, does not involve a set screw and a plurality of set screw openings but rather a securing pin **24** and a plurality of pin receiving recesses **26**. The securing pin **24** is slidably mounted in a cavity **27** inside the grip **14** (as shown), said cavity having a distal end **27d** (relative to the pivot point P) and a proximal opening **27o** (generally facing extension **12a** and recesses **26**). The securing pin **24** is biased towards the recesses **26** on the arc-shaped extension **12a**, through said proximal opening **27o**, by means of a spring **28** positioned between said pin **24** and the distal end **27d**. Like the set screw openings in the previous embodiment, the recesses **26** are preferably arranged in an arc-shaped configuration on the arc-shaped extension **12a**. When said pin **24** is biased into or against one of the recesses **26**, the grip **14** is secured at a preset angle relative to the longitudinal axis of member **12**.

[0031] To facilitate the temporarily disengagement of the securing pin **24** from a recess **26**, so that the grip **14** may be angularly adjusted relative to the member **12**, an elongated opening **27s** (in the side of the grip **14**) and a pin lever **24s** (projecting from the pin **24** through said elongated opening **27s**) are provided. The elongated opening **27s** is of a length to allow a user to push the pin lever **24s** and pin **24** away from a recess **26** and towards the distal end **27d** (at the same time compressing the spring **28**) and to provide sufficient clearance to allow the pin **24** to completely clear from a recess **26**. Once a user releases the lever **24s**, the pin **24** will once again be biased through the proximal opening **27o** and towards a recess **26** by the spring **28**.

Fourth Embodiment

[0032] Referring now to FIGS. **18-19**, a forth embodiment of the invention **10** is shown. In this embodiment the means for selectively securing the grip **14** to the member **12**, at various angles relative to the longitudinal axis L, comprises a quick-release pin **30**, a plurality of quick-release pin openings **32** through the extension **12a** and arranged in an arc around the pivot point P (as shown), and an opening **34** through the grip **14**. Preferably, grip **14** features paired extensions **14a**, **14b** which sandwich extension **12a** (as shown) and opening **34** extends through both of said paired extensions **14a**, **14b** (also as shown).

[0033] When opening **34** in the grip **14** is aligned with one of the openings **32** through the extension **12a**, the quick-release pin **30** is positioned through both openings **32**, **34**,

thereby selectively securing the grip **14** to the member **12** at a preset angle relative to the longitudinal axis L.

[0034] Preferably the quick-release pin **30** is of a length that is longer than the combined width of the grip's paired extensions **14a**, **14b** and the member's extension **12a**, has a first end **30a** that is of a large diameter than said openings **32**, **34** and has a spring-loaded ball **36** at it's second end **30b** (as shown). Such quick-release pins are available from Spaenaur Inc. of Kitchener, Ontario, Canada.

[0035] The grip **14** may be angularly adjusted, relative to the member **12**, by removing the quick-release pin **30**, pivoting the grip **14** relative to the member **12** and aligning opening **34** with another of the openings **32**, and inserting the quick-release pin **30** through aligned openings **32**, **34**.

Additional Embodiment

[0036] In a fifth embodiment (not shown), there is no means for selectively securing the grip **14** to the member **12**. Instead the grip or handle **14**, which is pivotally connected to said member **12** at a pivot point P, is allowed to swing freely as may be determined by gravity acting on the bar **10** during exercise. Preferably, the grip **14** is connected at the pivot point P via a ball and socket joint. This embodiment allows for a weightlifter to move the bar **10** through a conventional weightlifting movement and at the same experience a changing dynamic of leverages during said movement.

[0037] Variety of Exercises:

[0038] Referring now to FIGS. **20-25**, the second embodiment of the invention **10** is shown again gripped by a user **40**, to illustrate how the device **10** may be used in a variety of different exercises (such as a shoulder press (see FIG. **20**), bicep curl (see FIG. **21**), deltoid press (see FIG. **22-23**) or a triceps press (see FIGS. **24-25**)) and with a variety of different wrist positions (such as wrist extension or wrist flexion). FIGS. **20-25** also again illustrate how the grip **14** may be selectively secured to the member **12** at various angles relative to the longitudinal axis L, thereby providing the user with varying leverages required to lift the device during exercise.

[0039] Advantageously, the various different exercises, wrist positions and angular configurations of the grip **14** (relative to the longitudinal axis L) allow for the user's muscles to be recruited in manners that were not easily attainable with prior art exercise devices, resulting in strength and muscle gains more easily made.

[0040] The specific embodiments described should be taken as illustrative of the invention only and not as limiting its scope. Many further modifications and changes will readily occur to those skilled in the art to which the invention relates and the inventions should be construed in accordance with the accompanying claims.

1. A weight lifting bar having a weight carrying member with a longitudinal axis, a handle end and an outer surface, comprising:

a plurality of ridges projecting from the outer surface and oriented substantially perpendicular to said longitudinal axis; and

a grip for gripping by a user to perform an exercise movement.

2. The weight lifting bar of claim 1 wherein the grip is pivotally connected at a pivot point near the handle end of said weight carrying member.

3. The weight lifting bar of claim 2 further comprising means for selectively securing the grip to said member at various angles relative to the longitudinal axis.

4. The weight lifting bar of claim 2 further comprising:

an extension around at least a portion of said pivot point;

a plurality of set screw openings through said extension; and

a set screw which is positionable through one of said screw opening and threadable into the grip so that,

when the set screw is positioned through one of said screw openings and is threaded into the grip, said grip can be tightened into secure engagement with said weight carrying member.

5. The weight lifting bar of claim 4 wherein the extension is arc shaped and the screw openings are arranged in an arc near the circumference of the extension.

6. The weight lifting bar of claim 2 further comprising:

an extension around at least a portion of said pivot point;

a plurality of securing pin recesses in said extension; and

a securing pin slidably mounted within said grip and having a portion that is positionable into one of said pin recesses so that,

when said portion of the securing pin is positioned into one of the pin recesses, said grip is locked into secure engagement with said weight carrying member.

7. The weight lifting bar of claim 6 wherein the extension is arc shaped and the pin recesses are arranged in an arc at the circumference of the extension.

8. The weight lifting bar of claim 2 further comprising:

an extension around at least a portion of said pivot point;

a plurality of quick-release pin openings through said extension;

an opening through said grip; and

a quick-release pin positionable through one of quick-release pin openings and said opening through grip so that,

when said quick-release pin is positioned through one of the quick-release pin openings and through said opening through said grip, the grip is locked into secure engagement with said weight carrying member.

9. The weight lifting bar of claim 8 wherein the extension is arc shaped and the quick-release pin openings are arranged in an arc at the circumference of the extension.

10. A weight carrying member having a longitudinal axis and an outer surface, comprising a plurality of ridges projecting from said outer surface and oriented substantially perpendicular to said longitudinal axis.

11. A weight lifting bar having a weight carrying member with a longitudinal axis and a handle end, comprising:

a grip pivotally connected at a pivot point near the handle end, for gripping by a user to perform an exercise movement.

12. The weight lifting bar of claim 11 further comprising means for selectively securing the grip to said member at various angles relative to the longitudinal axis, said means being located on the bar at a point different from that of the pivot point.

13. The weight lifting bar of claim 11 further comprising:

an extension around a portion of said pivot point;

a plurality of set screw openings;

a set screw which is positionable through one of said screw opening and threadable into the grip so that,

when the set screw is positioned through one of said screw openings and is threaded into the grip, said grip can be tightened into secure engagement with said weight carrying member.

14. The weight lifting bar of claim 13 wherein the extension is arc shaped and the screw openings are arranged in an arc near the circumference of the extension.

15. The weight lifting bar of claim 11 further comprising:

an extension around a portion of said pivot point;

a plurality of securing pin recesses;

a securing pin slidably mounted within said grip and having a portion that is positionable into one of said pin recesses so that,

when said portion of the securing pin is positioned into one of the pin recesses, said grip is locked into secure engagement with said weight carrying member.

16. The weight lifting bar of claim 15 wherein the extension is arc shaped and the pin recesses are arranged in an arc at the circumference of the extension.

17. The weight lifting bar of claim 11 further comprising:

an extension around at least a portion of said pivot point;

a plurality of quick-release pin openings through said extension;

an opening through said grip; and

a quick-release pin positionable through one of quick-release pin openings and said opening through grip so that,

when said quick-release pin is positioned through one of the quick-release pin openings and through said opening through said grip, the grip is locked into secure engagement with said weight carrying member.

18. The weight lifting bar of claim 17 wherein the extension is arc shaped and the quick-release pin openings are arranged in an arc at the circumference of the extension.

19. The weight lifting bar of claim 12 further comprising weight securing means for releasably securing at least one weight on said weight carrying member at selected locations along said longitudinal axis.

20. The weight lifting bar of claim 11 wherein the grip is pivotally connected at the pivot point by means of a ball and socket joint.