



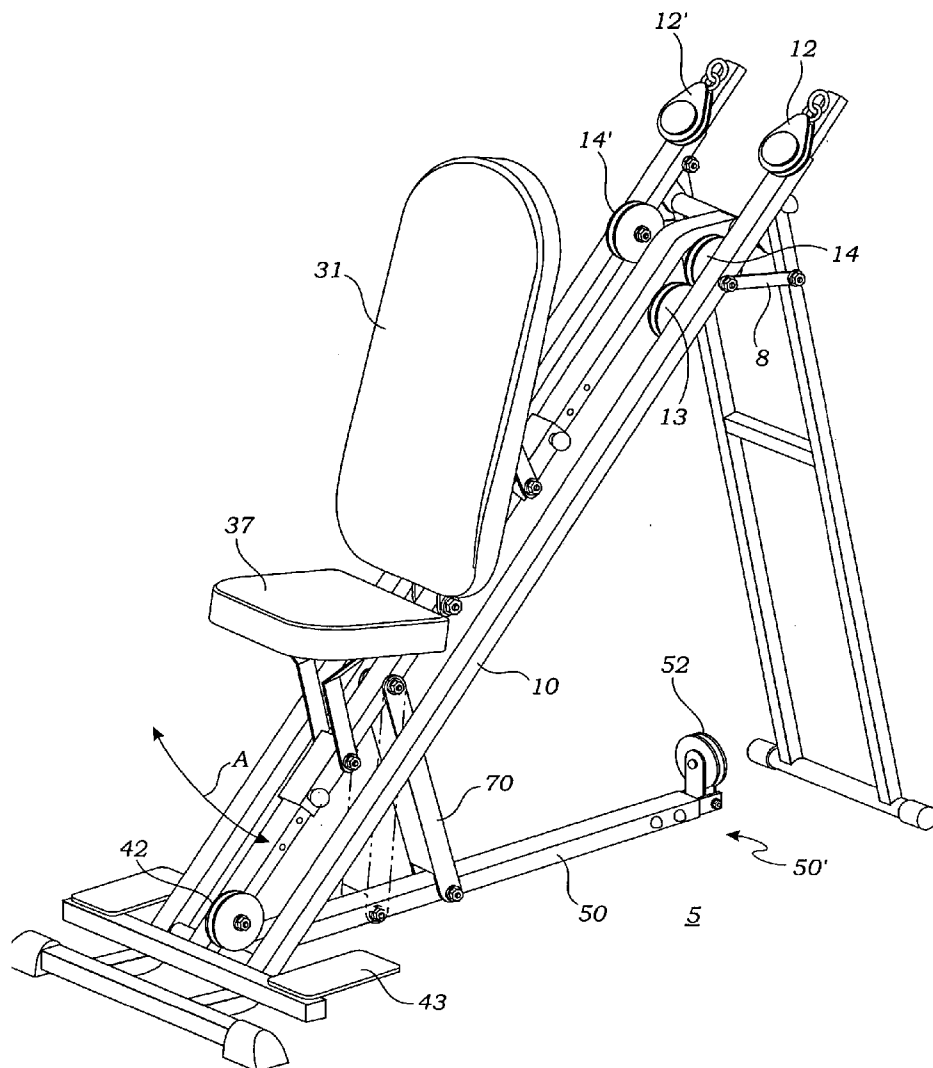
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(19) **United States**(12) **Patent Application Publication**
Chu(10) **Pub. No.: US 2006/0040810 A1**(43) **Pub. Date: Feb. 23, 2006**(54) **FOLDABLE GRAVITY RESISTANCE GYM**(52) **U.S. Cl. 482/142; 482/121; 482/93**(76) **Inventor: Youn S. Chu, Glendale, CA (US)**

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GROUP****3140 RED HILL AVENUE****SUITE 150****COSTA MESA, CA 92626-3440 (US)**(21) **Appl. No.: 10/915,532**(22) **Filed: Aug. 9, 2004****Publication Classification**(51) **Int. Cl.****A63B 21/06 (2006.01)****A63B 21/02 (2006.01)****A63B 26/00 (2006.01)**(57) **ABSTRACT**

An exercise apparatus is placed on a supporting surface where a linear support frame and a supporting strut depending from an elevated end of the linear support frame maintains the linear support frame at selected angles with respect to the supporting surface. A user support strut provides a seat, and is pivotally engaged with the linear support frame proximal its elevated end. A raising strut is pivotally engaged with the linear support frame at their lower ends. An intermediate strut is fixed between the user support strut and the raising strut, such that when the raising strut is pivoted upwardly, the seat strut is caused to pivotally move upwardly as well. Cables are mounted so that the user is able to apply force to the raising strut to lift the users own weight in a pivoting action during exercising.



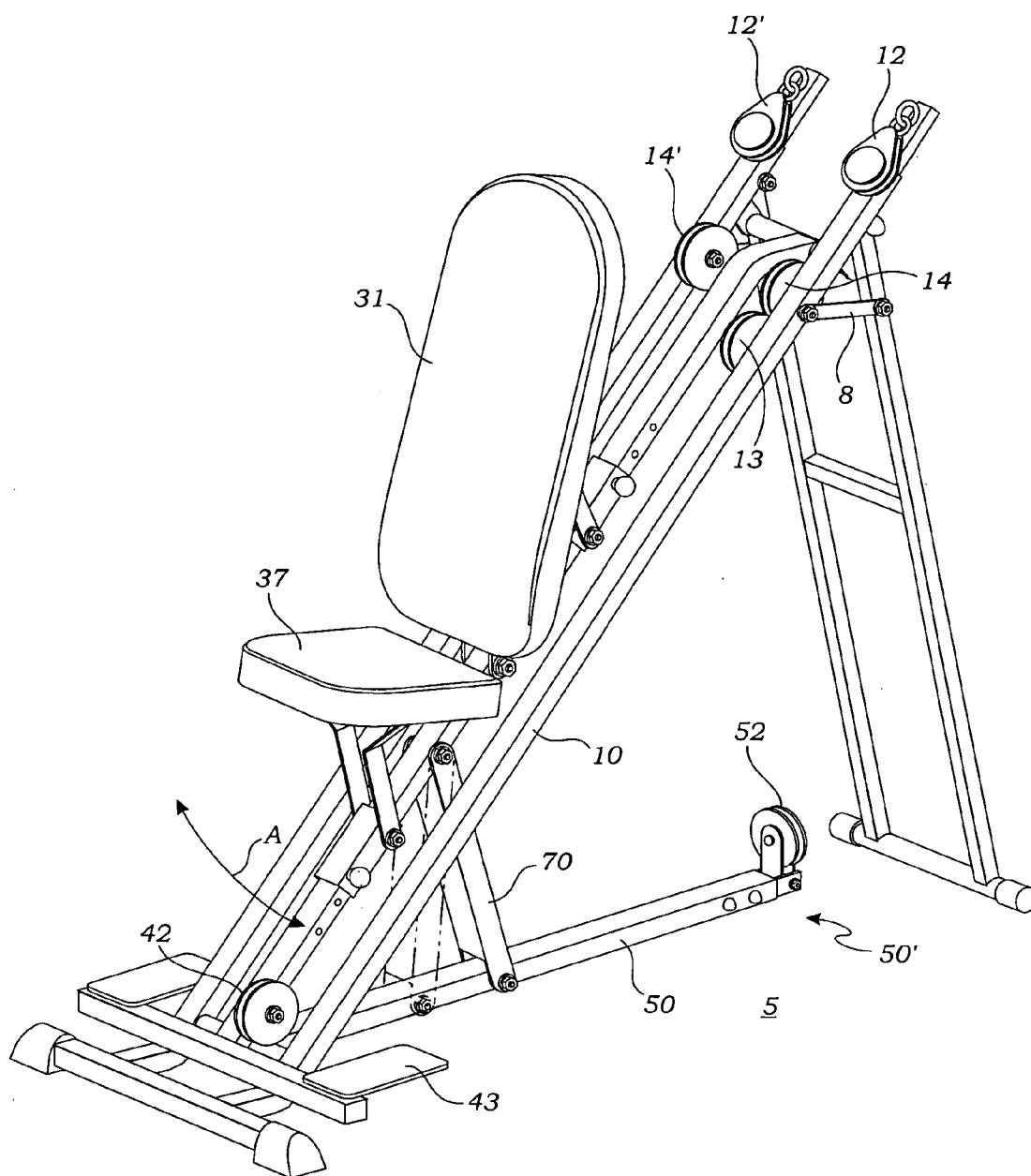


Fig. 1

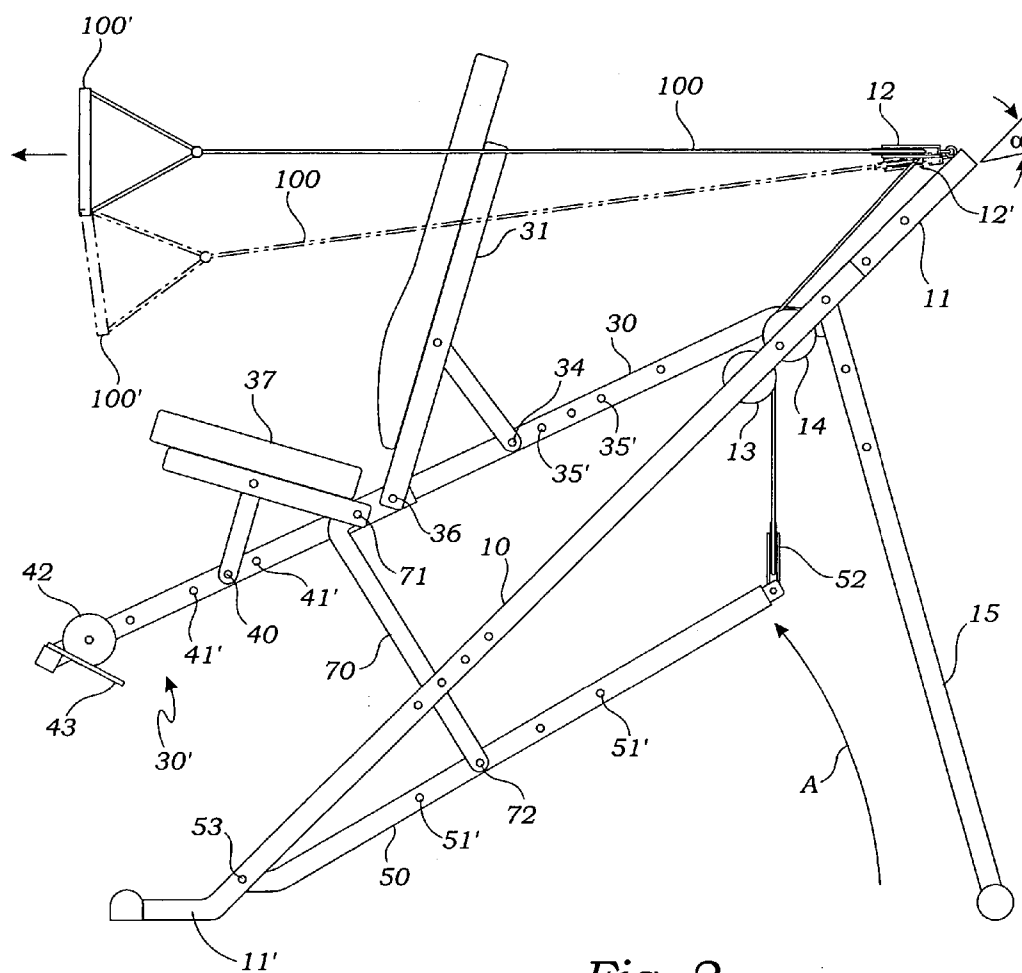


Fig. 2

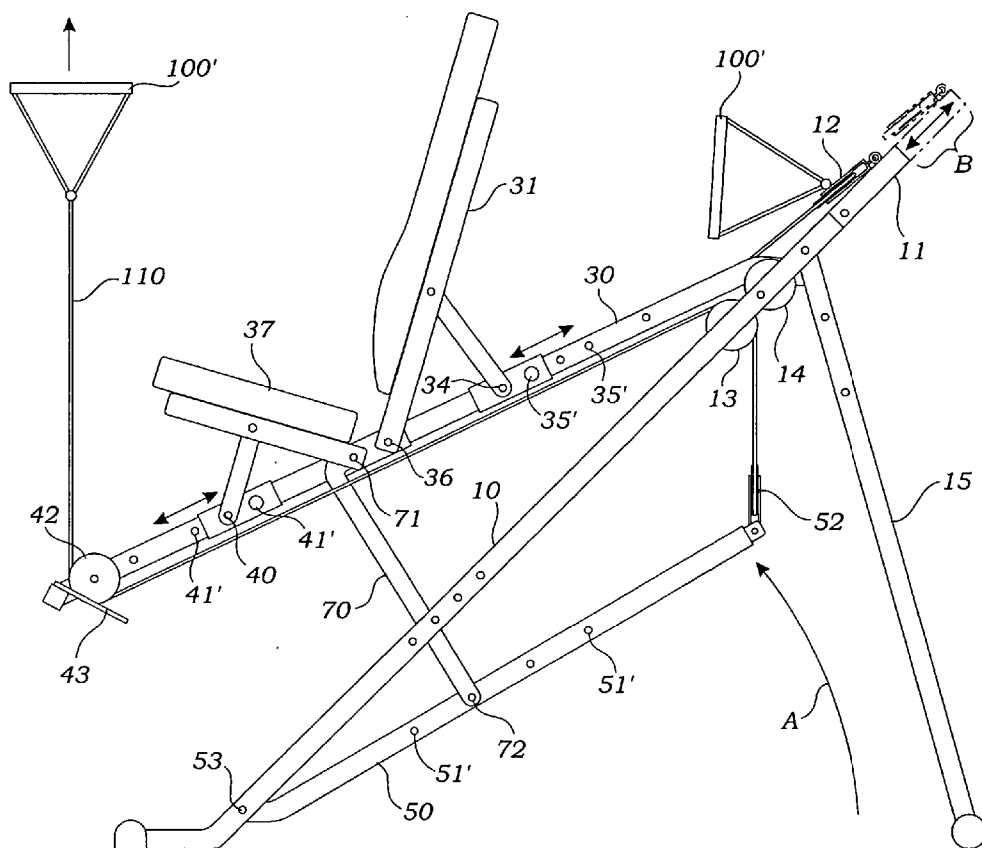


Fig. 3

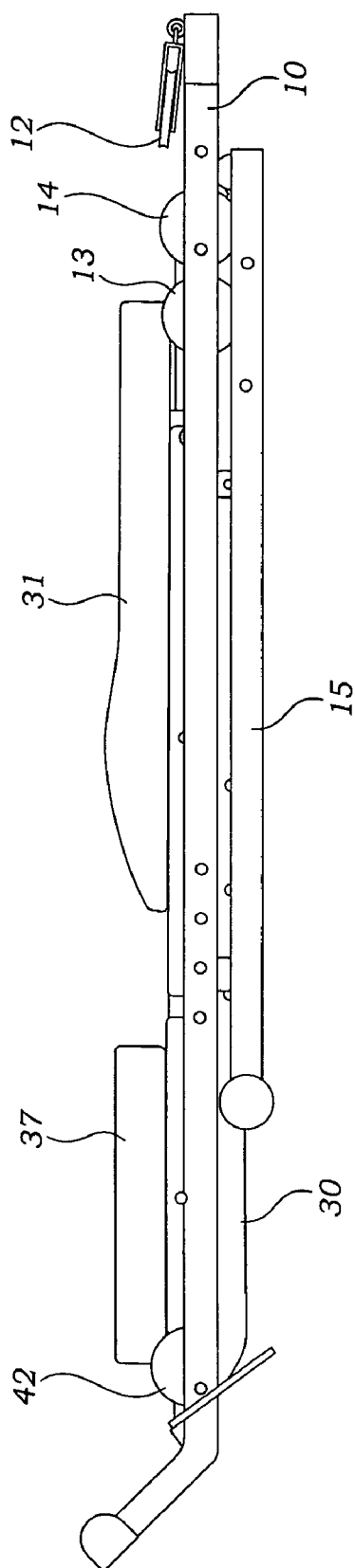


Fig. 4

FOLDABLE GRAVITY RESISTANCE GYM

BACKGROUND OF THE INVENTION

[0001] 1. Incorporation by Reference

[0002] Applicant(s) hereby incorporate herein by reference, any and all U.S. patents and U.S. patent applications cited or referred to in this application.

[0003] 2. Field of the Invention

[0004] This invention relates generally to an exercise equipment and more specifically to such a device which makes use of the body weight of the user to apply resistance to exercise.

[0005] 3. Description of Related Art

[0006] The following art defines the present state of this field:

[0007] Harris, U.S. Pat. No. 5,527,249 discloses a multi-function exercise machine which makes use of the body weight of an exerciser and has a base frame and a user support frame pivotally mounted. A lever arm mechanism for pivotably raising and lowering the user support frame against the user's weight is provided and comprises a handle bar having a lever arm depending therefrom and carrying a roller on the lower end thereof. An arcuate track is adjustably mounted to the base frame so as to provide an adjustable arcuate pathway for the lever arm roller to travel upon as the user pivotably motivates the handle bars and lever arm secured thereto in order to raise and lower the user support frame. Pushing and pulling exercises may be performed according to the selected position of the arcuate track.

[0008] Dalebout et al, U.S. Pat. No. 5,733,229, discloses an exercise machine having a frame that has a base with an upright member. The upright member is formed to have a race to receive wheels to interconnect a second frame to the upright member. A cable and pulley structure interconnects exercise structures to cause movement of the second frame relative to the first frame. A user is positioned on a seat connected to the second frame to resist movement of the second frame relative to the first frame. A butterfly structure is provided that has a mechanical linkage to interconnect the link arms to a butterfly lever rotatably connected to deflect the cable of an associated cable arrangement.

[0009] Habing et al, U.S. Pat. No. 5,330,405, discloses a multi-station exercise machine with a movable subframe on which a user sits while performing various exercises. The subframe is pivotally attached to a stationery frame and is supported by a lever arm that is also pivotally attached to the stationery frame. The pivot arms coupling the subframe to the stationery frame bear against a carriage that is located on the lever arm. A cable and pulley system couples the lever arm to the various operable members of the apparatus so that a selectable ratio of the weight of the subframe, including the user, is communicated as exercise resistance. The amount of weight that is coupled to the operable members is selected by positioning the carriage along the lever arm. This adjustment also varies the height to which the subframe is lifted by the exercise stroke and hence the effort that must be exerted by the user.

[0010] Richey, U.S. Pat. No. 4,949,958 discloses a weight lifting exercising device of the type wherein at least a

portion of the weight lifted includes the user's own weighted. The device includes a frame having a first end and a second end. A platform also provides a first end and a second end, with the second end of the platform being pivotally mounted adjacent to the second end of the frame to permit the first end of the platform to move in a generally vertical arc. A bench has a first end, a second end, an upper surface and a lower surface. The first end of the bench is pivotally mounted to the frame adjacent to the first end of the bench to move in a generally vertical arc during the operation of the device. A carriage is disposed below the bench for supporting the second end of the bench on the platform. A first exercise bar is also provided. A first flexible cable has a first end, a second end and a middle portion. The first end of the cable is coupled to the first exercise bar, the second end of the cable includes a coupler for coupling the second end to a member on the device disposed at a level generally no higher than the upper surface of the bench.

[0011] Our prior art search with abstracts described above teaches: apparatus that are heavy machines, difficult to fold for storage and move from one place to another. Such machines are also capability of exercising only one set, or at most, a few sets of different muscle groups of the user. The present invention overcomes these drawbacks and provides further related advantages as described in the following summary.

SUMMARY OF THE INVENTION

[0012] The present invention teaches certain benefits in construction and use which give rise to the objectives described below.

[0013] In a best mode preferred embodiment of the present invention, an exercise apparatus is placed on a supporting surface. The apparatus has a linear support frame and a supporting strut depending from an elevated end of the linear support frame to maintain the linear support frame at a selected angle with respect to the supporting surface. A user support strut provides a user support such as a seat, and is pivotally engaged with the linear support frame proximal its elevated end. A raising strut is pivotally engaged with the linear support frame at their lower ends. An intermediate strut is fixed between the user support strut and the raising strut, such that when the raising strut is pivoted upwardly, the seat strut is caused to pivotally move upwardly as well. For exercising, cables are mounted to the apparatus so that the user is able to apply force to the raising strut to lift the users own weight in a pivoting action.

[0014] A primary objective of one embodiment of the present invention is to provide an apparatus and method of use of such apparatus that yields advantages not taught by the prior art.

[0015] Another objective is to provide such an apparatus capable of being made with light weight, portability, ease of setup and storage and adjustability for level of difficulty.

[0016] A further objective is to provide such an apparatus capable of using the body weight of the user to apply restraining forces for exercising the user's muscles.

[0017] Other features and advantages of the embodiments of the present invention will become apparent from the following more detailed description, taken in conjunction with the accompanying drawings, which illustrate, by way

of example, the principles of at least one of the possible embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The accompanying drawings illustrate at least one of the best mode embodiments of the present invention. In such drawings:

[0019] **FIG. 1** is a perspective view of one embodiment of the invention;

[0020] **FIG. 2** is a side elevational view thereof showing the use of a cable routed for arm, chest and shoulder exercises;

[0021] **FIG. 3** is a side elevational view thereof showing the use of a further cable routed for further arm and also leg exercises; and

[0022] **FIG. 4** is a side elevational view thereof showing the apparatus folded for storage.

DETAILED DESCRIPTION OF THE INVENTION

[0023] The above described drawing figures illustrate the present invention in at least one of its preferred, best mode embodiments, which is further defined in detail in the following description. Those having ordinary skill in the art may be able to make alterations and modifications in the present invention without departing from its spirit and scope. Therefore, it must be understood that the illustrated embodiments have been set forth only for the purposes of example and that they should not be taken as limiting the invention as defined in the following.

[0024] An exercise apparatus is constructed for being used on a supporting surface **5** such as any floor surface in a workout room for instance. The apparatus comprises a linear support frame **10** oriented at a selected angle α , as shown in **FIG. 2**, to the supporting surface **5** and thereby defining an elevated end **11** of the linear support frame **10**. A supporting strut **15** depends from the elevated end **11** of the linear support frame **10** for resting on the supporting surface **5** in maintaining the linear support frame **10** at the selected angle α . A user support strut **30** has a user support such as seat **37** and backrest **31**. The user support strut **30** is pivotally engaged with the linear support frame **10** proximal its elevated end **11**. A raising strut **50** is pivotally engaged with the linear support frame **10** at its lower end **11'**. An intermediate strut **70** is engaged between the user support strut **30** and the raising strut **50**, such that when the raising strut **50** is pivoted upwardly, as shown by arrows in **FIGS. 2 and 3**, the user support strut **30** is caused to pivotally move upwardly with it for raising the user's weight. Preferably the frame **10** and the various struts **30**, **50** and **70** are made of a rigid and structural material such as steel so as to easily support a users weight and to provide durability.

[0025] In order to make the above apparatus a working exercise machine, a raising pulley **52** is engaged at a free end **50'** of the raising strut **50**; and, engaged with the linear support frame **10**, an idler pulley **13**, a pair of intermediate directing pulleys **14** and **14'**, and a pair of upper terminal pulleys **12** and **12'** are fixed to the several members of the apparatus as shown in **FIG. 1**. To perform arm exercises such as pullovers, chest presses and flies, arm exercise cable

100 is medially routed around the raising pulley **52** and thence to the intermediate directing pulleys **14** and **14'** and the upper terminal pulleys **12** and **12'**, and terminates at opposing ends thereof, each with a hand grip **100'** positioned proximal the user support **37**.

[0026] For performing further arm exercises such as arm curls, reverse flies and pull-ups and leg exercises such as leg curls and leg extensions, a lower terminal pulley **42** is engaged at a free end **30'** of the user support strut **30**. A leg exercise cable **110** is medially routed around the raising pulley **52** and thence, at one end thereof, to the idler pulley **13**, the lower terminal pulley **42** and terminating at a hand grip **100'** proximal the user support **37**. At an opposing end of the leg exercise cable **110**, routing is through directing pulley **14'** where it terminates.

[0027] The present apparatus is adjustable so that exercise force may be selected according to the ability of each user. In **FIG. 2** holes **51'** are shown in the raising strut **50** and pin **72** may be placed for adjusting the attachment position of the lower end of the intermediate strut **70**; where movement upward increases the difficulty factor of exercises. Holes **41'** are shown in the user support strut **30** for moving the location of the user support **37**; where movement downward increases the difficulty factor of exercises. Holes **35'** in the user support strut **30** enable the seat back structure **31** to be raised or lowered; where movement of pin **34** (**FIG. 2**) upward lowers the seat back structure **31**. As shown in **FIG. 3**, the support frame **10** is telescopingly extendable over a range shown as "B" in the figure. This enables the cable **100**, shown in **FIG. 2**, to be positioned at a selected angle relative to the user support **37** and also changes the distance from user support **37** to pulleys **12** and **12'**. Clearly, many other adjustments may be made to the apparatus to accommodate the needs of a wide variety of body sizes, weights and strength capabilities.

[0028] In **FIG. 4** it is shown how the apparatus may be folded flat for storage and portability. This is accommodated by the loosening of one end of struts **8** and **70**, which then allows struts **15**, **30** and **50** to be folded in line with the linear support frame **10**. User support **37** and seat back structure **31** are able to be folded flat as well by removing pins **34**, **40** and **72**.

[0029] The enablements described in detail above are considered novel over the prior art of record and are considered critical to the operation of at least one aspect of one best mode embodiment of the instant invention and to the achievement of the above described objectives. The words used in this specification to describe the instant embodiments are to be understood not only in the sense of their commonly defined meanings, but to include by special definition in this specification: structure, material or acts beyond the scope of the commonly defined meanings. Thus if an element can be understood in the context of this specification as including more than one meaning, then its use must be understood as being generic to all possible meanings supported by the specification and by the word or words describing the element.

[0030] The definitions of the words or elements of the embodiments of the herein described invention and its related embodiments not described are, therefore, defined in this specification to include not only the combination of elements which are literally set forth, but all equivalent

structure, material or acts for performing substantially the same function in substantially the same way to obtain substantially the same result. In this sense it is therefore contemplated that an equivalent substitution of two or more elements may be made for any one of the elements in the invention and its various embodiments or that a single element may be substituted for two or more elements in a claim.

[0031] Changes from the claimed subject matter as viewed by a person with ordinary skill in the art, now known or later devised, are expressly contemplated as being equivalents within the scope of the invention and its various embodiments. Therefore, obvious substitutions now or later known to one with ordinary skill in the art are defined to be within the scope of the defined elements. The invention and its various embodiments are thus to be understood to include what is specifically illustrated and described above, what is conceptually equivalent, what can be obviously substituted, and also what essentially incorporates the essential idea of the invention.

[0032] While the invention has been described with reference to at least one preferred embodiment, it is to be clearly understood by those skilled in the art that the invention is not limited thereto. Rather, the scope of the invention is to be interpreted only in conjunction with the appended claims and it is made clear, here, that the inventor(s) believe that the claimed subject matter is the invention.

What is claimed is:

1. An exercise apparatus on a supporting surface, the apparatus comprising: a linear support frame oriented at a selected angle to the supporting surface and thereby defining an elevated end of the linear support frame; a supporting strut depending from the elevated end of the linear support frame for resting on the supporting surface in maintaining the linear support frame at the selected angle; a user support strut having a user support, the support strut pivotally engaged with the linear support frame proximal the elevated end thereof; a raising strut pivotally engaged with the linear support frame at a lower end thereof; and an intermediate strut engaged between the user support strut and the raising strut, such that when the raising strut is pivoted upwardly, the user support strut is caused to pivotally move upwardly therewith for raising a user's weight.

2. The apparatus of claim 1 further comprising: a raising pulley engaged at a free end of the raising strut; and, engaged with the linear support frame, an idler pulley, a pair of intermediate directing pulleys, and a pair of upper terminal pulleys.

3. The apparatus of claim 2 further comprising an arm exercise cable medially routed around the raising pulley and thence to the intermediate directing pulleys and the upper terminal pulleys, and terminating at opposing ends thereof, each with a hand grip positioned proximal the user support.

4. The apparatus of claim 1 further comprising: a raising pulley engaged at a free end of the raising strut; a lower terminal pulley engaged at a free end of the user support strut, and engaged with the linear support frame, an idler pulley, an intermediate directing pulley, and a cable termination.

5. The apparatus of claim 4 further comprising a leg exercise cable medially routed around the raising pulley and thence, at one end thereof, to the idler pulley, the lower terminal pulley and terminating at a hand grip proximal the user support; and at an opposing end of the leg exercise cable, to one of the intermediate directing pulleys and terminating at the elevated end of the linear support frame at the cable termination.

6. The apparatus of claim 1 wherein the raising strut and the user support strut are enabled for folding in line with the linear support frame.

7. An exercise apparatus on a supporting surface, the apparatus comprising: a support frame having an elevated end; a supporting strut depending from the support frame for resting on the supporting surface in maintaining the support frame at selected angles relative to the supporting surface; a user support strut having a user support, the user support strut pivotally engaged with the support frame proximal the elevated end thereof; a raising strut pivotally engaged with the support frame at a lower end thereof; and pivotally engaged with the user support strut, such that when the raising strut is pivoted upwardly, the user support strut is caused to pivotally move upwardly therewith for raising a user's weight resting on the user support.

8. The apparatus of claim 7 further comprising: an exercise cable engaged with the raising strut in such manner that pulling on the exercise cable raises the user support strut pivotally.

9. The apparatus of claim 7 wherein the raising strut and the user support strut are enabled for folding in line with the support frame.

10. The apparatus of claim 8 wherein the support frame is telescopically extendable for positioning the exercise cable at a selected angle relative to the user support.

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