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(54) **EXERCISER WITH THE LEGS BEING SUPPORTED THEREON BY HANGING IN PERFORMING EXERCISE**

(76) Inventor: **Chang Ming Fong**, Sinjhuang City (TW)

Correspondence Address:
BRUCE H. TROXELL
SUITE 1404, 5205 LEESBURG PIKE
FALLS CHURCH, VA 22041

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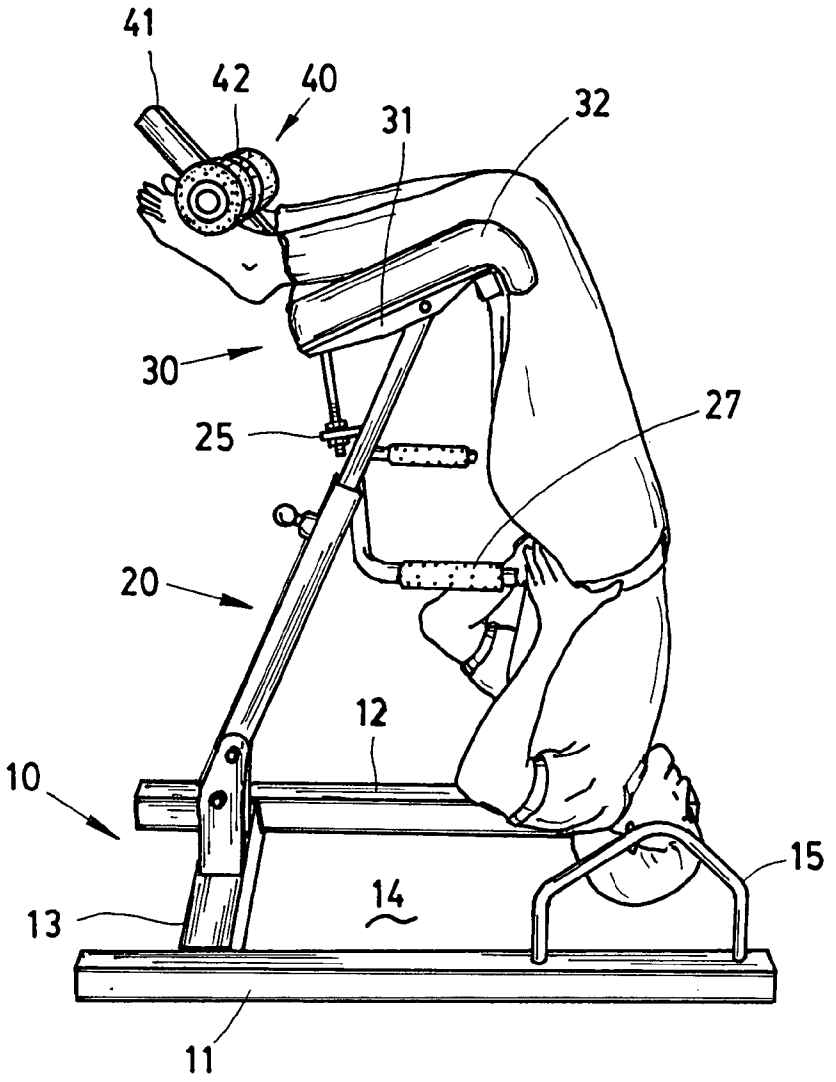
(57) **ABSTRACT**

An exerciser in one embodiment includes a base, a telescopic shank mechanism, a pivotal calf support disposed sufficiently above the ground by mounting on a top of the shank mechanism, and a foot support including a telescopic frame obliquely upwardly extending from one end of the calf support, and two cylindrical foot supporting members fixedly secured to both sides of the frame. The tops of the feet of an inverted person are urged against the foot supporting members, the backs of the calves and the knees are urged against the calf support, and the remaining portions of the body are disposed between the calf support and the reference ground in performing one form of exercise.



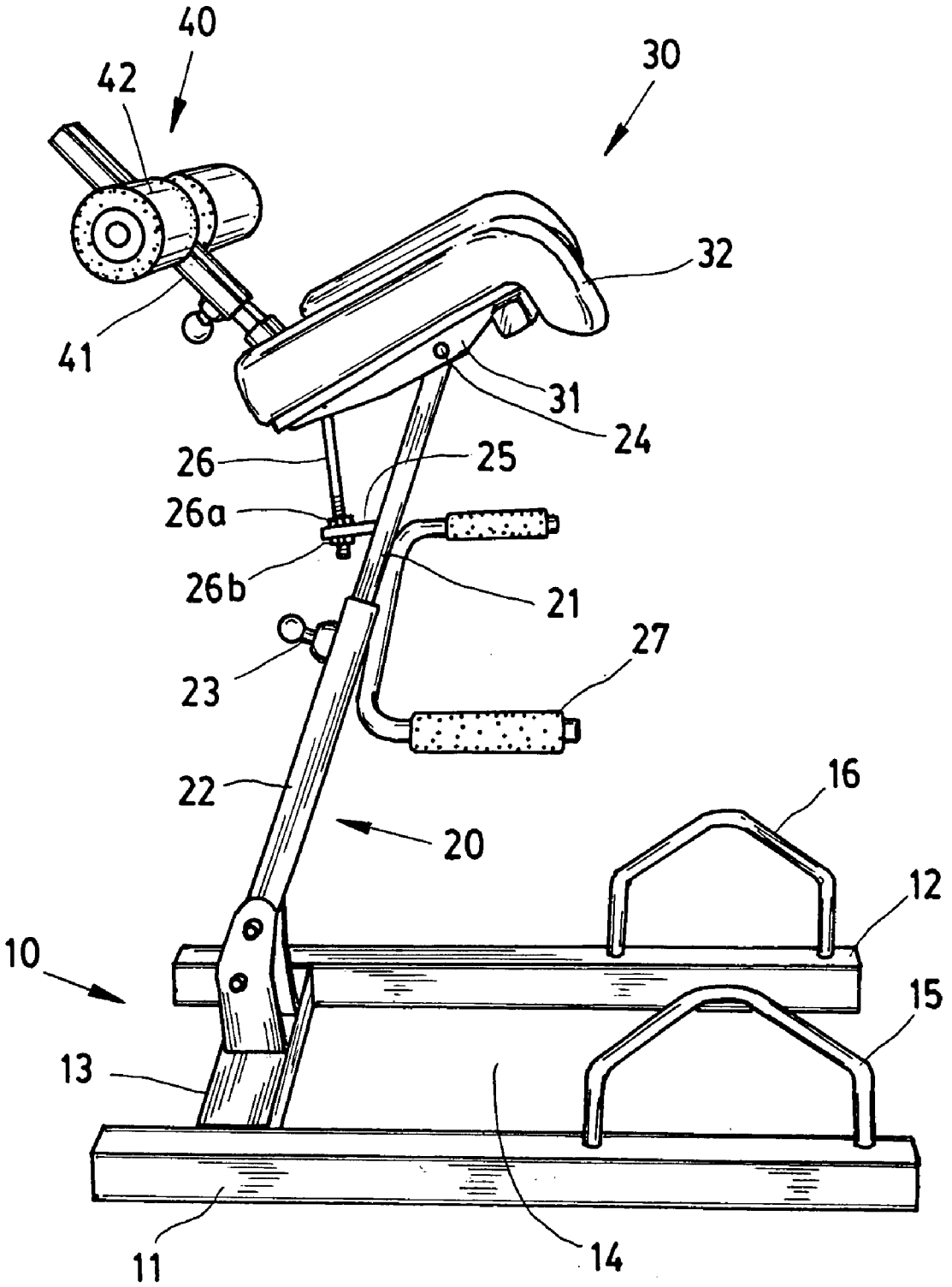


FIG. 1

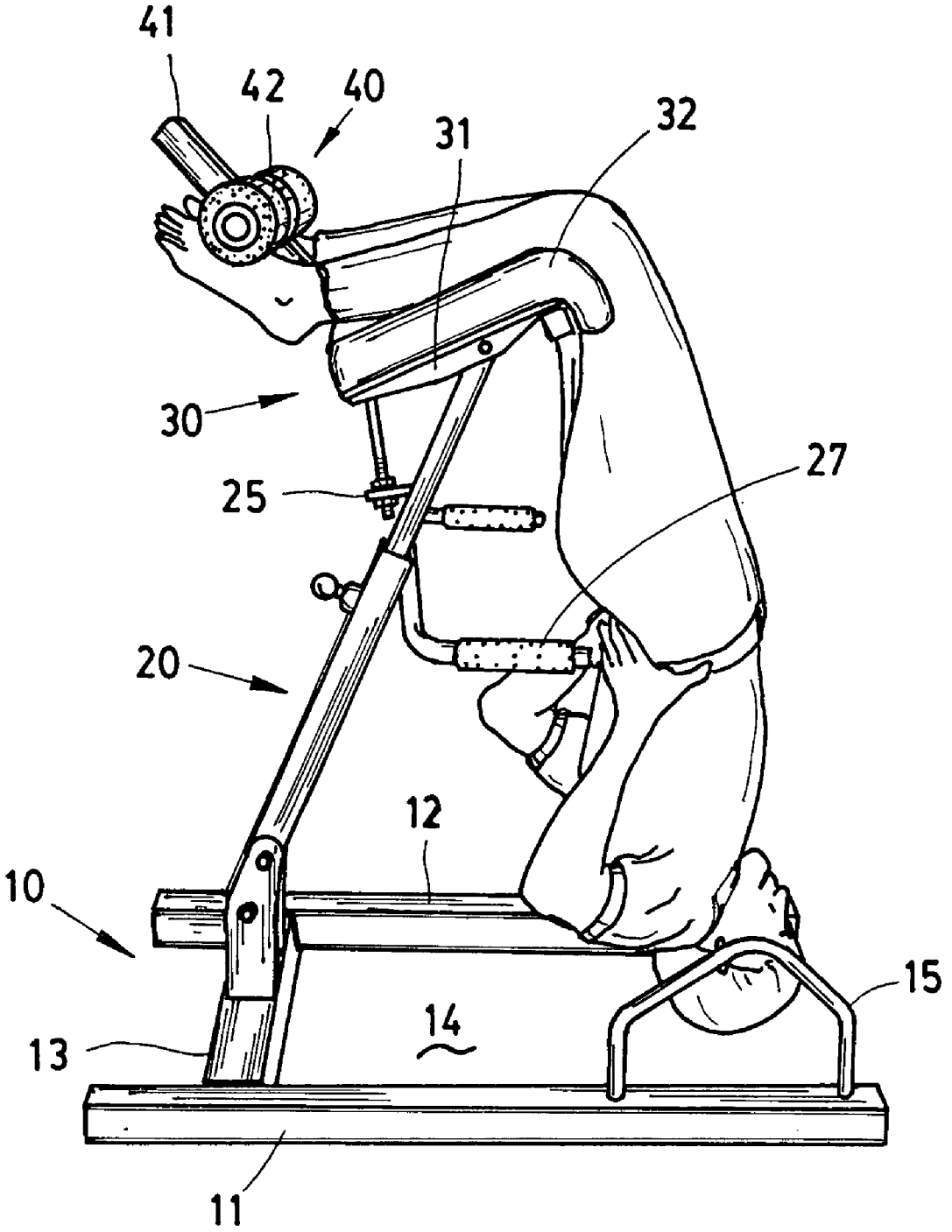


FIG. 2

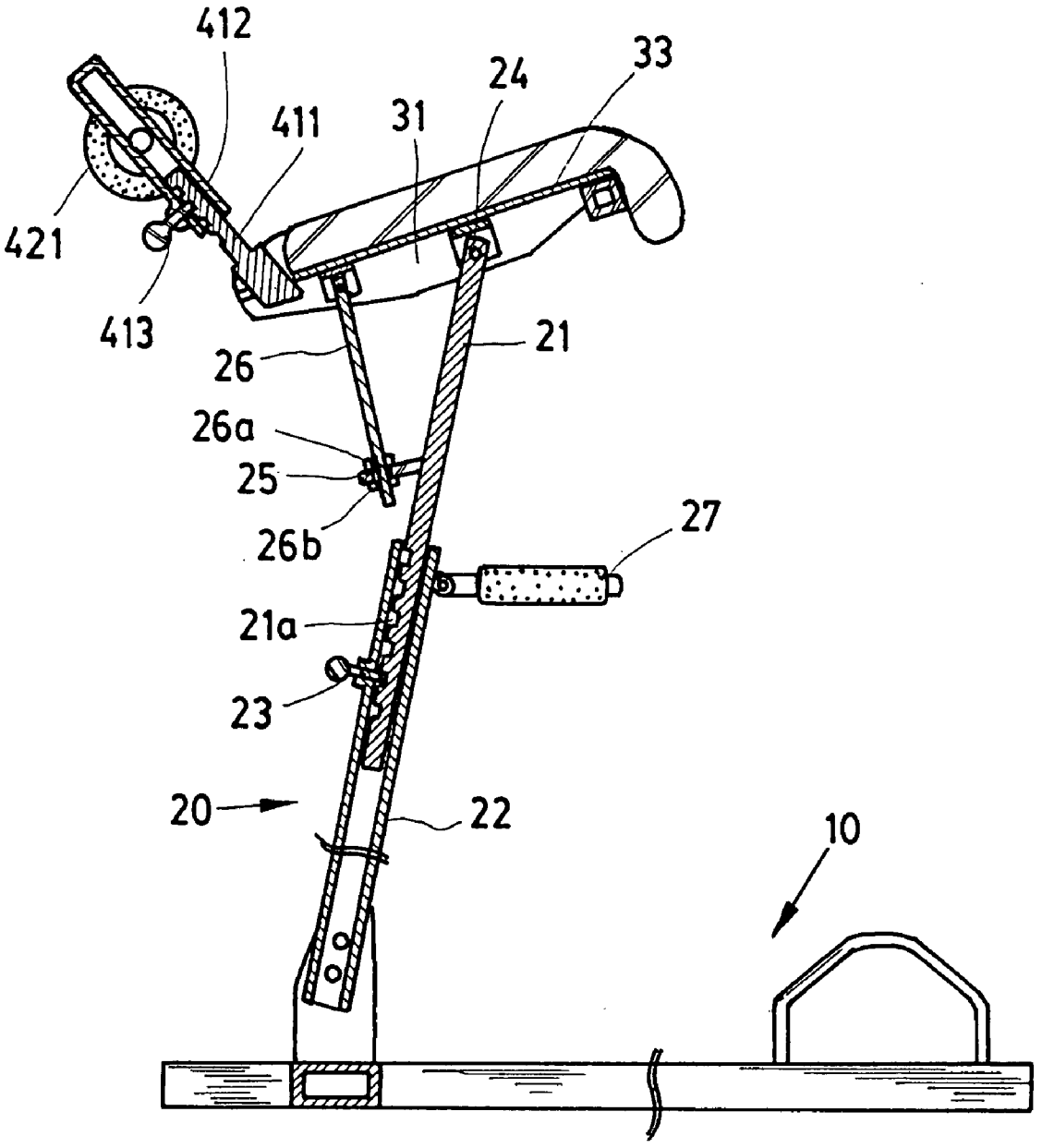


FIG. 3

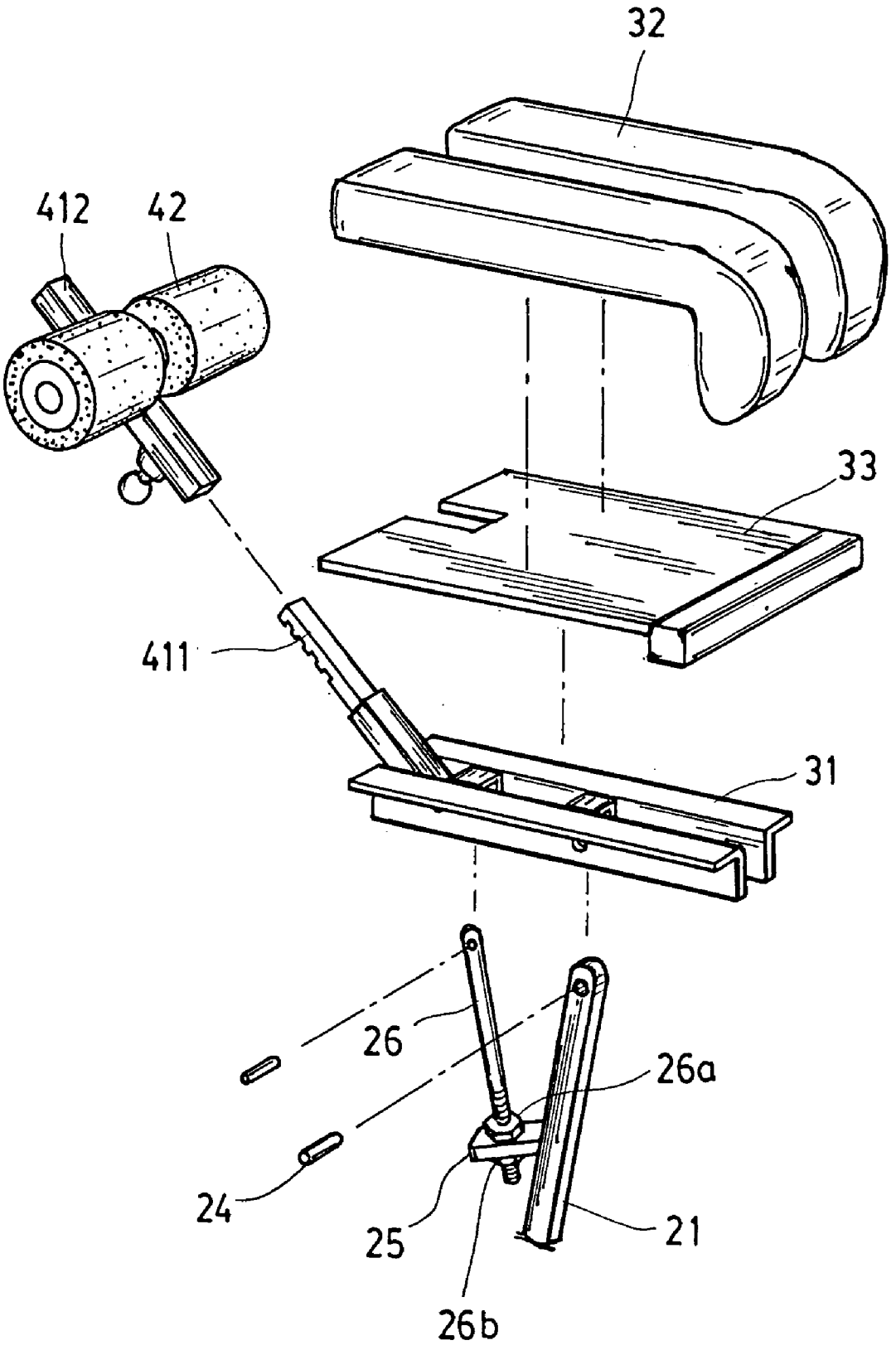


FIG. 4

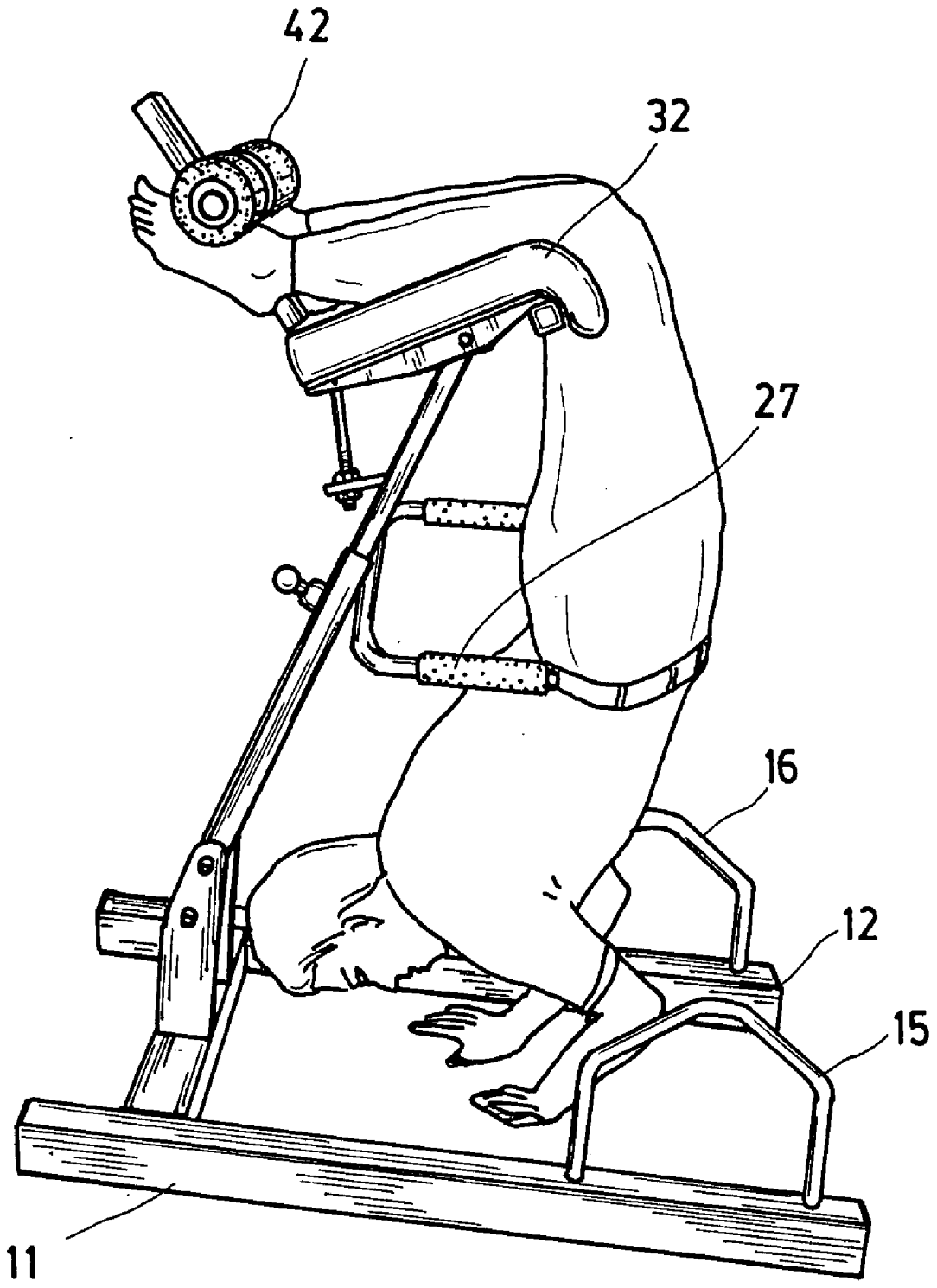


FIG. 5

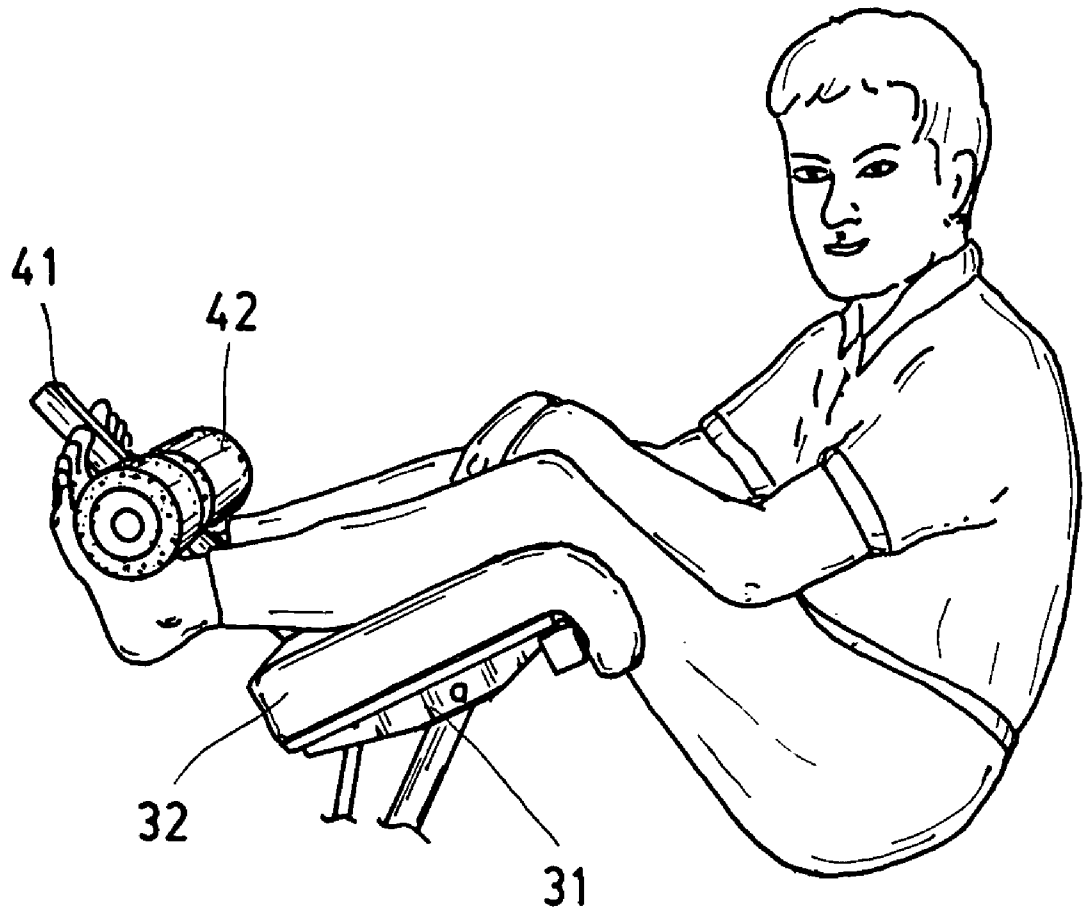


FIG. 6

EXERCISER WITH THE LEGS BEING SUPPORTED THEREON BY HANGING IN PERFORMING EXERCISE

BACKGROUND OF THE INVENTION

[0001] 1. Field of Invention

[0002] The invention relates to exercising machines and more particularly to an exerciser with the bent legs of a person supported on an upper portion of the exerciser by hanging in performing exercise.

[0003] 2. Description of Related Art

[0004] It is recognized that people spend more time in standing or sitting than lying during 24 hours of a day. Thus, certain portions of the body may bear more weight than other portions according to medical knowledge. Further, incorrect sitting positions may cause discomfort and even diseases after a long period of time. Thus, many physicians recommend persons excluding pregnant women or young children to stand upside down for some time a day as a form of exercise.

[0005] Exercisers are well known in the art in which there are two types of exercisers related to upside down exercises as detailed below. The first one is a clamp like exerciser having a pair of hooks. The hooks are suspended from two bars sufficiently high above the ground and are adapted to fasten the feet of an inverted person. However, the load of the exercise concentrates on the feet and adjacent muscles. Thus, the feet are susceptible to being hurt.

[0006] The second one is an inversion type exerciser widely employed in exercise clubs. The exerciser comprises a lever like bench. A person may lie on the bench with the feet being fastened. Next, the bench clockwise turns about 90 degrees to cause the head upside down. The second one is more advantageous than the first one. However, it limits the extent of exercise.

[0007] The invention seeks to provide a novel type of exerciser with the bent legs of a person supported on an upper portion of the exerciser by hanging in performing exercise so that body weight does not concentrate on a small body portion during exercising and a sufficient degree of exercise can be executed.

SUMMARY OF THE INVENTION

[0008] It is therefore one object of the invention to provide an exerciser comprising a calf support disposed a predetermined distance above a reference ground; and a foot support including a frame obliquely upwardly extending from one end of the calf support, and two cylindrical foot supporting members fixedly secured to both sides of the frame, wherein the tops of the feet of an inverted person are urged against the foot supporting members, the backs of the calves and the knees are urged against the calf support, and the remaining portions of the body are disposed between the calf support and the reference ground in performing exercise.

[0009] In one aspect of the invention there are further provided a base rested on the reference ground, and a shank mechanism having an upper end adjustably secured to the calf support and a lower end secured onto the base.

[0010] Preferably, an angle of the calves with respect to the thighs is about 90 degrees in performing exercise.

[0011] Preferably, the foot support is telescopic for fitting different individuals with various leg lengths.

[0012] In another aspect of the invention there are further provided two parallel substantially garble shaped tubes extending upward from rear portions of the base respectively. The hands can hold the garble shaped tubes in performing exercise.

[0013] Preferably, the shank mechanism is telescopic for fitting different individuals with various heights.

[0014] In a further aspect of the invention there is further provided a U-shaped handle bar having padded hand grips on both end portions, the handle bar having a midpoint fixedly secured to the shank mechanism. The provision of the handle bar aims at facilitating a person to use the exerciser or leave same after use as well as hold same in executing a body twisting exercise.

[0015] Preferably, the telescopic shank mechanism is hydraulic.

[0016] Preferably, the telescopic shank mechanism is pneumatic.

[0017] Preferably, the telescopic shank mechanism is electrical.

[0018] The above and other objects, features and advantages of the invention will become apparent from the following detailed description taken with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] FIG. **1** is a perspective view of a preferred embodiment of exerciser according to the invention;

[0020] FIG. **2** is an environmental view of the exerciser being used by an inverted person with his feet held on an upper portion of the exerciser in performing exercise;

[0021] FIG. **3** is a side view in part section of the exerciser;

[0022] FIG. **4** is an exploded view of the calf support, the foot support, and a portion of the shank mechanism;

[0023] FIG. **5** is a view similar to FIG. **2** where the person is performing an exercise different from the one shown in FIG. **2**; and

[0024] FIG. **6** is an environmental view of the exerciser being used by a person with his feet bent and held on an upper portion of the exerciser in performing an exercise similar to sit-up.

DETAILED DESCRIPTION OF THE INVENTION

[0025] Referring to FIGS. **1** and **2** an exerciser in accordance with a preferred embodiment of the invention is shown. The exerciser comprises a base **10**, a shank mechanism **20**, a calf support **30**, and a foot support **40**. Each component is discussed in detailed below.

[0026] The base **10** is supported on a flat surface, such as a floor. The base **10** comprises two long bars **11** and **12**, a short bar **13** at both ends interconnecting the long bars **11** and **12** proximate the front end together to define a U-shaped space **14**, and two substantially garble shaped tubes **15** and **16** extending upward from rear portions of the long bars **11** and **12** respectively.

[0027] Referring to FIGS. **3** and **4** in conjunction with FIGS. **1** and **2**, the shank mechanism **20** is obliquely upwardly extended from the short bar **13**. The shank mechanism **20** comprises an outer support tube **22** having a lower end fixed secured to a yoke (not numbered) on the short bar **13**, an inner sliding tube **21** having a lower portion slidably received in the support tube **22**, the sliding tube **21** having a plurality of spaced holes **21***a* formed lengthwise along a lower portion, a set pin **23** mounted on the support tube **22** and adapted to insert into one of the holes **21***a* for securing the tubes **21** and

22 together (i.e., height of the telescopic shank mechanism 20 is adjustable), a holed bracket 25 secured to the sliding tube 21 and being disposed above the set pin 23, an upwardly extending bolt 26 together with nuts 26*a* and 26*b* adjustably secured to the hole of the bracket 25, and a U-shaped handle bar 27 having padded hand grips on both end portions, the handle bar 27 having a midpoint fixedly secured to the support tube 22. The provision of the handle bar 27 aims at facilitating a person to use the exerciser or leave same after use as well as hold same in executing a body twisting exercise.

[0028] The calf support 30 is mounted on a top of the shank mechanism 20 and is above the space 14 by a sufficient height. In detail, the calf support 30 comprises an elongate underlying supporting member 31 having a pivot (not numbered) pivotably secured to an upper end of the sliding tube 21 by a pin 24, and another member (not numbered) fixedly secured to an upper end of the bolt 26; a plate 33 secured onto the supporting member 31, and two elongate padding members 32 mounted on the plate 33. By configuring as above, an angle of the calf support 30 with respect to the shank mechanism 20 is slightly adjustable.

[0029] The foot support 40 comprises a bar shaped frame 41 including a support bar 411 having a lower end fixedly secured to a front portion of the supporting member 31 and a plurality of spaced holes (not numbered) formed lengthwise along an upper portion, an outer sliding tube 412 slidably put on the upper portion of the support bar 411, and a set pin 413 mounted on the sliding tube 412 and adapted to insert into one of the holes of the support bar 411 for securing the sliding tube 412 and the support bar 411 together (i.e., length of the telescopic frame 41 is adjustable); and two spaced cylindrical foot supporting members 42 fixedly secured to both sides of the frame 41 and each including a pad (e.g., foam) 421 formed therearound.

[0030] A first exercise may be performed by using the exerciser as shown in FIG. 2. The tops of the feet of a person are urged against lower portions of the foot supporting members 42. The backs of the calves and the knees are tightly rested on the padding members 32. The person is upside down with the hands on the waist and the elbows bent. Most importantly, the center of gravity of the person falls within the space 14.

[0031] Referring to FIG. 5, a second exercise is performed by using the exerciser. The tops of the feet of an inverted person are urged against lower portions of the foot supporting members 42. The backs of the calves and the knees are tightly rested on the padding members 32. An angle of the calves with respect to the thighs is about 90 degrees. The person is suspended with the head proximate the ground. The weight of the person falls between the long bars 11 and 12. The hands are adapted to reach the long bars 11 and 12, the garble shaped tubes 15 and 16, the handle bar 27, and the ground. Advantageously, the body motion is relatively not limited as compared with that using the prior art exerciser. Thus, the exercising purpose can be achieved by using the exerciser of the invention.

[0032] Referring to FIG. 6, a third exercise is performed by using the exerciser. The person is executing an exercise similar to the traditional sit-up with the calves tightly rested on the padding members 32 and the tops of the feet urged against front and lower portions of the foot supporting members 42.

[0033] Alternatively, the shank mechanism 20 may be eliminated by mounting the calf support 30 directly on the ground.

[0034] Still alternatively, both the base 10 and the shank mechanism 20 can be eliminated in other embodiments with the calf support 30 and the foot support 40 directly mounted on a wall and disposed sufficiently high above the ground.

[0035] Still alternatively, the shank mechanism 20 can be implemented as a hydraulic, pneumatic, or electrical one. Further, the hydraulic, pneumatic, or electrical device for activating the shank mechanism 20 is well known in the art. Thus, a detailed description thereof is therefore deemed unnecessary.

[0036] While the above embodiment discussing an angle of the calves with respect to the thighs about 90 degrees is only a preferred embodiment of the invention, it is contemplated that an angle of the calves with respect to the thighs is in a range between 40 degrees to 145 degrees.

[0037] To summarize, the invention provides an exerciser for exercising the whole body except the feet. Also, some components of the exerciser are telescopic so as to adjustably position to fit different individuals with various heights and weights.

[0038] While the invention herein disclosed has been described by means of specific embodiments, numerous modifications and variations could be made thereto by those skilled in the art without departing from the scope and spirit of the invention set forth in the claims.

What is claimed is:

1. An exercise apparatus comprising:

a calf support disposed a predetermined distance above a reference ground; and

a foot support including a frame obliquely upwardly extending from one end of the calf support, and two cylindrical foot supporting members fixedly secured to both sides of the frame,

wherein the tops of the feet of an inverted person are urged against the foot supporting members, the backs of the calves and the knees are urged against the calf support, and the remaining portions of the body are disposed between the calf support and the reference ground in performing exercise.

2. The exercise apparatus of claim **1**, further comprising a shank mechanism having an upper end adjustably secured to the calf support and a lower end rested on the reference ground.

3. The exercise apparatus of claim **2**, wherein the shank mechanism comprises at least one member having an upper end adjustably secured to the calf support and a lower end rested on the reference ground.

4. The exercise apparatus of claim **1**, wherein the shank mechanism is telescopic.

5. The exercise apparatus of claim **1**, further comprising a base rested on the reference ground, and a shank mechanism having an upper end adjustably secured to the calf support and a lower end secured onto the base.

6. The exercise apparatus of claim **1**, wherein the calf support comprises a pivotal member on an underside.

7. The exercise apparatus of claim **1**, wherein the frame is telescopic.

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