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Hummer, JR.

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Publication Classification

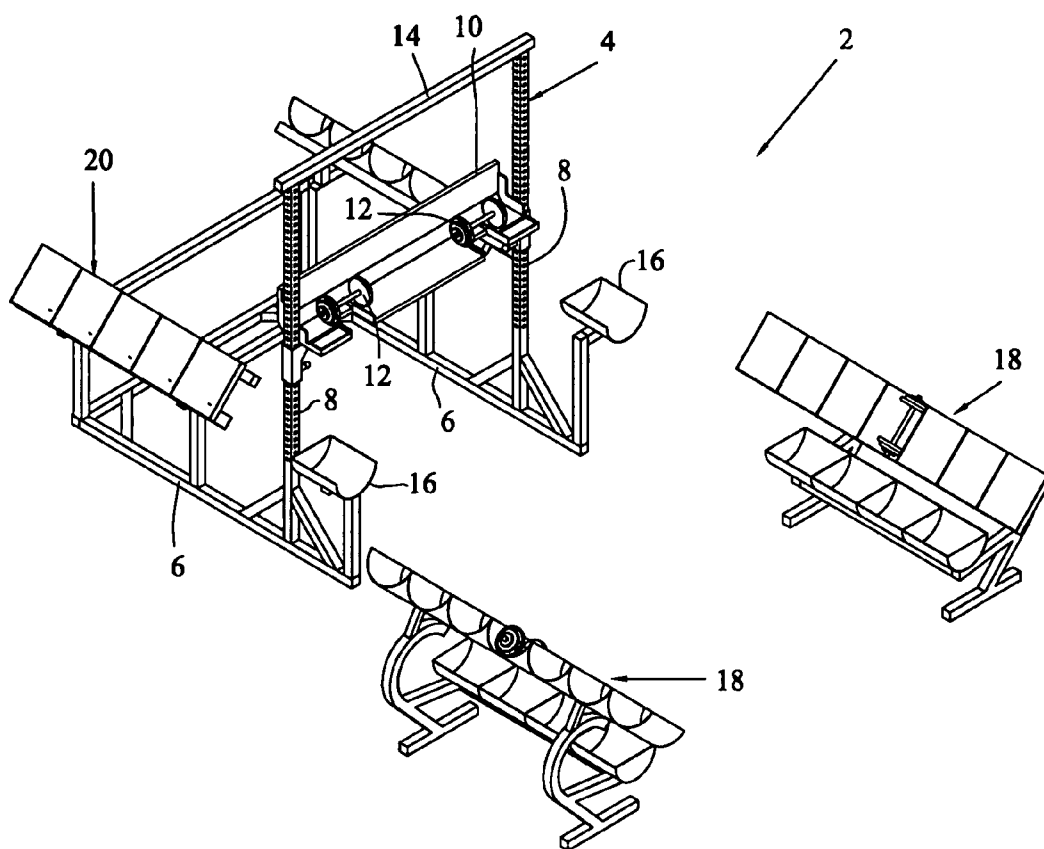
(51) **Int. Cl.**
A63B 21/078 (2006.01)

(52) **U.S. Cl.** **482/104**

(57) **ABSTRACT**

A spotter assembly is disclosed where multiple vertical uprights, cross bars and individual spotters are possible. The cross bars are vertically movable relative to the uprights and the spotters are movable relative to the crossbars.

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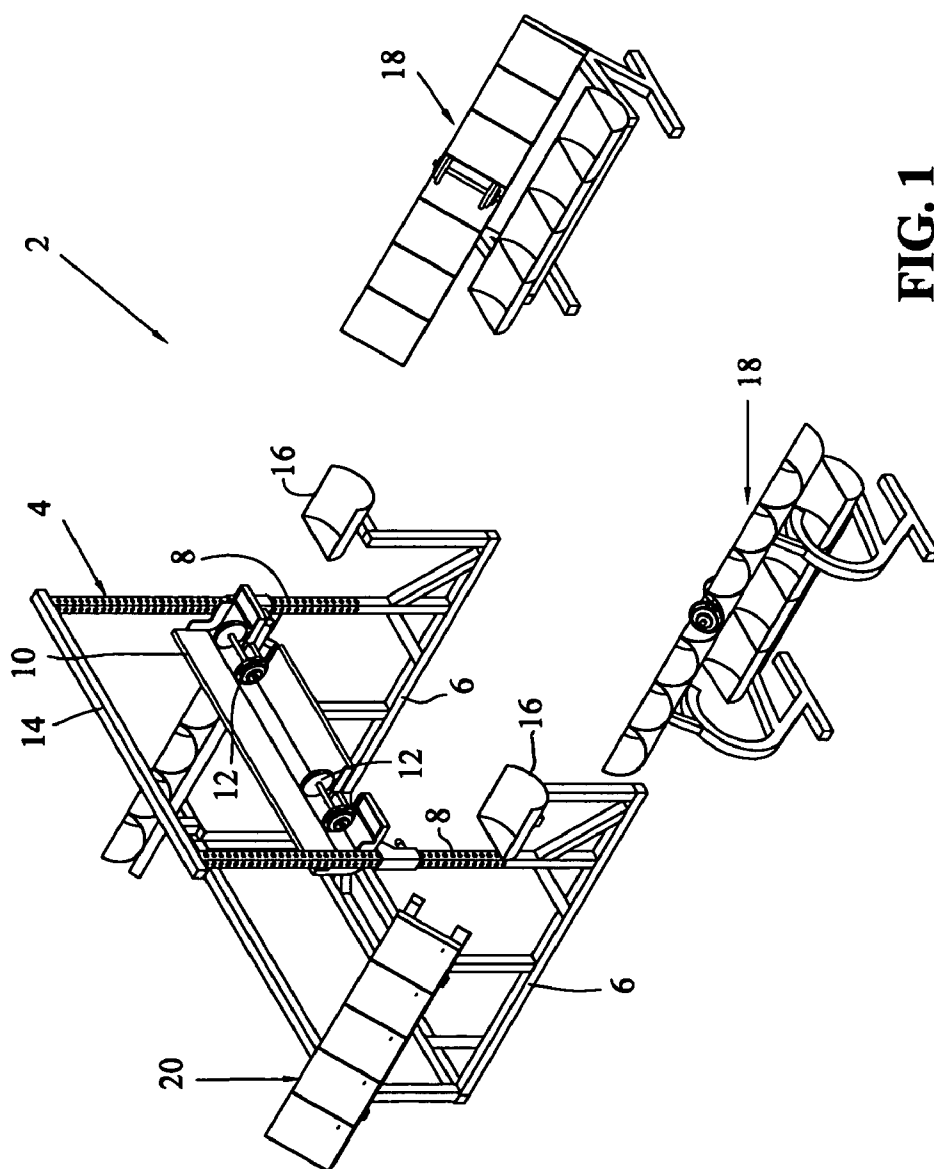


FIG. 1

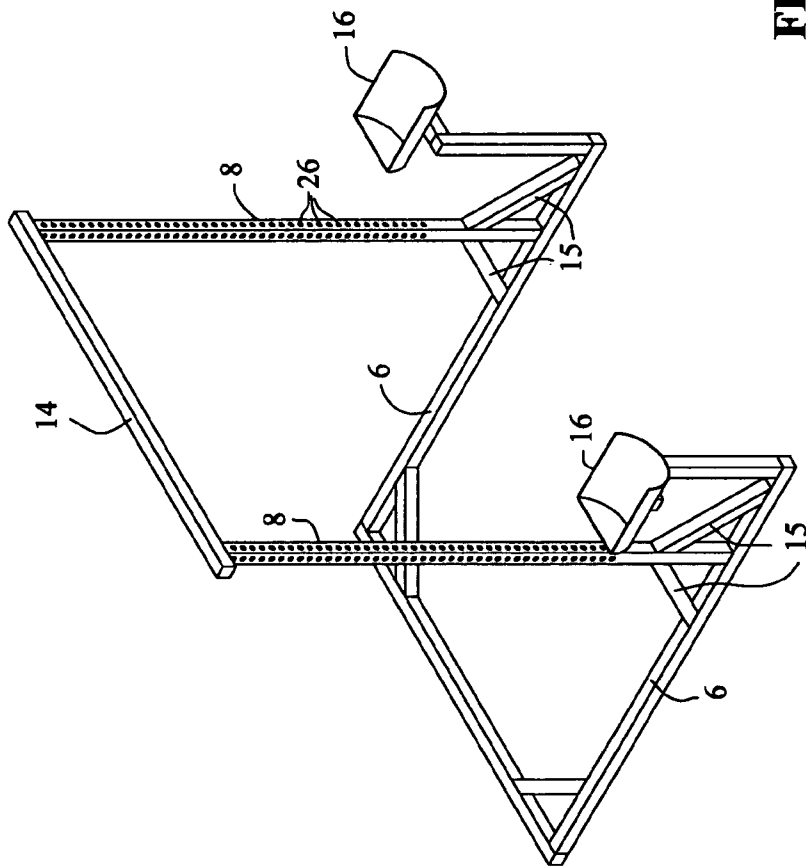


FIG. 2

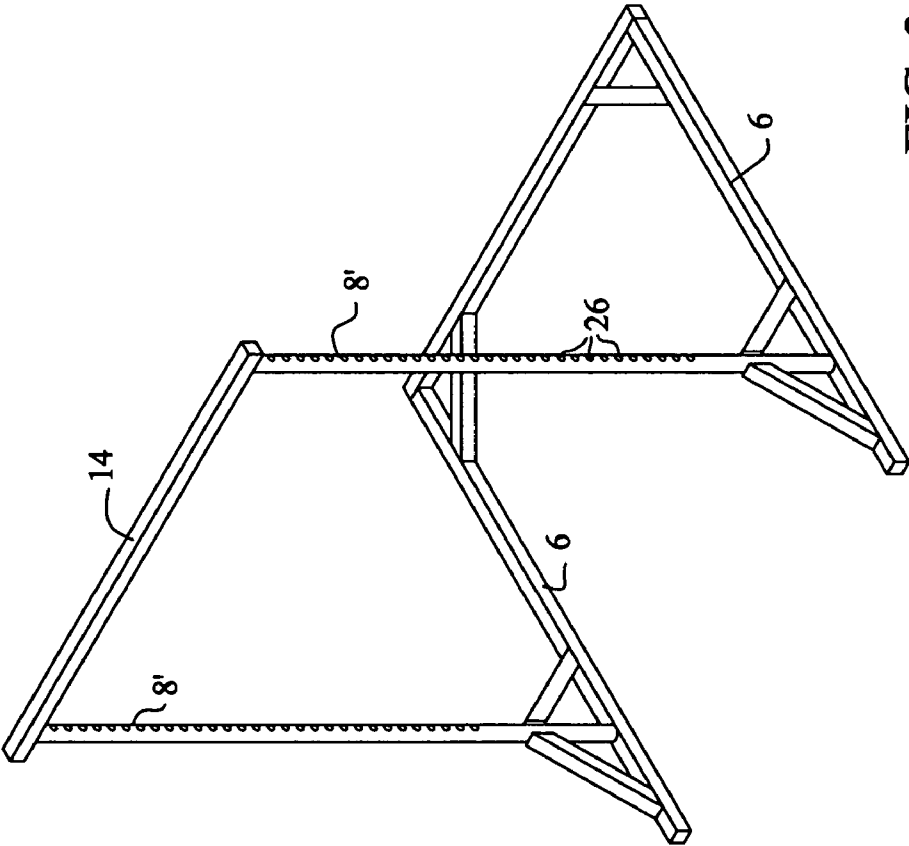
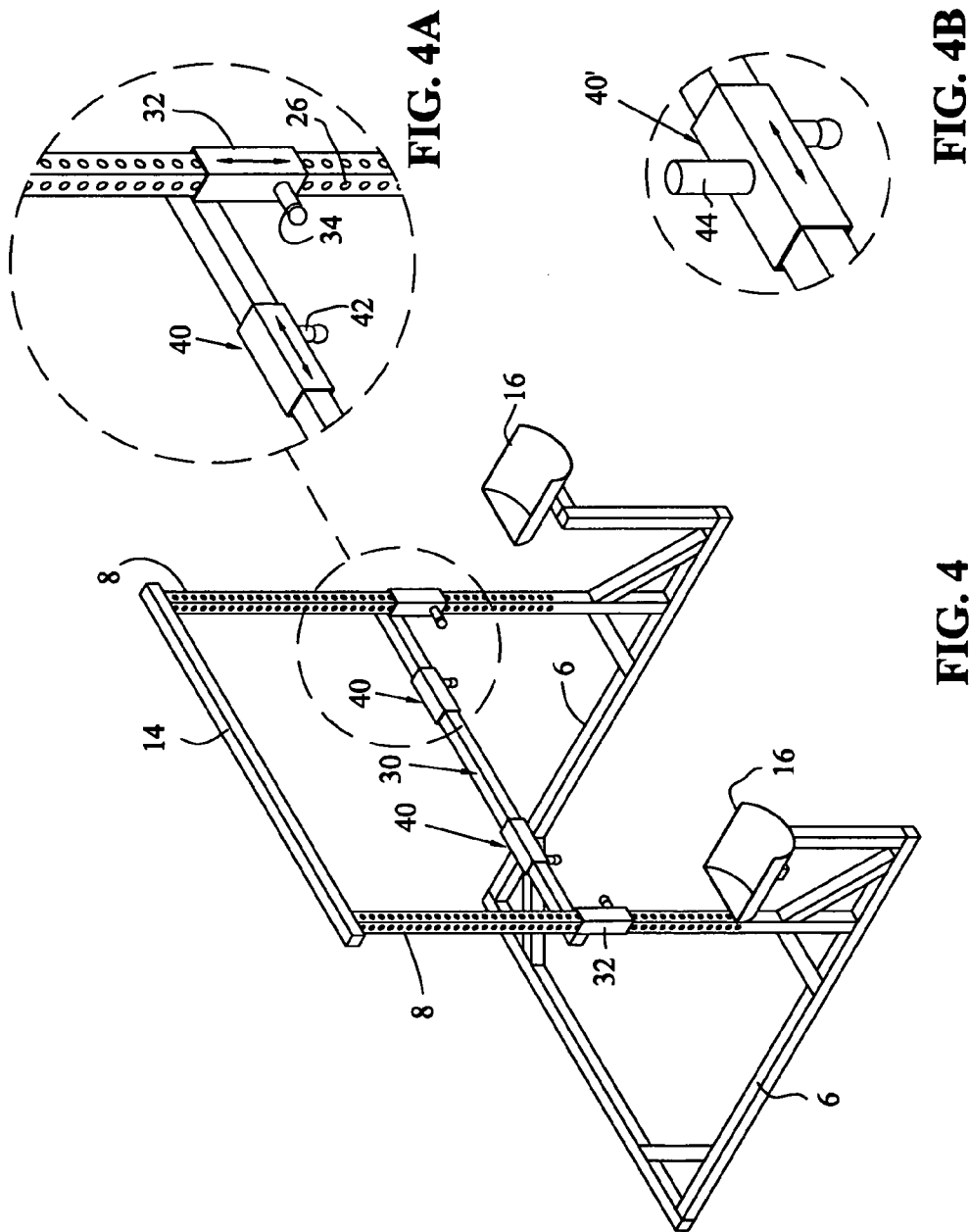


FIG. 3



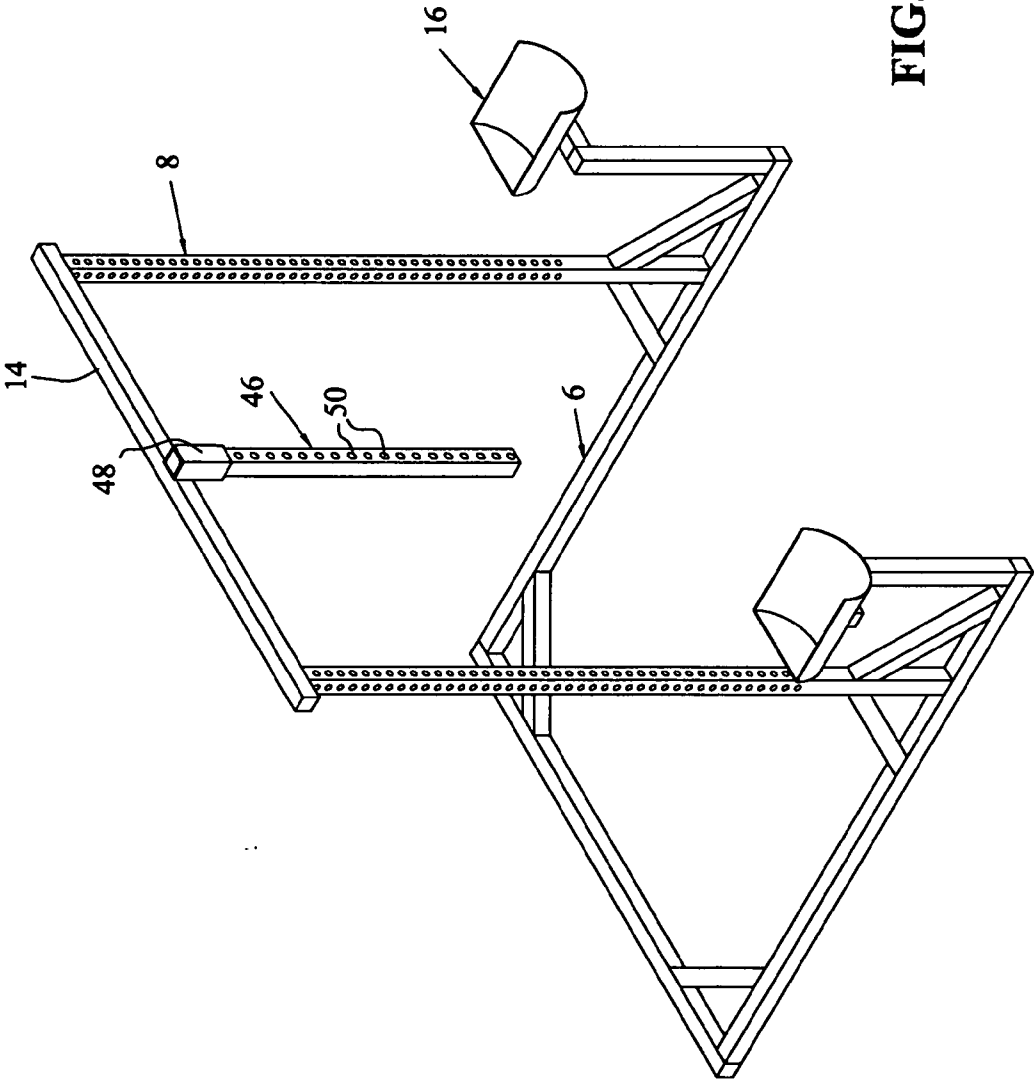


FIG. 5

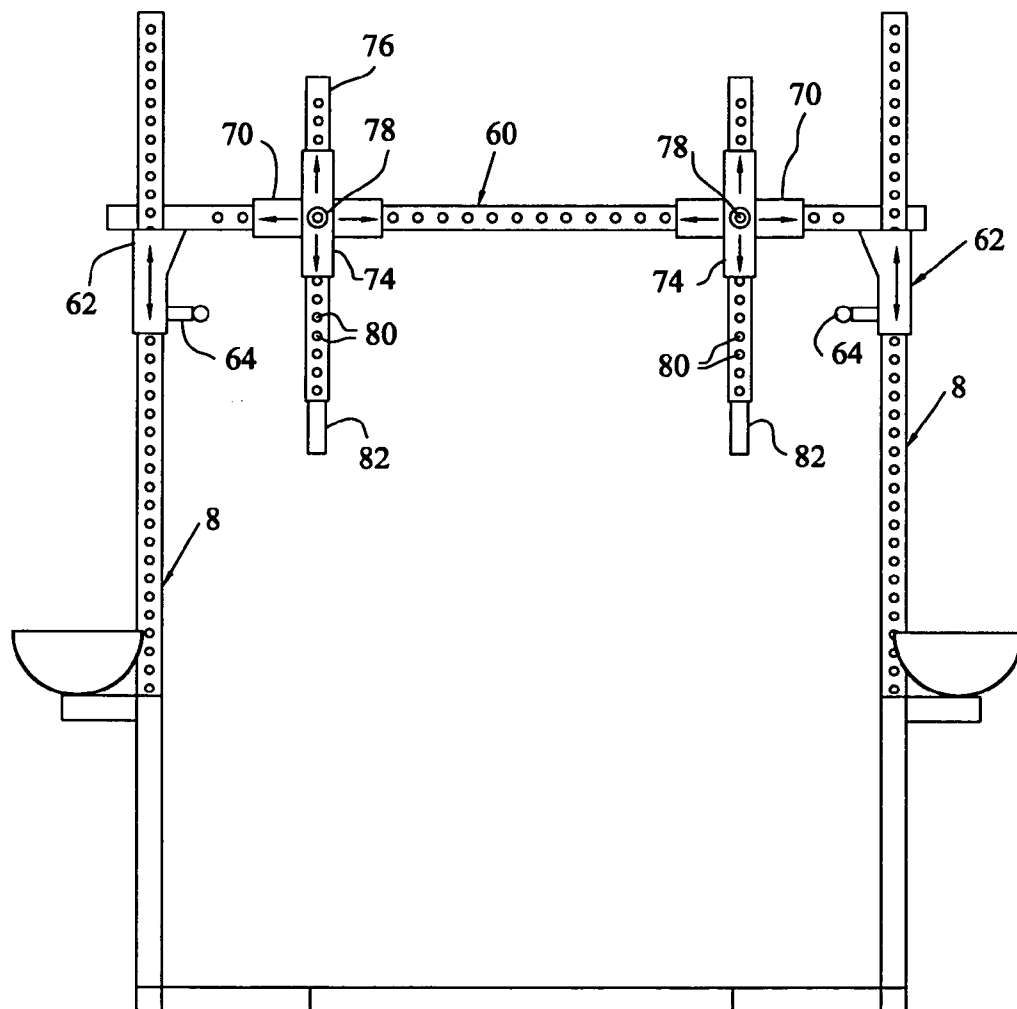


FIG. 6

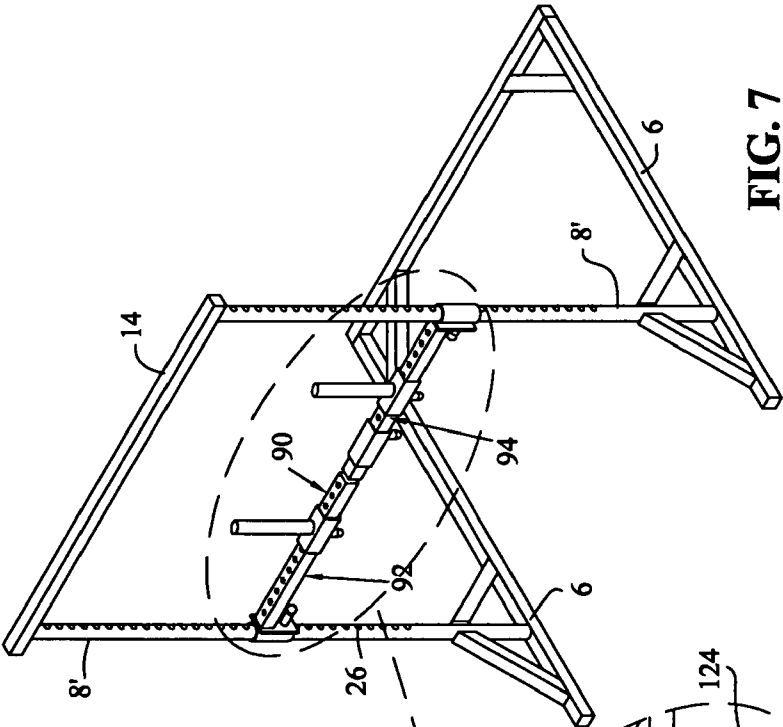


FIG. 7

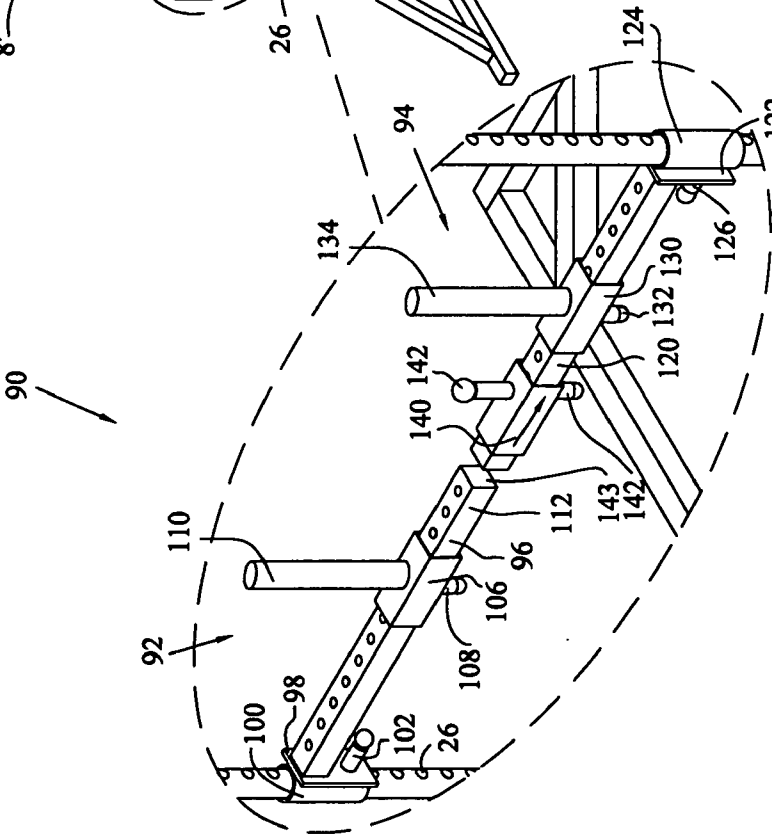


FIG. 7A

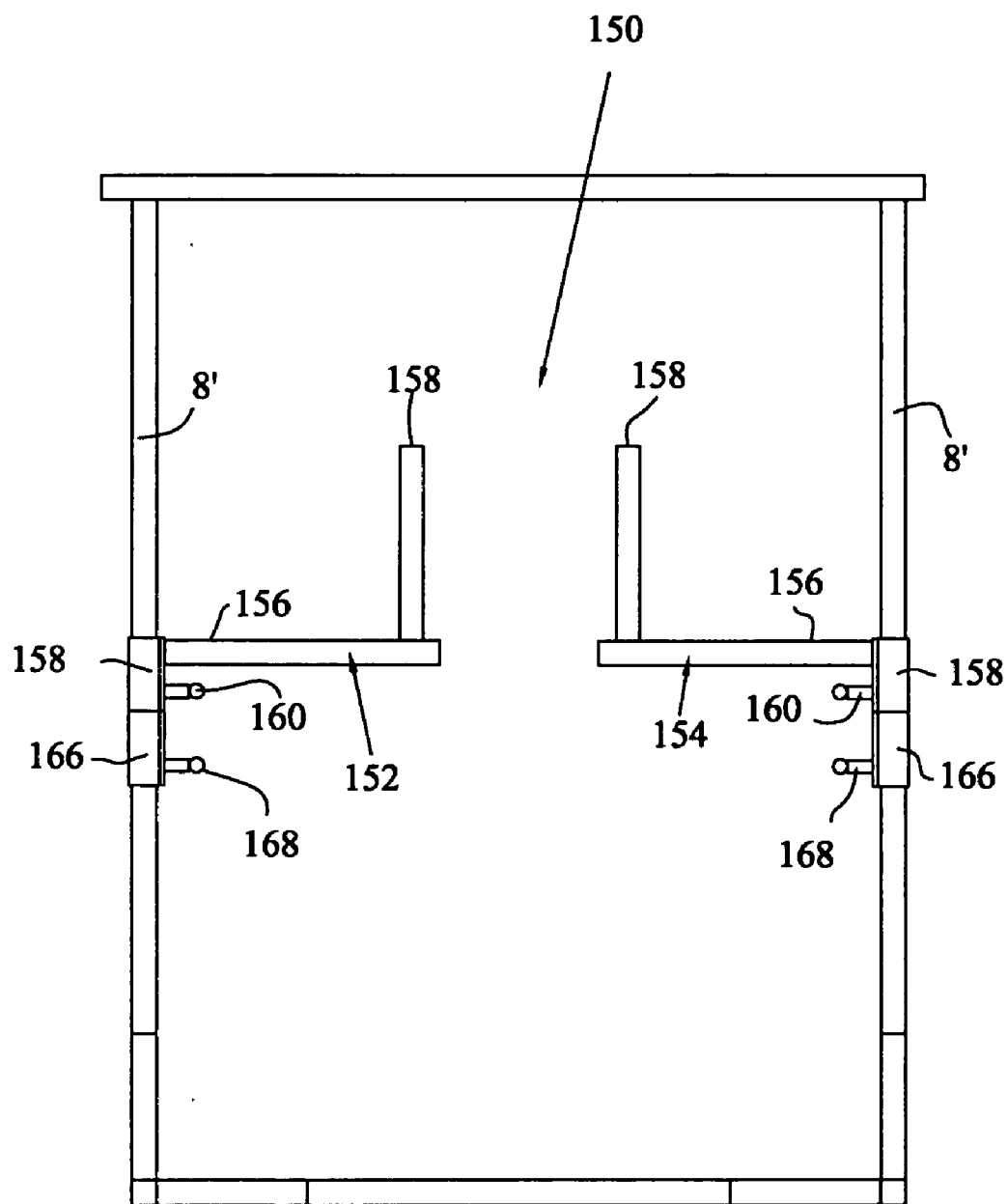


FIG. 8

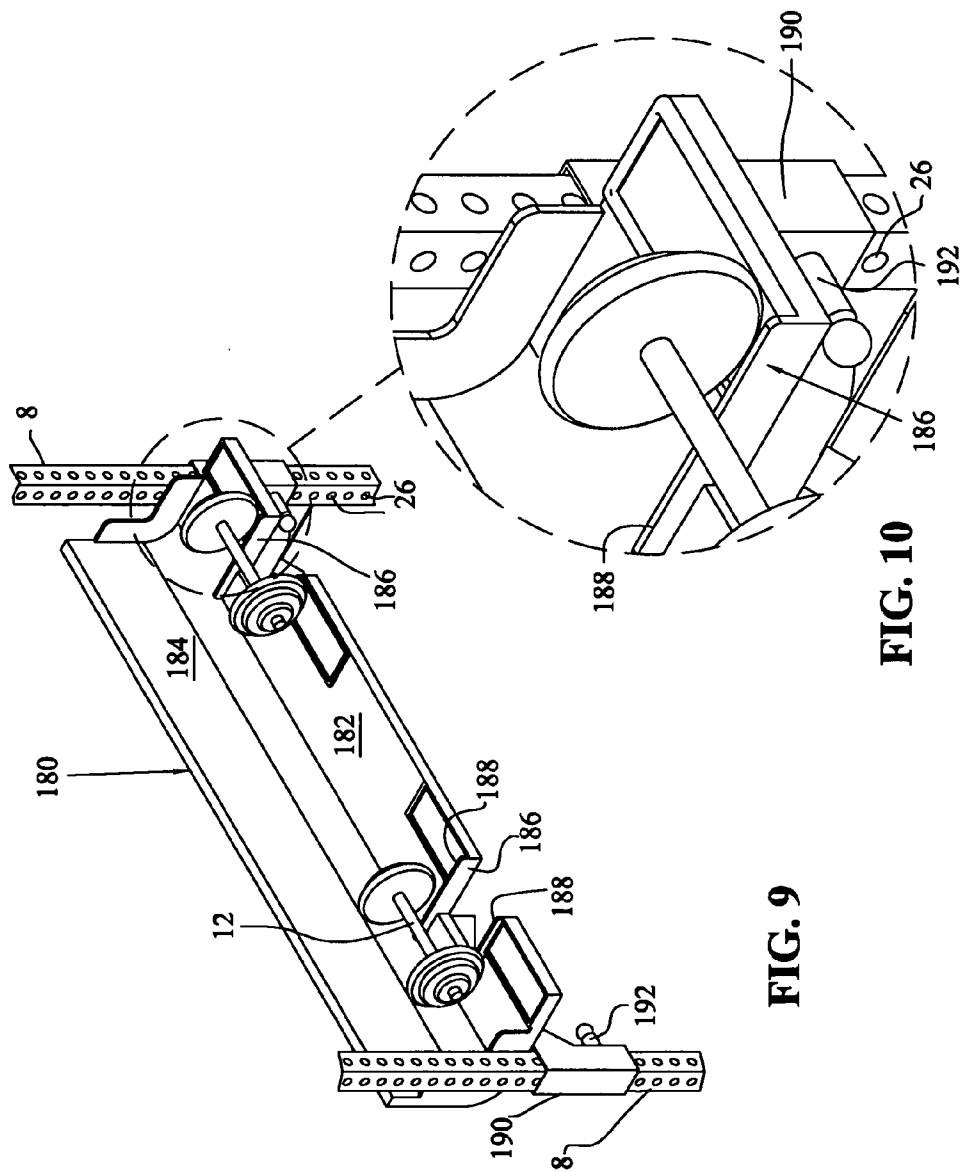


FIG. 9

FIG. 10

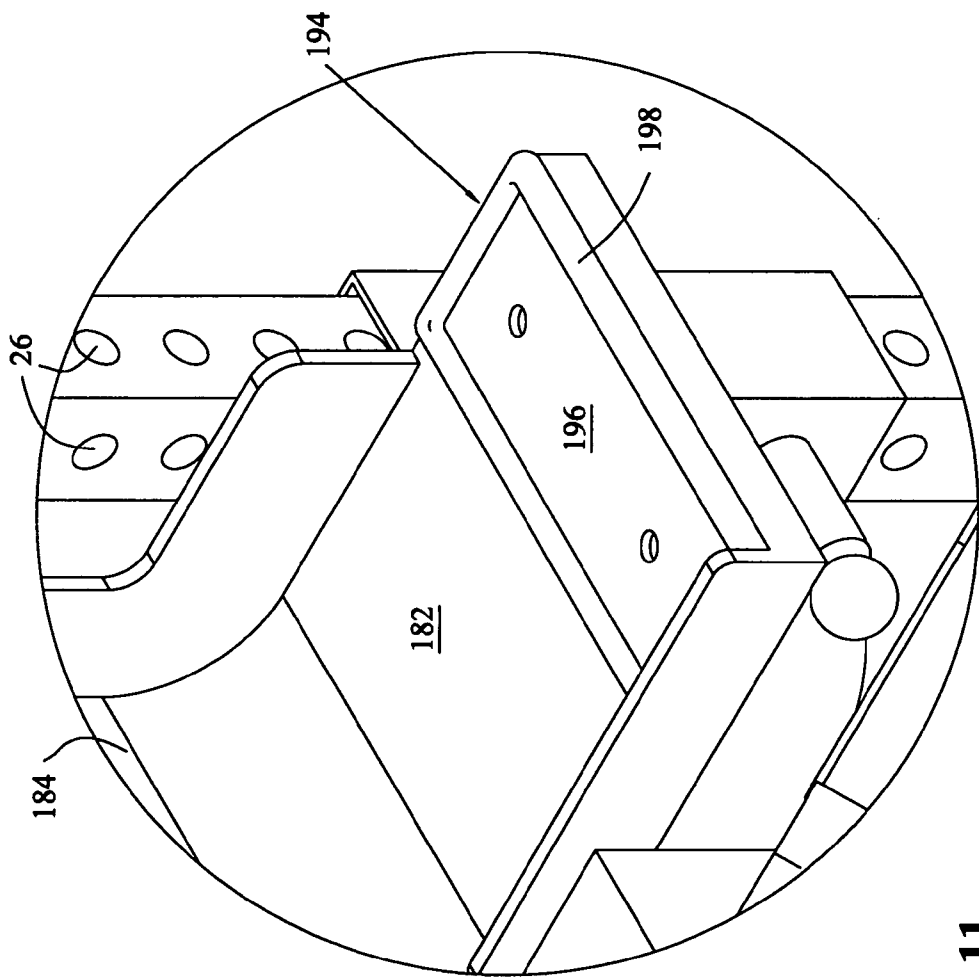


FIG. 11

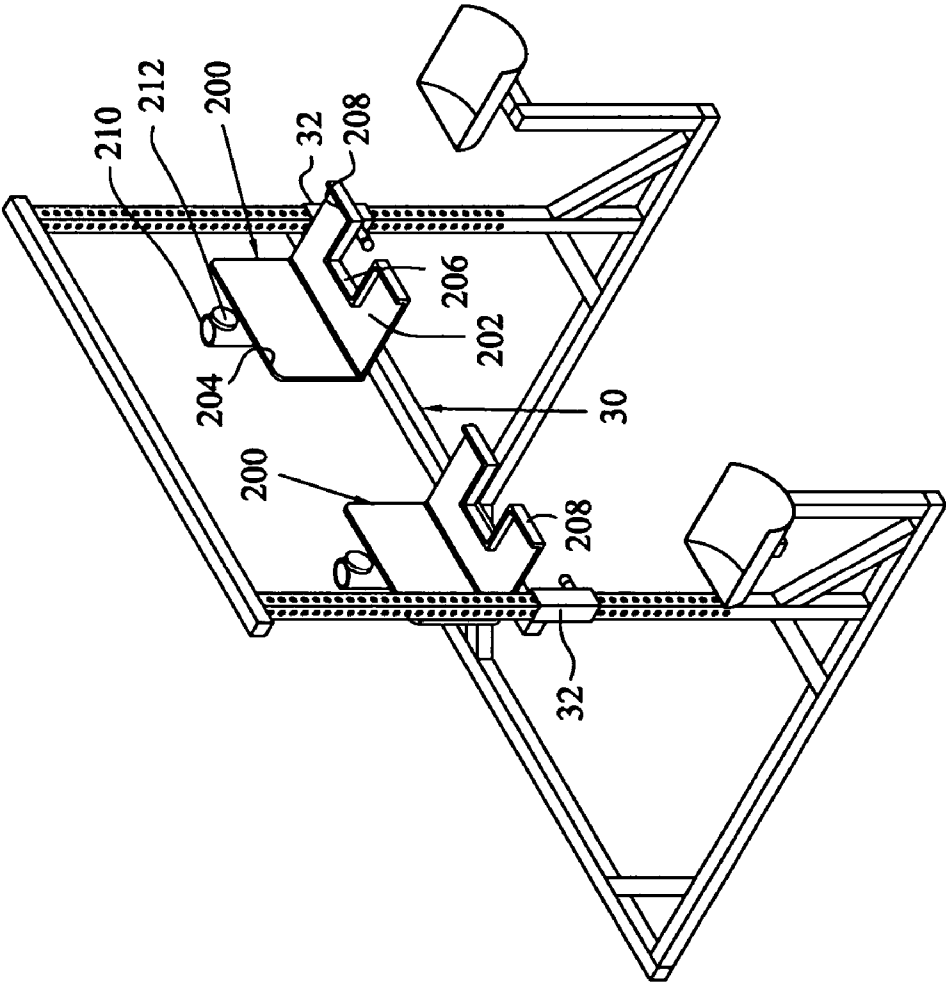


FIG. 12

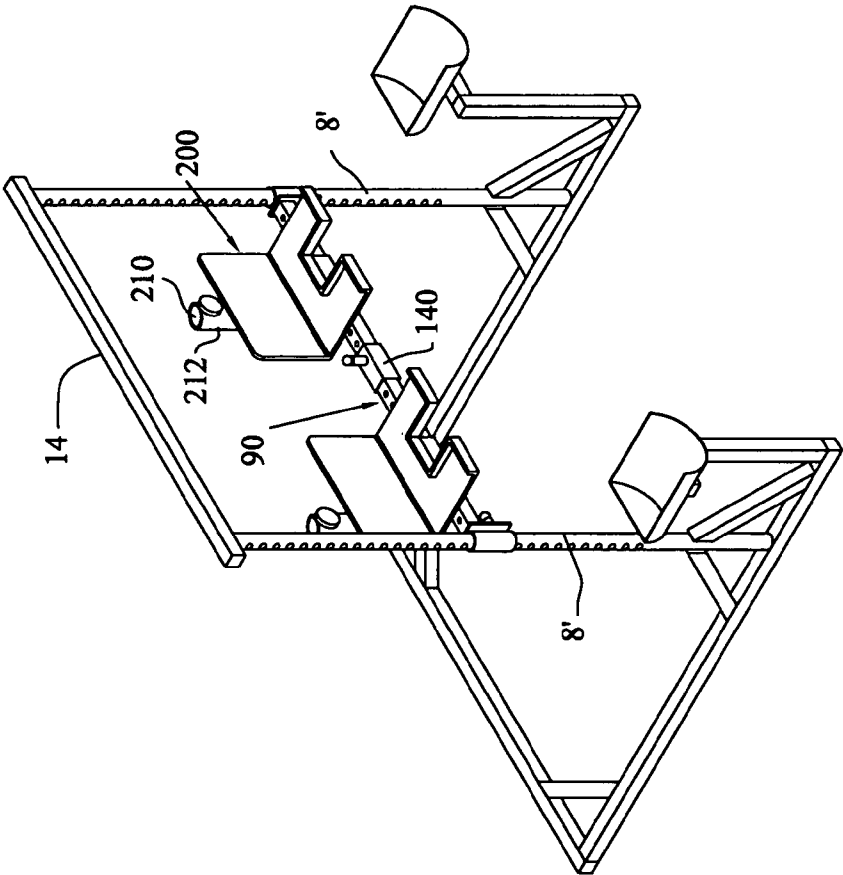


FIG. 13

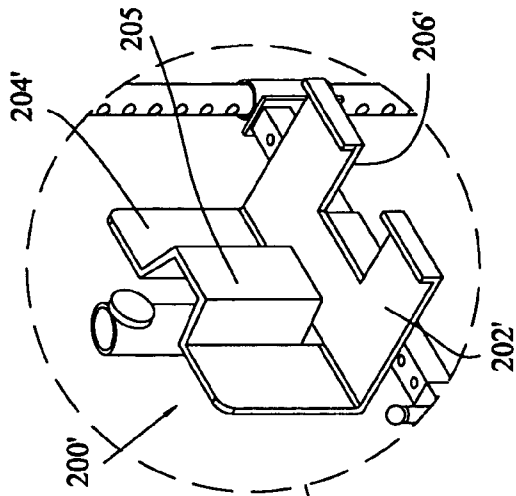


FIG. 13B

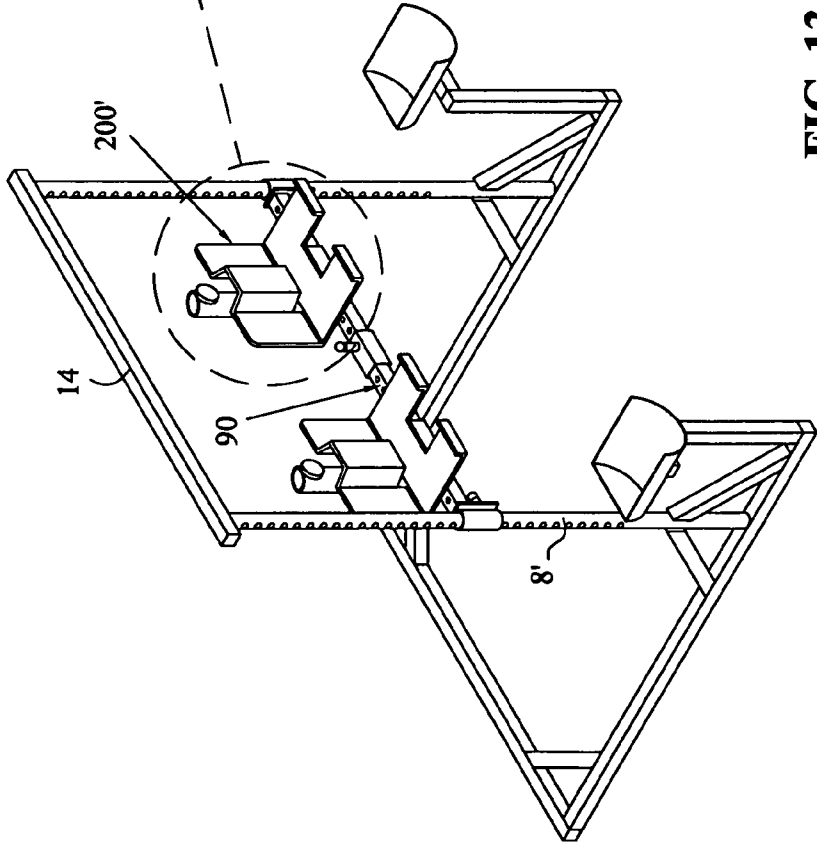


FIG. 13A

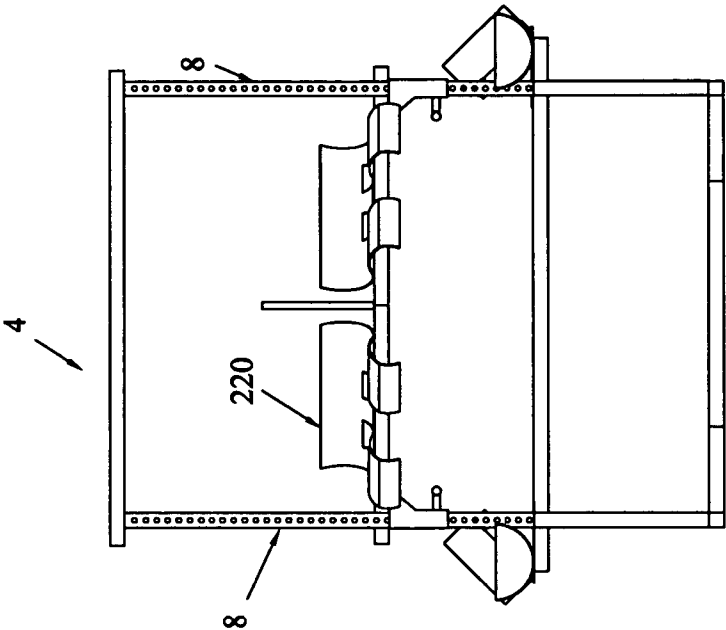


FIG. 15

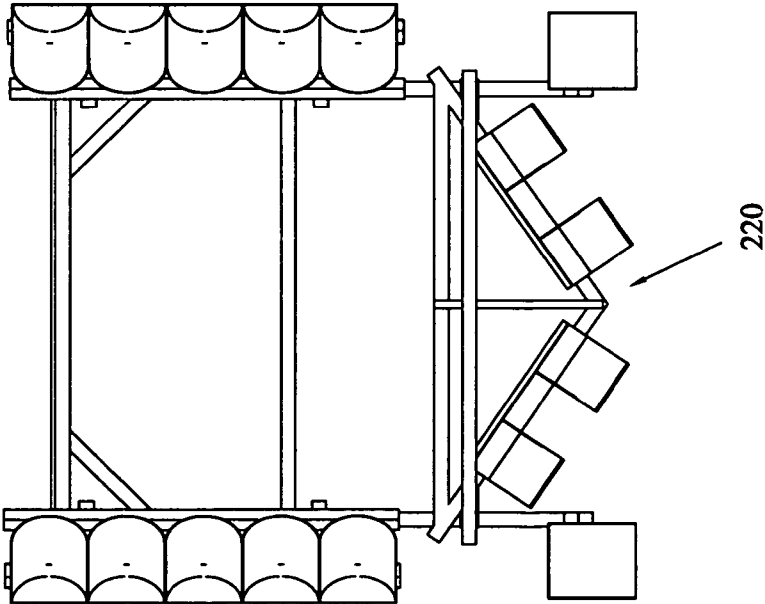


FIG. 14

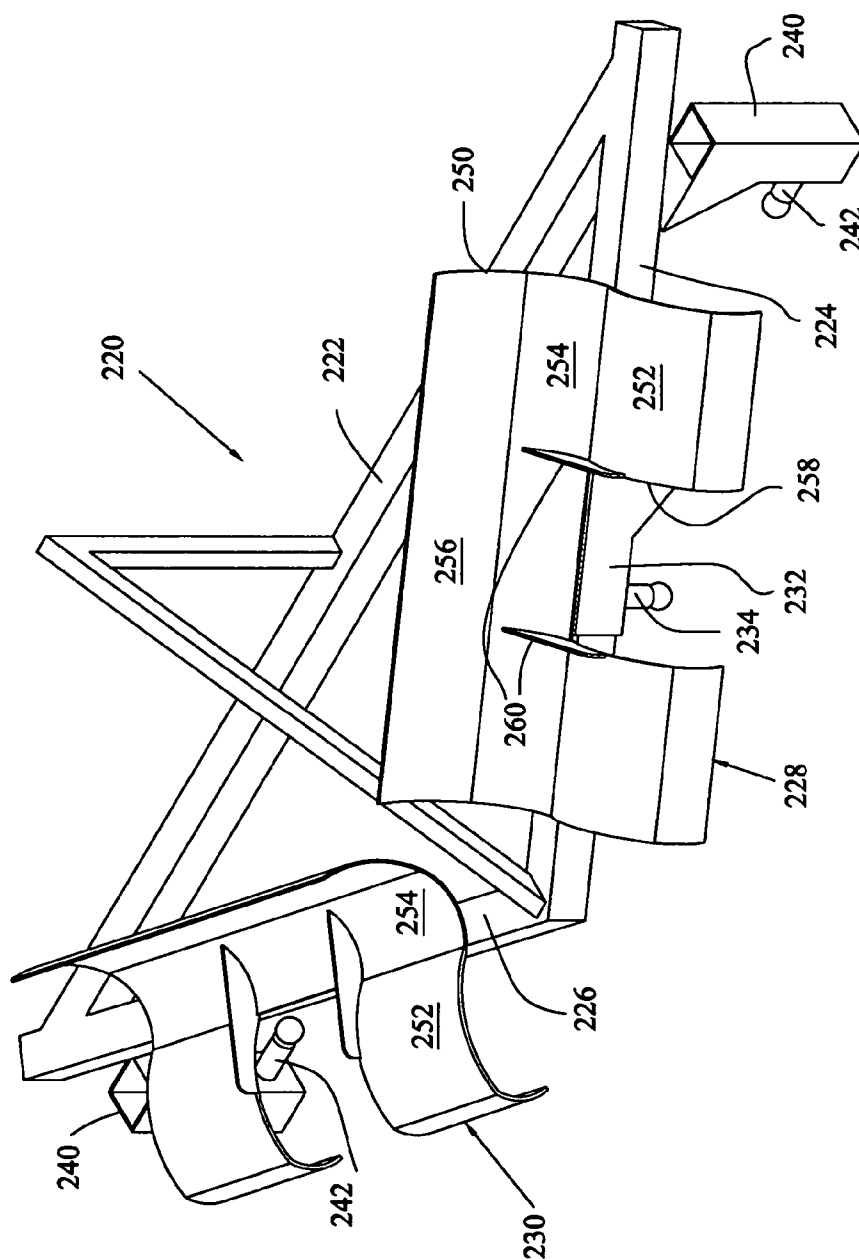


FIG. 16

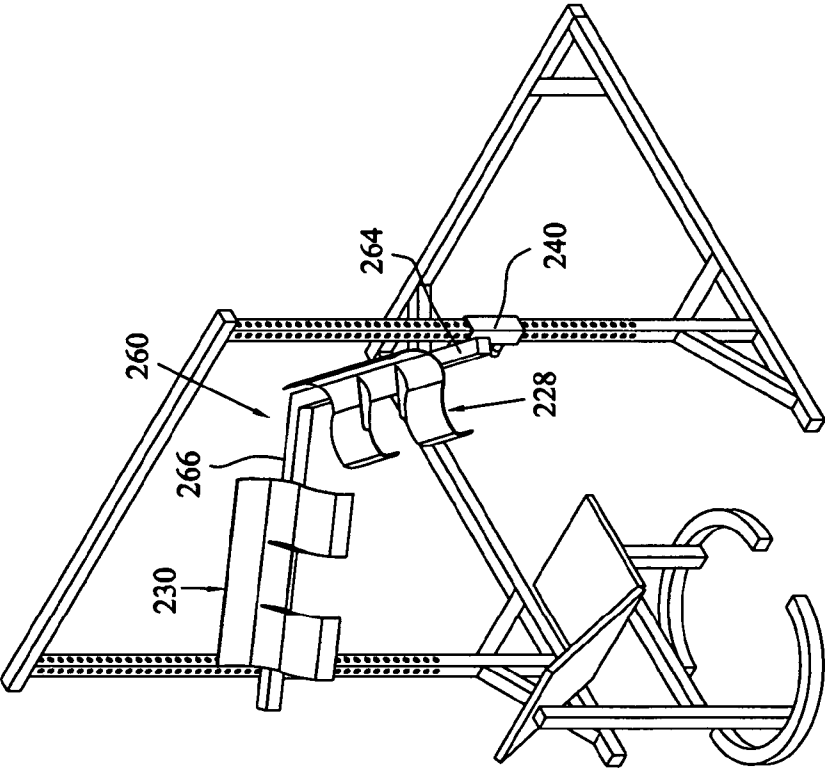


FIG. 17

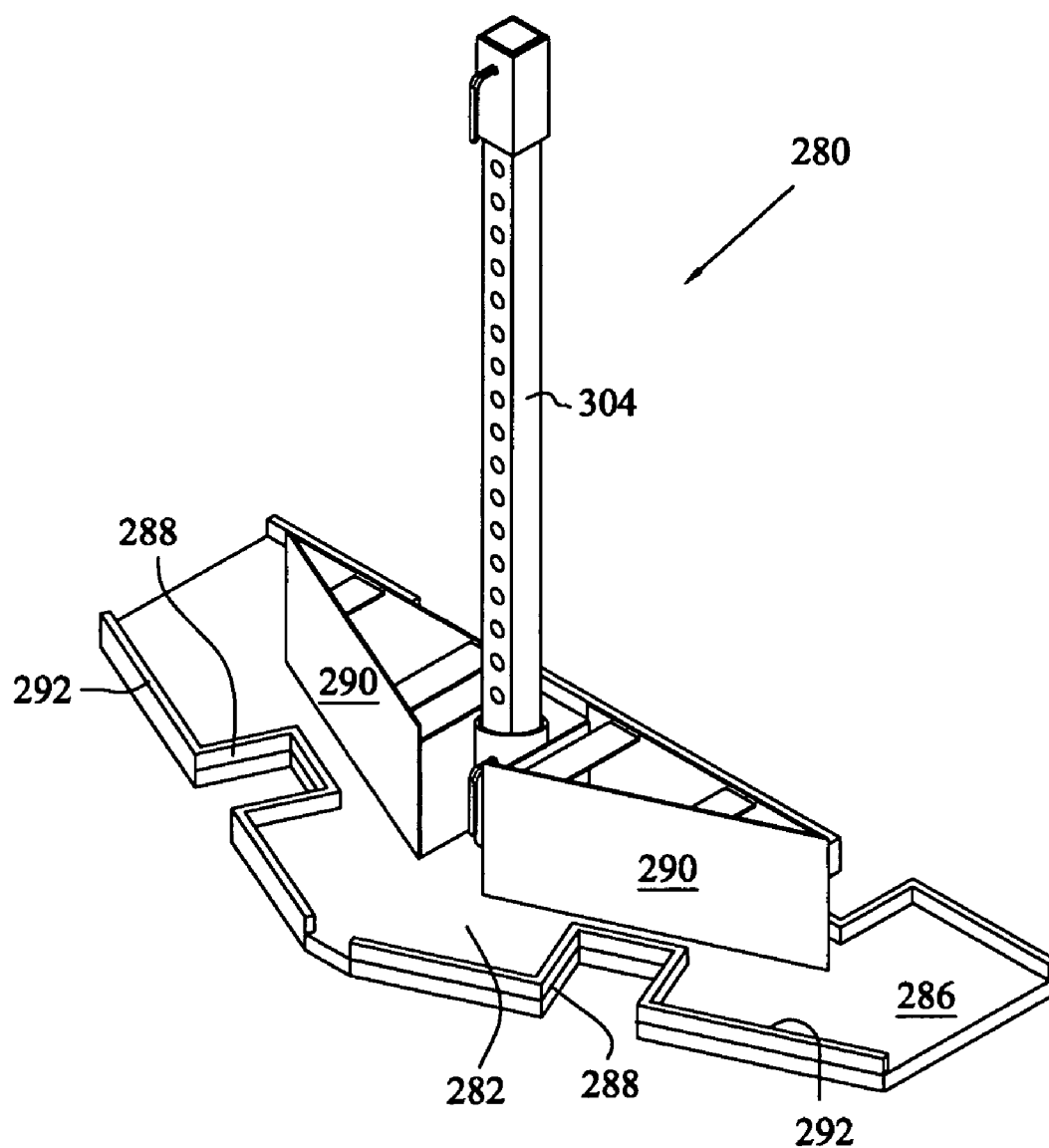


FIG. 18

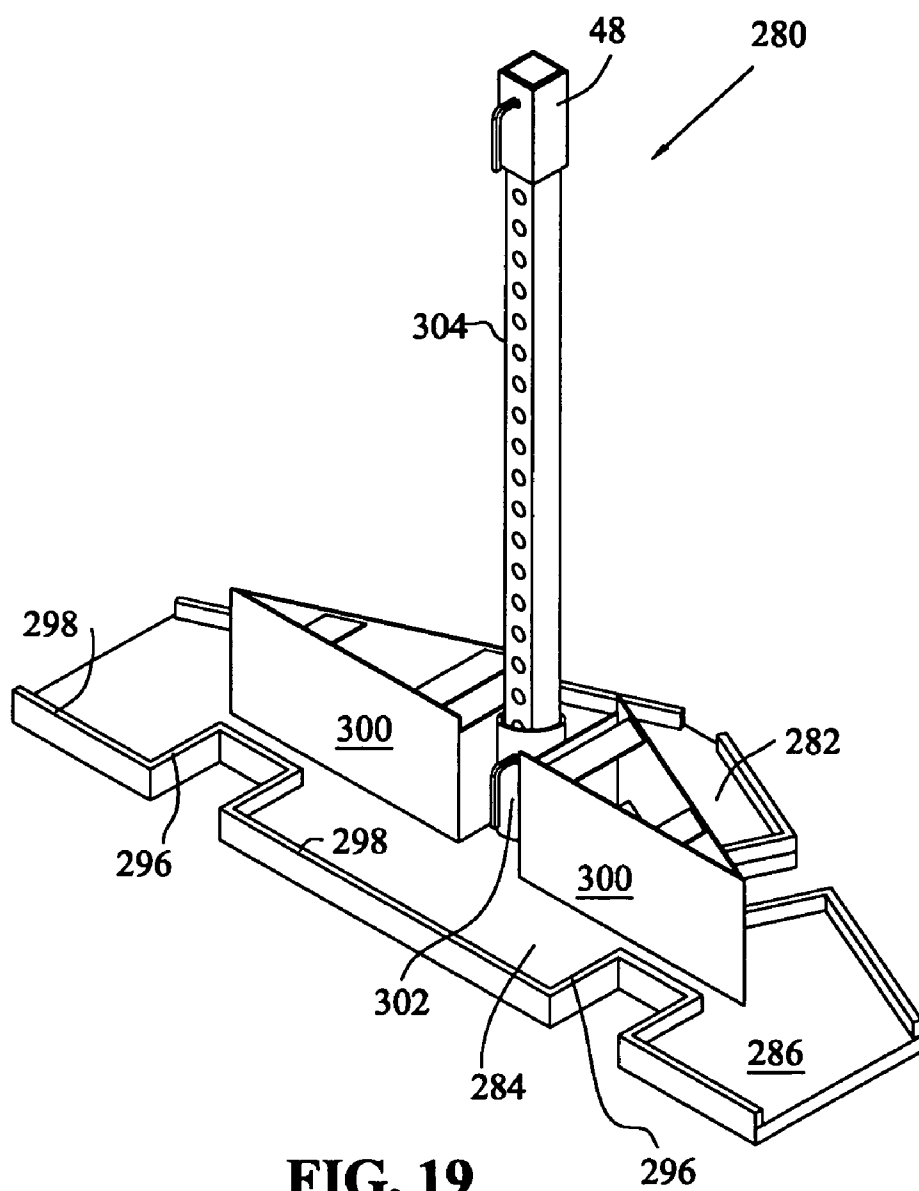
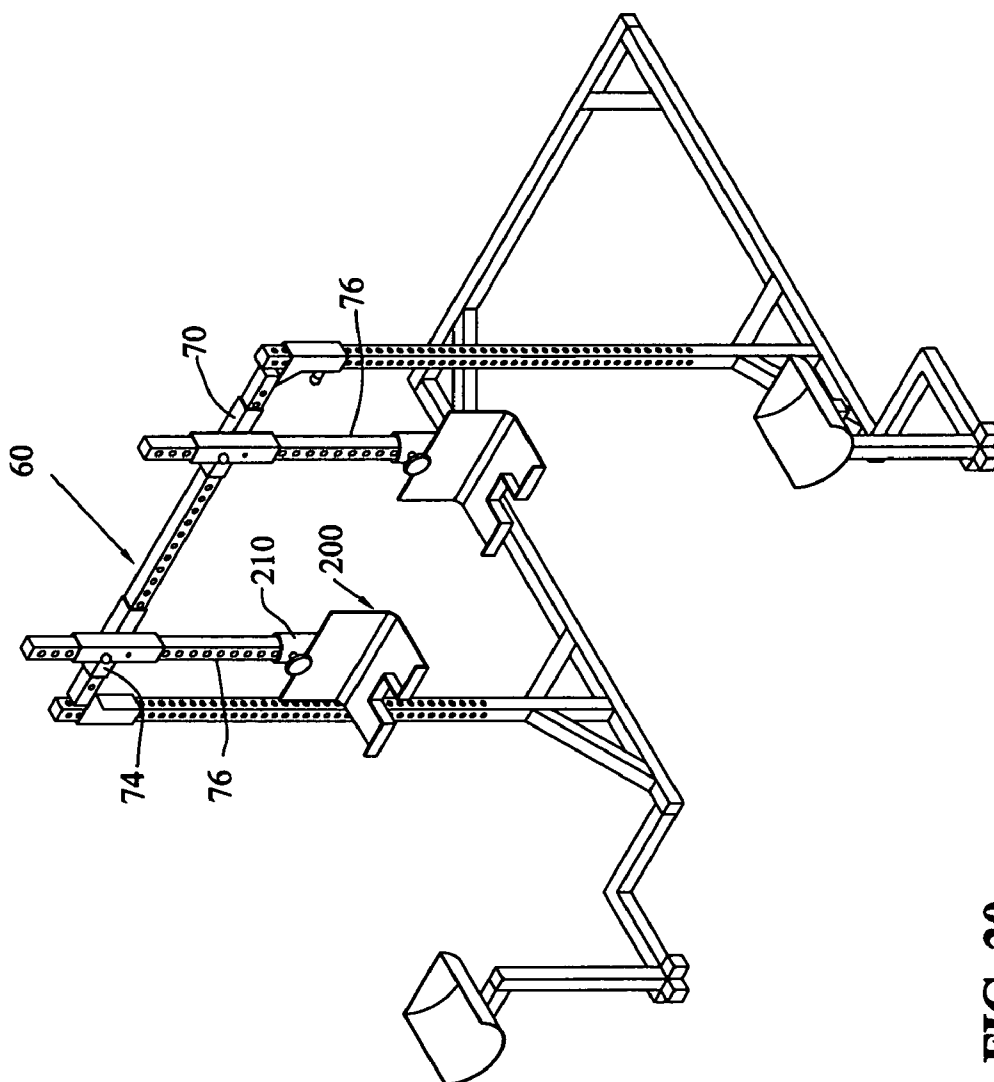


FIG. 19



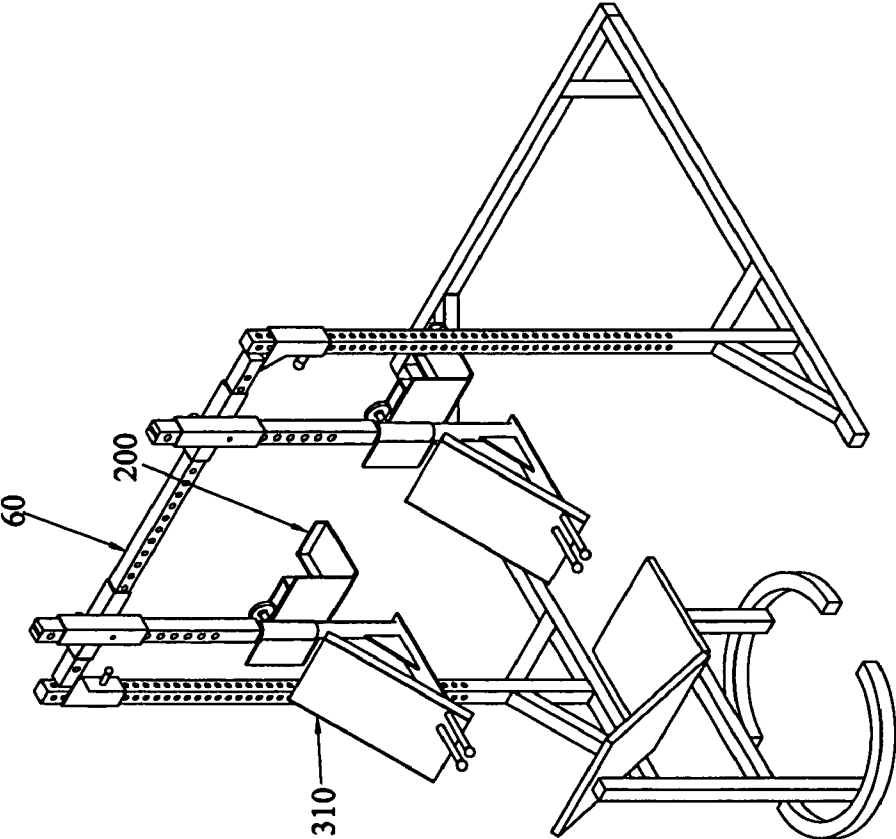


FIG. 21

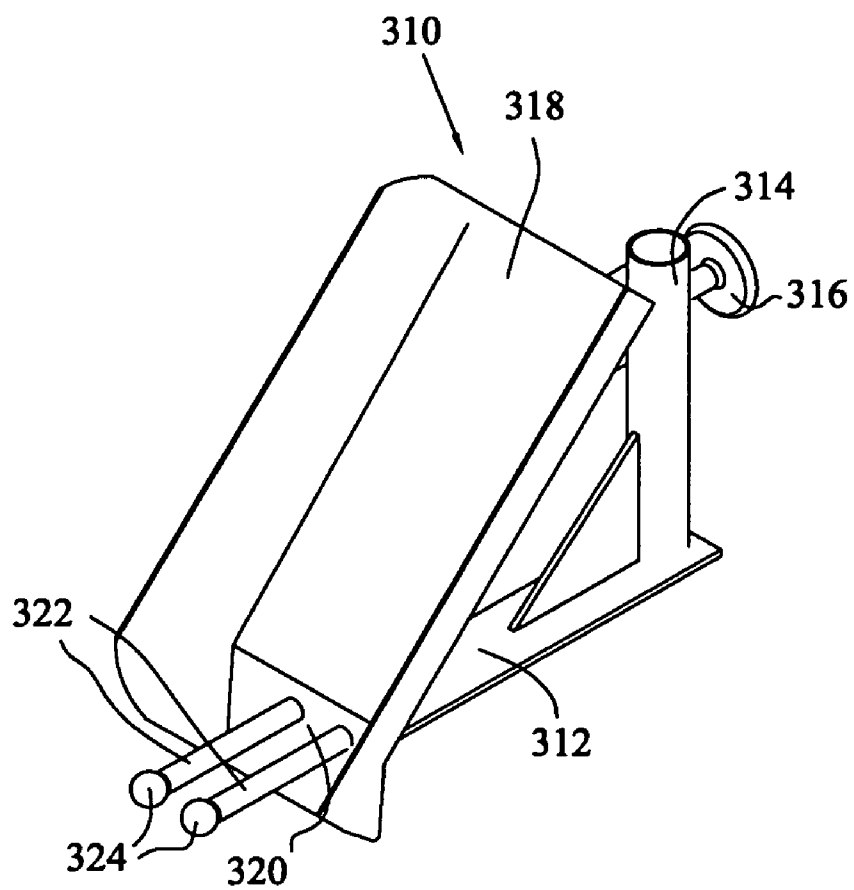


FIG. 21A

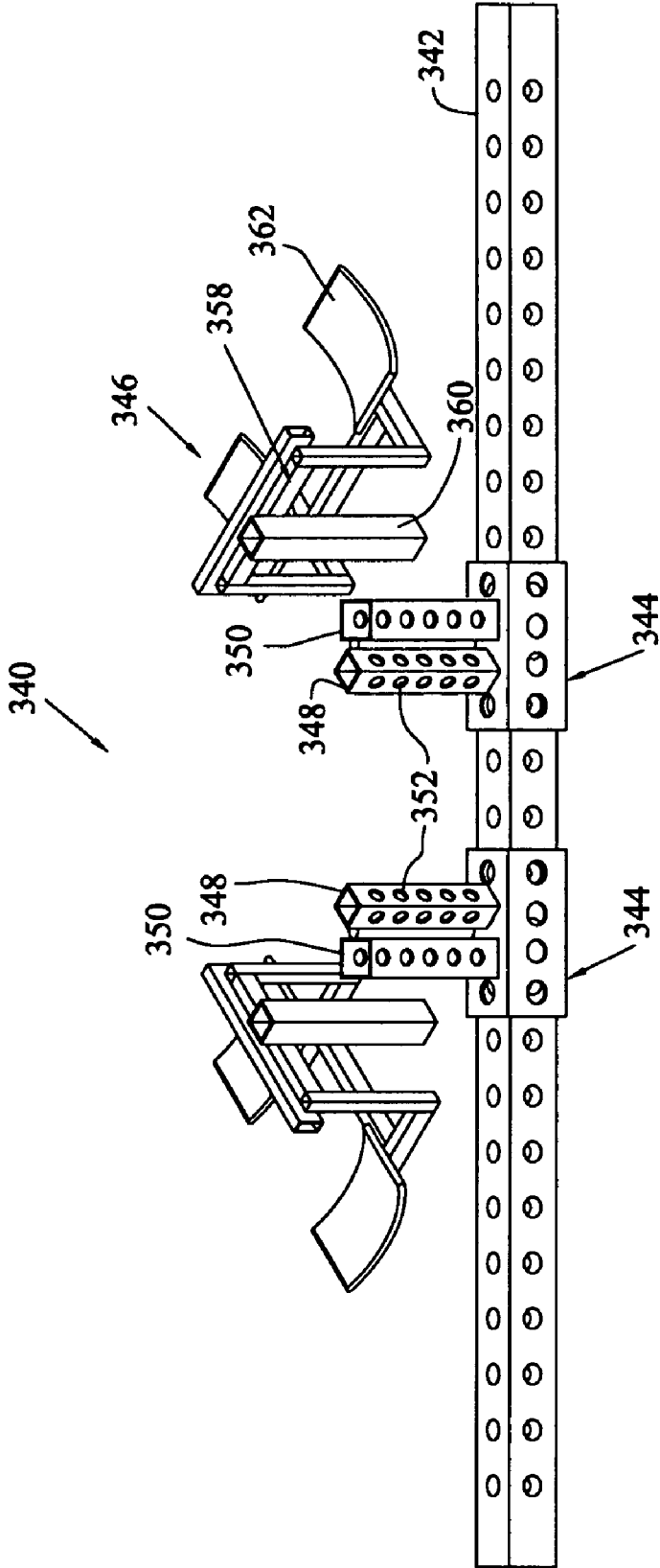


FIG. 22

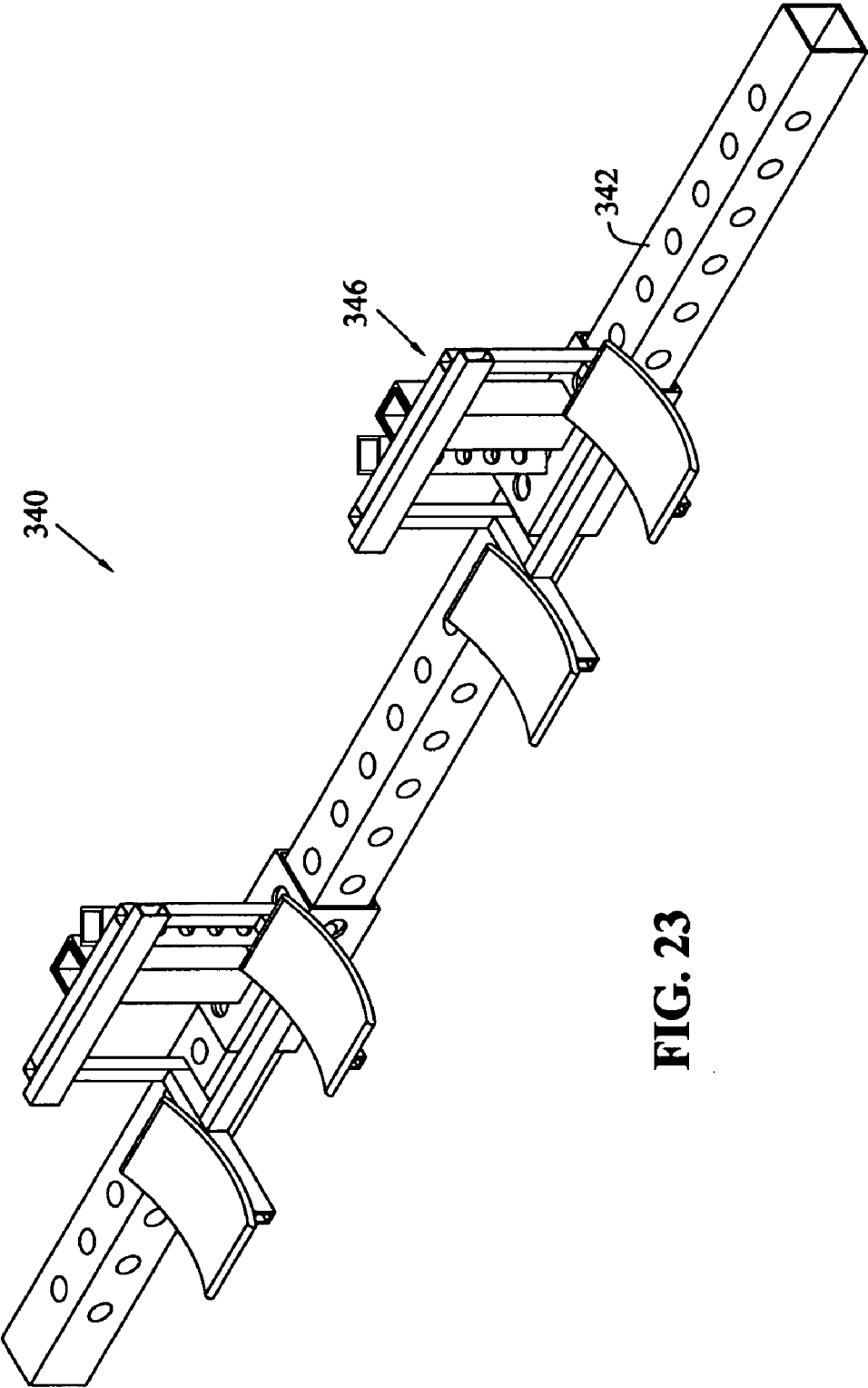


FIG. 23

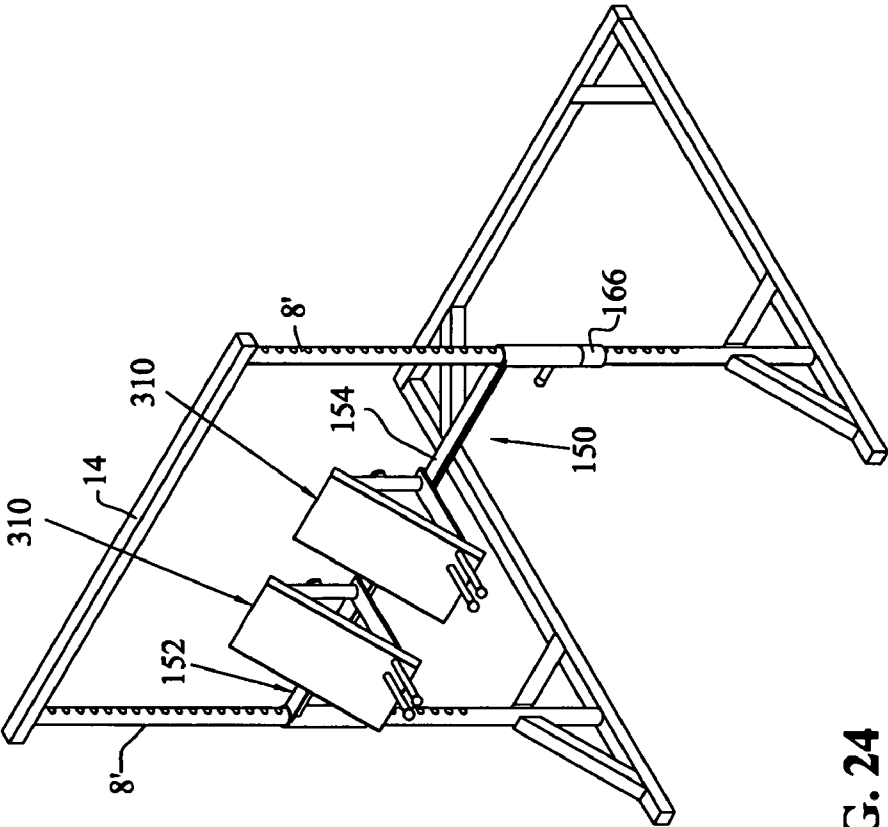


FIG. 24

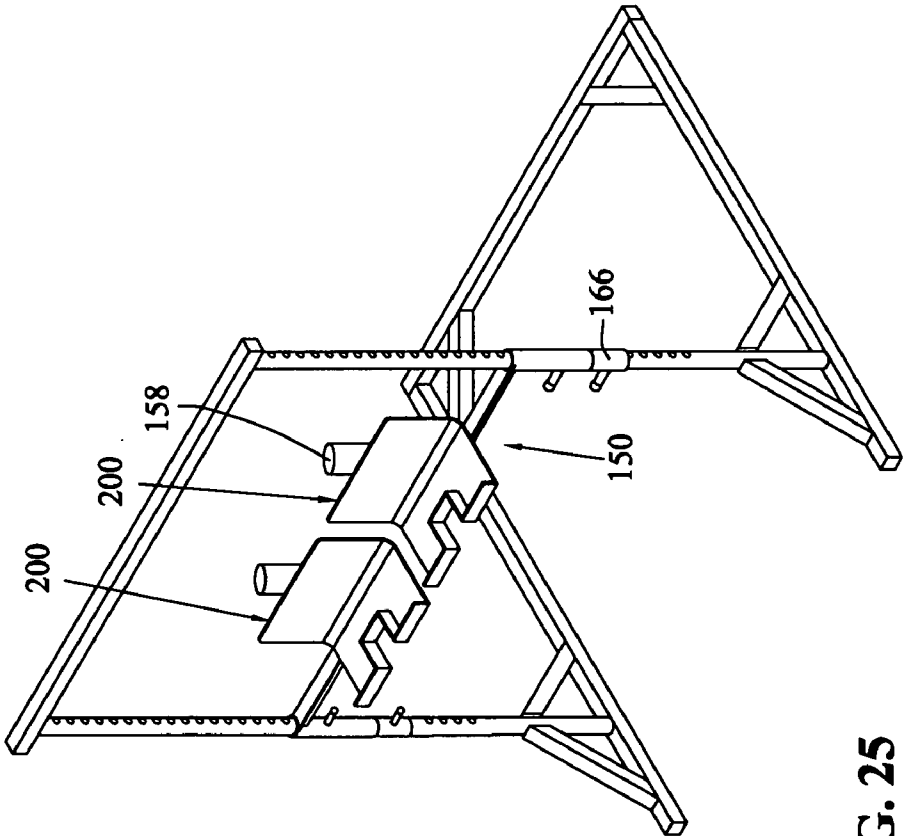


FIG. 25

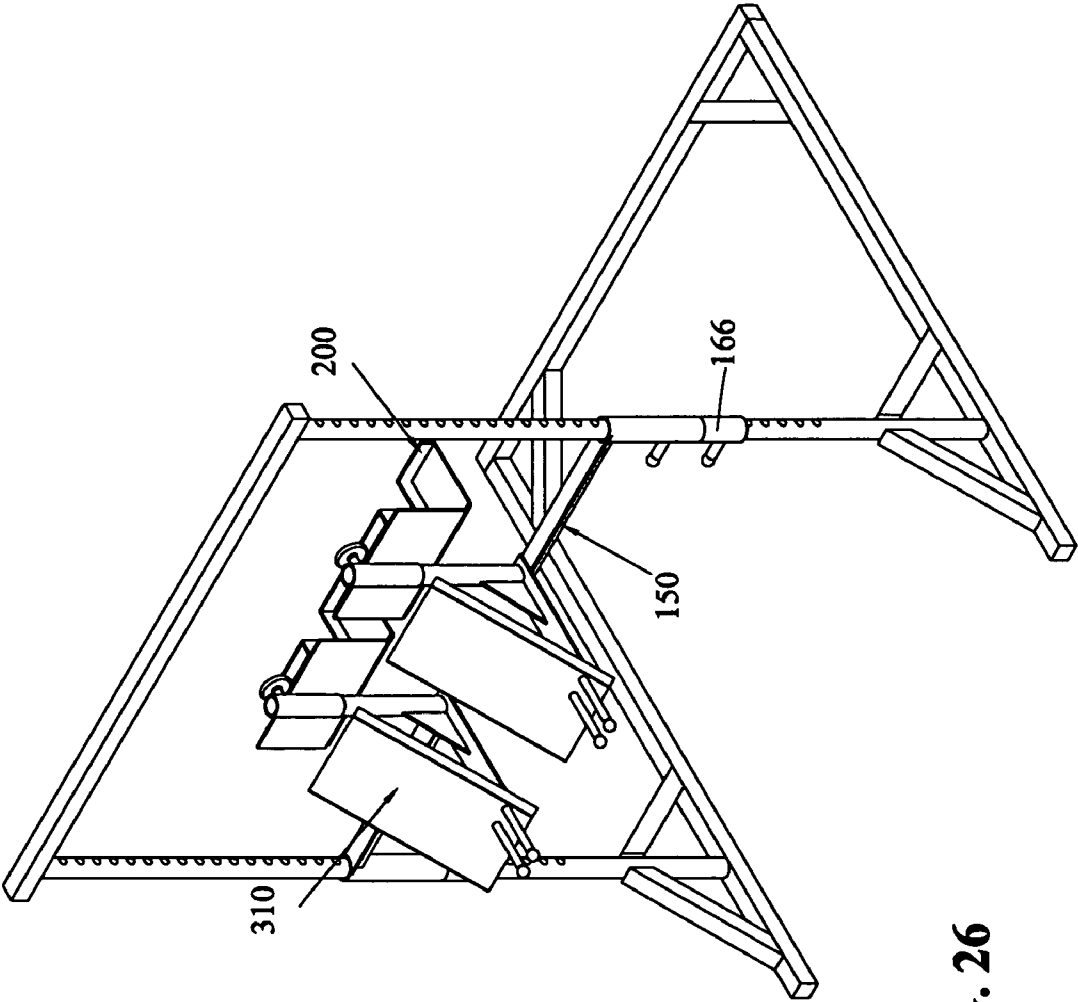


FIG. 26

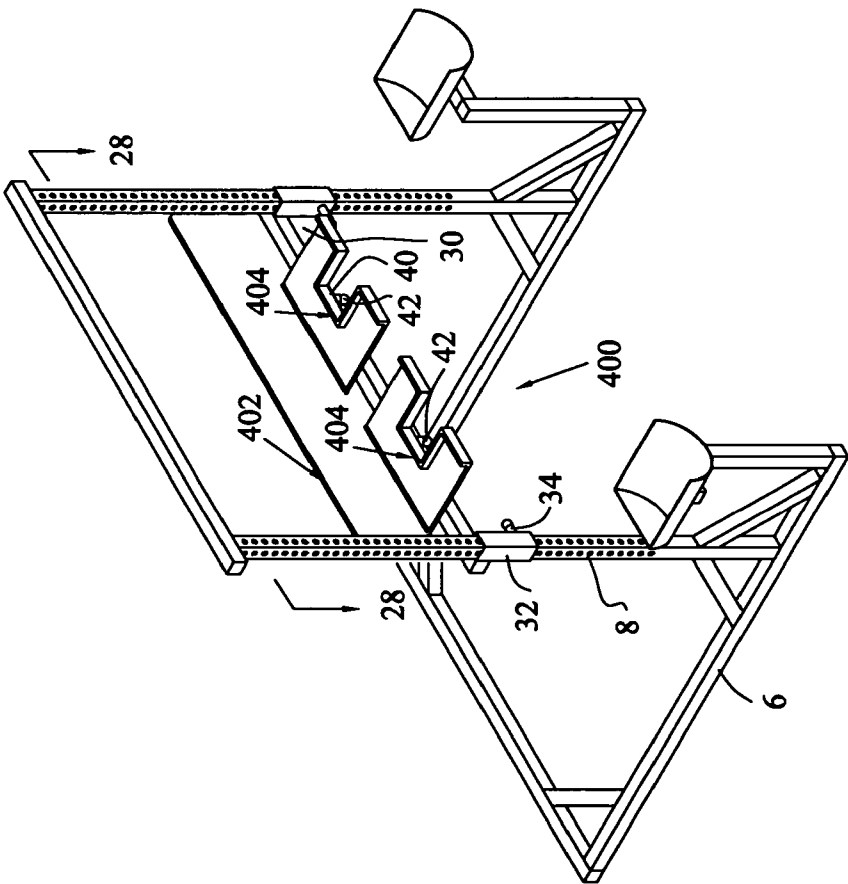


FIG. 27

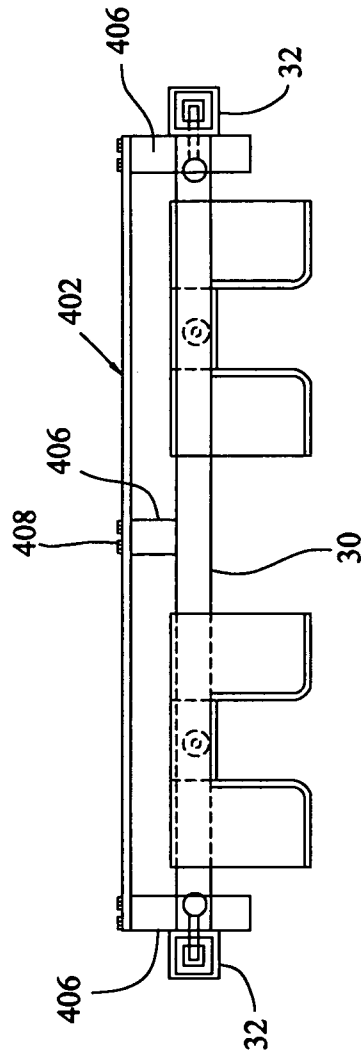
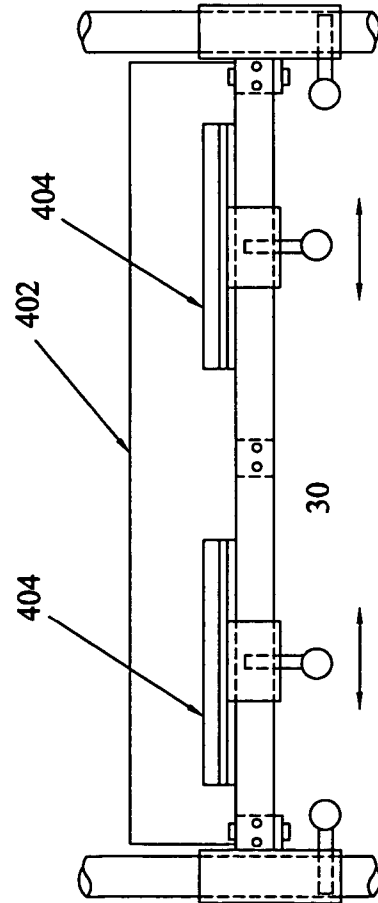
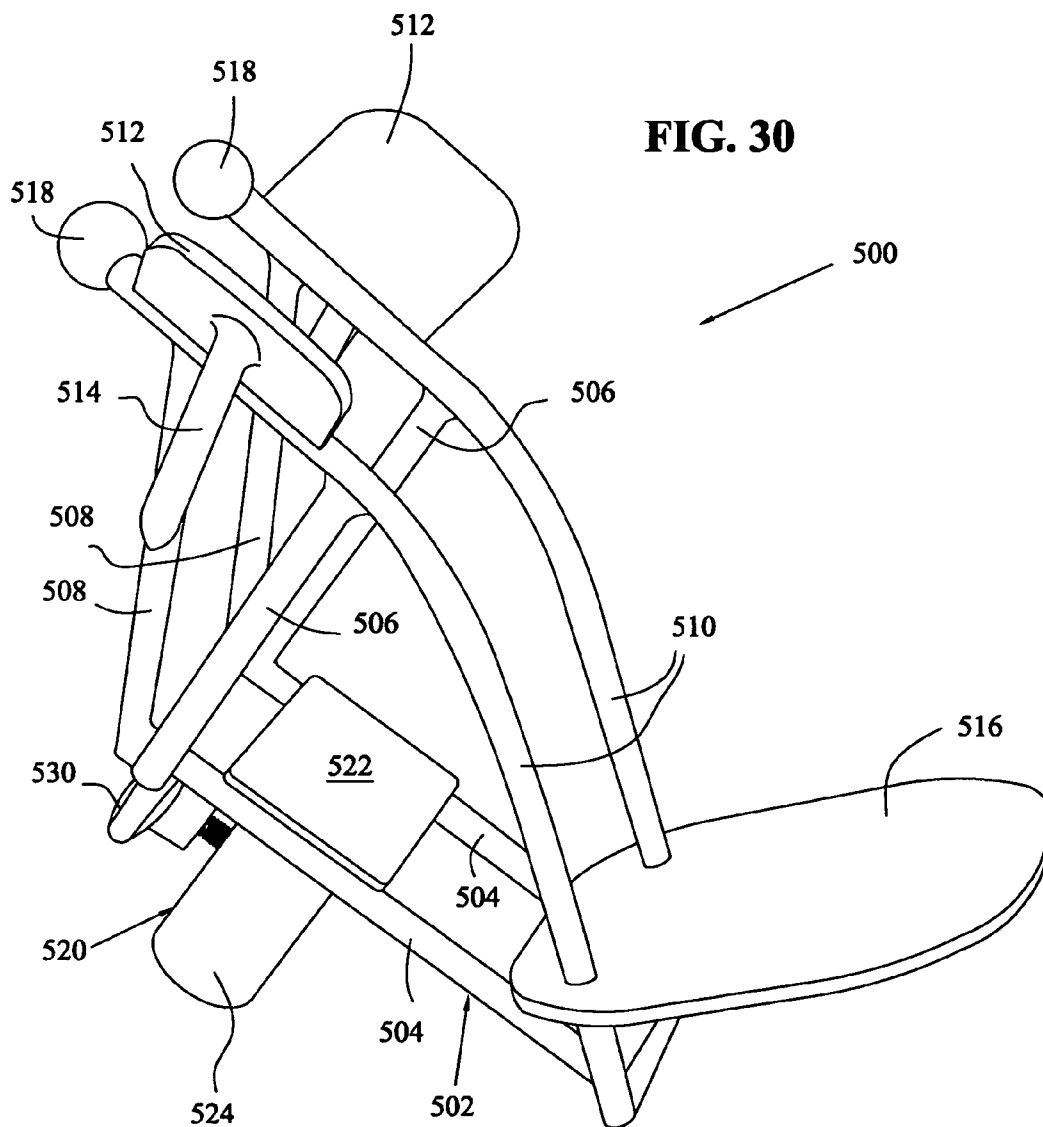
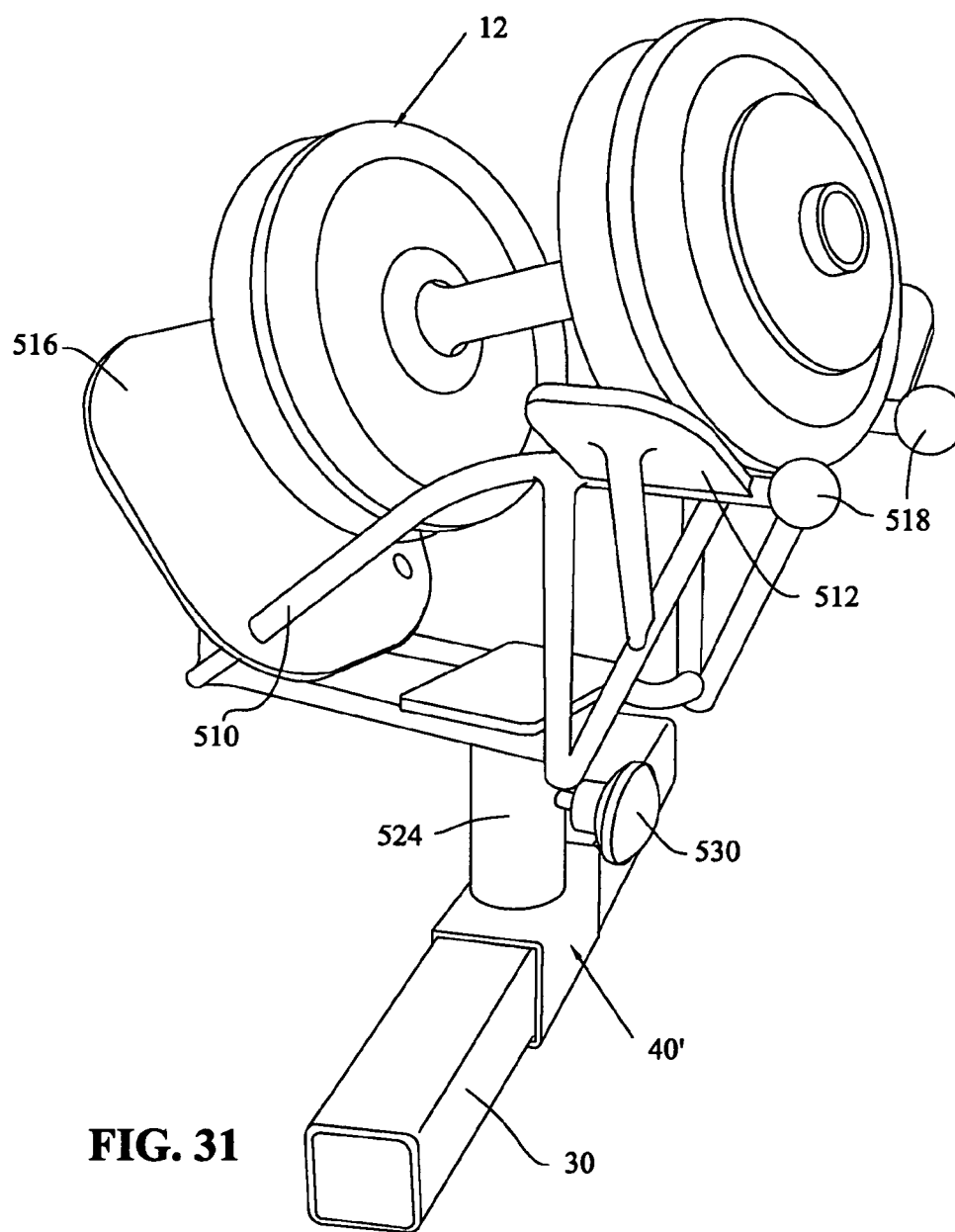


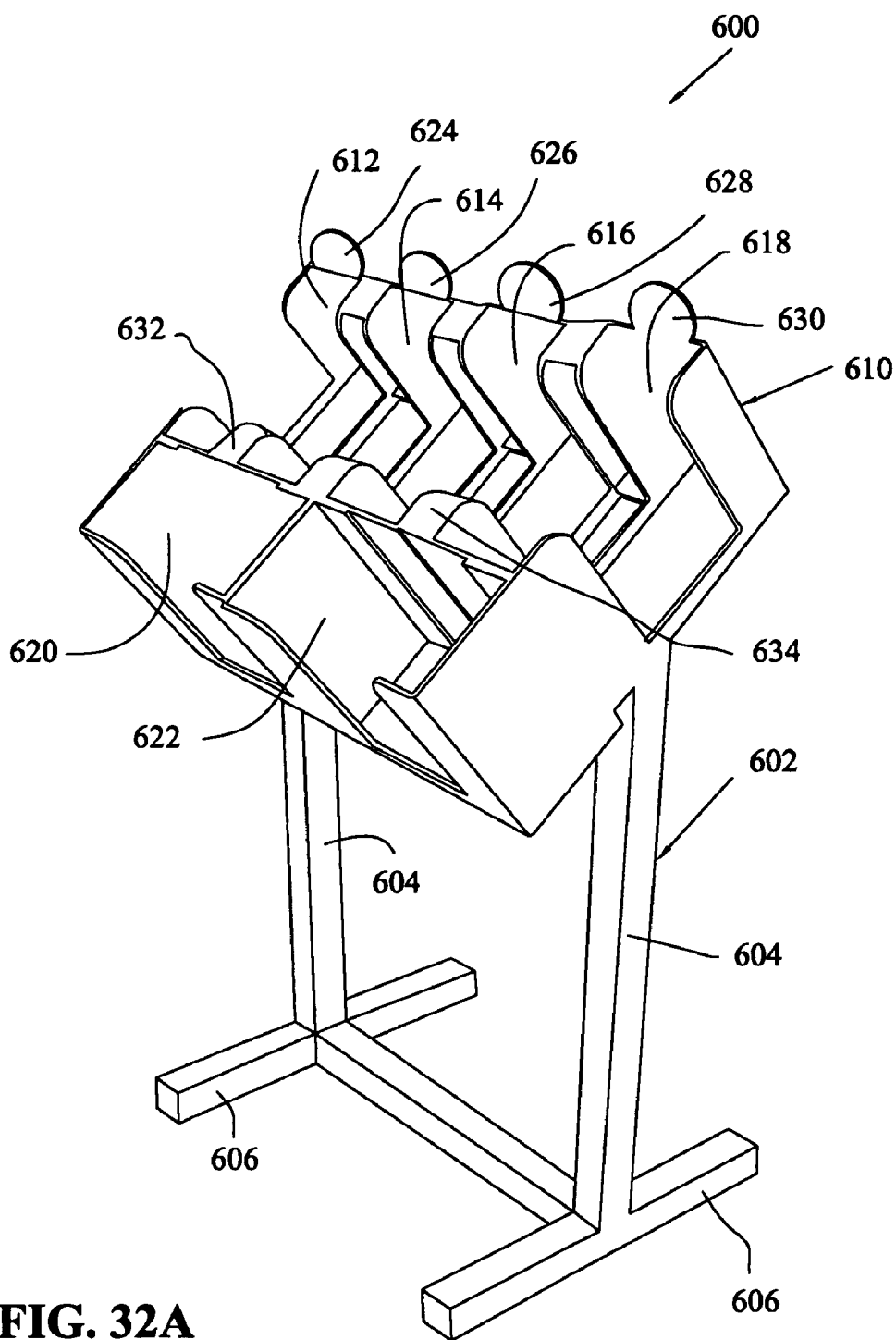
FIG. 28

FIG. 29









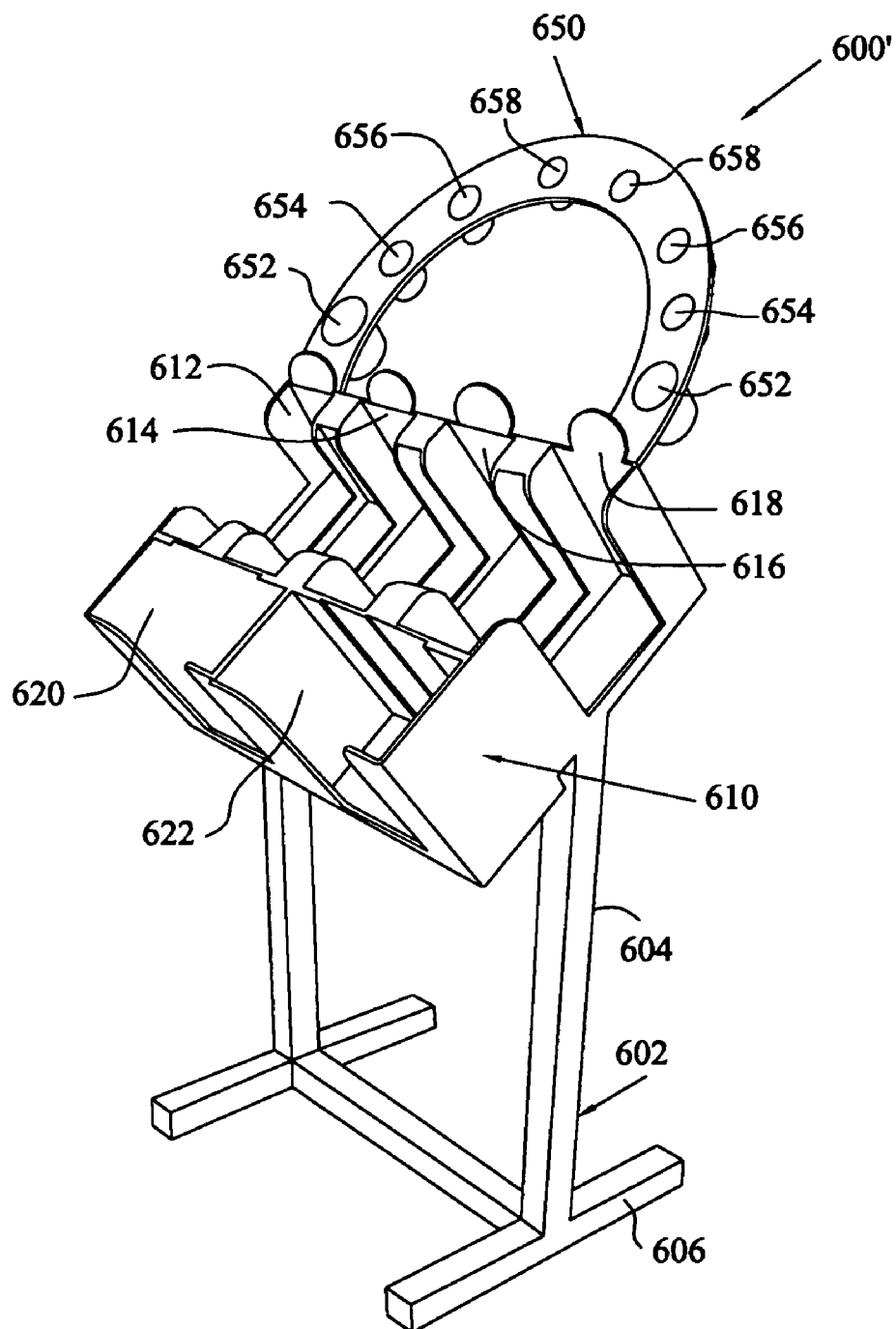


FIG. 32B

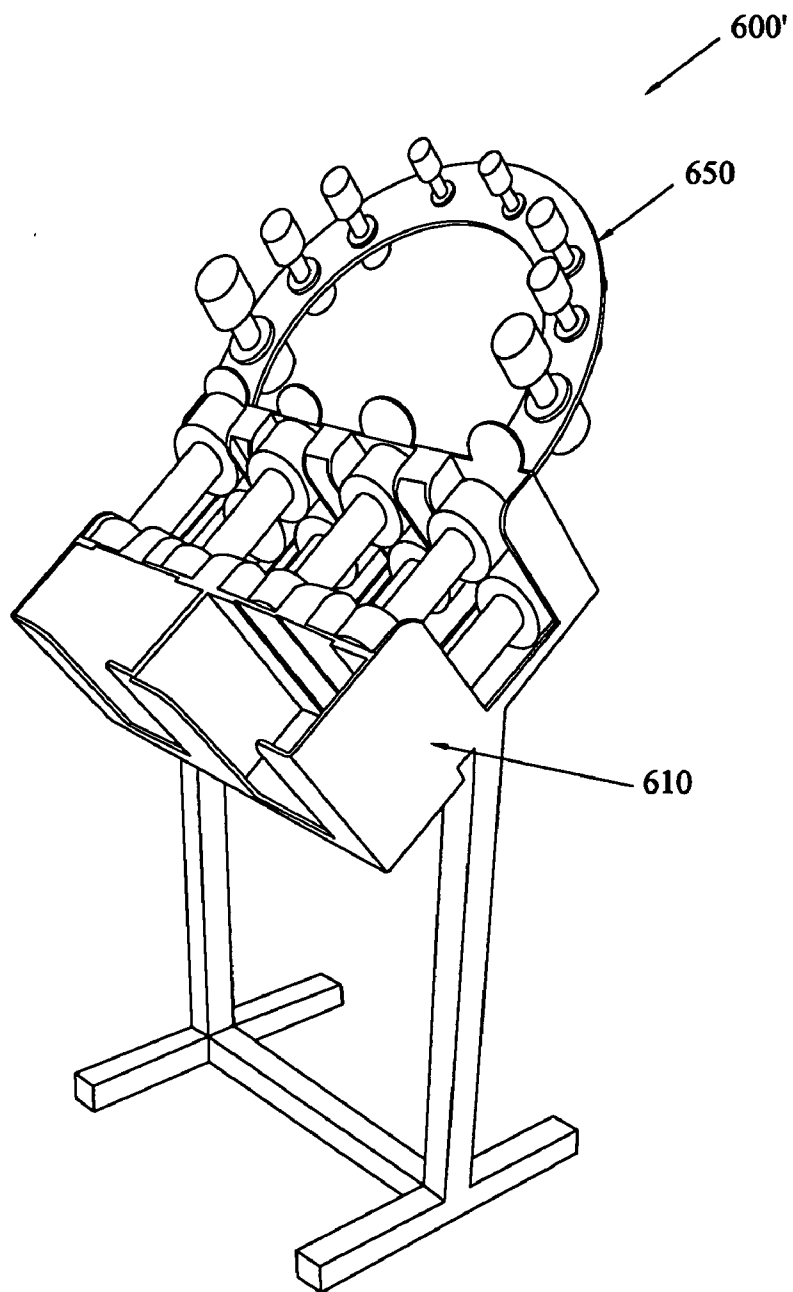


FIG. 32C

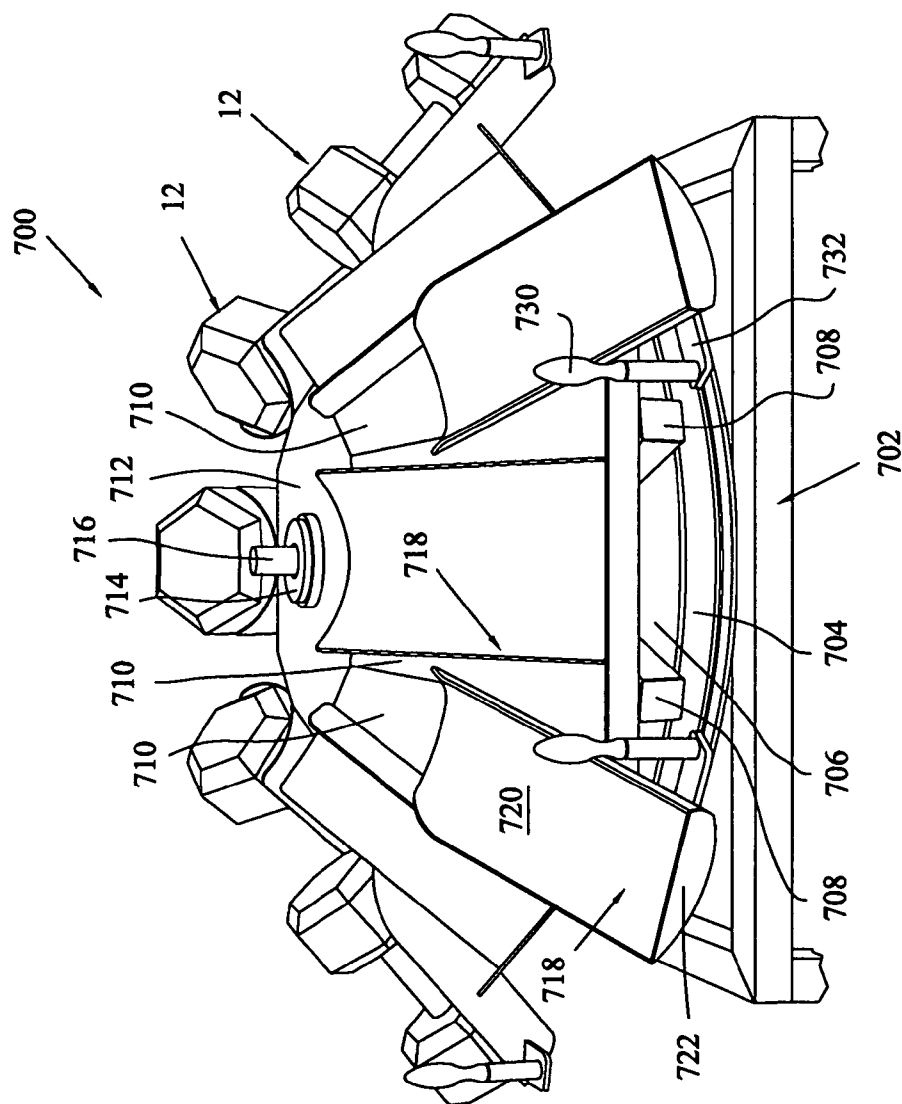


FIG. 33

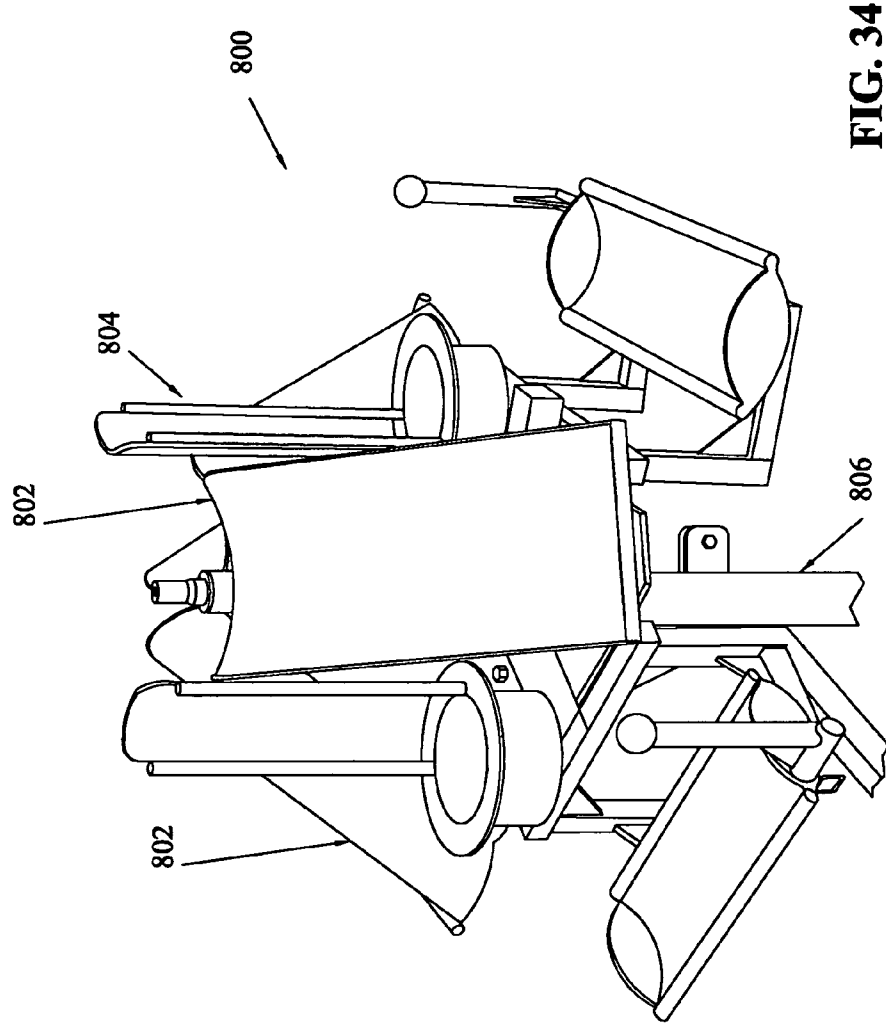


FIG. 34

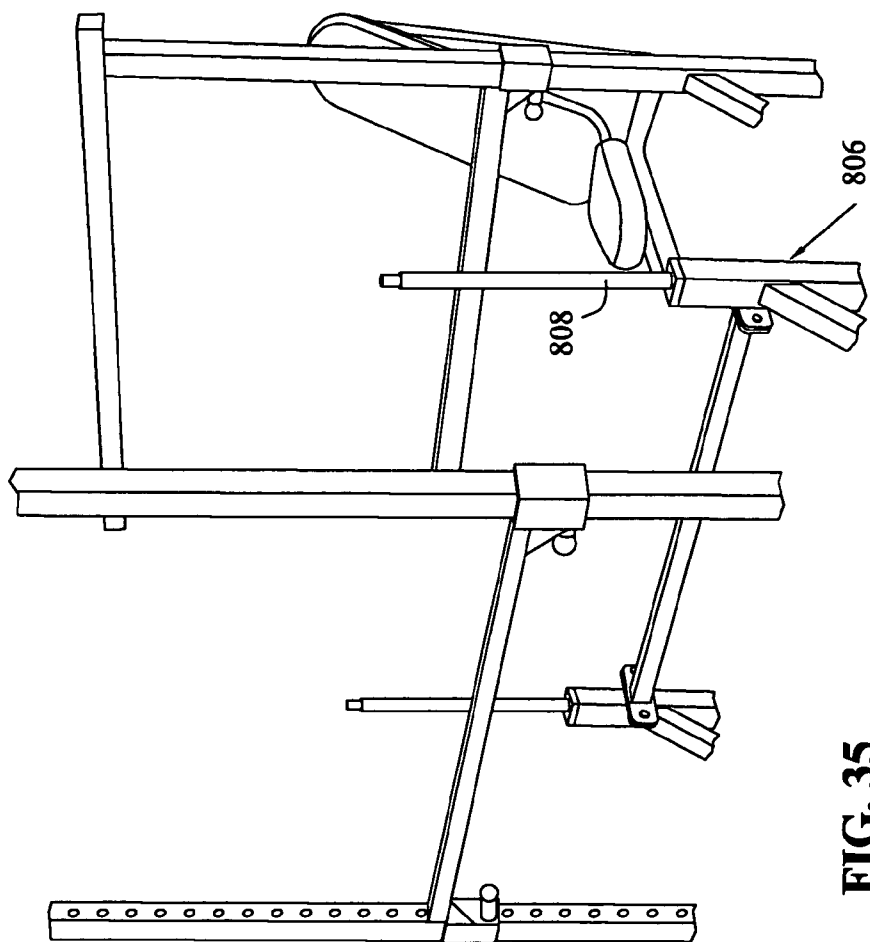


FIG. 35

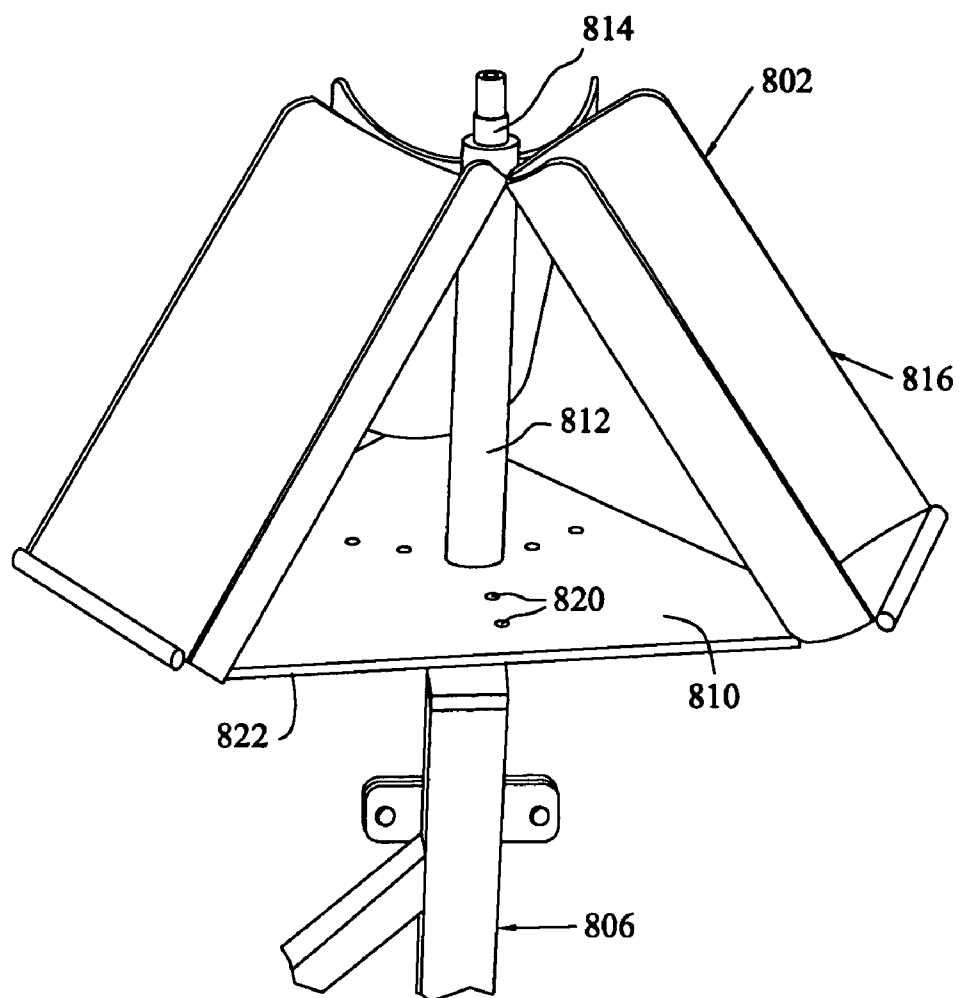


FIG. 36

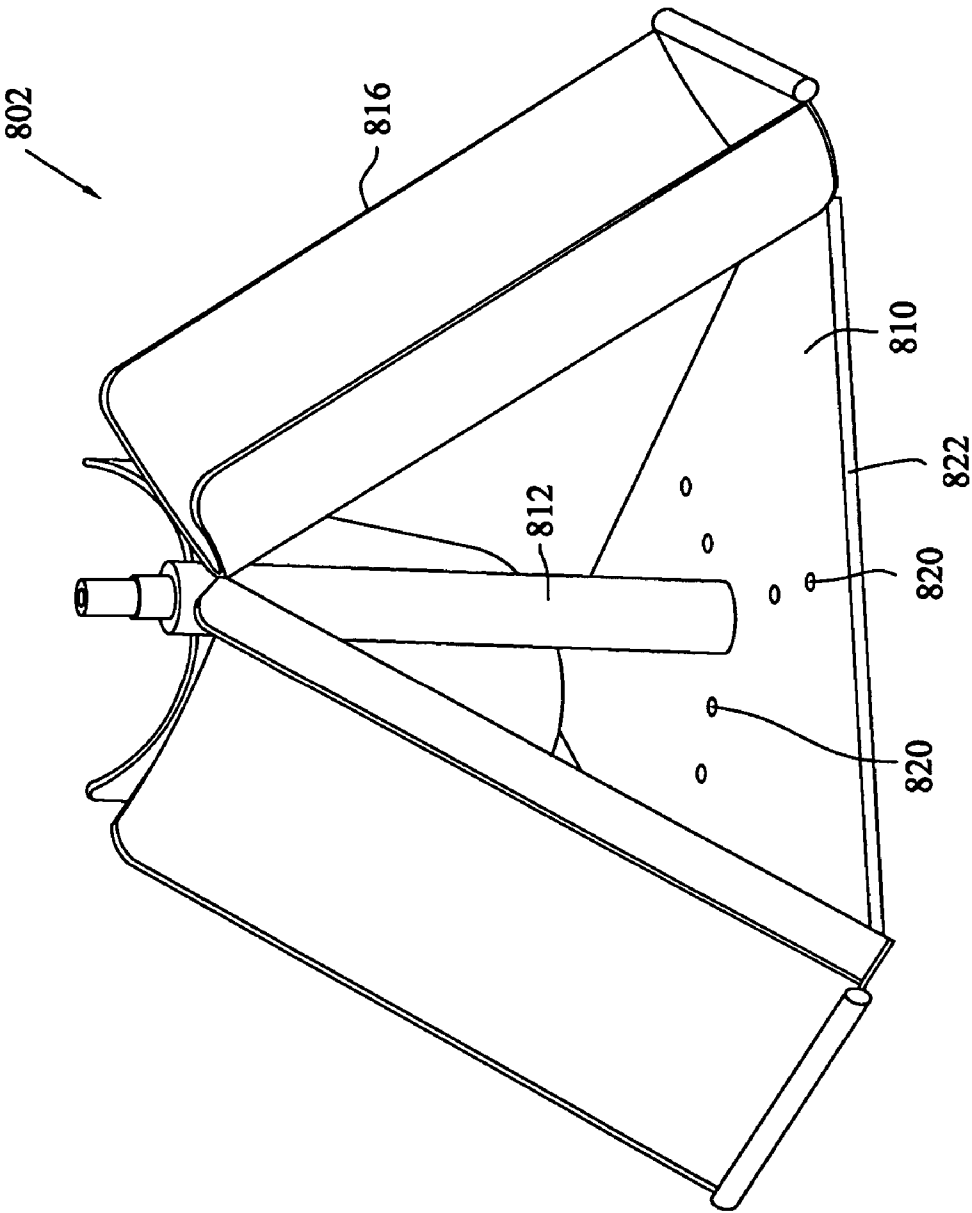


FIG. 37

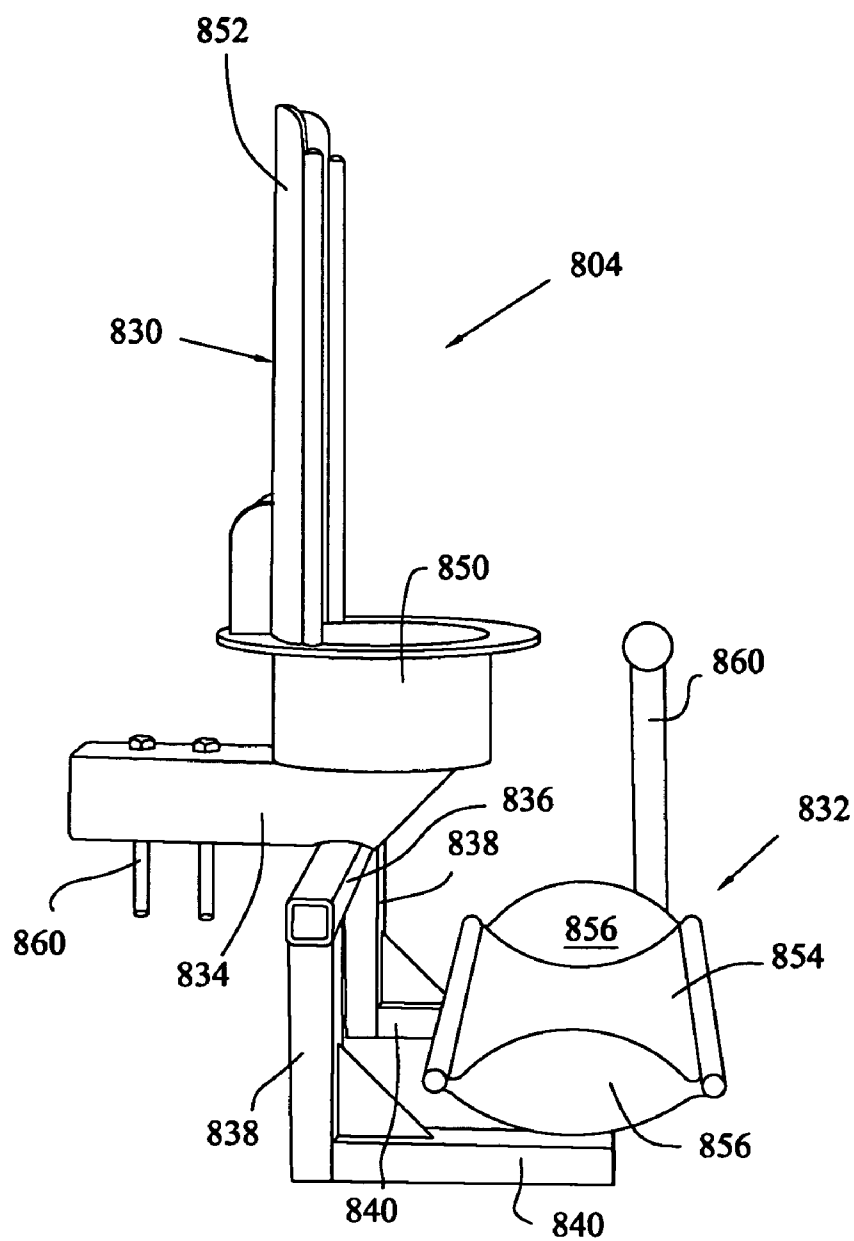
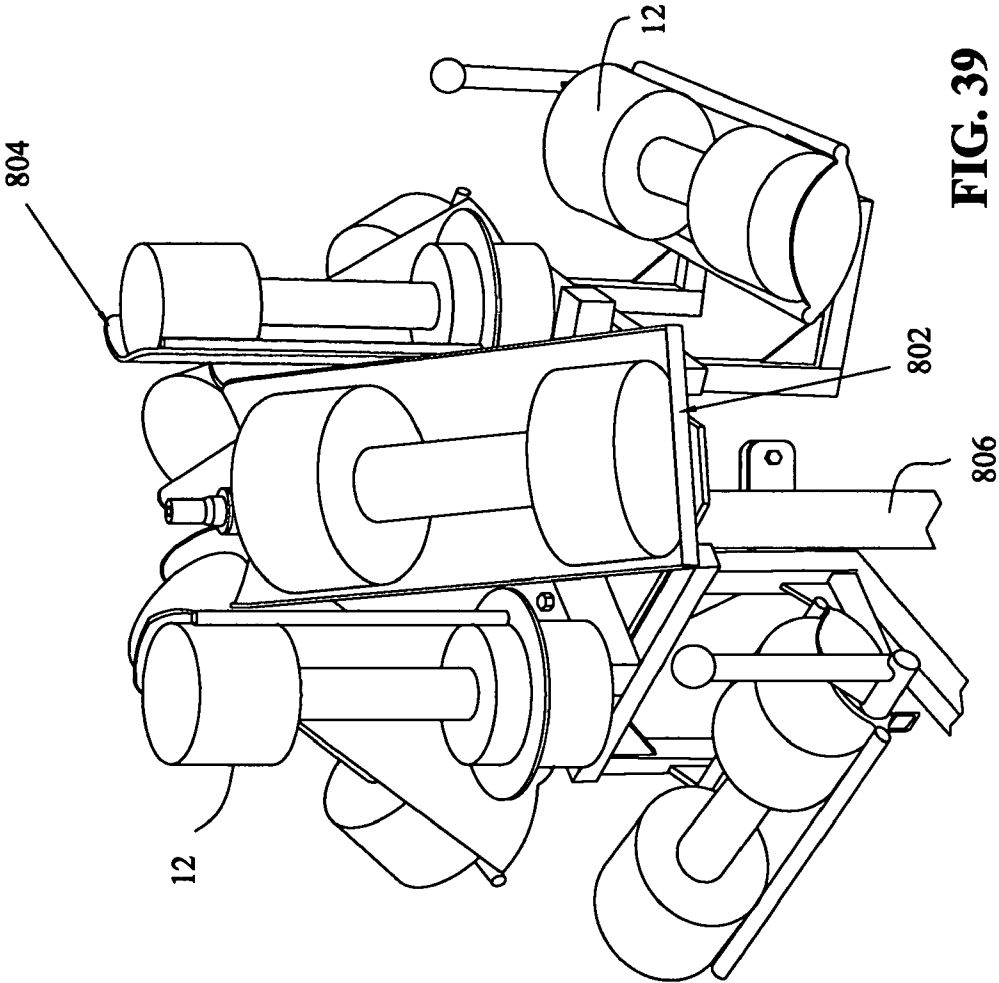


FIG. 38



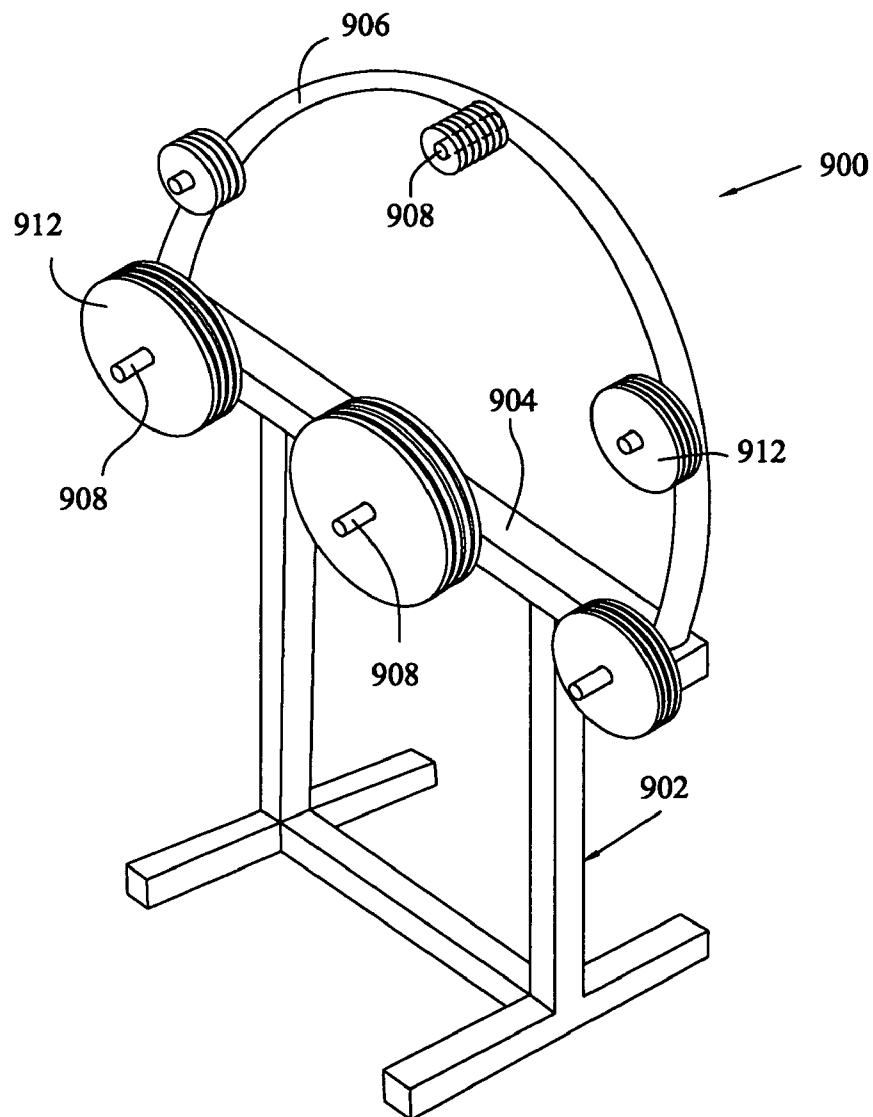


FIG. 40

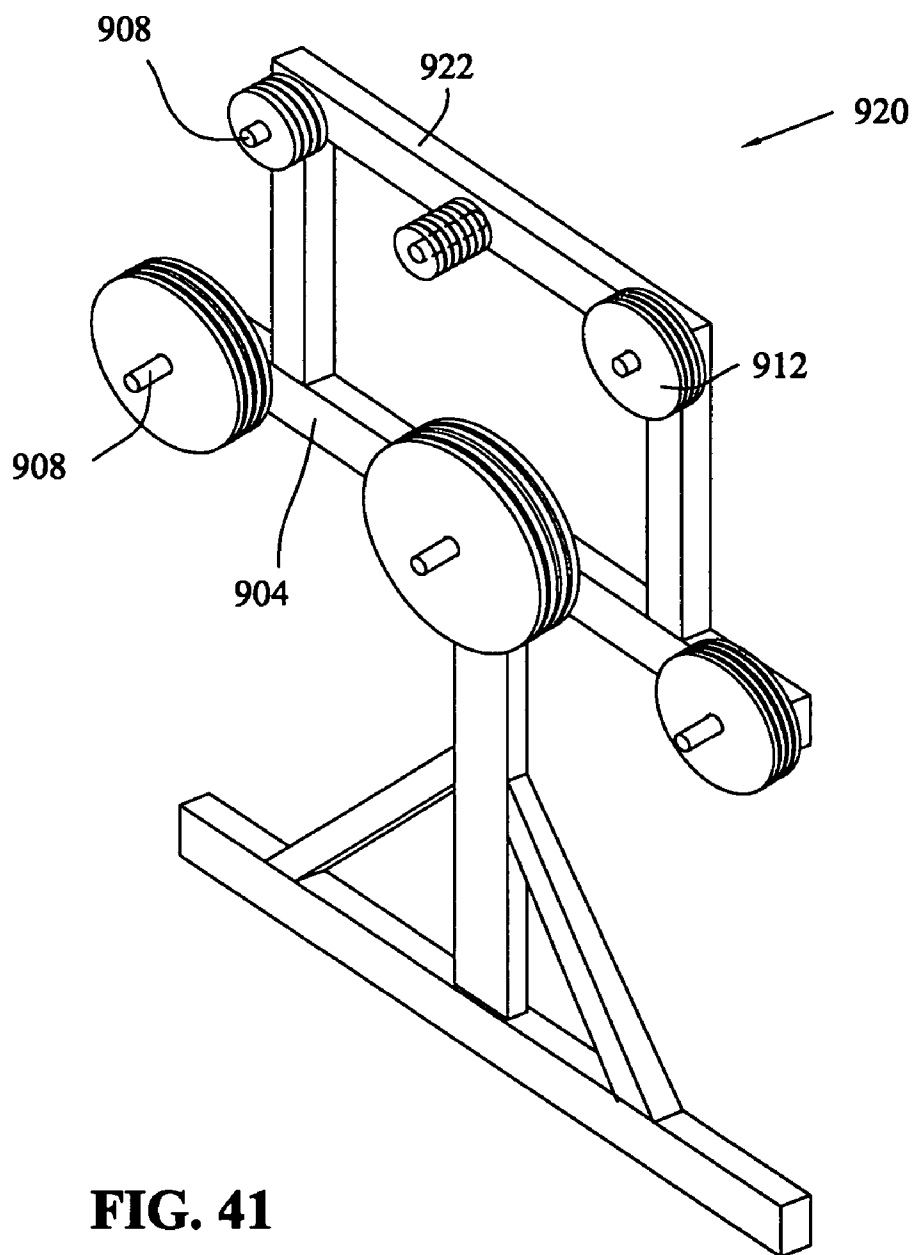


FIG. 41

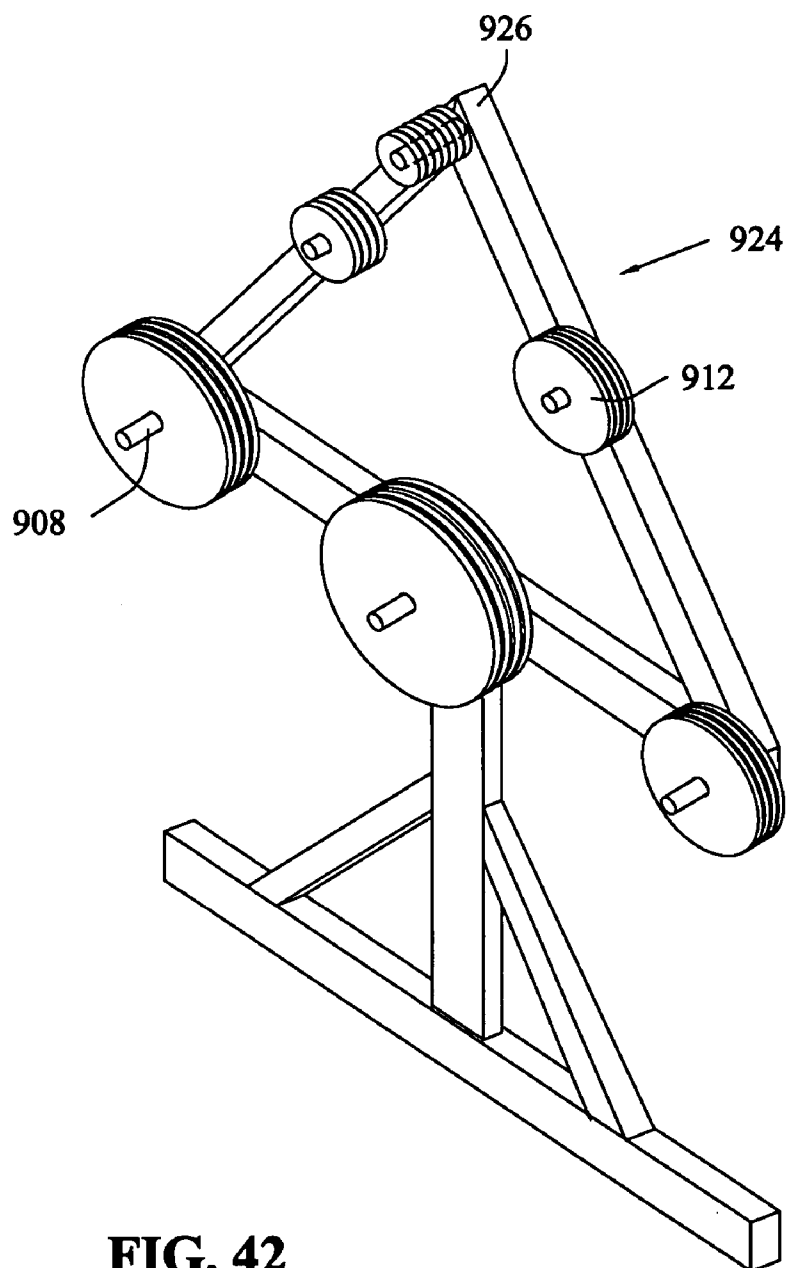


FIG. 42

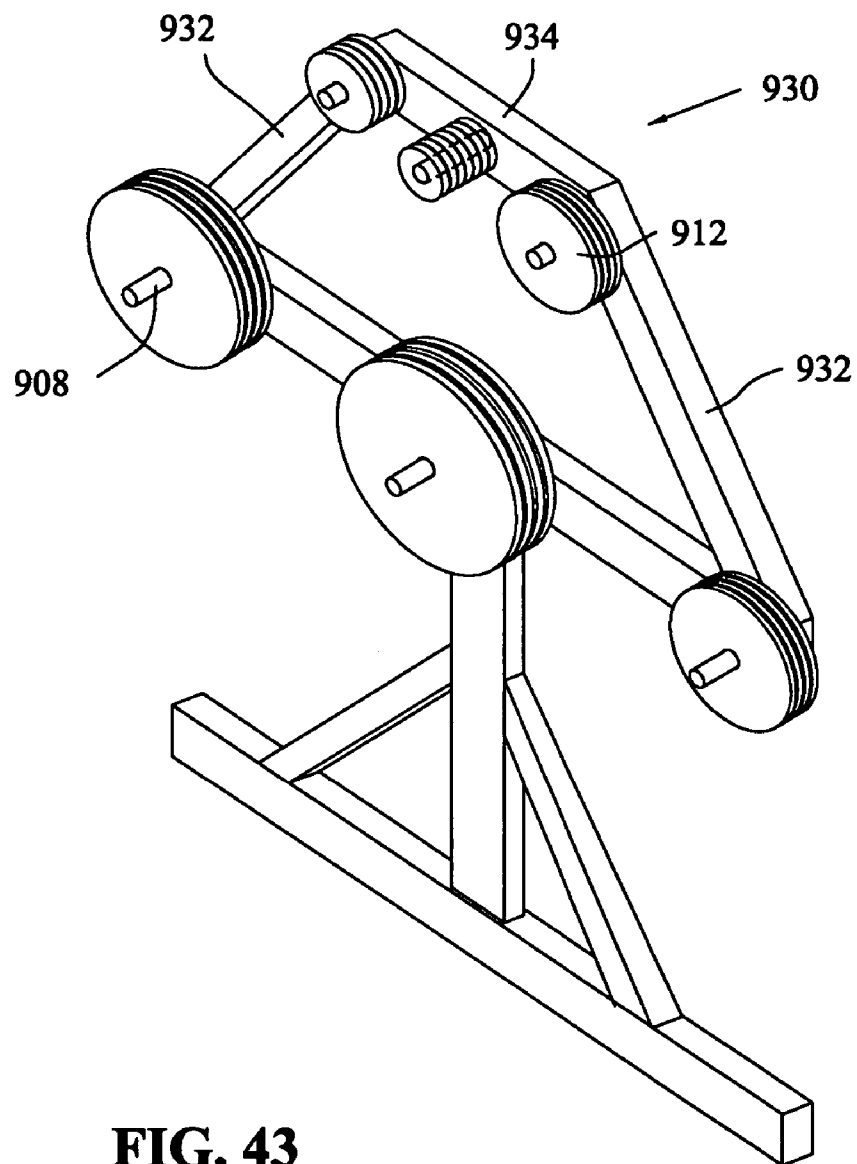


FIG. 43

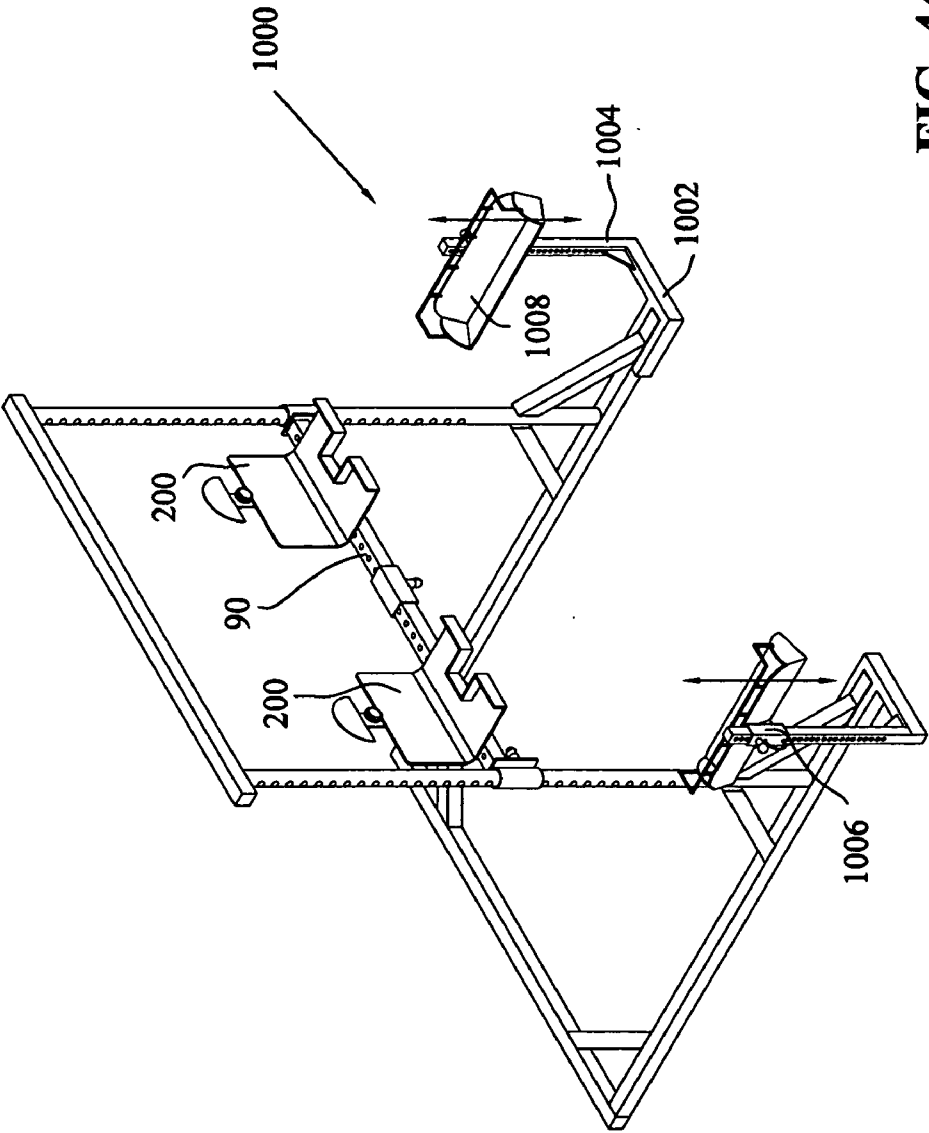


FIG. 44

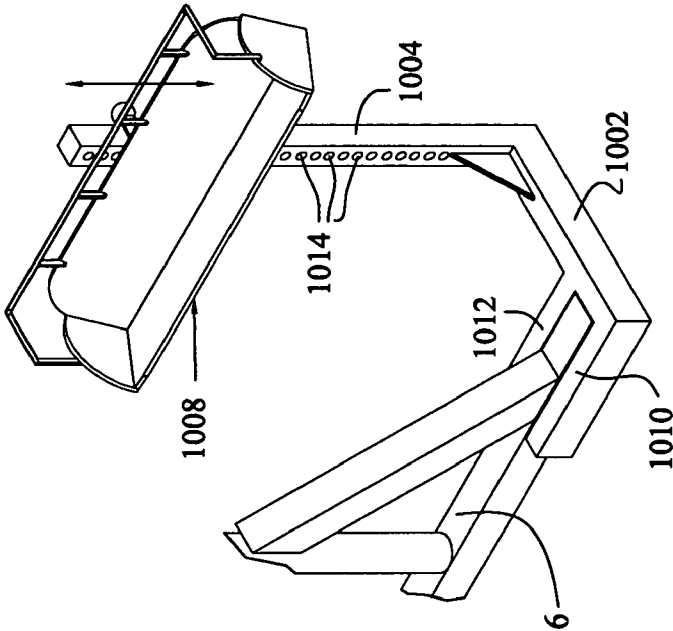


FIG. 46

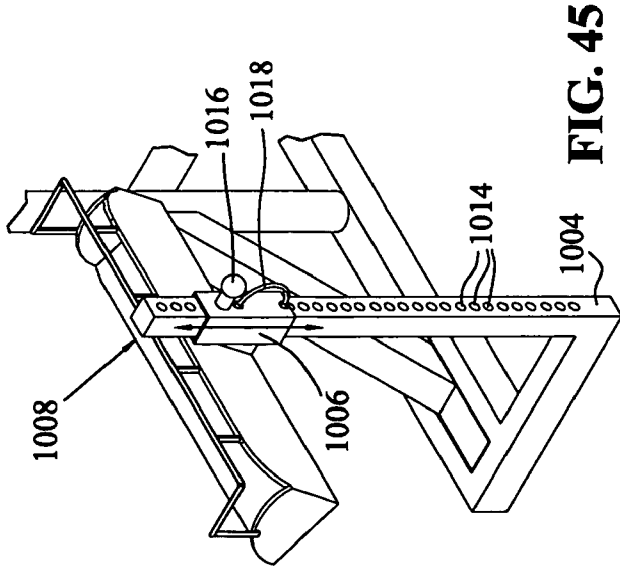
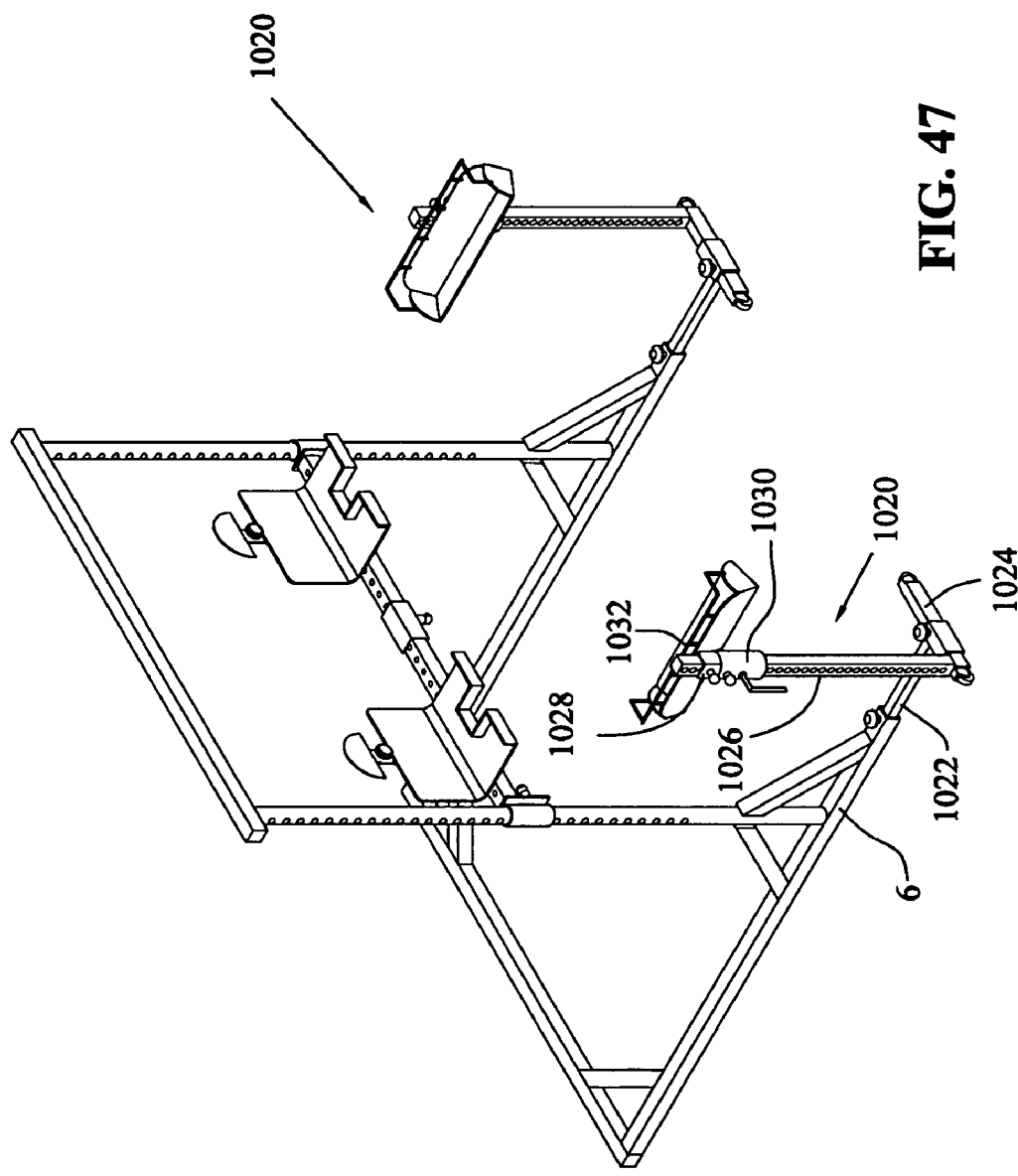
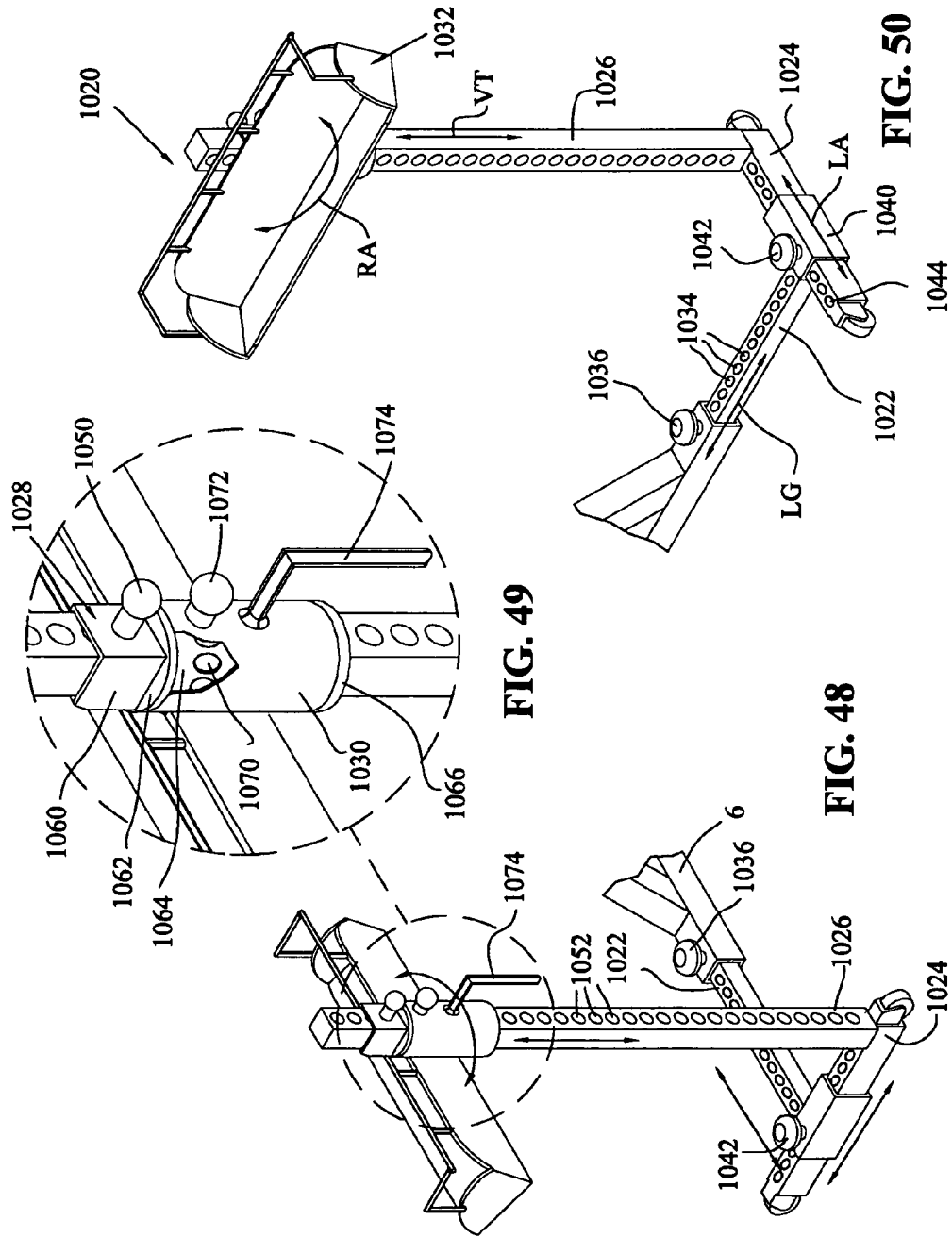


FIG. 45





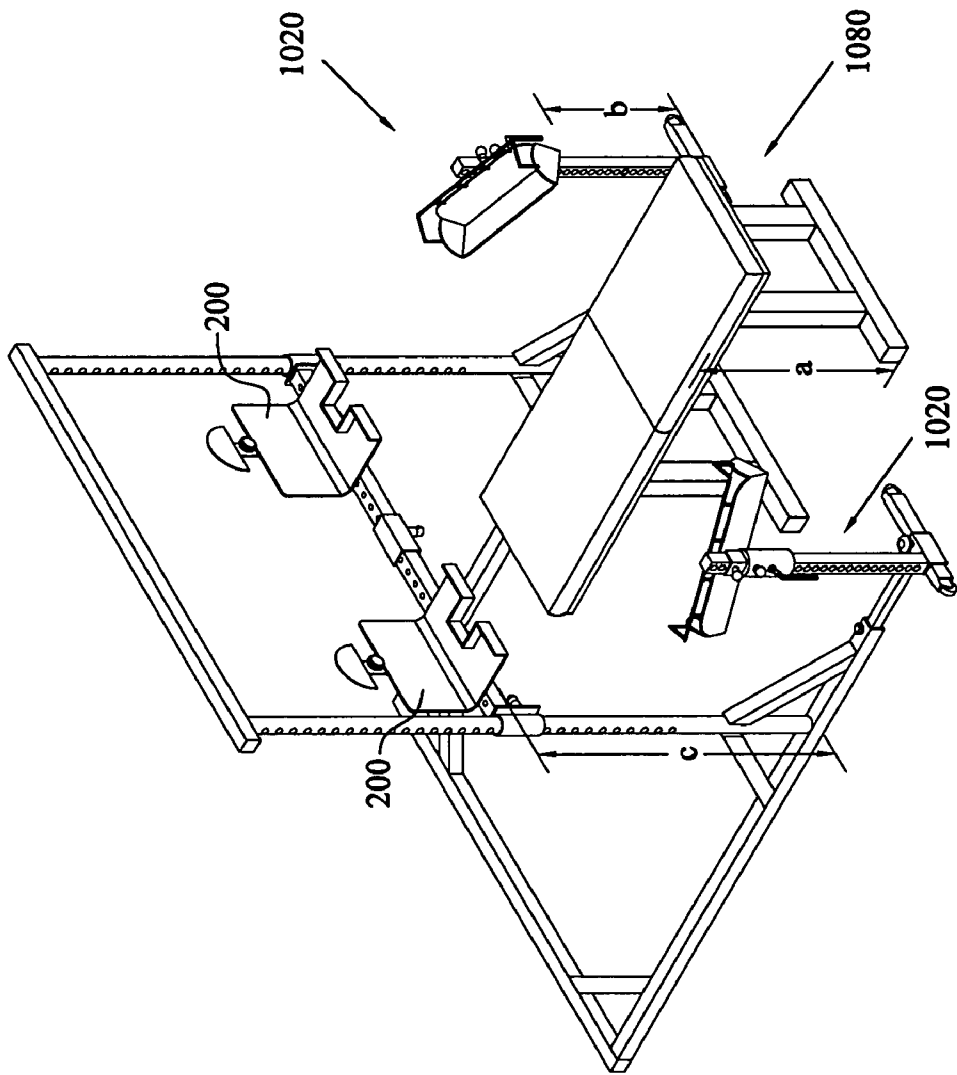
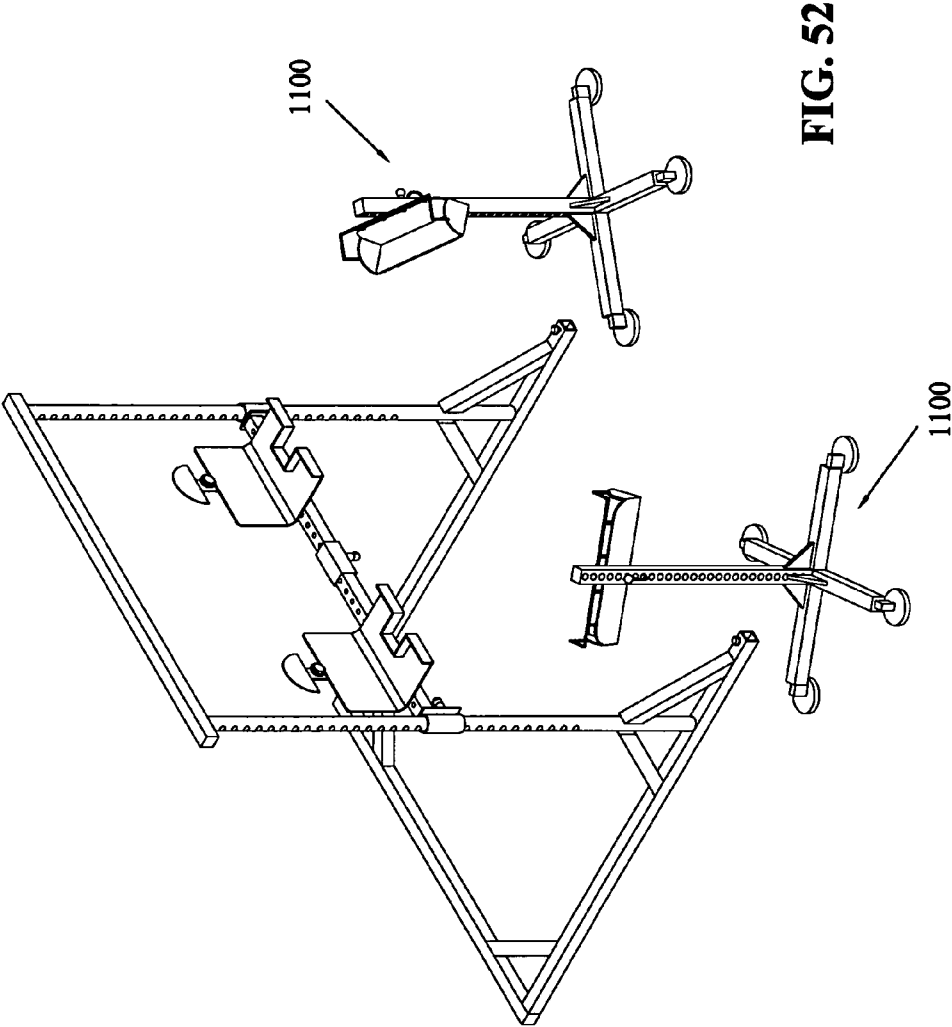


FIG. 51



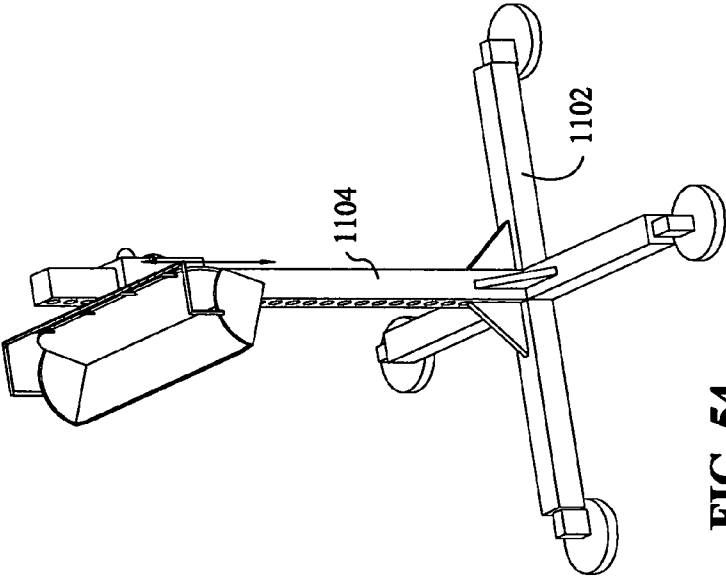


FIG. 54

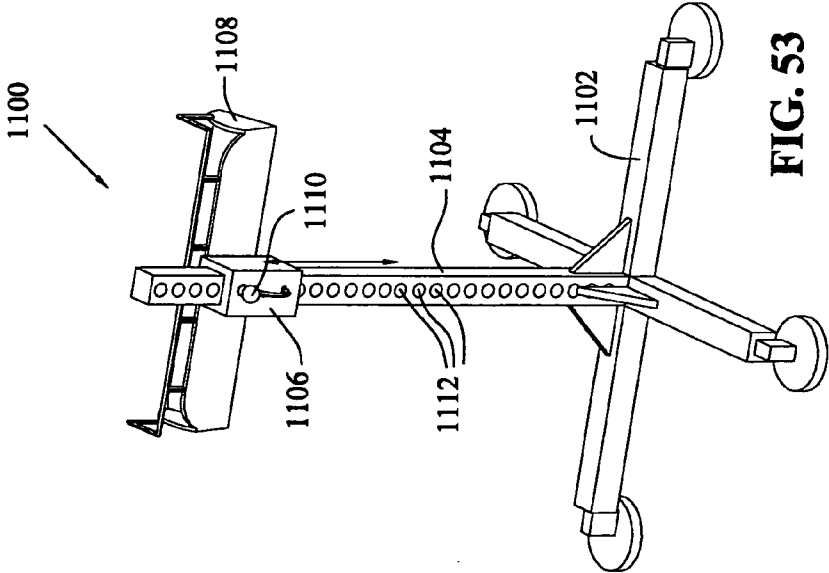


FIG. 53

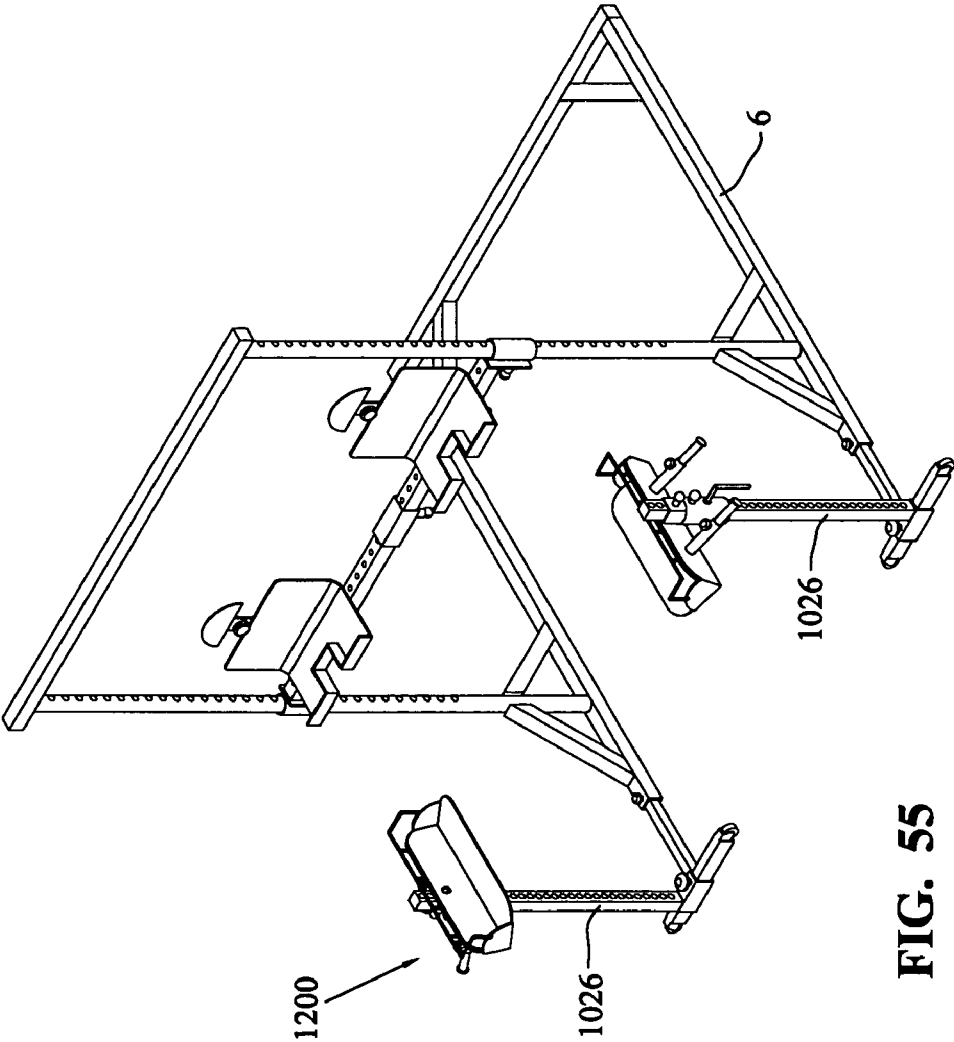


FIG. 55

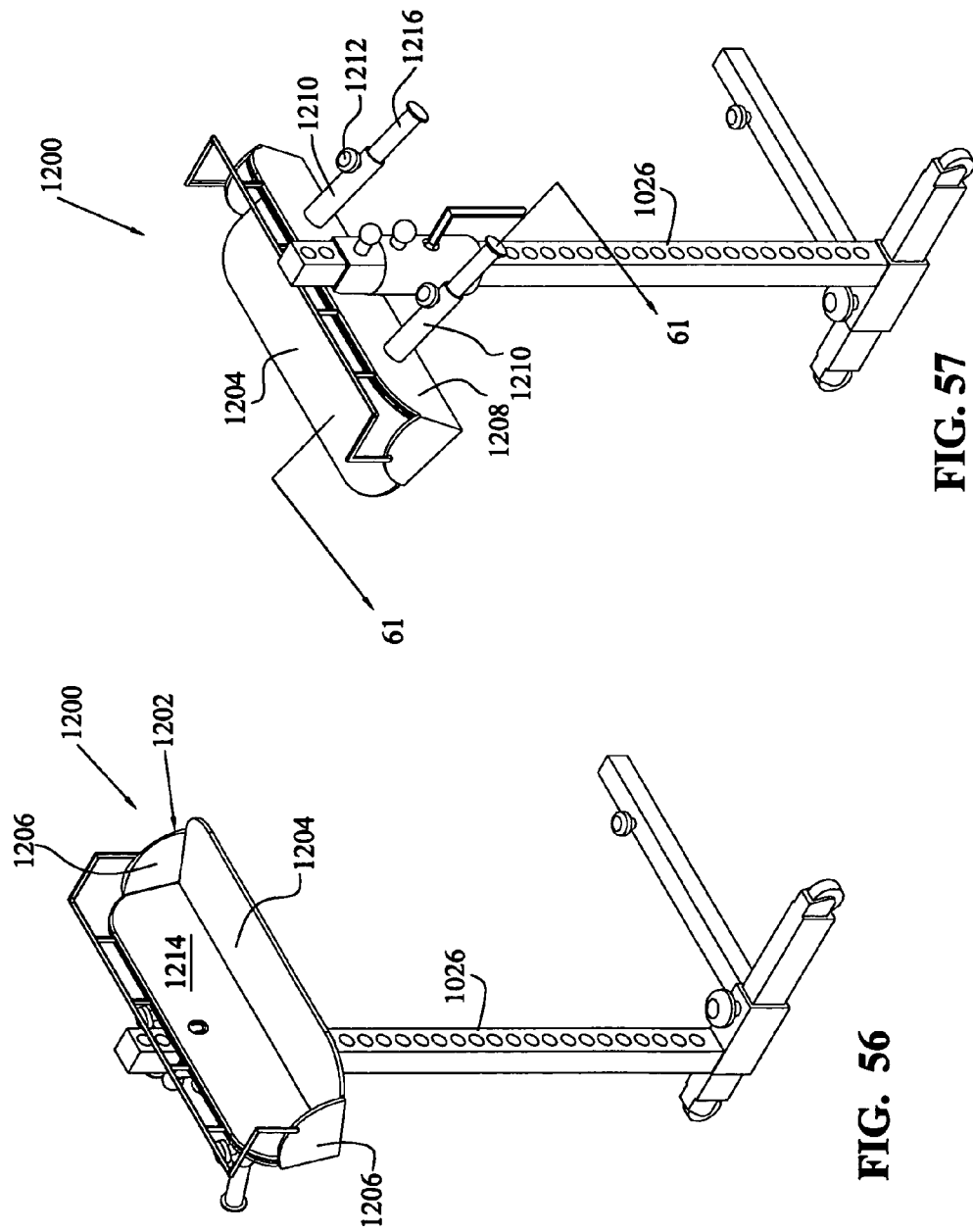


FIG. 57

FIG. 56

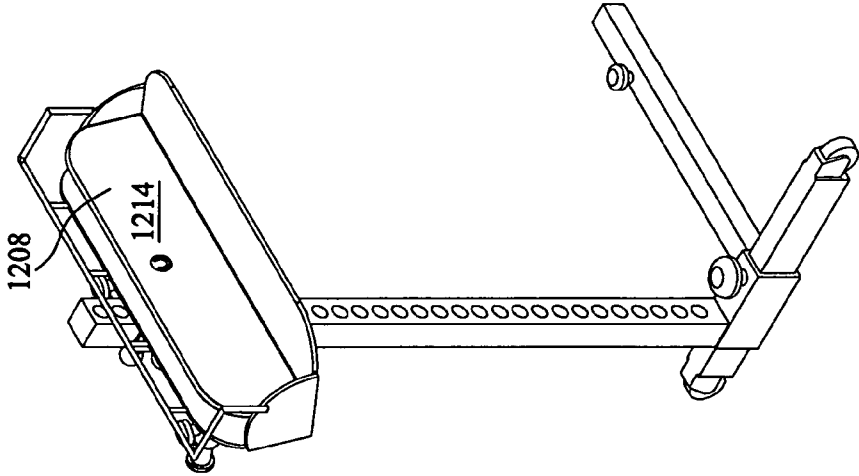


FIG. 58

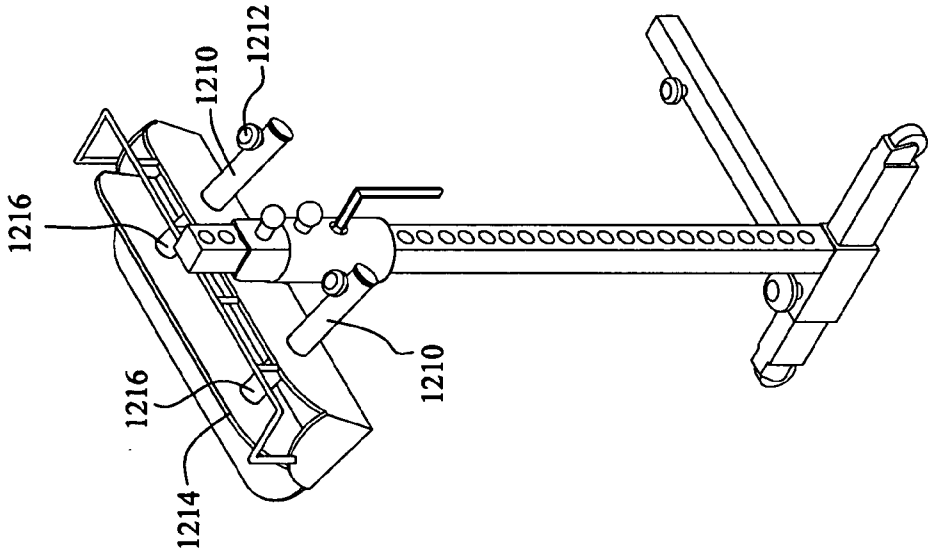


FIG. 59

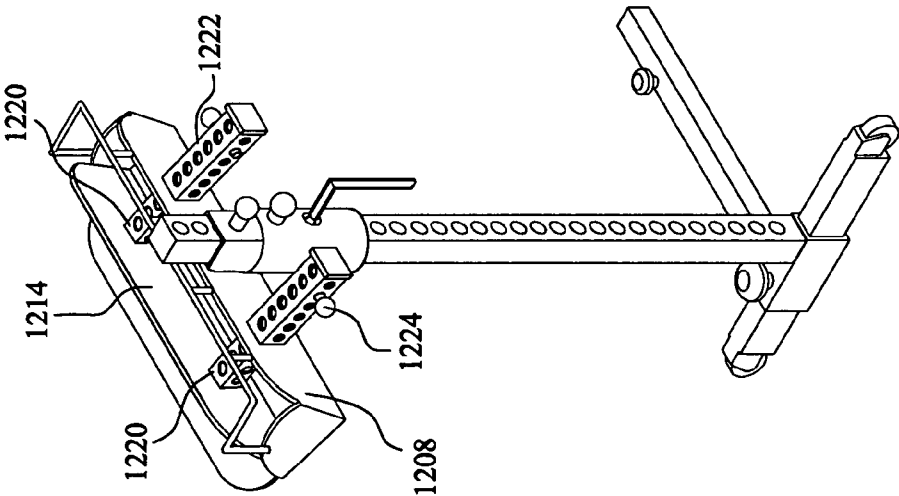


FIG. 60

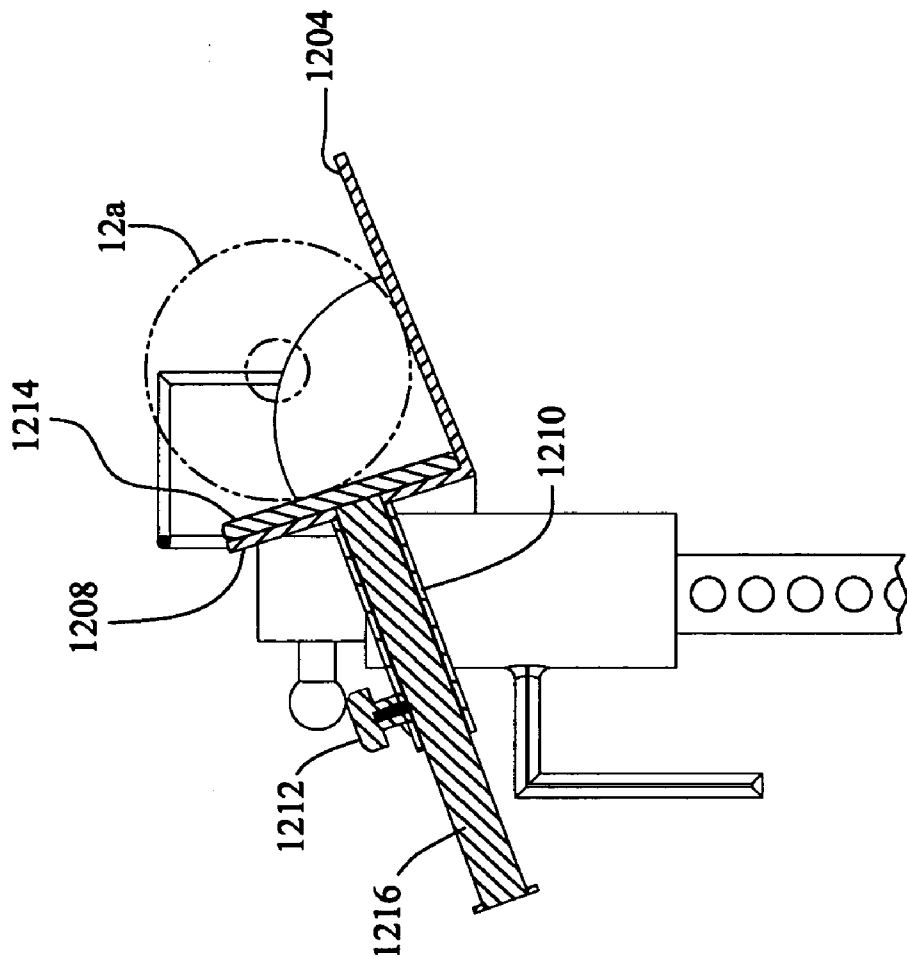


FIG. 61

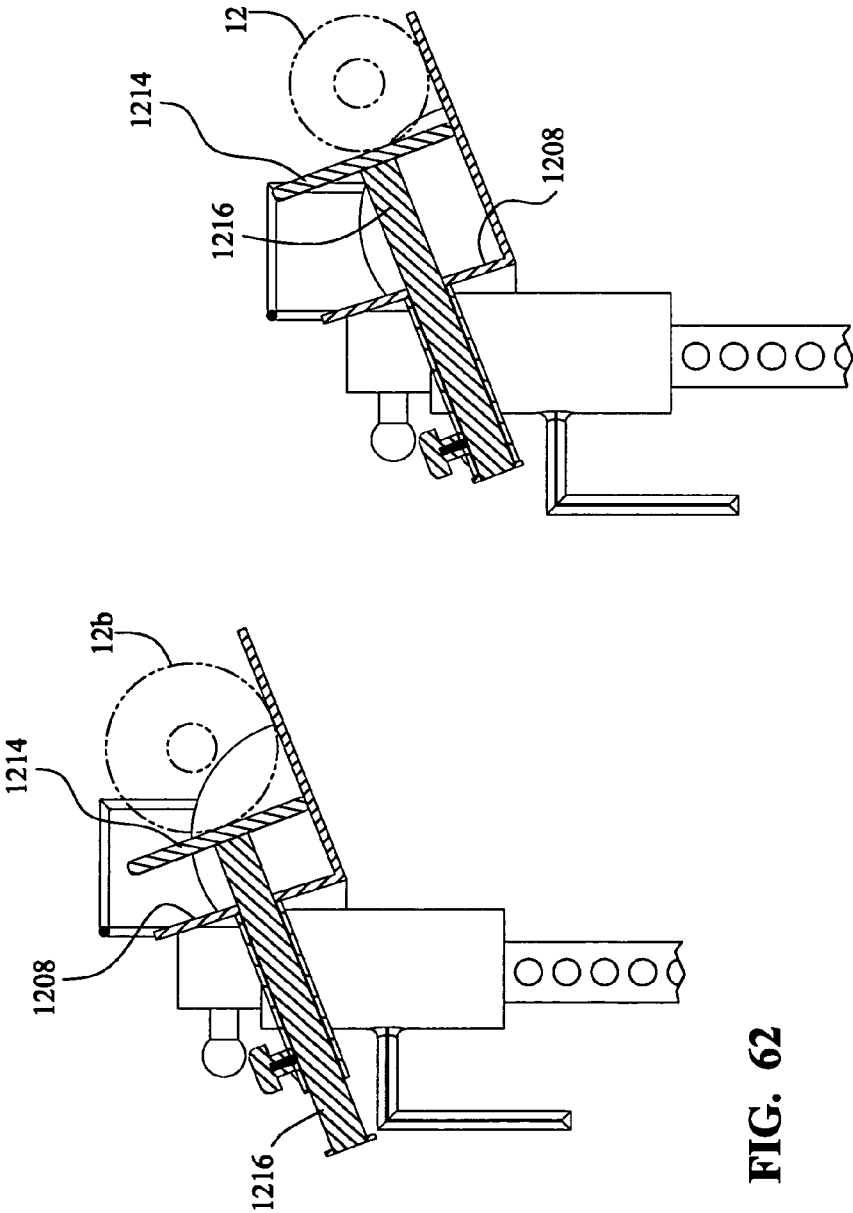
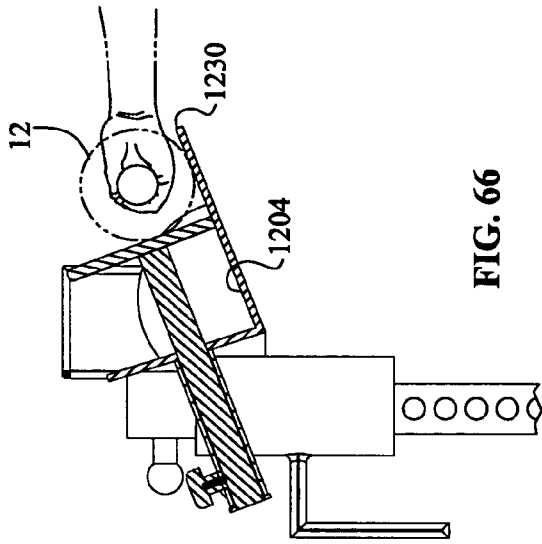
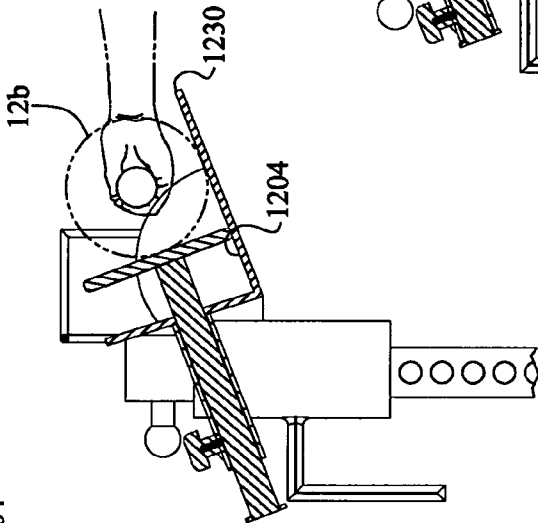
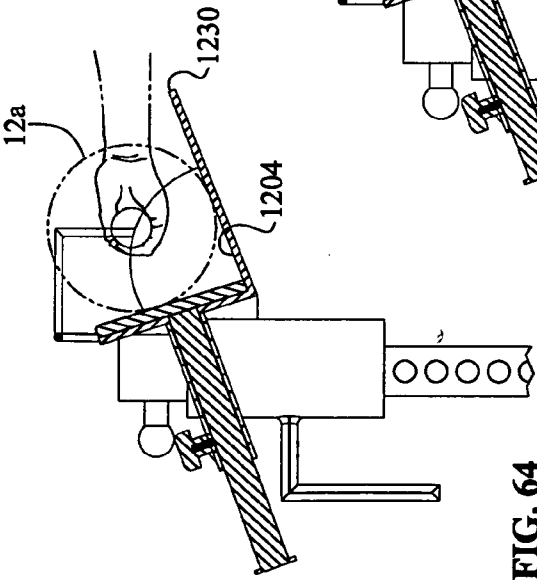


FIG. 63

FIG. 62



SPOTTER FOR USE WITH DUMBBELL WEIGHTS

[0001] This application claims priority from provisional applications 60/733,104, filed Nov. 3, 2005; 60/760,654 filed Jan. 20, 2006; and 60/807,629 filed Jul. 18, 2006.

FIELD OF THE INVENTION

[0002] The field of the invention relates to exercise equipment, and more particularly to a dumbbell rack and spotter.

BACKGROUND OF THE INVENTION

[0003] Weight lifting using free-weights is widely enjoyable as a form of exercise and strength conditioning. Barbells and dumbbells are used in different workout routines to exercise and strengthen various muscle groups, such as biceps, triceps, pectorals, etc., depending upon the manner in which the free-weights are lifted and for the body position of the user.

[0004] The user must use the strength of his arm muscles, particularly the biceps, in order to move the dumbbells from the floor or rack into the starting exercise position. Such exercises were designed to develop chest and/or shoulder muscles and not arm muscles. Further, particularly at higher weights, it may be difficult for a user to lift heavy weight dumbbells from the floor or rack using only the smaller bicep muscles rather than the larger chest or shoulder muscles. Further, any attempts to lift large weights off of the floor to the starting exercise position could result in an injury to the user's back.

[0005] It is known to construct frames specifically designed for receiving a pair of dumbbells, where the frames provide vertical adjustability for the dumbbell rests or supports. See for example, Hayden, U.S. Pat. No. 5,411,459; 5,616,108; 5,772,561; and 5,924,964.

[0006] However, with one exception, all of the previously devised dumbbell supports are fixedly mounted perpendicular to the frame. This places the dumbbell handles at an inconvenient position for gripping by a weightlifter when in a seated position in front of the dumbbell supports.

[0007] In the one instance, a dumbbell holder is provided with a support frame in which the dumbbell rests are fixedly positioned at an acute angle from a horizontal line extending between the rest supports. However, in this design, the dumbbell rests are fixed at the one acute angle.

[0008] Further, such dumbbell supports, while providing vertical adjustability, do not have and or have only limited means for horizontal adjustment of the pair of dumbbell rests relative to each other. Thus, dumbbell rests which are fixed at a given spacing on a support frame(s) may not be in an ideal position for some weightlifters to easily grasp the dumbbells or, at the completion of the exercise, easily and safely placing the dumbbells back onto the rests.

[0009] In another dumbbell support design, the two side frames are connected by two telescopically interconnected crossbars. A pin is releasably extendable through aligned apertures in the ends of the two crossbars to adjust the horizontal spacing between the pair of dumbbell rests. However, one complete side frame, dumbbell rest, and crossbar must be manually lifted or dragged relative to the ground and urged toward or away from the opposed side frame. Due to the high weight levels which may be lifted, the

support frame, crossbar, and rest represent a considerable weight which presents an inconvenience to the weightlifter in setting up the dumbbell rest support for an exercise. Further, this weight must be supported by the user in order to precisely align two apertures in the crossbars for insertion of the locking pin therethrough.

[0010] During an execution of a weight lifting exercise, good form and proper range of motion are very important for both safety and effectiveness. At the beginning of a lifting exercise, a lifter should assume a position that would allow the target muscle to be exercised to bear the weight. If the weight is transferred to the easily damaged ligaments or tendons, a serious injury may occur. So is the case when the lifter has completed his exercise and must return the dumbbells to the rack. The lifter must be able to return the dumbbells to the rack without further fatigue to his arms or back. For example, if the lifter has completed a set of exercises, and must return the dumbbells to the rack with his arms extended, and must accurately place the dumbbells in place, the lifter's back, shoulders, neck, or arms could be strained.

[0011] In using dumbbells, the dumbbells are typically stored in a rack or on the floor. The user must lift the dumbbells into the starting exercise position for chest or shoulder muscle exercises. The starting exercise position for various muscle groups is well off the ground. Attempts have been made to reduce or eliminate the need of a spotter for certain dumbbell lifting exercises. The attempts involve providing lifting equipment with a support rack as a built-in spotter. The idea is that the risk of injury may be reduced if the dumbbell can be presented to the lifter or can be returned on the rack by the lifter, while he is in a lifting position.

[0012] For example, one known dumbbell support attachment modifies a conventional weight lifting bench for use with dumbbells. The attachment includes a holder on which up to two dumbbells can be rested simultaneously. The holder is part of a rack assembly which is rigidly attached to both a horizontal support bar and a pair of vertical mounting legs. The holder defines two cutouts through which a lifter, as he lies on the weight bench, can reach to grab the dumbbell and lift it from its resting position.

[0013] Another known attachment that can be mounted on a weight lifting exercise equipment includes a rack assembly for holding up to two dumbbells, a pair of mounting legs rigidly attached to distal ends of the rack assembly and an extension bar slidably connected to opposing parts of the assembly for adjusting the span between the mounting legs. A drawback with these dumbbell support attachments is that the pair of dumbbells are positioned at 180 degree angle from each other. Therefore, the lifter is limited to initiate the lifting exercise from the same position every time, regardless of the muscle exercise to be conducted. The risk of muscle injury may be high, especially if the lifter has to shift or change muscle motions while lifting very heavy dumbbells.

[0014] Another known dumbbell position rack holds a single dumbbell. A pair of the dumbbell position racks are needed if two dumbbells are being used in an exercise routine. The pair of the dumbbell position racks can be positioned at a distance and an angle that are convenient for the start of various exercises. However, positioning of the dumbbell position rack involves lifting each rack and stand

assembly individually, making the initial positioning rather cumbersome. In addition, the individual rack and stand assembly may be easily bumped out of place while being used.

[0015] Therefore, there is a need for a dumbbell rack that can be adjustable so that a lifter can initiate and complete various lifting exercises in different positions. The present inventor has realized this need, and has designed an automatic elevation adjustment mechanism, disclosed in U.S. patent application Ser. No. 10/008,394, filed Nov. 7, 2001, the disclosure of which is incorporated by reference. This prior work of the present inventor addresses some of the short comings of the prior art, but further improvements are desired. The present inventor has also designed multiple spotters as shown in U.S. patent application Ser. No. 10/881,567 publication number 20050009671A1, published Jan. 13, 2005 the disclosure of which is incorporated by reference.

[0016] A further need exists for a dumbbell rack that can be used with a traditional weight lifting bench or chair.

[0017] Another need exists for having a plurality of spotter assemblies for various different weight exercises.

SUMMARY OF THE INVENTION

[0018] In one embodiment, a dumbbell weight lifting system, comprises a bench having a substantially flat surface having a first vertical height; a dumbbell holder assembly for holding at least two dumbbells, the holder assembly being generally transverse to the length of the bench, the holder assembly being capable of holding the dumbbells at a second vertical height greater than the first vertical height; and dumbbell release holders, flanking the bench, and profiled for a user to drop dumbbells into the holders, when an exercise is completed.

[0019] The dumbbell release holders may be comprised of a tray to hold the dumbbells, the trays being positioned at a third vertical height, where the third vertical height is less than the first vertical height. The dumbbell release holders may be comprised of a tray to hold the dumbbells. The trays are vertically adjustable. The may be comprised of a bottom plate, and a back plate. The system may further comprise a movable plate on the inside of the back plate, the movable plate being generally parallel to the back plate, and changing the location of the dumbbell weight depending on its size.

[0020] In another embodiment, dumbbell release holders for use with a bench having a substantially flat surface and a dumbbell holder assembly for holding at least two dumbbells, the holder assembly being generally transverse to the length of the bench, the dumbbell release holders being comprised of trays positionable in a flanking arrangement relative to the bench, and being profiled for a user to drop dumbbells into the holders, when an exercise is completed.

[0021] The dumbbell release holder trays may be positionable at a vertical height below a height of the bench. The trays may be vertically adjustable. The trays may be comprised of a bottom plate, and a back plate. The system may further comprise a movable plate on the inside of the back plate, the movable plate being generally parallel to the back plate, and fixably movable between positions adjacent to and distant from, the back plate to change the location of the dumbbell weight depending on its size.

[0022] In another embodiment of the invention, a dumbbell support assembly for supporting dumbbells for weight lifting exercises is shown, where the assembly comprises a vertical support assembly; at least one lateral support, supported by the vertical support assembly; and first and second dumbbell holders supported by the at least one lateral support, each the dumbbell holder comprising a channel-shaped member, upstanding with at least a partial vertical orientation, the first dumbbell holder further comprising an engagement member, positioned at a lower level of the channel-shaped member and profiled to receive an end of a dumbbell when dropped in at least a partially vertical orientation.

[0023] The channel-shaped member may be arcuate in section. The channel-shaped member may upstand at a vertical orientation of between 45-90 degrees. The engagement member is defined by a pair of rods extending outwardly from the channel-shaped member. The pair of rods include a stop member at a free end of each rod. The stop members are defined by a ball shaped member attached to each the rod.

[0024] In another embodiment, a carousel for holding a plurality of dumbbells, comprises a rotatable tray assembly having a plurality of dumbbell locating positions, and a central axle about which the tray rotates.

[0025] The dumbbell locating positions are formed by individual trays. At least some of the individual trays may be angled inwardly towards the central axis. At least some of the trays are positioned on a turntable, which spins on an axle along the central axis. The carousel may further comprise a bearing positioned intermediate the turntable and the central axis.

[0026] In yet another embodiment, a dumbbell support assembly for supporting dumbbells for weight lifting exercises comprises a vertical support assembly comprising at least two vertical uprights; a collar, fixably movable upwardly and downwardly of each of the vertical uprights; a lateral support ending from each the collar; and a vertical support, attached adjacent a free end of the lateral support, and extending upwardly.

[0027] The dumbbell support assembly may comprise a plurality of dumbbell supports positioned on each of the vertical supports.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] FIG. 1 depicts an overall configuration of one embodiment of a spotter configuration.

[0029] FIG. 2 shows the upright portion of FIG. 1 with a square cross-sectional post;

[0030] FIG. 3 shows uprights similar to that of FIG. 2 showing a cylindrical cross-sectional post;

[0031] FIG. 4 shows the upright of FIG. 2 with a cross-bar having laterally movable supports;

[0032] FIG. 4A shows an enlarged portion of the area depicted in FIG. 4;

[0033] FIG. 4B shows an alternate laterally moveable sleeve to that shown in FIG. 4B;

[0034] FIG. 5 shows a vertical support similar to that shown in FIG. 2 with a holding mechanism which can drop from the top bar of the support;

[0035] FIG. 6 shows an embodiment similar to that of FIG. 5 having double vertical drop mechanisms mounted to laterally movable support members on a vertically adjustable support bar;

[0036] FIG. 7 shows a horizontal bar which is split in the center and has a locking collar to lock the two split bars together;

[0037] FIG. 7A shows the horizontal bar of FIG. 7, with the locking collar moved to the right, showing the individual bars released;

[0038] FIG. 8 shows two rotatably moveable mounts with upstanding pedestal rods;

[0039] FIG. 9 shows a rack mounted dumbbell holding apparatus vertically adjustable on two vertical uprights;

[0040] FIG. 10 is an enlarged view of the portion depicted in FIG. 9;

[0041] FIG. 11 is an enlarged view of FIG. 10 less the dumbbell;

[0042] FIG. 12 shows a second embodiment of spotter mounted to a horizontal upright similar to that of FIG. 4B;

[0043] FIG. 13 shows the spotter platforms of FIG. 12 on an upright similar to that of FIG. 7;

[0044] FIG. 13A is a modified spotter of FIG. 12;

[0045] FIG. 13B shows an enlarged view of the spotter tray in enlarged view showing the centering device of the spotter;

[0046] FIGS. 14 and 15 show a third embodiment of a spotter mounted on a convex support bar;

[0047] FIG. 16 shows the detail of the spotters mounted on the crossbar of FIGS. 14 and 15;

[0048] FIG. 17 shows a view similar to that of FIG. 14-16 where the spotters are mounted on a concave cross bar;

[0049] FIG. 18 shows a double sided spotter, which can be mounted to a vertical drop mechanism of FIG. 5;

[0050] FIG. 19 shows double sided spotter of FIG. 18 for the opposite side;

[0051] FIG. 20 shows spotters similar to that of FIG. 12 mounted on a double sided assembly similar to that of FIG. 6;

[0052] FIG. 21 shows an embodiment similar to that of FIG. 20 however with a further and second spotter assembly attached to the vertical drop members;

[0053] FIG. 21A shows an enlarged view of the second spotter assembly of FIG. 21;

[0054] FIGS. 22-23 show yet another embodiment of a spotter assembly having a double peg assembly for attaching the spotters in multiple orientations;

[0055] FIG. 24 shows inclined spotters mounted on the upright of FIG. 8;

[0056] FIG. 25 shows the spotter assemblies of FIG. 12 mounted on the upright of FIG. 8;

[0057] FIG. 26 shows the spotters of FIG. 25 with a second spotter assembly positioned on the back side thereof;

[0058] FIG. 27 shows the front perspective view of another spotter embodiment;

[0059] FIG. 28 shows a top view of the spotter taken through lines 28-28 of FIG. 27;

[0060] FIG. 29 shows a front perspective view of the spotter of FIG. 27;

[0061] FIG. 30 shows a front perspective view of another spotter embodiment;

[0062] FIG. 31 shows the spotter of FIG. 30 with a dumbbell resting in a static position;

[0063] FIG. 32A shows an incline rack for a plurality of dumbbells;

[0064] FIG. 32B shows an incline rack, similar to that of FIG. 32A, with a further arch-shaped holder;

[0065] FIG. 32C shows the incline rack of FIG. 32C, shown loaded with dumbbells.

[0066] FIGS. 33 shows a rotatable carousel for the storage of a plurality of dumbbells;

[0067] FIG. 34 shows another carousel for mounting adjacent to the vertical uprights of the exercise equipment described above;

[0068] FIG. 35 shows a vertical pedestal for mounting adjacent to the vertical uprights and for rotatably mounting the carousel with FIG. 34;

[0069] FIG. 36 shows a first carousel portion mounted to the vertical pedestal;

[0070] FIG. 37 shows a detailed view of the first stage carousel of FIG. 36;

[0071] FIG. 38 shows a second stage carousel portion which is attachable to the first stage portion of FIG. 37;

[0072] FIG. 39 shows the complete assembly of the first and second stage carousel portions with dumbbell weights in their stored positions;

[0073] FIGS. 40-43 show novel arrangements of storage racks for free weights;

[0074] FIG. 44 shows a vertically moveable dumbbell safety holder attached to the vertical uprights;

[0075] FIGS. 45 and 46 show enlarged and detailed views of the safety holders shown in FIG. 44;

[0076] FIG. 47 shows a safety holder with three axes of movement and which is fixed to the vertical uprights;

[0077] FIG. 48 is an enlarged view of one of the safety holders shown in FIG. 47;

[0078] FIG. 49 is an enlarged view of the portion denoted in FIG. 48;

[0079] FIG. 50 is an enlarged view of one of the safety holders shown in FIG. 47;

[0080] FIG. 51 is a view similar to that of FIG. 47 showing the safety holders in a modified position;

[0081] FIG. 52 shows portable safety holder pedestals flanking the position which would include a workout bench; and

[0082] FIGS. 53 and 54 show enlarged views of the portable safety holders of FIG. 52.

[0083] FIG. 55 shows an adjustable and portable safety holder similar to that shown in FIG. 47;

[0084] FIG. 56 shows a front perspective view of the adjustable safety holder FIG. 55;

[0085] FIG. 57 shows a rear perspective view similar to that of FIG. 56;

[0086] FIGS. 58 and 59 show front and rear perspective views, respectively of the adjustable plate of the adjustable safety holders in an extended position;

[0087] FIG. 60 shows an alternate version of the safety holder of FIG. 55;

[0088] FIGS. 61-63 show cross-sectional views through the adjustable plate with varying sizes of dumbbell weights; and

[0089] FIGS. 64-66 show a users placing various size dumbbell weights into the adjustable safety holder.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0090] With reference first to FIG. 1 an overall exercise equipment setup is shown as 2 spotting and temporarily storing a plurality of dumbbells. It should be appreciated that the initial discussion of the overall system will be described in a manner to introduce the various elements for discussion purposes. For example, as shown in FIG. 1 the spotter mechanism is shown generally at 4 which includes floor mount pedestals 6 with vertical uprights 8 extending upward from the floor pedestals 6 and which holds a spotter 10 for holding and spotting dumbbells. Spotter mechanism 4 also includes a horizontal upright 14 connected to the vertical uprights.

[0091] FIG. 1 also shows a plurality of storage trays for example trays 16 are shown which flank the spotter mechanism 4 for holding individual dumbbells for exercising and for placing on spotter 10. Racks 18 also flank spotter mechanism 4 and can accumulate the plurality and in this case 11 dumbbells of various sizes and or weights for the exercise. It should be appreciated that the exact configuration of the racks 18 is not material to the invention although in this embodiment the racks 18 are shown as individual racks which would flank a bench (not shown) which would be positioned adjacent to the spotter mechanism 4. Also racks 20 are shown mounted directly to pedestal 6 and again provide a mechanism for holding the plurality of dumbbells with that background, a plurality of uprights, crossbars, adjustment mechanisms and spotter assemblies will be described.

[0092] As described above, the system mainly comprises some type of vertical uprights, in this case square cross-sectional uprights 8, some type of cross bar or holding mechanism to attach to the vertical uprights, and further,

some type of spotter, in this case spotter 10. In this particular application, Applicant has conceived multiple different combinations of vertical uprights, cross bars and spotters, and multiple combinations thereof.

[0093] Thus, the application will proceed with a discussion of the possible uprights with reference to FIGS. 2 and 3; with multiple cross bar and rotation mechanisms with reference to FIGS. 4-8; and with multiple spotters with reference to FIGS. 9-23. Furthermore, various other combinations are possible as referenced in FIGS. 24-27

[0094] With respect now to FIG. 2, the vertical uprights 8 are shown without the spotter 10 attached and the vertical uprights are shown more clearly. As shown in FIG. 2, vertical uprights 8 are square in cross section and include a plurality of apertures 26 as will be described herein. Vertical uprights 8 are attached to pedestals 6 by way of cross bracing 15.

[0095] With respect now to FIG. 3, and alternatively, vertical uprights can be cylindrical in shape, as shown at 8'. Vertical uprights 8' also include a plurality of apertures 26 which will be described herein. It should be appreciated from viewing FIG. 3 that vertical uprights 8' are attached to floor mount pedestals 6 in a similar manner as described above. Also, horizontal top bar 14 is also attached to vertical uprights 8' to complete the assembly.

[0096] With reference now to FIG. 4, a first version of crossbar 30 is shown which spans between, and is interconnected to vertical uprights 8. Crossbar 30 generally includes mounting sleeves 32 having spring loaded popper pins 34, FIG. 4A. It should be appreciated that the popper pins 34 are pulled outwardly under a spring load, and have a pin projecting through sleeves 32 and into one of the apertures 26 to maintain the crossbar 30 in a particular vertical orientation. Thus, to move the crossbar 30 vertically, both popper pins would be pulled simultaneously, and the crossbar 30 lifted upwardly or allowed to move downwardly to its new vertical location, whereupon the popper pin is released to engage one of the apertures 26 on each side. It should also be appreciated that the sleeves 32 may have a bearing type material internal to the sleeve, such as a nylon material, in order that the sleeves do not scratch and/or bind upon traversing the vertical uprights 8.

[0097] With respect still to FIGS. 4 and 4A, crossbar 30 also includes laterally moveable sleeves 40 having popper pins 42 which will engage apertures on the bottom side of crossbar 30 (not shown). Alternatively, as shown in FIG. 4B, an alternate sleeve 40' can be provided which includes a vertical rod 44 upon which a spotter can be positioned as will be described further herein. In a similar manner as described above with respect to FIG. 4A, popper pins 34 engage apertures 26, in order to move in multiple preset lateral positions. In this manner, crossbar 30 can be moved in a vertical sense upwardly and downwardly on a crossbars 8 and held in place by popper pins 34, while at the same time sleeves 40 are laterally moveable along crossbar 30 and held in a lateral position by way of popper pins 42.

[0098] With respect now to FIG. 5, a center vertical drop rod is shown at 46 which is mounted to top bar 14 by way of a sleeve 48. The rod 46 could be permanently mounted to the top bar through the sleeve 48; alternatively, the drop rod 46 could be moveable upwardly and downwardly, through

the use of a popper pin, through sleeve 48, as described above. Alternatively, by such structure as by welding or by bolts or other similar manner. Alternatively, central vertical drop rod 46 extends downwardly in a generally parallel manner with vertical uprights 8 and also includes a plurality of apertures 50.

[0099] With reference now to FIG. 6, vertical uprights 8 are shown having another version of crossbar shown generally at 60. Crossbar 60 includes sleeves 62 having popper pins 64 for engagement with apertures on an inside surface of vertical uprights 8 as described above. Cross bar 60 further comprises laterally moveable sleeve 70 having attached thereto, a fixed sleeve 74 through which a vertically moveable bar 76 is provided. Sleeve 74 includes popper pins 78 which are engageable with apertures 80 to allow the vertically moveable bar 76 to traverse in a vertical direction while at the same time sleeves 70 allow for the entire bar 76 to move laterally towards and away from each other. Meanwhile popper pins 78 allow for the vertical movement of the bars 76. Finally, a cylindrical rod 82 is fixed to an end of the bars 76, and allow attachment of spotters as described herein.

[0100] With respect now to FIG. 7, the vertical uprights 8' of FIG. 3 are shown where a crossbar 90 is shown, comprised of two separate portions 92 and 94. With reference to FIG. 7A, crossbar 90 will be described in greater detail. Crossbar portion 92 includes a square tube portion 96 attached to a plate portion 98, in turn which is interconnected to a cylindrical sleeve 100. Popper pin 102 is attached to plate portion 98 where a pin of popper pin 102 intersects with the interior diameter of sleeve 100 in order to lock with apertures 26, as shown in FIGS. 7 and 7A. Crossbar portion 92 further includes a laterally moveable sleeve 106 having a popper pin 108 which will intersect with apertures (not shown) on the bottom of square tube 96. Sleeve 106 further includes an upstanding tube 110 on which a spotter may be positioned and held in place. Finally square tube 96 includes a free end portion 112 adjacent to crossbar portion 94 as further described herein.

[0101] Crossbar portion 94 is similar in nature to crossbar portion 92 including a square tube 120 attached to a plate portion 122, which in turn is attached to cylindrical sleeve 124 where popper pin 126 is attached plate portion 122 and intersects cylindrical tube 124 as previously described. Crossbar portion 94 also includes a laterally moveable sleeve 130 having a popper pin 132, and an upstanding tube 134 attached to the top of laterally moveable sleeve 130. Finally, crossbar portion 94 includes a locking sleeve 140 having a popper pin 142. It should be appreciated that locking sleeve 140 is laterally moveable to the right (as viewed in FIG. 7A) to expose a free end 141 of square tube 120 to allow the two ends to be proximate in location. As shown in FIG. 7A, the locking sleeve 140 is moved to the right, which exposes gap 143. As shown in FIG. 7, locking sleeve 140 is moved to the left and popper pin 142 can be locked to an aperture (not shown) adjacent free end 112 to lock the two square tubes 96, 120 together.

[0102] With respect now to FIG. 8, crossbar assembly 150 is shown including individual crossbars 152 and 154. Crossbars 152 and 154 are attached to vertical uprights such as 8'. Crossbar portions 152 and 154 include a horizontal tube portion 156 attached to a sleeve 158 having popper pins 160

therein. Crossbar portions 152 and 154 also include a vertical tube 158 having a cylindrical cross section and being fixedly attached to the horizontal tubes 156. Finally, locking collars 166 are attached having popper pins 168. Thus it should be appreciated that locking collars 166 can be traversed upwardly and downwardly along vertical uprights 8' and that popper pins 168 can be locked in appropriate apertures 26 (FIG. 3) and sleeves 158 are thereby positionable above locking collars 166 and can either be fixed in place and locked by their popper pins 160 or the popper pins can be released and the crossbar portions 152, 154 can be rotated outwardly towards the lifter.

[0103] Thus as described above, multiple vertical uprights and crossbar configurations have been described with reference to FIGS. 1-8. Multiple spotter assemblies will now be discussed which are usable with the vertical uprights and crossbar assemblies discussed above.

[0104] With reference now to FIGS. 9-11 a first spotter is shown which is defined as a shelf 180 having a horizontal surface 182 and includes a vertical backwall portion 184 to form a right-angled configuration. The spotter 180 also includes 2 openings at 186 defined by a cutout in the horizontal portion 182 and which is defined by vertically positioned strip portions 188 which flank the opening 186 which resist the side to side movement of the dumbbell 12 when positioned over the cutout 186.

[0105] With reference still to FIGS. 9-11, the shelf spotter 180 is rigidly attached to sleeve members 190 having popper pins 192. As should be appreciated, the popper pins 192 can be pulled outwardly to release the sleeve members 190, whereupon the shelf spotter at 180 can be moved upwardly and downwardly along vertical uprights 8 to any desired vertical position.

[0106] With reference now to FIG. 11, the shelf spotter 180 can include a takeoff plate 194 positioned on each side of openings 186 where the takeoff plate 194 includes a plate portion 196 having a raised boundary at 198 whereupon the dumbbell can be moved forwardly off of the surface 182 and rolled on the takeoff plate 196, whereupon a lifter can conveniently position the dumbbell close to the edge of the shelf for easily transitioning the dumbbell to the appropriate exercise position. Thus the lifter can preposition the dumbbells 12 for easily transitioning to an exercise, and advantageously, due to the rigidity of the shelf horizontal portion 182 together with the rigidity of the vertical backstop, the lifter can almost drop the dumbbells onto the shelf spotter 180 without having to strain his arms, neck or back by setting the dumbbell down into a specific position or slot on the spotter.

[0107] With reference now to FIG. 12, spotters 200 are provided in the form of a tray which are mounted on laterally moveable sleeves 40 as referred to above in FIG. 4. Next shown in FIG. 12, the tray spotters 200 each include horizontal portions 202 having back stop portions 204 with a cutout at 206 where the cutout 206 and the front edge includes an upstanding rim portion at 208. As described above, the dumbbell can be positioned over the opening 206 and the dumbbell weights can reside in the position between the cutout and held in a secure position by way of the rim 208. As also shown in FIG. 12, the tray spotters 200 can include a mounting tube 210 which is slidably receivable over the upstanding rods 44 (FIG. 4B) together with a

locking nut **212** which can be tightened to lock the tray spotters in a particular angular orientation on the vertical rods **44** for the proper position. Thus, in the embodiment shown in FIG. 12, the crossbar **30** can be moved upwardly and downwardly by way of the mounting sleeves **32**, each of the tray spotters **200** can be moved laterally by way of the sleeves **40** (FIG. 4) and the tray spotters **200** can be moved in an angular orientation by virtue of tubes **210** being positioned over the vertical rods **44**.

[0108] With respect now to FIG. 13, tray spotters **200** can also be attached to the crossbar **90**, from FIGS. 7 and 7A where tubes **210** are positioned over upstanding tubes **134** (FIG. 7A) in this manner, crossbar **90** can be used alternatively as a fixed crossbar as depicted in FIG. 13, or the crossbar can be detached by the locking sleeve **140**, and the two halves **92**, **94** rotated about the cylindrical vertical upright **8** in manner similar to that discussed with respect to FIG. 12.

[0109] With respect now to FIGS. 13A and 13B a modified tray spotter **200'** is shown attached to crossbar **90**. As shown in FIG. 13B, the tray spotter **200'** is similar to the tray spotter **200** including horizontal portions **202'** and backstop portions **204'**, and a cutout portion **206'**. In this embodiment however, the backstop portion **204'** includes a centering device **205**, generally centrally located relative to the cutout portion **206'**. In this embodiment, the centering device centers the dumbbell as it is replaced on the tray spotter **200'** and therefore does not require the lip portion surrounding the cutout **206'**. In other words, centering device **205** will protrude into the space between the weights on the dumbbell, aligning the dumbbell centrally onto the tray spotter **200'** such that the dumbbell does not fall through the cutout **206'**. This allows the cutout portion **206'** to be wider than otherwise possible as the dumbbell is centered relative to the tray spotter **200'**.

[0110] With respect now to FIGS. 14-16, yet another spotter is shown as a convex tray spotter **220** which is interconnected to two vertical uprights **8**. As shown best in FIG. 16, convex spotter **220** includes a crossbar assembly comprised of crossbar **222** in combination with crossbar portions **224**, **226** whereby spotter tray portions **228**, **230** are laterally moveable on their crossbar portions **224**, **226**. It should be appreciated that each of the tray portions **228**, **230** includes a sleeve **232**, and popper pins **234** allow the trays **228** or **230** to be laterally moveable along a respective crossbar and locked in place. With reference still to FIG. 216, spotter **220** further includes vertical sleeves **240** having popper pins **242** for vertically positioning spotter **220** relative to vertical uprights **8** as shown in FIG. 15. As best shown in FIG. 16, the individual tray spotters **228**, **230** includes a single piece curvilinear plate **250** having raised portions at **252** and recessed radius portions at **254** with a backstop wall at **256**. As in previous designs, cutouts **258** are defined with plates **260** flanking the opening **258**. Thus the dumbbells can be positioned with the weights in the recessed portions **254** against the back wall **256** and plates **260** prevent lateral movement of the dumbbells relative to the cutouts **258**.

[0111] Alternatively as shown in FIG. 17, a concave spotter **260** is shown similar to that of the spotter **220** shown in FIG. 16, where tray spotters **228** and **230** are slidably mounted on a concave crossbar defined by crossbar portions **264** and **266**.

[0112] With respect now to FIGS. 18 and 19, another spotter **280** is shown having two spotters; a first spotter **282** positioned on one side of spotter assembly **280** and another spotter **284** (FIG. 19) positioned on the opposite side thereof. Both spotters **282** and **284** have a common platform **286** with spotter **282** being angled as shown in FIG. 18 with two cutout portions **288** having backstops **290** situated behind each of the cutouts **288**. As in other embodiments, a rim **292** is provided defining a perimeter around the cutouts **288**. With reference now to FIG. 19, spotter **284** is similar in nature to spotter **282**, however is a linear version providing cutouts **296** defined by a raised ridge **298**. Backstop portions **300** are positioned behind each of the cutouts **296** for the purpose mentioned above. A cylindrical collar is provided at **302** which attached to square tube **304** whereby an internal cylindrical tube (not shown) is provided allowing the entire spotter **280** to rotate relative to square tube **302**. Thus in this embodiment, square tube **304** is attachable to sleeve **48** (FIG. 5) whereby the entire spotter **280** can be raised and lowered relative to top crossbar **14** and either of the spotters **282** or **284** may be utilized by simply spinning the member around.

[0113] With respect now to FIG. 20, tray spotters **200** are also useable with the crossbar mechanism **60** of FIG. 6, which again allows crossbar mechanism **60** to be vertically moved; allows sleeves **70** to be laterally moved; and allows post **76** to be vertically moved. Finally due to the connection of spotters **200** on cylindrical rods **82** (FIG. 6), the spotters **200** can also be rotated to a proper position for the particular exercise.

[0114] With respect now to FIGS. 21 and 21A, a modification to the spotter configuration of FIG. 20 is shown whereby spotters **200** are positioned above an inclined spotter **310**. Inclined spotter **310** is shown in particular in FIG. 21A having a platform support portion **312**, with a tubular upright **314** having a locking screw **316**. The inclined spotter is defined by a substantially cylindrical member shown at **318**. A lower and substantially vertical plate portion is shown at **320** with support rods **322** extending outwardly from the plate **320**. At the end of each of the support rods **322** are support balls **324**, whereby a dumbbell can be positioned on its end and set on the support rods with the other end of the dumbbell positioned in the cylindrical portion **318**. Balls **324** prevent the dumbbell from sliding off the support rods **322** and also allow for an easy transition from the weight of the dumbbell to a lifter's shoulders.

[0115] With reference now to FIGS. 22 and 23 another spotter is shown at **340** comprised of a crossbar **342**, sleeve members **344** and a removable spotter **346**. Sleeves **344** include a first post **348** which is positioned at a substantially 45 degree angle relative to the longitudinal sleeve **344** and another post **350** which is positioned in a substantially parallel manner with the sleeve **344**. Each of the posts **348** and **450** include a plurality of apertures at **352**.

[0116] Meanwhile spotter **346** includes a structural support member **358** having a vertical tube **360** and a pair of cylindrical shaped pads at **362**. As shown in FIG. 23, the spotters **346** can be positioned with their vertical sleeves **360** positioned over alternative posts **348** and **350** (FIG. 22) to provide for alternative positions or orientations relative to the longitudinal bar **342**. As shown in FIG. 23, the spotters **346** are positioned in a parallel manner relative to the

longitudinal bar **342**. It should be appreciated that bar **342** could also include sleeves at its ends to allow for the vertical orientation of the bar **342** in a like manner to that shown in FIG. 6.

[0117] With respect now to FIGS. 24-26, crossbar portion **150** is shown (as previously described in FIG. 8) with previously described spotter mechanisms positioned thereon. For example as shown in FIG. 24, inclined spotter **310** is shown attached to upright **158**; as shown in FIG. 25, spotter **200** is positioned on upright **158**; and in FIG. 26 both spotter **200** and **310** are both attached to uprights **158**.

[0118] Thus as shown above, multiple different exercises are possible from multiple spotters. It is possible to have one or more spotters for a selected home or professional gym, or it is possible to have all of the spotters set up for multiple different exercises. It should be appreciated that many of the spotters are usable with different seating arrangements. For example, and with reference to FIG. 23, spotters **310** and **200** could be used with a chair and the lifter can face the spotter and perform multiple exercises. Alternatively, the lifter can use a bench and lie flat on his back and use the spotter **200** in a bench press mode. Obviously, the spotters shown and depicted herein will have multiple uses to those avid body builders.

[0119] As shown in 27, another spotter embodiment is shown generally at **400** which includes a fixed backstop portion **402** and slidable dumbbell trays **404**. The sliding trays **404** slide along horizontal upright **30** which was described above. Trays **404** also slide on horizontal guides **40**. Sliding trays **404** move irrespective of the fixed backstop allowing the trays to be positioned at multiple lateral positions. As best shown in FIG. 28, backstop **402** is attached to horizontal upright **30** by way of spacers **406** with typical hardware fasteners such as **408**. Thus in this embodiment trays **404** can be moved laterally along horizontal upright as shown by the arrows in FIG. 29 yet also contained the backstop **402** for receiving the dumbbells when dropped in the trays **404**.

[0120] FIG. 30 shows yet another embodiment of a spotter, shown generally at **500**. The spotter **500** is attachable as shown in FIG. 31 to a crossbar such as **30**, by way of the slidable sleeve **40** prime, see also FIG. 4(b).

[0121] As shown in FIG. 30, spotter **50** generally includes a frame portion **502** defined by rods **504** and upright rods **506** and **508**. Receiving rods **510** are attached at one end to rods **504**, and at an upper end to rods **508**. Receiving plates **512** are attached at an upper end of rods **510** and are rigidified by support rods **514**. As shown, plates **512** are somewhat flared open to receive a plurality of sizes of dumbbells as will be described further herein. At a lower end of rods **510** is an end plate **516** which will receive an end of the dumbbell in a resting position. Balls **518** are also positioned at an end of rods **510** to prevent a dumbbell from escaping the rods **510** when dropped as more fully described below. Spotter **500** also includes a mounting portion **520** which includes a mounting plate **522** attached to rods **504** and the mounting tube **524** extending through rods **504** and attached to a backside of plate **522**. A securing screw is positioned as shown at **530** having a threaded portion extending through tube **524** as is well known in the art.

[0122] As shown in FIG. 31, the dumbbell **12** can be dropped on spotter **500** with one dumbbell hitting plates **512**

and the other end of the dumbbell hitting rods **510**. The dumbbell can then be slid down rods **510** to a resting position against plate **516** as shown in FIG. 31.

[0123] With reference now to FIG. 32A, a dumbbell rack is shown at **600** generally comprised of a support upright assembly **602** comprised of individual vertical uprights **604** and horizontal feet portion **606**. At the upper end of the rack **600** is a tray shown generally at **610** providing a plurality of channels **612**, **614**, **616** and **618**; and a pair of generally horizontally extending channels **620** and **622**. Rack **600** further includes placards **624**, **626**, **628** and **630** for identification of the weight positioned in its corresponding channel as well as a placard at **632** and **634** for identification of the weight and corresponding channel **620** and **622**. While it is contemplated that any size in configuration of rack can be configured, it may be provided that the channels are configured as follows:

[0124] Channel **612**—15 lbs;

[0125] Channel **614**—20 lbs;

[0126] Channel **616**—25 lbs;

[0127] Channel **618**—30 lbs;

[0128] Channel **620**—35 lbs; and

[0129] Channel **622**—40 lbs.

[0130] In addition, and with respect to FIG. 32B, a modified incline rack is shown at **600'**, which again includes a support upright assembly **602** comprised of individual vertical uprights **604** and horizontal feet portion **606**. At the upper end of the rack **600** is a tray shown generally at **610** providing a plurality of channels **612**, **614**, **616** and **618**; and a pair of generally horizontally extending channels **620** and **622**. In addition, an arch-shaped holder **650** extends above the tray **610**, and includes two cup-shaped holders **652**, two cup-shaped holders **654**, two cup-shaped holders **656**, and two cup-shaped holders **658**. The holders are configured as follows:

[0131] Channel **652**—12 lbs;

[0132] Channel **654**—10 lbs;

[0133] Channel **656**—8 lbs; and

[0134] Channel **658**—5 lbs.

[0135] With reference now to FIG. 33, a carousel is shown at **700**, where the carousel is rotatable about 360 degrees. Carousel **700** would include a support frame such as **702** upon which a rotative support is provided. This support may be in the form of a lower bearing or other type of assembly, but in the embodiment disclosed, the rotative support **704** is a model number CA-40-4 available from TNS Equipment Company in Angola, Indiana. Attached to the rotative support is a circular support plate shown at **706**. Stacked above the cylindrical plate **706**, is a plurality of support frames such **708** which generally holds a multi-sided carousel section defined by a plurality of plate portions, such as **710** which extend upwardly to an upper plate **712**.

[0136] It should be appreciated that the plates **110** terminate along an upper edge which matches the multisided upper plate **712**. Upper plate **712** includes a center opening around which a support bearing **714** is positioned through which a center pivot rod **716** extends. Each plate portion **710**

has a semi-cylindrical trough such as **718** attached to it. Where each includes a semi-cylindrical plate portion **720**, and a semi-circular plate portion **722**. Semi-cylindrical trough portion **718** further include a hand grip shown at **730** which is attached to each of the trough portions **718** by way of a rigid strip **732**. In this manner a plurality of dumbbells **12** can be placed in troughs **718**, and hand grips **730** can be grasped and the entire carousel may be spun like a turntable about rod **716** to locate the desired weighted dumbbell.

[0137] With reference now to FIG. **34**, another carousel is shown at **800**, and includes multi-stages of dumbbell support attachments. For example dumbbell support **800** includes a first stage support shown at **802**, coupled with a second stage support shown at **804**. These two support stages are assembled together and are rotatable about a vertical upright such as **806**.

[0138] With reference first to FIG. **35**, vertical upright **806** is shown which would be coupled to one of the multiple vertical uprights shown previously for example in FIGS. **1** through **8**. Vertical upright **806** would include a cylindrical spindle such as **808** upon which carousel **800** would rotate.

[0139] With reference next to FIGS. **36** and **37**, first stage portion **802** will be shown in greater detail. First stage portion **802** includes a triangular plate portion **810** having a cylindrical rod **812** centrally located therein. The cylindrical rod may be fixed to the triangular plate portion **810** with the cylindrical spindle extending therethrough. The cylindrical rod may have a bearing **814** positioned therein, which may any type of rotationally assisted bearing. However, Applicants have incorporated two oil impregnated bushings **814** (one at each end of cylindrical rod **812**). The bushings are available from Bearing Service in Woodhaven, Mich. They are oil-impregnated bushings part number EF162016 having a **1" inner diameter**.

[0140] At each triangular corner, a semi-cylindrical trough portion **816** is mounted which extends in an inclined manner to coincide and intersect with tubular portion **812**. Plate portion **810** includes apertures **820** positioned transverse to a triangular side **822**, and form the mounting portion for the second stage portions to be described below.

[0141] With reference now to FIG. **38** the second stage portion **804** is shown which includes two holder portions **830** and **832**. The second stage portion **804** includes a rod **834** attached to a transverse rod portion **836** which in turn are attached downwardly extending vertical rods **838**. Vertical rods **838** then support horizontal rods at **840**.

[0142] First holder **830** is attached to bar **834** as shown in FIG. **38** and includes a cylindrical holder at **850** with a semi-cylindrical back stop portion at **852**. Meanwhile holder **832** includes a semi-cylindrical cradle at **854** with end plates at end **856**. An upper extending rod **860** is attached to horizontal rod **840** which will form a hand grip portion as described below.

[0143] As described above second stage portion **804** can be attached first stage portion **802** by positioning fasteners **860** (FIG. **38**) through openings **820** (FIG. **37**) such that three second stage portions **804** are positioned intermediate each of the semi-cylindrical portions **816** to define the configuration shown in FIG. **34**. Thus as shown each carousel **800** includes nine separate dumbbell holders at each

end, that is attached to each to upright **806** or **19** dumbbells total can be positioned intermediate to the uprights, as shown best in FIG. **39**.

[0144] With reference now to FIGS. **40-42**, a plurality of free weight holders are shown. As shown in FIG. **40**, a free weight holder at **900** is shown comprised of a lower frame portion **902** having a horizontal support bar at **904** and a circular and tubular bar at **906**. At various lateral locations, holding pegs **908** are attached to bars **904** and **906** to position free weights **912** thereon.

[0145] With reference now to FIG. **41**, a holder **920** is shown as a variation to holder **900** where instead of a circular bar **906**, a rectangular frame up right is shown at **922** to hold the plurality of free weights **912**.

[0146] With respect to FIG. **42**, a triangular shaped member is shown **924** having a triangular upright portion **926**, again positioning the plurality of free weights **912** on a plurality of pegs **908**.

[0147] With respect now to FIG. **43**, a trapezoidal shaped member is shown at **930** having a generally trapezoidally shaped portion having upright portions **932** and a horizontal portion **934**, positioning the plurality of free weights **912** on a plurality of pegs **908**.

[0148] With respect to FIG. **44**, a first embodiment of a safety holder assembly is shown at **1000** which includes a platform portion **1002**, a vertical upright portion **1004**, a vertically moveable sleeve **1006**, and a safety tray **1008**. As shown, the platform portion **1002** includes two leg portions **1010** and **1012** (as best shown in FIG. **46**) which would flank leg portion **6** of the vertical uprights and would be attached by either a spring loaded pin or other fastener (not shown).

[0149] With respect now to FIGS. **45** and **46**, vertical upright portion **1004** is shown with a plurality of vertically spaced apertures **1014** for vertical adjustment of the safety holder trays **1008**. Vertically moveable sleeve **1006** includes a spring loaded popper pin **1016** which is normally biased inwardly and which would project through one of the vertical alignment apertures **1014** as is well known in art. Thus to move the safety holder tray **1008** vertically upwardly or downwardly, the user would grasp handle **1018** with one hand, pull the popper pin **1016** and move the vertically moveable sleeve upwardly or downwardly along vertical upright **1004** to the proper vertical position until the popper pin finds one of the apertures **1014**. Thus the use of the safety holders is in combination with the spotter trays **200** as follows.

[0150] In the case where a bench is positioned intermediate the two spotter assemblies **100** and the user is using the bench for a bench press type exercise, where the user lies flat on the bench with his or her back on the bench, a crossbar **90** would be placed in position such that the user can raise his or her arms grasp the dumbbells from the trays **200** and begin the bench press exercise. In the event that the user becomes so fatigued that he or she could not again lift the dumbbells to the vertical position of the spotter trays **200**, the user can simply drop the dumbbells into the safety trays which flank the bench. It should be noted that the position of the safety trays **1008** would be generally in position of the "wingspan" of the user such as the dumbbells are simply dropped in the tray **1008**.

[0151] With respect now to FIG. 47, a safety tray assembly 1020 is shown again attached to leg 6. Assembly 1020 generally includes a longitudinally moveable leg 1022, a laterally moveable leg 1024, a vertical leg 1026, a vertically moveable collar 1028, a rotatable collar 1030, and safety tray 1032.

[0152] With respect now to FIGS. 48-50, the operation of the safety holder 1020 will be described in greater detail. With respect to either FIG. 48 or FIG. 50, longitudinally moveable rail 1022 slides inside of leg 6 and includes a plurality of apertures 1034 which would operate in conjunction with a popper pin 1036 in a similar manner as described with respect to popper pin 1016 above.

[0153] Vertical upright 1026 is attached orthogonally to laterally moveable leg 1024 as shown and laterally moveable leg 1024 is slidable through a sleeve 1040. Sleeve 1040 includes a popper pin 1042 which cooperates with apertures 1044 in the laterally moveable leg 1024 to allow leg 1026, and safety holder 1032 to move laterally towards and away from a workout bench. With respect to FIGS. 48 and 49, vertically moveable sleeve 1028 is shown including a popper pin 1050 which would cooperate with any one of a plurality of apertures 1052 on vertical leg 1026. Sleeve 1028 is comprised of a square shaped sleeve 1060 which is fixedly retained to an upper ring 1062, an inner ring 1064 and lower ring 1066. Outer sleeve 1030 is trapped between upper 1062 and lower 1066 rings relative to inner sleeve 1064. As shown, inner sleeve 1064 includes apertures 1070 which cooperate with popper pin 1072 to provide a radial location for the safety tray 1032.

[0154] Thus in this embodiment, the safety tray assembly 1020 provides for four different degrees of freedom, namely along longitudinal axis LG, lateral axis LA, vertical axis VT and radial axis RA, as best shown in FIG. 50. Thus the user can move the entire assembly longitudinally by grasping popper pin 1036 and moving the assembly outwardly through leg 6 to a desired position. Popper pin 1042 can be lifted to move the safety tray 1022 towards or away from a workout bench. Handle 1074 can be grasped and moved vertically by grasping popper pin 1050 to the vertically proper position, and by grasping popper pin 1072 and moving the safety tray 1032 to the proper radial position.

[0155] While applicants have shown a four way positionable safety tray assembly, it should be understood that other degrees of freedom could easily be shown by having other radially moveable collars to move the tray in different angular positions. FIG. 51 shows one example of a possible setup for safety holders 1020 flanking a workout bench 1080.

[0156] With particular reference to FIG. 51, a particular orientation of the safety holders 1020 is shown, together with spotters 200, and bench 1080. In one orientation, the bench has a height (a) from the ground of approximately 21", although it should be appreciated that this dimension could be varied to suit particular users, and is anticipated that this range be between 20-22". The vertical height (b) of the safety holders will normally be set to a position below the height of the height "a" of the bench, and the height 18" has been found to be comfortable. It should also be appreciated that the height "b" of the safety holders is relative to the height of the bench, but it anticipated that the height difference will be in the range of 2-6". Finally, the height "c"

of the spotters 200 is movable upwardly and downwardly to fit the user, but one comfortable position has been found to be 42" from the ground. This too is relative to the bench height "a", but the difference between the bench height "a" and the spotter height "c" will have a range at least 20-24", and more than likely of approximately 15-28", which is primarily dependent upon the length of the users arms.

[0157] Finally FIGS. 52-54 depict portable safety holders which can be moveable anywhere relative to a workout bench 1080 or relative to another workout station where the safety holders are shown as assemblies 1100. As shown in FIGS. 53 and FIG. 54, assemblies 1100 are comprised of pedestals 1102 supporting a vertical upright 1104 which in turn supports a vertically moveable sleeve 1106. Safety tray 1108 is attached to the vertically moveable sleeve 1106 and is vertically moveable relative to vertical upright 1104 by way of a popper pin 1110 engaging any one of a plurality of apertures 1112 as should now be well understood by way of previous examples. Thus in this example, the pedestals could be moveable relative to a workout bench and moved in any orientation longitudinal or laterally of the bench, and at any angular orientation relative to the bench and vertically moveable by way of sleeve 1106.

[0158] With reference now to FIGS. 55-59, safety holder similar nature to that described as 1020 in FIG. 47 as shown, where the safety holder is adjustable. As shown in FIG. 55, safety holder 1200 is mounted to a vertical post 1026, as described with respect to FIG. 47, and thus need not be discussed further.

[0159] With respect to FIGS. 56 and 57, safety holders 1200 include a tray portion 1202 comprised of a lower plate portion 1204 side plate portions 1206, and a back plate portion 1208. On the back side of plate 1208, and as shown in FIG. 57, two tubes 1210 are mounted with thumbwheel screws 1212. An adjustable plate 1214 is positioned on the inside of the back plate 1208 and includes rods 1216 mounted on the back side of adjustable plate 1214 which are telescopically positioned in tubes 1210.

[0160] Thus it should be appreciated that the plate 1214 can be adjusted to a position spaced away from the back plate 1208, as shown in both of FIGS. 58 and 59, where thumbwheels 1212 are loosened to allow the telescopic movement of rods 1216 within tubes 1210, whereupon thumbwheel screws 1212 can be tightened again to hold the plate in infinitely variable number of positions, such as the positions shown in FIGS. 58 and 59. Alternatively, the adjustable plate 1214 can include square telescopic posts 1220 having apertures which align with apertures in a square tube 1222 where a popper pin 1224 can allow for incremental positioning of the adjustable plate 1214. Regardless of the version of adjustable plate shown, FIGS. 61-63 show three various positions for the adjustable plate 1214 relative to back plate 1208. Thus with reference to FIGS. 64-66, a users hand is shown gripping various sizes of dumbbells 12A, 12B, and 12C. It should be understood that the hand grip portion of the dumbbell increases in distance from the lower plate 1204 as the dumbbell weight increases. This is due to the fact that the weights on the end of the grip portion become larger in diameter as the weights increase, increasing also the distance from the hand grip to the lower plate 1204. Thus the user can set the adjustable plate at a variety of positions relative to the back plate 1208 depending upon

the size of the dumbbell weight being used. This prevents the user from dropping the dumbbell weight onto one of the safety holders **1200** and hitting their wrist on the front edge **1220** of the lower plate **1204**.

What is claimed is:

1. A dumbbell weight lifting system, comprising:
 - a bench having a substantially flat surface having a first vertical height;
 - a dumbbell holder assembly for holding at least two dumbbells, the holder assembly being generally transverse to the length of the bench, the holder assembly being capable of holding the dumbbells at a second vertical height greater than said first vertical height; and
 - dumbbell release holders, flanking said bench, and profiled for a user to drop dumbbells into the holders, when an exercise is completed.
2. The system of claim 1, wherein each of the dumbbell release holders is comprised of a tray to hold the dumbbells, the trays being positioned at a third vertical height, where said third vertical height is less than said first vertical height.
3. The system of claim 1, wherein each of the dumbbell release holders is comprised of a tray to hold the dumbbells.
4. The system of claim 3, wherein the trays are vertically adjustable.
5. The system of claim 3, wherein the trays are comprised of a bottom plate, and a back plate.
6. The system of claim 5, further comprising a movable plate on the inside of said back plate, said movable plate being generally parallel to said back plate, and changing the location of the dumbbell weight depending on its size.
7. Dumbbell release holders for use with a bench having a substantially flat surface and a dumbbell holder assembly for holding at least two dumbbells, the holder assembly being generally transverse to the length of the bench, the dumbbell release holders being comprised of trays positionable in a flanking arrangement relative to the bench, and being profiled for a user to drop dumbbells into the holders, when an exercise is completed.
8. The system of claim 1, wherein each of the dumbbell release holder trays are positionable at a vertical height below a height of the bench.
9. The system of claim 7, wherein the trays are vertically adjustable.
10. The system of claim 7, wherein the trays are comprised of a bottom plate, and a back plate.
11. The system of claim 10, further comprising a movable plate on the inside of said back plate, said movable plate being generally parallel to said back plate, and fixably movable between positions adjacent to and distant from, said back plate to change the location of the dumbbell weight depending on its size.
12. A dumbbell support assembly for supporting dumbbells for weight lifting exercises, said assembly comprising:

a vertical support assembly;

at least one lateral support, supported by said vertical support assembly;

first and second dumbbell holders supported by said at least one lateral support, each said dumbbell holder comprising a channel-shaped member, upstanding with at least a partial vertical orientation, said first dumbbell holder further comprising an engagement member, positioned at a lower level of said channel-shaped member and profiled to receive an end of a dumbbell when dropped in at least a partially vertical orientation.

13. The dumbbell support assembly of claim 12, wherein said channel-shaped member is arcuate in section.

14. The dumbbell support assembly of claim 13, wherein said channel-shaped member upstands at a vertical orientation of between 45-90 degrees.

15. The dumbbell support assembly of claim 12, wherein said engagement member is defined by a pair of rods extending outwardly from said channel-shaped member.

16. The dumbbell support assembly of claim 15, wherein said pair of rods include a stop member at a free end of each rod.

17. The dumbbell support assembly of claim 16, wherein said stop members are defined by a ball shaped member attached to each said rod.

18. A carousel for holding a plurality of dumbbells, comprising a rotatable tray assembly having a plurality of dumbbell locating positions, and a central axle about which the tray rotates.

19. A carousel according to claim 18, wherein the dumbbell locating positions are formed by individual trays.

20. A carousel according to claim 19, wherein at least some of the individual trays are angled inwardly towards the central axis.

21. A carousel according to claim 19, wherein at least some of said trays are positioned on a turntable, which spins on an axle along said central axis.

22. A carousel according to claim 21, further comprising a bearing positioned intermediate said turntable and said central axis.

23. A dumbbell support assembly for supporting dumbbells for weight lifting exercises, said assembly comprising:

a vertical support assembly comprising at least two vertical uprights;

a collar, fixably movable upwardly and downwardly of each of said vertical uprights;

a lateral support ending from each said collar; and

a vertical support, attached adjacent a free end of said lateral support, and extending upwardly.

24. The dumbbell support assembly of claim 23, further comprising a plurality of dumbbell supports positioned on each of said vertical supports.

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