Aug. 18, 1970 J. F. KANE 3,524,644

PUSH-PULL SPRING BIASED BAR-BELL TYPE EXERCISING DEVICE

Filed July 25, 1968 4 Sheets-Sheet 1

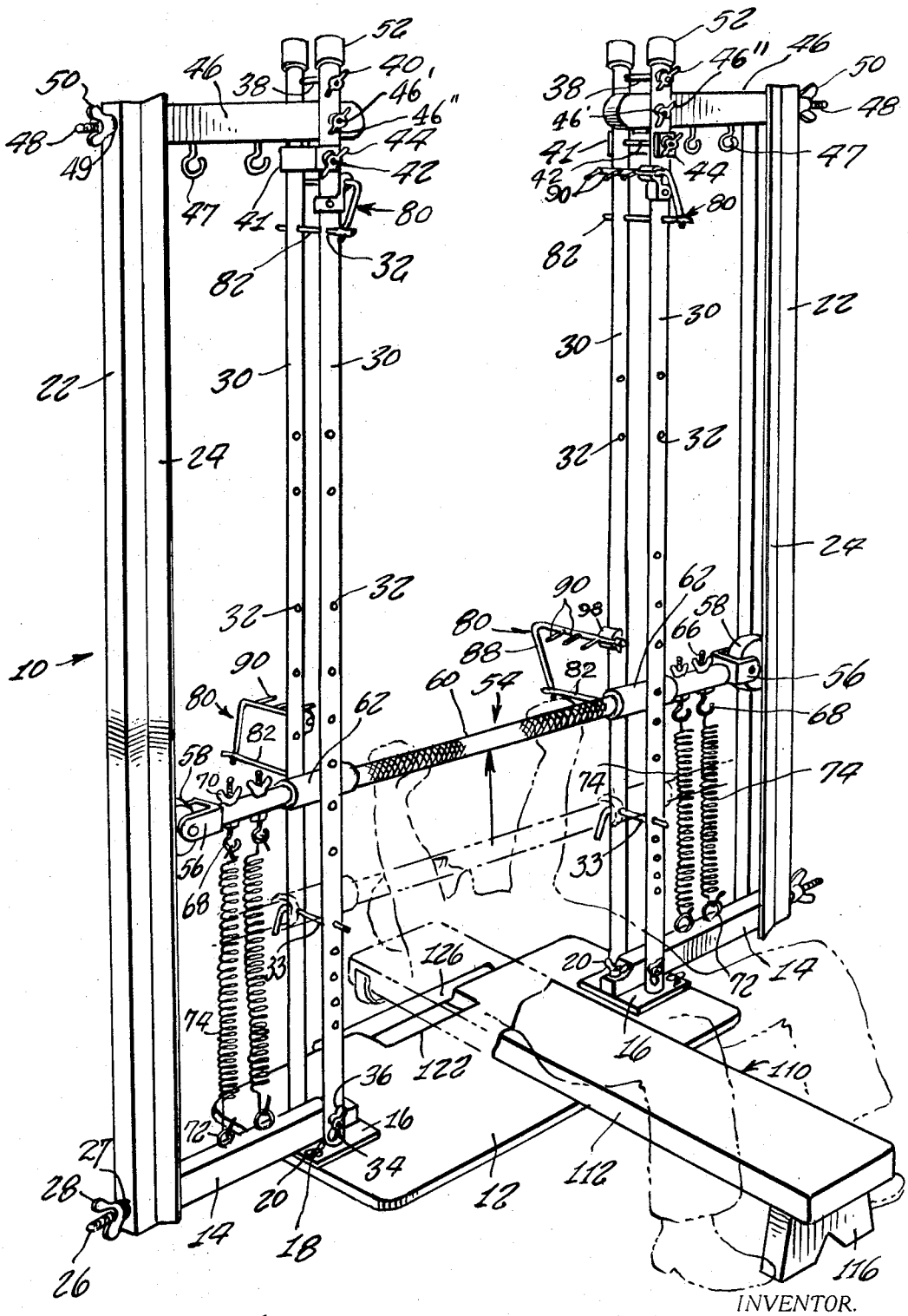

Fig. 1

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Fig. 3

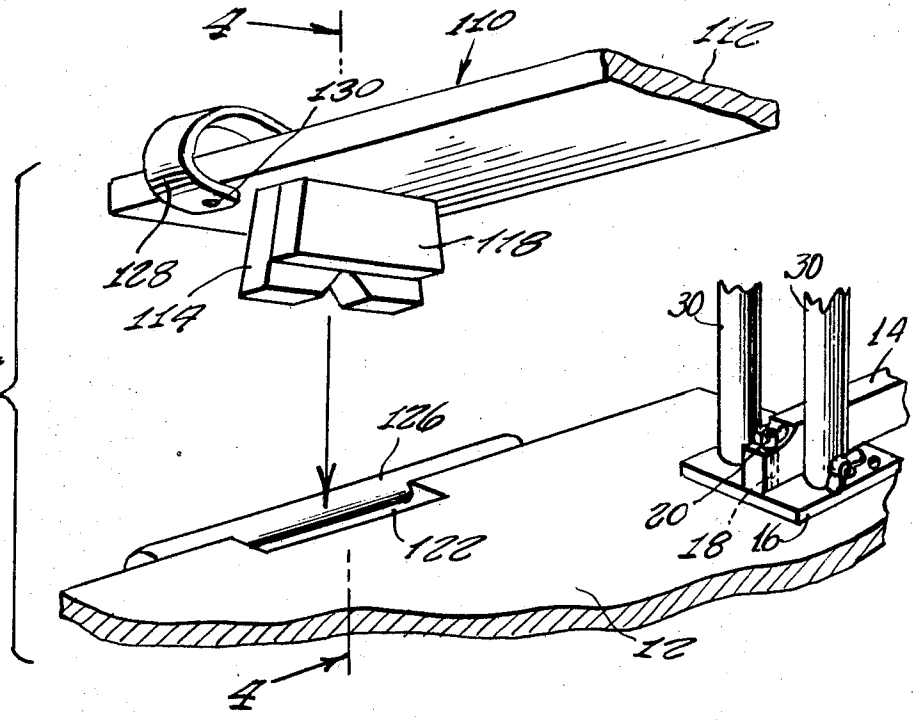

Fig. 4

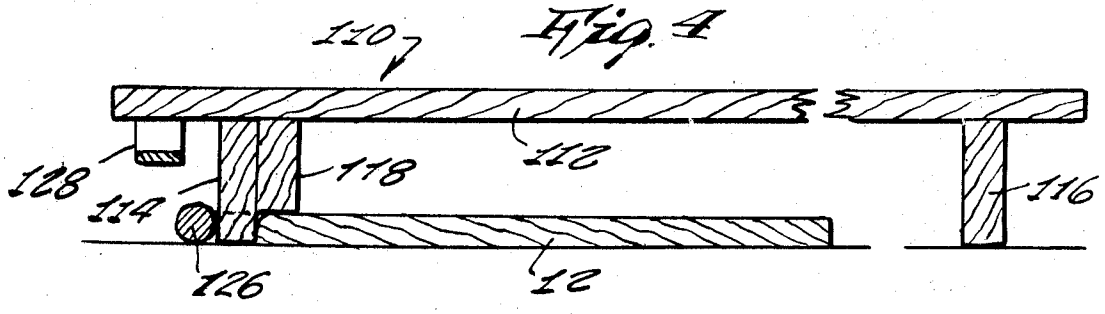

Fig. 2

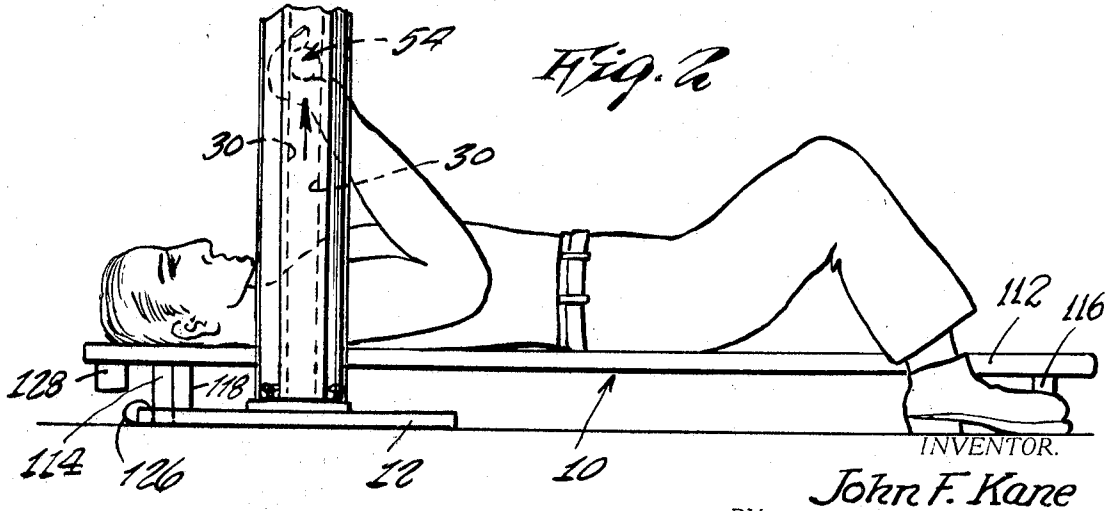

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Fig. 5

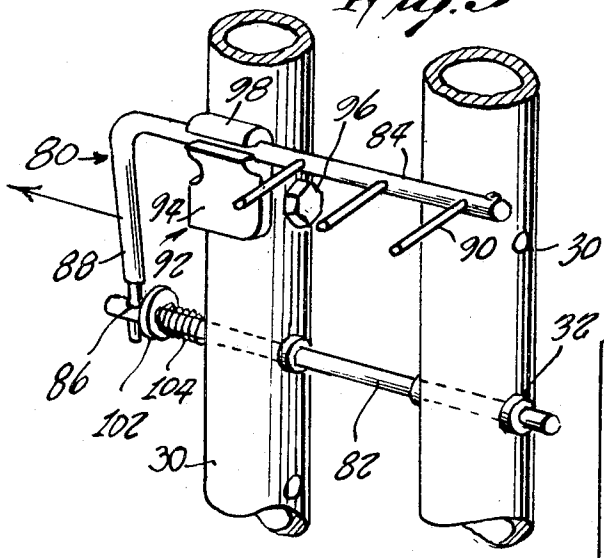


Fig. 8

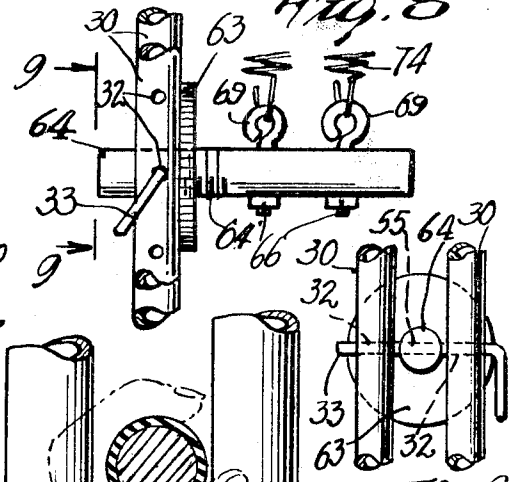


Fig. 9

Fig. 6

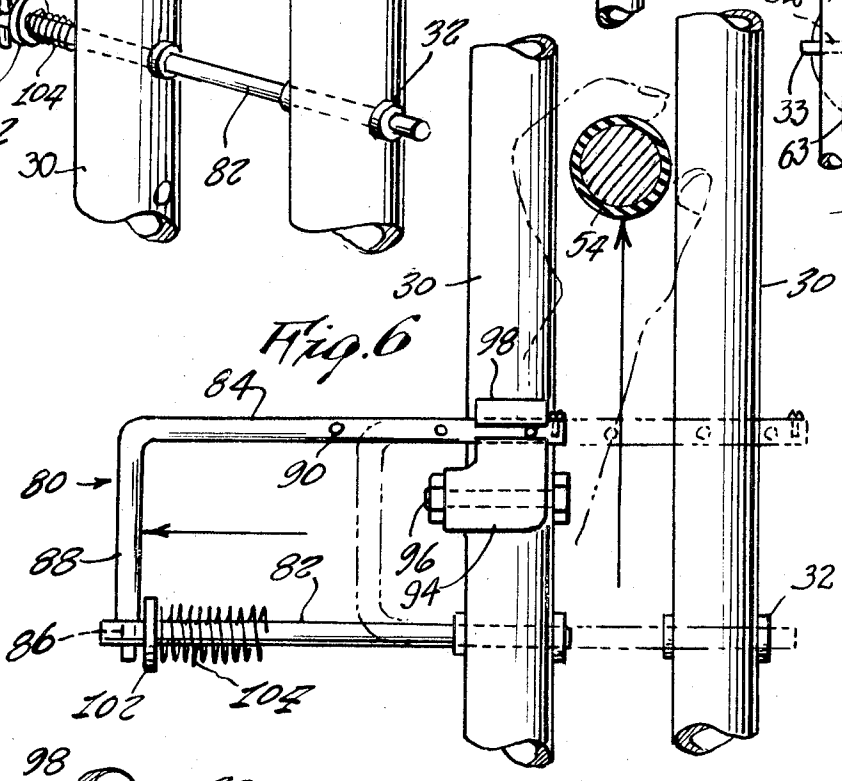
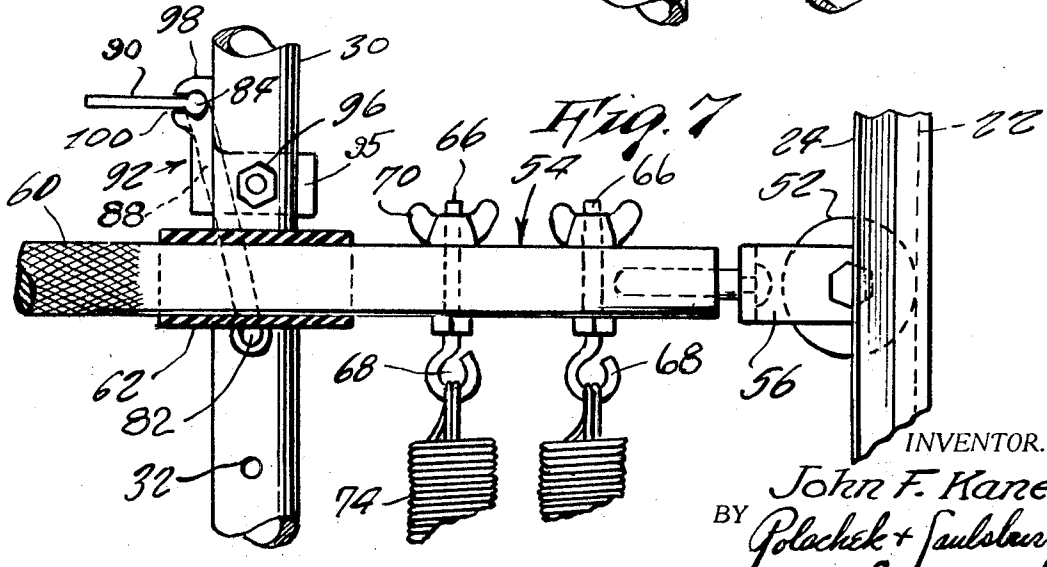


Fig. 7



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PUSH-PULL SPRING BIASED BAR-BELL TYPE EXERCISING DEVICE

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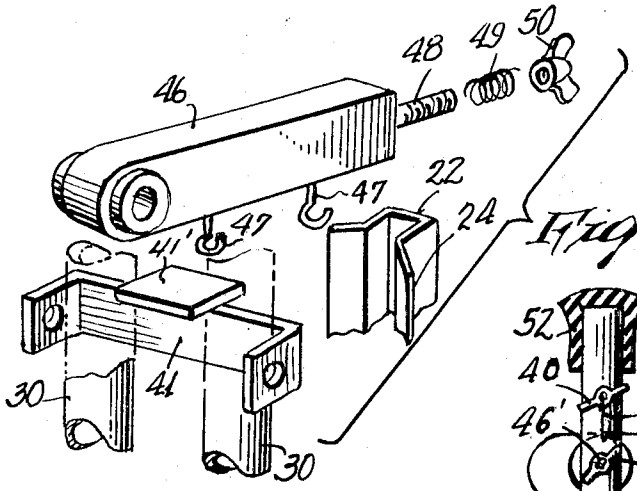

Fig. 10

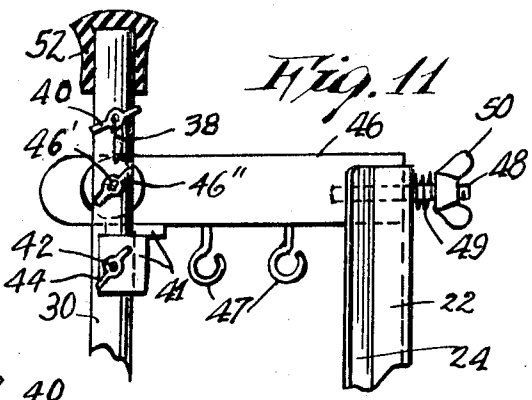

Fig. 11

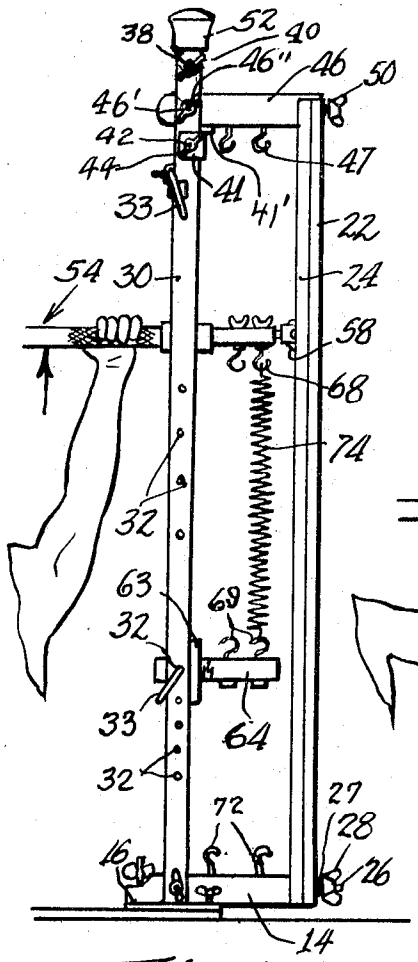

Fig. 12

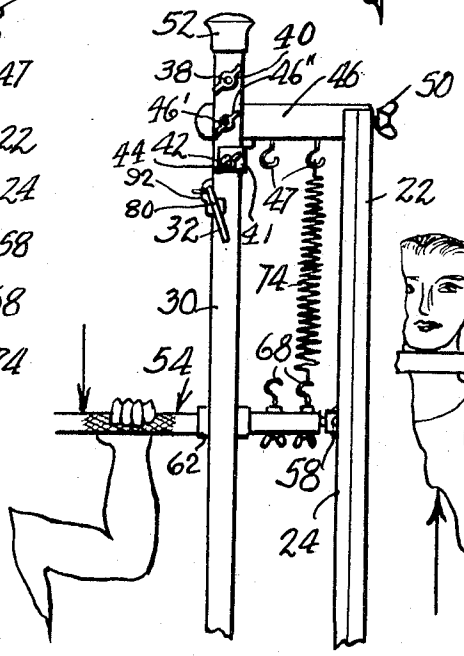

Fig. 13

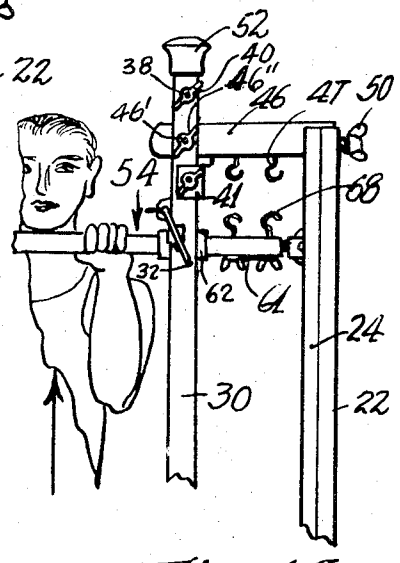

Fig. 14

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United States Patent Office 3,524,644 Patented Aug. 18, 1970

3,524,644

PUSH-PULL SPRING BIASED BAR-BELL TYPE EXERCISING DEVICE

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Int. Cl. A63b 21/00
U.S. Cl. 272—83 9 Claims

ABSTRACT OF THE DISCLOSURE

An exercising apparatus for bar-bell type exercises, for development and strengthening the major portions of the body including arms and legs, and is readily adaptable for use in various standing, squatting, sitting and lying-down types of exercises. A horizontal movable bar is adapted to rest upon bars disposed between spaced pairs of vertically-extending perforated poles, secured to a platform. The ends of the horizontal bar carries wheels ridable in channel-shaped uprights. Radial arms are carried by the top and bottom ends of the poles and are provided with depending and upright hooks adapted to be aligned with hooks on the horizontal bar. Tension springs are secured between the bar hooks and the arm hooks against which the bar moves. An elongated portable exercise bench is provided for use when required for certain exercises.

This invention relates to exercising apparatus and more particularly to spring-controlled apparatus for bar-bell type exercises.

A principal object of the present invention is to provide a spring exercising apparatus of the bar-bell type which can be set up in any suitable place with ease and which makes possible the exercise of a maximum number of the muscles of the body. The device is in effect the equivalent of most of the apparatus customarily found in a gymnasium, but in a form that may be easily set up or removed at will, and does not require the use of weights, as the resistance medium.

Another object of the invention is to provide an exercising apparatus of this kind that is quickly and easily adjustable to the capacity of the user.

A further object is to provide an exercising apparatus providing optimum movement for developing and strengthening the arms and legs and other major portions of the body.

A still further object is to provide an exercising apparatus of thin kind which may be easily used to perform a number of basic exercises for all the major portions of the body and such as ordinarily provided by the bar-bell exercise equipment.

A still further object of the invention is to provide a spring-biased bar-bell type of exercising apparatus which is readily adaptable for use in various standing, squatting, sitting and lying-down types of exercise.

A still further object is to provide a bar-lifting type of exercising apparatus having improved means for vertically adjusting the effective height of the bar-bell means.

FIG. 1 is a front perspective view of exercising apparatus embodying the invention, parts being shown broken away.

FIG. 2 is a fragmentary side elevational view thereof showing a user in prone press position.

FIG. 3 is a fragmentary perspective view of the low exercise bench detached from the supporting base or platform.

FIG. 4 is a vertical sectional view taken on line 4—4 of FIG. 3 showing the low exercise bench in operative position on the base or platform.

FIG. 5 is a perspective detail view of the sliding lift bar supporting bracket in operative position between poles.

FIG. 6 is a front elevational view of the supporting bracket moved to inoperative position preparatory to positioning the horizontal lift bar.

FIG. 7 is an enlarged front elevational view showing the mounting of one end of the horizontal lift bar.

FIG. 8 is a side elevational view of an adapter device adjusting spring attachment level and is shown in use with the apparatus in FIG. 12.

FIG. 9 is an end elevational view of an adapter device on line 9—9 of FIG. 8.

FIG. 10 is a fragmentary exploded perspective view of the top radial arm assembly.

FIG. 11 is a fragmentary elevational view of the assembly of FIG. 10 with the parts assembled.

FIG. 12 is a fragmentary front elevational view of the exercising apparatus as shown in FIG. 1, showing the lift bar in pushed-up position and using the adapter device shown in FIG. 8.

FIG. 13 is a fragmentary view of FIG. 12 showing the lift bar in a pull-down position, and

FIG. 14 is another fragmentary view similar to FIG. 13 showing the lift bar raised and locked in a rigidly fixed position by the sliding bar lock supporting bracket as shown in FIG. 5.

Referring now in detail to the various views of the drawings, in FIG. 1 an exercising apparatus of the rack type made in accordance with the present invention is illustrated and designated generally at **10**. The apparatus comprises a rectangular shaped wooden base board **12** for supporting a pair of bottom radial extending arms **14, 14** bolted to the metal plates **16** fastened to the base by bolts **18** and nuts **20**. A pair of uprights **22** formed of channel iron with flared elongated edges **24** is yieldingly supported on the ends of the arms **14** by means of bolts **26** and wing nuts **28** spaced from the uprights by coil springs **27** to permit upright **22** to be resiliently self-adjusting.

At each end of the base board **12** on the plates **16**, there is a pair of closely spaced tubular metal upright poles **30, 30** soldered at their bottom ends to the metal plates **16**. The poles are formed with a plurality of pairs of opposed holes **32** extending therethrough. A pair of opposed holes at the bottom end of the poles **30** receive bolts **34** and wing nuts **36** fastening the arms **14** to the poles. Adjacent the top of the poles **30, 30** there are bolts **38** extending thereacross fastening the poles to each other by means of wing nuts **40**. Below the bolts **38**, there are flanged plate-like metal brackets **41** secured to the pairs of poles **30, 30** by means of bolts **42** extending through holes in the flanges thereof and wing nuts **44** on the protruding ends of the bolts.

Another pair of upper radially extending arms **46, 46** with one end seated on the brackets **41** and pivotally connected by a bolt **46** and wing nut **46″** to the upright poles **30, 30**, and the other end extending into the channel shaped uprights **22** at the top thereof where it is yieldingly secured to the uprights by means of bolts **48** and coil springs **49** and wing nuts **50**. A pair of closely spaced metal hooks **47, 47** are secured to the under surface of the arms **46, 46** in line with the hooks **68, 68** of the bar **54**. The free tops of the pairs of poles **30, 30** may be provided with rubber caps **52**. The bracket **41** has a top plate **41′** that overhangs the same and upon which the top arm **46** rests in a cantilever manner while being bolted to pipes so that no force is imparted to the channel uprights **22**. A horizontal round lift bar **54** extends through the pairs of poles **30, 30** and is provided at its ends with pivotally mounted U-shaped metal brackets **56, 56**, carrying wheels **58, 58** of hard rubber, adapted

to ride in the channel-shaped uprights 22. The bar may be formed with a knurled outer surface 60 and with rubber sleeves 62 serving as a cushion where it passes through the poles 30, 30. At its ends, the bar 54 is formed with opposed pairs of spaced holes to receive threaded bolts 66 passing through the bar and formed with hooks 68 at one end and secured in position by wing nuts 70 at the other end. A similar pair of hooked bolts 72 is secured in each pair of bottom arms 14 in line with the bolts 66, 66 and pairs of compressed springs 74, 74 are attached at their ends on the opposed hooks 68, 68 and 72, 72 as shown in FIG. 1.

High and low pairs of inverted U-shaped sliding lift bar supporting brackets 80 are placed at two specific locations on poles 30, 30. These brackets 80 support the horizontal lift bar 54 at these two locations to permit the user to easily free himself from under the bar. Each bracket 80 comprises a straight round metal bar 82 and an L-shaped metal bar 84. The round bar 82 is formed with a hole 86 at one end thereof and extend loosely and slidably through opposed pairs of holes 32, 32. The other bar 84 had one end 88 extending through the hole in bar 82. The two long bars 82 and 84 define an inverted U-shaped bracket or frame. The bar 84 is formed with a plurality of actuating pins 90 projecting radially therefrom, remote from the end 88. The bar 84 projects along the outside of the poles 30, 30 and is slidably supported on one of the poles 30 by a bracket 92 constituted by a metal plate 94 formed with an integral curved finger 95 looped around said pole 30 and secured thereto by a bolt 96. The plate 94 is formed with a head 98 having a transverse slot 100. A washer 102 is mounted on the end of the bar 82 to serve as a bearing for a spring 104 carried around the bar between the washer and the body of the adjacent pole 30 so that the U-shaped bracket or frame moves against the action of the spring 104. In moving each sliding bar lock supporting bracket 80, back and forth, the object is to move the round bar 82 activating the actuating pins 90 of bar 84.

An L-shaped round pin 33 is slidably and removably mounted in opposed pairs of holes 32, 32 in each pair of poles 30, 30 for supporting the horizontal lift bar 54 at any desired height along the poles 30, 30.

A portable bench 110 is provided for use with the exercising apparatus. This bench comprises an elongated rectangular shaped wooden body 112 provided with wooden legs 114 and 116 at the ends of the body. A wooden block 118 is juxtaposed against the leg 114 and its sole purpose is to prevent any movement of platform 12 when bench 110 is being used with the exercising apparatus. The leg 114 extends below the bottom of the block 118. The platform 12 is formed with a cutaway portion 122 and extending across the cutaway portion 122, there is a round wooden bar 126 secured at its ends to the adjacent edge of the base 12 thereby closing the cutaway portion. The round wooden bar 126 can be used as a handle to carry the platform 12 when the apparatus has been disassembled. A strap 128 extends across the bottom surface of the body of the platform at each end thereof and is fastened by fastening elements 130. The scrap serves as a stirrup.

In using the exercising apparatus for a prone press, for example, the bench 110 is placed across the platform 12 and the extending leg 114 inserted into the cutaway portion 122 of the platform whereby the bench will be on a level for lying prone thereon and the bench will be held against displacement. With the sliding bar locks supporting brackets 80 slid away from the poles 30 so that the bars 82, 84 thereof do not extend into the space between the poles, and with the bar 54 raised sufficiently to permit the user to lie on his back on the bench 110, the user when prone spreads his arms and grasps the bar 54 and pushes it from the chest and from a position resting on locking pins 33, 33 upwardly against the action of the springs 74 until it reaches its optimum. This movement can be repeated any number of times by the user. At the completion of this movement, it then becomes necessary for the user to place the lift bar 54 at such a position on the pairs of poles 30, 30 away from his chest and high enough so that he can arise from bench 110. This becomes possible by resting bar 54 on locking pins 33, 33 and unhooking all springs 74 from hooks 68. The bar 54, with no springs attached, is then pushed upwardly to the position where the small fingers of each hand are adjacent to the actuating pins 90, of the sliding bar lock supporting bracket 80. The small fingers then flip the bracket 80 inwardly by pushing actuating pins 90 forcing bars 84 and 82 of bracket or frame 80 to move simultaneously so that the bar 82 hereof is below the bar 54 and movable through the opposed holes 32 of the poles 30 and the bar 84 slides in the head 98 of the plate 94 across the outside of the poles so that pressure on the bar may be released with the bar 82 supporting the lift bar 54 in its optimum position along the poles.

For close arm tricep press, similar use is made of the apparatus but the hands are placed close together on the bar 54.

For sit up exercises, the lift bar 54 is moved down along the poles 30, 30 to a position close to the bottom of the apparatus and the user sits on the end of the bench 110 with his legs over the bar 54, his knees encircling the bar with his feet in the stirrup 128 on the bench 110.

For military press, the user sits on the end of the bench 110 or on platform 12 without bench 110 and spreads his arms apart and pushes upon the lift bar 54 against the action of the springs 74. This exercise necessitates the use of adapter 64 shown in FIGS. 8 and 12 where the attachment location for springs 74 changes from hooks 72 at arms 14 to hooks 69 on the adapter.

For pull down exercises as shown in FIG. 13, the springs 74 are moved from between the bar 54 and bottom arms 14 to the hooks 47 on the top arms 46 and the hooks 68 on the lift bar 54. With the bar to his back, the user sits on the bench 110 or kneels on the platform 12 and with outstretched arms pulls down on the bar 54.

For chinning exercises, the springs are removed from the apparatus and the horizontal bar 54 moves to a point adjacent the top of the rack where it is held against movement of the sliding bar lock supporting brackets 80. With the bar positioned to the back of his head, the user grasps the bar with his hands wide apart and with his heels on the floor intermittingly raises and lowers himself. Instead of resting his heels on the floor the user may place his heels on a chair and follow the same routine. The user may also chin himself by raising his legs off the support and while bending the legs lift and lower himself.

The exercising apparatus is very versatile and other forms of exercising may be peformed as upright rowing, dead lift, squats, bent over rowing, curls and shoulder shrugs.

The versatility of the apparatus is also enhanced by the use of an adapter 64 shown in FIGS. 8 and 12. The adapter 64 takes the place of the bottom arms 14, 14. A pair of adapters can be mounted on the poles 30, 30 at any desired height above the platform 12. The adapter 64 comprises a short rod length formed with pairs of closely spaced parallel holes to receive metal hooks 69, 69. The outer surface of the rod is threaded at 64' for receiving an internally-screw threaded perforated metal disc 63. In use, the rod 64 is inserted through the space between pin 33 and the adjacent pair of poles 30, 30 and secured between by shaped threads 64' extending from one side of the poles 30, 30. The disc 63 is then turned on the threads until it engages the outer surfaces of the poles whereby the adapter is clamped in position on the poles 30. The tension springs 74 are then hooked onto the hooks 68 on the horizontal bar 54 and onto the hooks 69 on the adapter 64. This arrangement of the

springs facilitates various exercises, such as curls, shoulder shrugs, upright rowing and side bends.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the specific construction herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

What is claimed is:

1. An exercising apparatus of the rack bar-bell type comprising a rectangular platform, two pairs of spaced apart pipes the pipes in each pair having vertically aligned perforations, wherein said pipes extend upwardly from the two opposite ends of the platform, channel-shaped metal uprights spaced outwardly of the pipes, upper and lower arms extending between the pairs of pipes and the uprights, means for securing the arms to the pipes at one end and at the other end thereof to the uprights, and a horizontal movable lift bar extending across the space between the pairs of pipes and through the space between each pair of pipes, rigid means extendible through vertically aligned perforations for engaging said horizontal bar, guide means on the ends of the horizontal bar for riding in the channel-shaped uprights, and spring and hook means interposed between the opposite ends of the horizontal bar and one set of arms, the springs affording resistance to the movement of the horizontal bar away from the arms.

2. An exercising apparatus of the rack bar-bell type as defined in claim 1, wherein the guide means on the ends of the horizontal bar for riding in the channel-shaped uprights comprises wheels carried by the ends of the horizontal bar.

3. An exercising apparatus of the rack bar-bell type as defined in claim 1 wherein the spring means comprises a pair of elongated tension springs removably hooked at one end to the horizontal bar and removably hooked at the other end to said set of arms.

4. An exercising apparatus of the rack bar-bell type as defined by claim 1, wherein the means on the ends of the horizontal bar for riding in the channel-shaped uprights comprises wheels carried by the ends of the horizontal bar and the spring means comprises a pair of elongated springs removably hooked at one end to the horizontal bar and removably hooked at the other end said one set of arms.

5. An exercising apparatus of the rack bar-bell type as defined in claim 1 and said rigid means holding the horizontal bar in moved position including sliding U-shaped lock bar supporting brackets each of which having a straight bar member slidable in pairs of opposed perforations in the pipes, an L-shaped bar member secured at one end to one end of the straight bar member, said L-shaped bar member disposed outwardly of the pipes, a spring encircling the connected end of the straight bar member, a disc mounted on the straight bar member adjacent the connection between the straight bar member and the one L-shaped bar member, one end of the spring impinging against the disc and its other end engaging the outer surface of the adjacent pipe of the pair of pipes for biasingly limiting the sliding movement thereagainst, and spaced pins radiating from the L-shaped member adapted to be engaged by the finger of the operator while holding the horizontal bar in his hand for moving the bracket against the action of said springs at the end of its movement.

6. An exercising apparatus of the rack bar-bell type as defined in claim 1 and the arms traversing the space between the pairs of pipes and uprights at the top thereof, means for securing one end of the latter arms to the pipes and the other end to the uprights, and hooks carried by and depending from said latter arms in line with hooks on the horizontal bar, said hooks on the arms and on the horizontal bar adapted to receive pairs of elongated tension springs therebetween.

7. An exercising apparatus of the rack bar-bell type as defined in claim 1 wherein said platform has a cutaway portion along end edge centrally thereof, and an elongated removably low bench disposed across said platform, said bench having depending end legs, one of said legs having an extension adapted to fit in the cutaway portion while resting upon the platform to prevent displacement of the bench when positioned therein.

8. An exercising apparatus as defined in claim 1 and said securing means for the arms at the top of the pipe including brackets attached between the pipes and with an overhang top plate on which the arm rests in cantilever position while being bolted to the pipes.

9. An exercising apparatus of the rack bar-bell type as defined in claim 1, and adapters in the space between the pairs of pipes and the uprights adjacent the bottom thereof, said adapters each consisting of a short length of rod, a hook protruding from the rod in line with a hook on the horizontal bar, pin means extending through the pipe and rods to anchor the rod to the pipes, and an internal screw threaded perforated disk mounted on the threads of the rod whereby the disk is adapted to travel along the threaded surface of the rod into engagement with the adjacent upright rod for clamping the adapter to the pair of uprights, the aligned hooks on the horizontal bar adapter adapted to support tension springs therebetween.

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