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3,378,259

EXERCISING COT

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FIG. 1

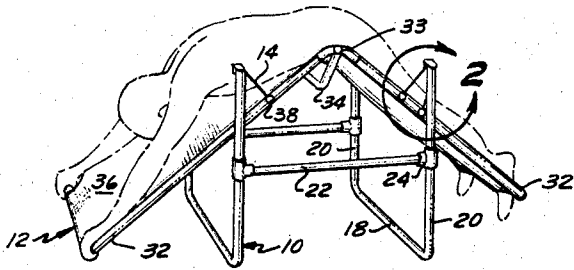


FIG. 2

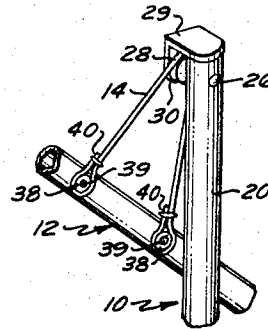


FIG. 3

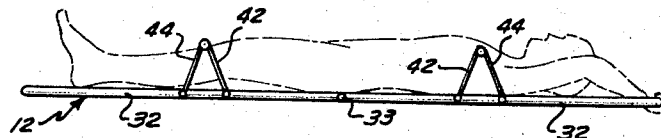


FIG. 4

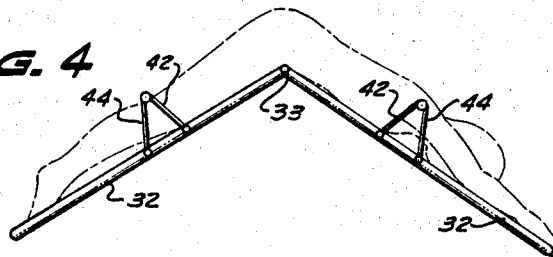


FIG. 6

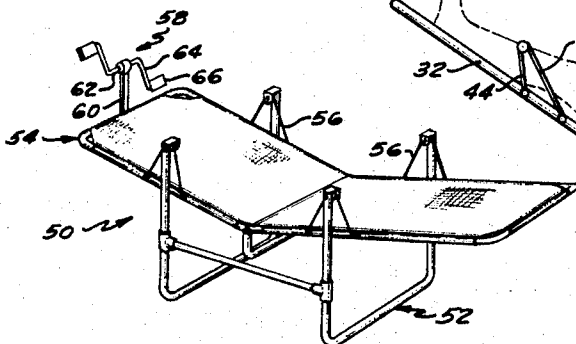
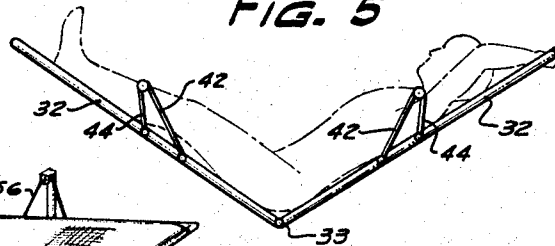


FIG. 5



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EXERCISING COT

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This invention relates to body supporting apparatus and, while not limited thereby, is particularly directed to exercising devices of the type which are adapted to support the human body in a reclined position and enable the performance of bending exercises involving bending at the waist, side and hip regions.

Waist, side and hip bending exercises are performable on exercising devices which support the body in a reclined position on a covered frame, the frame having two pivotally joined frame halves or sections. In prior devices the center portion of each of the frame halves is generally rotatably joined to a supporting base to enable rotation of the sections in opposite directions so as to support the bent body. As the frame halves rotate, the distance between points of pivotal connection to the base generally varies and provisions are made on the frame or base to vary the distance between supporting points. These varying means have generally resulted in substantial increase in the complexity of the exercising device and the more frequent occurrence of malfunction.

In the use of exercisers of the described type, the pivotal connection of at least one frame half to the supporting base has restricted swaying movement of the frame assembly. During vigorous exercising, the body often imparts impulses which tend to sway the entire frame. However, rigid pivotal frame connection to the base support has prevented back and forth swaying and therefore has not enabled the absorption of small force impulses or shocks or enabled the swaying of the frame. One exerciser device has provided a spring support wherein the frame assembly lies on and compresses several springs, but the large spring stiffness generally required to support the frame usually causes rapid up and down oscillations which are uncomfortable, inasmuch as they lead to a feeling of lack of comfort. Furthermore, the spring dimensions are generally chosen for a person of average weight, and the device is likely to operate poorly when used by a person much lighter or heavier than average, and may even collapse when vigorously used by a person of large weight.

Accordingly, one object of the present invention is to provide an exerciser for enabling the performance of waist, side and hip bending exercises, which is characterized by simple and reliable construction and smooth operation.

Another object is to provide an exerciser device which enables the back and forth swaying of a body-supporting frame, yet provides firm vertical support therefor.

Still another object is to provide an exerciser device which is efficiently usable by persons of greatly different weights.

The foregoing and other objects are attained by an exerciser device of the folding frame type wherein each frame half is suspended by ropes or cables extending from a base to opposite sides of the frame halves. The cable support enables back and forth swaying and slight side-ward swaying in a smooth and vibration-free manner, yet provides firm vertical support in any frame position. The exerciser functions smoothly with a person of any weight, and the construction of the device is simple and reliable.

In one embodiment of the invention, each of the supporting cables for each frame half extends around a pulley mounted on the base, and the cable is attached to two spaced points on the frame. When a frame half turns,

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the pulley rotates and tension is imparted to each length of cable extending from the pulley to the frame. The lower of the two spaced points on the frame half carries most of the downwardly directed body weight and the cable extends in a generally vertical direction to the lowermost of the points. For different directions of frame half rotation from horizontal, alternate of the spaced points on the frame are lowermost and carry most of the weight. Thus, the frame halves can be turned considerably in either direction from horizontal and there is always a largely vertically extending cable portion; accordingly, turning is accomplished with only moderate body bending forces.

The foregoing and other features of the invention can be appreciated from the following description and claims taken in conjunction with the accompanying drawings wherein:

FIGURE 1 is a perspective view of an exerciser device constructed in accordance with the invention;

FIGURE 2 is a partial view of the area II of the exerciser device of FIGURE 1;

FIGURE 3 is a partial representational view of the exerciser device of FIGURE 1, showing it in a position wherein the frame halves are horizontal;

FIGURE 4 is a partial representational view of the exerciser device of FIGURE 1, in a position wherein the frame halves are rotated so that the center of the frame assembly is raised;

FIGURE 5 is a partial representational view of the exerciser device of FIGURE 1 wherein the center of the frame assembly is lowered; and

FIGURE 6 is a pictorial view of another embodiment of the invention which utilizes a pedal assembly to aid in the performance of exercises.

Reference is now directed to FIGURES 1 and 2 which illustrate an exerciser constructed in accordance with the invention, comprising a supporting base 10, a body supporting frame assembly 12, and cables 14 for suspending the frame assembly from the base. The base 10 comprises two U-shaped members, each having a base section 18 adapted to rest on the ground and two vertically extending legs 20. The legs are braced by two tie rods 22 which extend between the legs and are joined thereto by T fittings 24. Studs 26 projecting through the upper end of each of the four legs extend through the center of four pulleys 28. The center of the pulleys serve as bearings to enable the pulleys to rotate freely. A groove 30 formed in the perimeter of each pulley holds the cables 14 which extend between the base 10 and frame assembly 12. Shields 29 mounted on the top of the legs and extending over the pulleys enable a person to press down on the legs in climbing onto or descending from the exerciser.

The frame assembly 12 comprises two U-shaped frame halves 32 pivotally joined together at the ends of their legs or free bar portions at pivot connections 33. A bracing bar 34 having angled end portions extends across the pivot joint 33 of the frame halves and is pivotally joined thereto. A taut covering 36 of canvas or other flexible material is disposed over the two frame halves and joined to all of the sides thereof. The bracing bar 34 strengthens the frame while lying a distance therefrom so as to eliminate any hard line across the center of the canvas covering.

As shown in detail in FIGURE 2, each cable 14 which supports the frame halves from the supporting base has a center portion extending around a main pulley 28 and has opposite end portions extending to the frame half. A set of secondary pulleys 38 is pivotally mounted on each side of each frame half by studs 39 which project through the frame, and the end portions of the cables are

looped about the secondary pulleys. The extreme ends 40 of the cables are tied to the cable portions immediately above the secondary pulleys.

The exercising device is used by placing the body in a reclined position upon the canvas covering 36, side- 5 ways, face-up or face-down. Waist, side or hip bending exercises are executed and the frame halves fold to support the body in any configuration assumed during the performance of the exercises.

FIGURES 3, 4 and 5 illustrate the cable configurations for various positions assumed by the frame halves. When the frame halves are horizontal as in FIGURE 3, the inner cable portions 42 are of the same length as the outer portions 44. When the frame halves are rotated to the position of FIGURE 4 wherein the point of pivotal connection 33 is moved upward, the inner cable portions 15 42 assume a more horizontal orientation while the outer cable portions 44 remain in a largely vertical orientation and supply a major portion of the vertical support for the body weight. When the frame halves are rotated 20 to the position of FIGURE 5 wherein the point of pivotal connection 33 is moved downward, the inner cable portions 42 lengthen considerably and assume a more horizontal position while the outer cable portions 44 shorten and remain in a largely vertical orientation. 25

The angle between the frame halves depends upon the position of the body weight with respect to the secondary pulleys 38 mounted on the frame halves, and on the body bending forces exerted. In a face-up position with the exerciser oriented as shown in FIGURE 5, a relaxed body position will place most of the body weight toward the center, or pivot point 33, and a large angle will be assumed between the frame halves. With the body and arms outstretched over the head and stiffened, the body applies a torque and also the body weight shifts away 30 from the center, both of these occurrences tending to rotate the frame halves toward a horizontal position or even further. The amount of stretching and body stiffness required to rotate the frame halves to horizontal depends to a large extent upon the placement of the secondary pulleys 38; if they are too close to the pivot point 33, 40 the frame tends to assume the position shown in FIGURE 4, and if placed too far from the pivot point or center the frame tends to assume the position shown in FIGURE 5. The choices of secondary pulley locations take into account the height of the average person and the fact 45 that the average person can exert more force in stiffening the body so as to bring the frame from the position of FIGURE 5 to horizontal, than in bending the body so as to bring the frame from the position of FIGURE 4 to horizontal. For a frame assembly of about 7 feet length, a placement of the innermost of the secondary pulleys 38 at a distance of about one foot from the center or pivot point 33 and placement of the outermost of the secondary pulleys about six inches from the innermost secondary pulley, has been found satisfactory. 50 The exerciser functions well for persons of very different weights and functions adequately for persons within a large range of heights.

When vigorous bending exercises are performed, the cables lengthen and shorten and move over the pulleys 30. The cables encounter negligible friction when thus moving because the pulleys rotate freely. The cable ends also move slightly, assuming different angles of orientation with respect to the frame halves, but they experience negligible friction or twisting because the secondary pulleys 38 rotate slightly to accommodate these small changes of orientation. The lack of cable end twisting also eliminates high stress points on the cable and assures 60 long reliable operation of the exerciser device. The lack of frictional restraint allows vigorous exercising movements involving abrupt application of forces, to be performed without the creeping restraints often found in devices wherein appreciable friction is encountered, as where the frames are directly pivotally joined to a sup-

porting base. Sudden application of body forces which are unequal on the two frame halves cause a small amount of swaying of the entire frame. The cables allow swaying back and forth and thus obviate the harshness of restraint that would be encountered with rigid connection of frame to supporting base.

Reference is now directed to FIGURE 6 which illustrates an exerciser 50 constructed in accordance with the invention, comprising a base 52, frame assembly 54 and cables 56, all similar to the embodiment of FIGURE 1, and in addition, a pedal assembly 58 for aiding the performance of exercises. The pedal assembly 58 includes an extension rod 60 fixed to the base of one U-shaped frame half of the frame assembly, an axle 62 extending through the rod and rotatably mounted thereto, pedal arms 64 fixed 15 to the ends of the axle, and pedals 66 rotatably mounted on the ends of the arms. A person lying with his back on the frame assembly 54, with his feet or hands on the pedals 66, facilitates exercising by rotating the pedal arms around the axle 62. The pedals serve as a place against which to push with the foot to straighten a person's back and cause rotation of the frame halves from the position of FIGURE 5 to horizontal or further. A simple foot receiving member such as the rod 60 by itself, can be used instead of the pedal assembly to aid in applying back bending exercises. However, a pedal assembly is superior in some instances because the even rotation thereof is easier to perform than rhythmic pushing and relaxation with the feet and arms. Resistance to rotation of the axle 20 62 may be employed, as by incorporating a tight bearing of rubber or other highly frictional material on the portions of the rod 60 within which the axle 62 rotates, or by other means. Such resistance helps to insure smooth pedal turning.

It should be understood that many other modifications and variations in the particular embodiments of the invention described can be made, and the scopes of the invention is limited only by a just interpretation of the appended claims. 35

I claim:

1. An exerciser comprising:

a base having a lower portion adapted to rest on the ground and an upper portion;
cot means having opposite sides and having at least one folding line extending between said opposite sides and forming two folding cot sections;
45 pulley means attached to said upper portion of said base;
a pair of spaced attach points located on each of said opposite sides of said folding cot sections; and
ropes of predetermined effective lengths extending about said pulley means, having ends attached to said attach points. 50

2. An exerciser as defined in claim 1 wherein:

said spaced attach points comprise secondary pulleys and said end portions of said ropes extend about said secondary pulleys. 55

3. An exerciser comprising:

a base having lower portions adapted to rest on the ground and upper portions extending above the ground;
two U-shaped frame halves pivotally joined together so as to form a rectangular frame with the arms of the frame halves forming the sides of the frame when the frame halves are oriented in a coplanar configuration;
a taut covering disposed on said frame;
pulleys rotatably mounted on said upper portions of said base; and 60

cables of predetermined effective length looped over said pulleys, said cables having end portions attached to two spaced points on each side of each of said frame halves. 65

4. An exerciser comprising:

a supporting base having four pulleys; 75

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an elongated body supporting member having sides and opposite ends, said supporting member having first and second sections joined at a pivot point for supporting the human body in a reclined position with the length of the body disposed substantially parallel with the length of said supporting member; and

four ropes, two of said ropes located on opposite sides of the first of said sections with each rope having ends attached to its respective side of the section, and two of said ropes located on opposite sides of said second section with each rope having ends attached to its respective side of the section, each of said four ropes extending about one of said pulleys.

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