

[72] Inventors Clarence R. Rogers
1857 Carl St., Walla Walla, Wash.;
Tom Lamb, Rte. 1, Waitsburg, Wash.
99361; Marvin Dahl, 518 Balm St.; Harvey
Morrison, 148 Hobsor St., Walla Walla,
Wash. 99362
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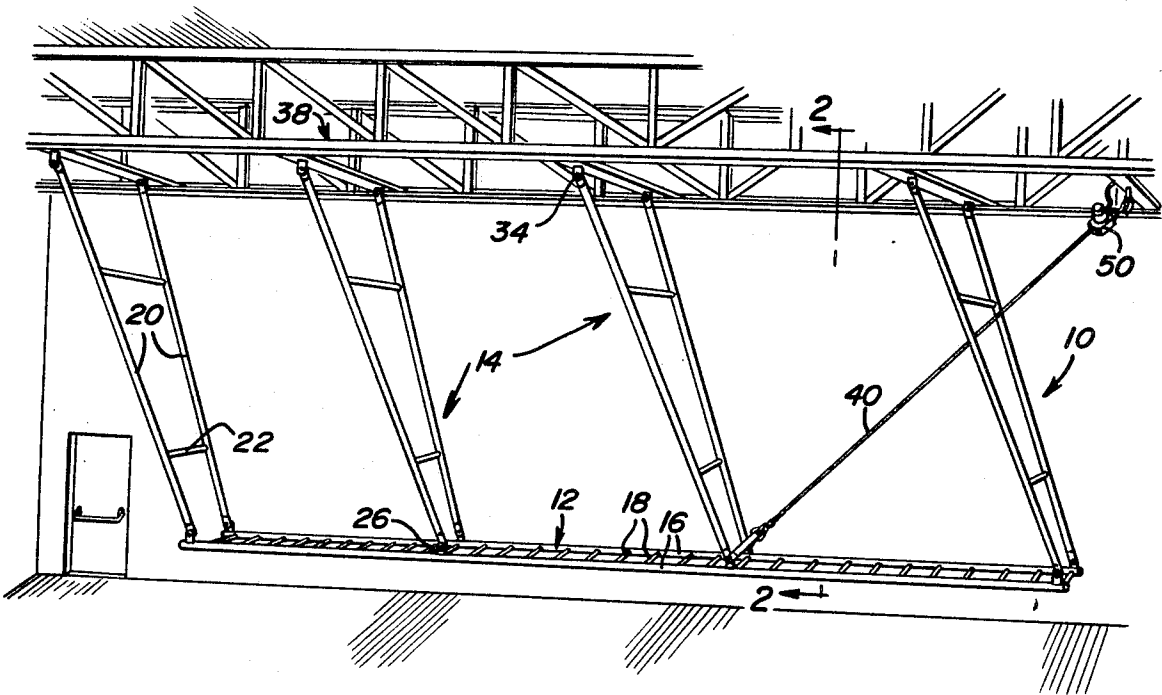
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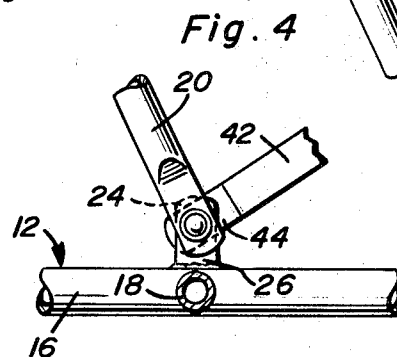
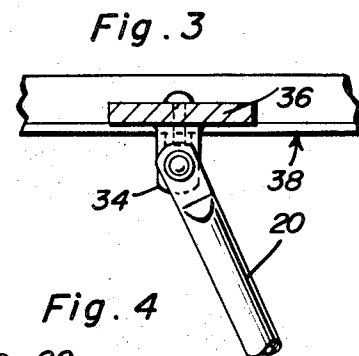
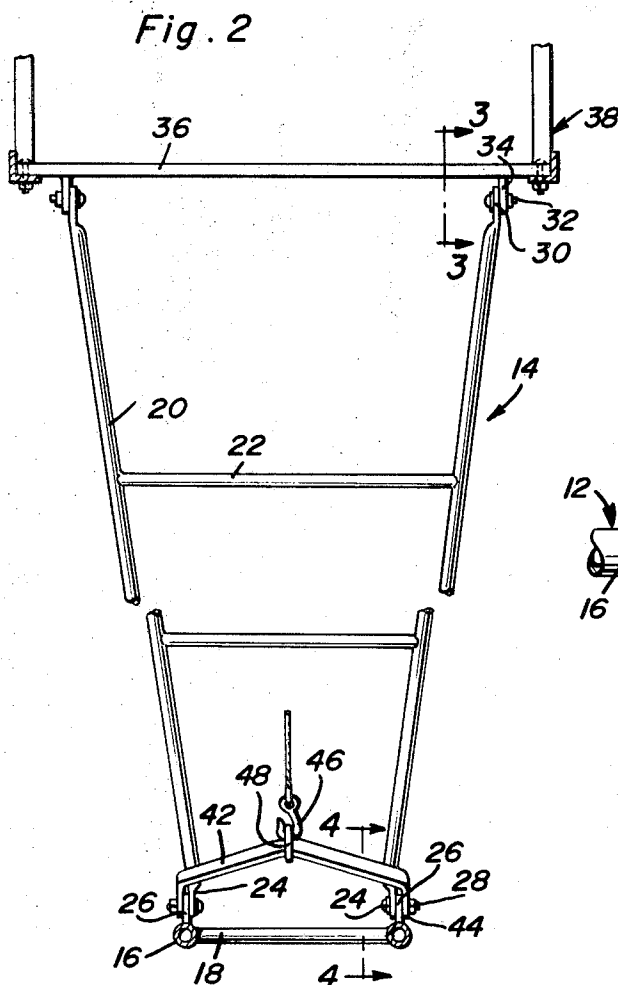
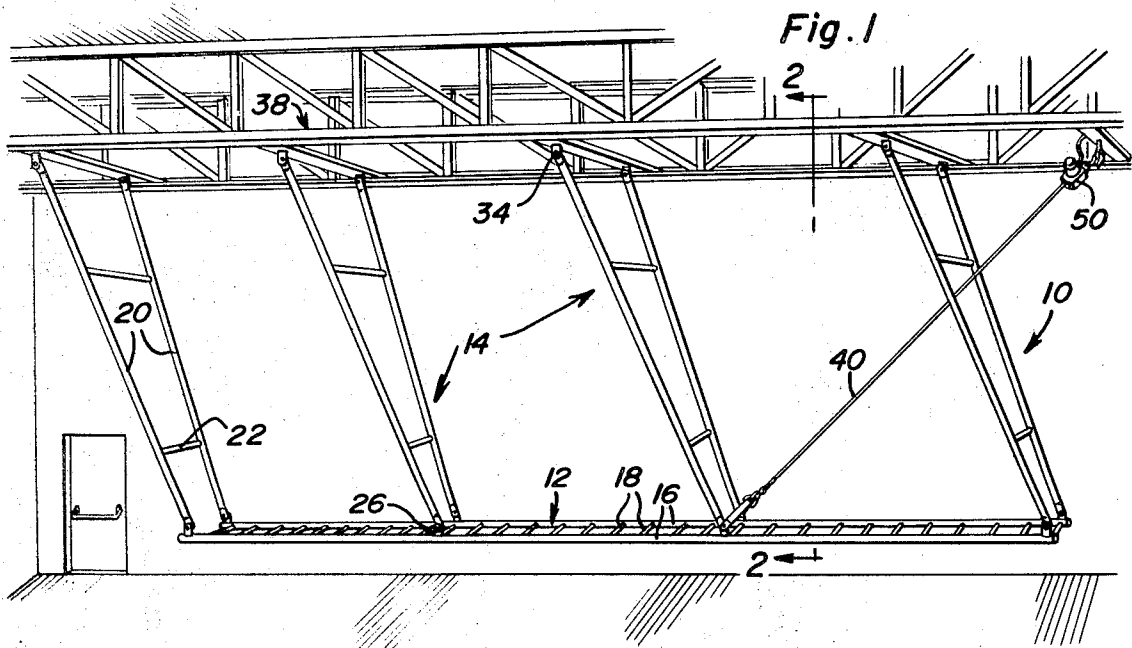
Primary Examiner—Richard C. Pinkham
Assistant Examiner—Richard W. Diaz, Jr.
Attorneys—Clarence A. O'Brien and Harvey B. Jacobson

[54] VERTICALLY ADJUSTABLE EXERCISING
APPARATUS
7 Claims, 8 Drawing Figs.

[52] U.S. Cl..... 272/63,
272/89, 272/60, 272/61, 248/327
[51] Int. Cl..... A63b 17/02
[50] Field of Search..... 272/60-
—63, 89; 248/324, 327, 17

ABSTRACT: A horizontally orientated exercising ladder suspended from an overhead support by a plurality of rigid pivotally connected suspension members which enable a vertical swinging of the ladder between a raised storage position and any one of a plurality of different height exercising positions. The adjustment of the apparatus is effected through a winch controlled cable. Further, auxiliary equipment can be mounted on the adjustable ladder for adjustment therewith.





Clarence R. Rogers
Tom Lamb
Marvin Dahl
Harvey Morrison
INVENTORS

BY *Clarence A. O'Brien*
and *Harvey B. Jacobson*
Attorneys

Fig. 5

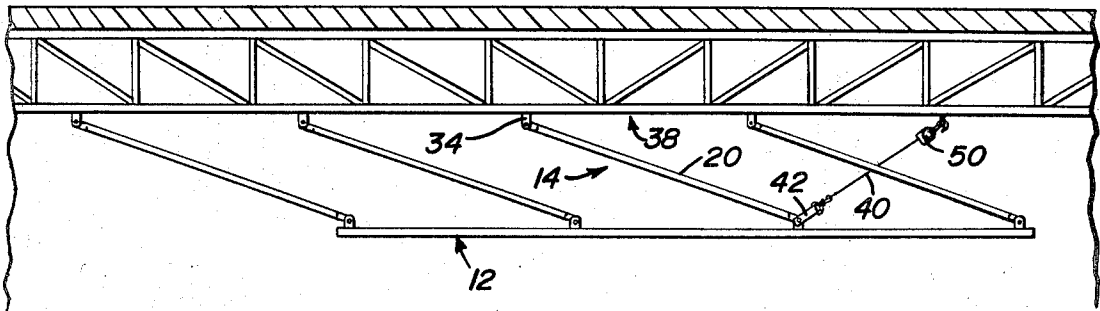


Fig. 6

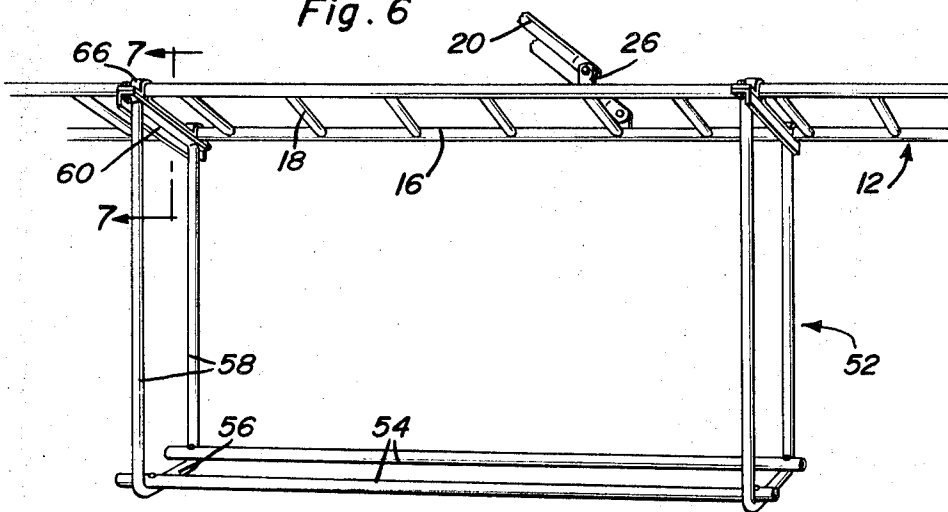


Fig. 8

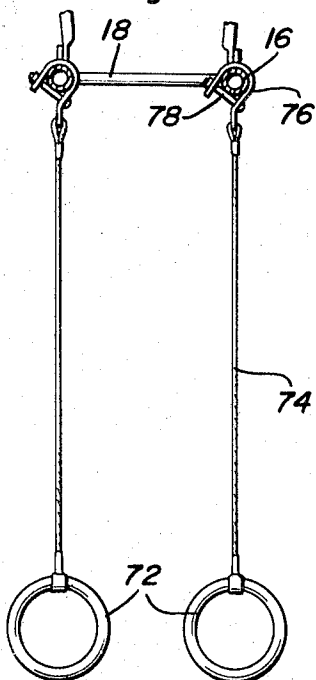
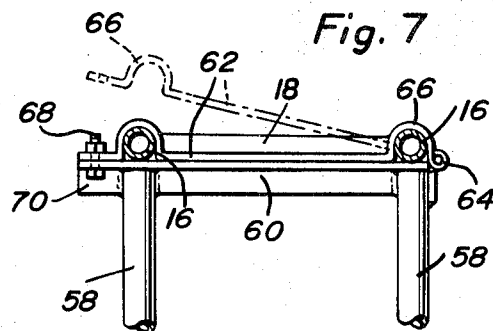


Fig. 7



Clarence R. Rogers
Tom Lamb
Marvin Dahl
Harvey Morrison
INVENTORS

BY *Clarence A. O'Brien*
and *Harvey B. Jackson*
Attorneys

VERTICALLY ADJUSTABLE EXERCISING APPARATUS

The instant invention is generally concerned with physical education apparatus, and more particularly relates to ceiling hung apparatus which is vertically adjustable for the accommodation of different age groups and so as to be capable of vertical withdrawal into an elevated stored position.

It is a primary object of the instant invention to provide exercising apparatus which requires for its installation only a rigid overhead support structure, for example the open steel trusses normally found in conventional school gymnasiums, and which, through the vertically adjustable nature thereof, can be installed over any conventional play area, regardless of the normal use of the area, in that a vertical retraction of the apparatus will leave such area free of any obstruction.

In view of the above, it will be appreciated that a significant object of the instant invention resides in the provision of exercising apparatus which is particularly adapted for use in situations wherein space for physical activities is normally limited.

Another highly significant object of the instant invention, achievable through the vertically adjustable nature of the apparatus, is the provision of apparatus which can be utilized in conjunction with any age group, from adults to the youngest age group capable of receiving instruction with regard to such apparatus.

Furthermore, an object of the instant invention resides in the provision of apparatus which incorporates various releasably mountable attachments so as to provide a variety of exercising devices.

In addition, a significant object of the instant invention resides in the provision of a highly stable construction which, notwithstanding the adjustable nature thereof, will be substantially rigid in any of its adjusted positions.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a perspective view of the apparatus of the instant invention in one of its vertically adjusted usable positions;

FIG. 2 is an enlarged cross-sectional view taken substantially on a plane passing along line 2-2 in FIG. 1;

FIG. 3 is an enlarged cross-sectional view taken substantially on a plane passing along line 3-3 in FIG. 2;

FIG. 4 is an enlarged cross-sectional detail taken substantially on a plane passing along line 4-4 in FIG. 2;

FIG. 5 is a side elevational view of the apparatus in a retracted storing position;

FIG. 6 is a perspective view of a parallel bar unit mounted as an attachment on the basic unit or apparatus;

FIG. 7 is an enlarged cross-sectional detail taken substantially on a plane passing along line 7-7 in FIG. 6; and

FIG. 8 is a view illustrating releasably mounted exercise rings utilized as another attachment for the basic unit.

Referring now more specifically to the drawings, reference numeral 10 is used to generally designate the apparatus comprising the instant invention. This apparatus can consist basically of a horizontal elongated exercising ladder 12 suspended by a plurality of suspension units or frames 14.

The exercising ladder 12 is formed by a pair of laterally spaced elongated parallel sidebars or rails 16 rigidly interconnected by a plurality of transversely extending rungs 18 welded at the opposite ends thereof to the siderails 16. 18, as will be appreciated from FIG. 1, will be laterally spaced from each other along the full length of the side rails 16.

The suspension units or frames 14, normally provided at the opposite ends of the ladder 12 and at such intermediate points along the length thereof so as to provide the necessary support, such being dependent for the most part on the length of the unit 12, include, in each instance, a pair of elongated rigid side posts 20 interconnected by transversely extending rigid braces 22, the opposite ends of which are welded or otherwise rigidly affixed to the posts 20. The two posts 20 of each suspension unit 14 have the lower ends 24 thereof pivotally

bolted to a pair of upstanding ears 26 affixed to the two ladder rails 16 in laterally spaced alignment with each other by appropriate bolt and nut means 28. The upper ends 30 of the two posts 20 of each suspension unit 14 are in turn pivotally bolted, by bolt and nut means 32, to a pair of laterally aligned depending ears 34 fixed to an appropriate rigid overhead support, such as for example a transverse member or brace 36 provided between adjacent ceiling truss units 38. In this manner, the horizontal exercising ladder 12 is suspended for swinging vertical adjustment, as will be appreciated upon a comparison of FIGS. 1 and 5, in a manner whereby the horizontal orientation of the ladder 12 is maintained.

The actual vertical adjustment of the apparatus 10 will be effected by an elongated cable 40 engaged with the apparatus 10 through a yoke 42 which has the opposite end portions 44 thereof pivotally engaged with a pair of upstanding mounting ears on the exercising ladder 12. Such ears can, as illustrated, be one of the pairs of ears 26 utilized in mounting the suspension units 14, thus also enabling the utilization of the same pivot bolt means 28. This yoke 42 will span the exercising ladder 12 in an elevated position relative thereto with the cable 40 normally engaging the peaked central portion of the yoke 42 by means of an appropriate hook element 46 on the cable and hook receiving ring 48 on the yoke. The opposite end of the cable 40 will be secured to and controlled by an appropriate winch unit 50, the illustrated winch unit being mounted on an appropriate portion of the ceiling support structure and being in the nature of an electric winch which is to be remotely controllable from an appropriate wall mounted switch. Such an electric winch is conventional in nature and as such no detailed description thereof is deemed necessary other than an indication that the winch 50 is remotely controllable for selectively shortening and lengthening the effective length of the cable 40 as well as locking the cable 40 at any desired point. If so desired, an appropriate hand winch can be used, such a hand winch normally being mounted on an adjoining wall for easy access, with the cable being guided thereto over a ceiling mounted pulley.

Thus, through the ability of the apparatus to vertically adjust, the normal use of the area which the apparatus 10 overlies remains possible through a complete raising of the apparatus to a stored position which can be the slightly expanded position of FIG. 5, or a more fully collapsed position depending on how the area therebelow is to be used.

With reference to FIG. 2 in particular, it will be noted that the side posts 20 of each suspension unit 14 diverge upwardly from the pivotally mounted lower ends 24 thereof to the pivotally mounted upper ends 30. In this manner, a high degree of lateral stability is introduced into the exercising ladder 12 which will substantially eliminate any tendency for the ladder 12 to sway laterally during use. By the same token, in every adjusted position of use other than the lowest position, which might be assumed when the smallest children are using the apparatus 10, the exercising ladder 12 is positioned upwardly with the suspension units 14 at an angle other than completely perpendicular, such a positioning being illustrated best in FIG. 1. In this manner, a substantial degree of longitudinal stability is also introduced into the apparatus. A tendency for the ladder 12 to swing longitudinally to a lower position is rigidly resisted by the tension cable 40. By the same token, any tendency for the ladder 12 to swing longitudinally in the opposite direction is effectively resisted by the full weight of the apparatus biasing the ladder against such movement. Thus, notwithstanding the completely adjustable nature of the apparatus 10, a substantial degree of both lateral and longitudinal rigidity is present therein.

Referring now specifically to FIGS. 6 and 7, an attachment 52, in the nature of a parallel bar unit, has been illustrated. The use of a pair of laterally spaced elongated parallel bars as an exercising device is well known, and as such, the unit 52 functions so as to provide such a device in conjunction with the vertically adjustable apparatus 10 of the instant invention. In doing so, a pair of elongated rigid parallel bars 54 are pro-

vided with the opposite ends thereof rigidly affixed to a pair of U-shaped frames including, in each instance, a rigid transverse bar 56 and a pair of vertically extending posts 58. The upper ends of each pair of posts 58 are rigidly affixed, as by welding, to a transverse bar 60 which underlies the exercising ladder 12 transversely thereacross. A rigid securing strap 62 is hingedly mounted, as at 64, to one end of each bar 60 and is movable into overlying relation thereto, enclosing the two ladder siderails 16 within a pair of upwardly offset rail accommodating or nesting portions 66, the free end of the strap 62 being releasably bolted, by bolt means 68, to a projecting end portion 70 provided on the bar 60 at the opposite end thereof from the hinged engagement 64 with the strap 62. In this manner, noting FIG. 7 in particular, the parallel bar unit 52 will be rigidly clamped to the exercising ladder for vertical adjustment therewith. Incidentally, with regard to the provision of parallel bars, if so desired, selected sections of the exercising ladder 12 can have the rungs 18 eliminated whereby the siderails rails 16 themselves can be used as such parallel bars.

Referring now specifically to FIG. 8, a further attachment has been illustrated, such consisting of a pair of exercising rings 72, each of which is suspended from one of the ladder rails 16 by an elongated flexible cable 74 engaged at one end to one of the rings 72 and at the opposite end to an enlarged hook 76 which engages over the corresponding rail 16 and is capable of locking the rail 16 therein by a removable transverse locking bolt 78 received through opposed portions of the hook 76.

From the foregoing, it will be appreciated that a highly unique apparatus for exercising purposes has been defined, such being vertically adjustable for the accommodation of any age group, as well as so as to enable a complete retracting of the unit vertically upward so as to free the area therebeneath for other uses. It will be recognized that this latter feature actually enables the installation of the unit over a basketball court or the like, the only requirement being that sufficient vertical height be provided so as to enable the apparatus to rise, in its retracted position, above the height required for a utilization of the area or court therebeneath. Incidentally, as will be appreciated from the cross-sectional details of the drawings, the various members utilized are preferably in the nature of hollow pipes so as to provide for a maximum degree of structural rigidity in conjunction with relatively light weight which will facilitate the adjustment of the unit without sacrificing any of the desired stability thereof.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

We claim:

1. Exercising apparatus comprising an exercising unit, suspension means for suspending said unit from an overhead support, means engaged with said exercising unit for effecting a vertical adjustment thereof, said suspension means comprising a plurality of elongated rigid members, each member including pivot means at one end thereof pivotally affixing the member to the exercising unit and pivot means at the second end thereof for pivotally engaging the member with an overhead support, said exercising unit vertically adjusting through an arcuate swinging of the suspension members about the second ends thereof, said exercising unit comprising a pair of elongated laterally spaced parallel bars, said suspension members engaging with said bars at longitudinally spaced points therealong, said suspension members being orientated in pairs, each pair having the members laterally aligned with one member pivotally engaged with each bar, the members of each pair of suspension members diverging upwardly relative to said exercising unit and including rigid brace means transversely therebetween, the means for effecting a vertical adjustment of the exercising unit comprising a winch unit, and cable

means engaged between said winch unit and said exercising unit, said exercising unit including a plurality of transverse extending rungs affixed to said laterally spaced bars, said rungs being laterally spaced from each other along at least a major portion of the length of said exercising unit, and an exercising attachment and means for releasably securing said exercising attachment to said exercising unit so as to depend therebeneath and be vertically adjustable therewith, said exercising attachment comprising a parallel bar unit, said parallel bar unit including a pair of laterally spaced parallel bars rigidly affixed, at the opposite ends thereof, to a pair of vertically extending upwardly directed members, said means for releasably securing said exercising attachment comprising bar engaging clamp means affixed to the upper ends of said parallel bar unit vertical members for clamping engagement about the exercising unit bars.

2. The apparatus of claim 1 wherein said clamp means comprises a rigid bar affixed to and extending transversely between the members of each pair of parallel bar unit vertical members positionable in underlying relation across the exercising unit bars, a rigid securing strap rigidly mounted at one end of each of said transverse clamp means bars and movable to overlying position over the exercising unit bars, and means for locking the free end of each of said straps to the associated transverse bar for a sandwiching of the exercising bar units therebetween.

3. The apparatus of claim 1 wherein the means for effecting the vertical adjustment of the exercising unit further includes a yoke, said yoke having the opposite end portions thereof pivotally engaged with the spaced exercising unit bars, said cable means engaging the central portion of said yoke.

4. Exercising apparatus comprising an elongated horizontally orientated exercising unit, a plurality of rigid suspension members positioned at longitudinally spaced points along said elongated exercising unit, each suspension member including pivot means at a first end thereof pivotally affixing the member to the exercising unit and pivot means at the second end thereof for pivotally engaging the suspension member with an overhead support, said exercising unit being vertically adjustable through an arcuate swinging of the rigid suspension members about the second ends thereof with the exercising unit pivoting about the first ends of the suspension members in a manner so as to maintain the horizontal orientation thereof as the exercising unit is vertically adjusted, and means for vertically adjusting said exercising unit, said exercising unit comprising an exercising ladder including laterally spaced parallel sidebars interconnected, along substantially the full length thereof, by transversely extending rigid rungs.

5. Exercising apparatus comprising an elongated horizontally orientated exercising unit, a plurality of rigid suspension members positioned at longitudinally spaced points along said elongated exercising unit, each suspension member including pivot means at a first end thereof pivotally affixing the member to the exercising unit and pivot means at the second end thereof for pivotally engaging the suspension member with an overhead support, said exercising unit being vertically adjustable through an arcuate swinging of the rigid suspension members about the second ends thereof with the exercising unit pivoting about the first ends of the suspension members in a manner so as to maintain the horizontal orientation thereof as the exercising unit is vertically adjusted, means for vertically adjusting said exercising unit, an exercising attachment and means for releasably securing said exercising attachment to said exercising unit so as to depend therebeneath and be vertically adjustable therewith, said exercising attachment comprising a parallel bar unit, said parallel bar unit including a pair of laterally spaced parallel bars rigidly affixed, at the opposite ends thereof, to a pair of vertically extending upwardly directed members, said means for releasably securing said exercising attachment comprising clamp means affixed to the upper ends of said parallel bar unit vertical members for clamping engagement with the exercising unit.

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6. The apparatus of claim 5 wherein said exercising unit comprises a pair of elongated laterally spaced parallel bars, and a plurality of transversely extending rungs affixed to said laterally spaced bars, said rungs being laterally spaced from each other at generally equal spacings along at least a major portion of the length of said exercising unit.

7. Exercising apparatus comprising an elongated exercising ladder including laterally spaced parallel side bars interconnected, along substantially the full length thereof, by transversely extending rigid rungs, a plurality of suspension units affixed to said ladder at longitudinally spaced points therealong,

each suspension unit including a rigid suspension post pivotally affixed at the lower end thereof to each side bar, each post including means at the upper end thereof for pivotal engagement with an overhead support, the suspension posts of each suspension unit diverging upwardly relative to the ladder, said ladder being horizontally positionable and vertically adjustable through the suspension members in a manner so as to maintain the horizontal orientation thereof, and means for vertically adjusting said ladder.

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