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(54) **EXERCISE DEVICE**

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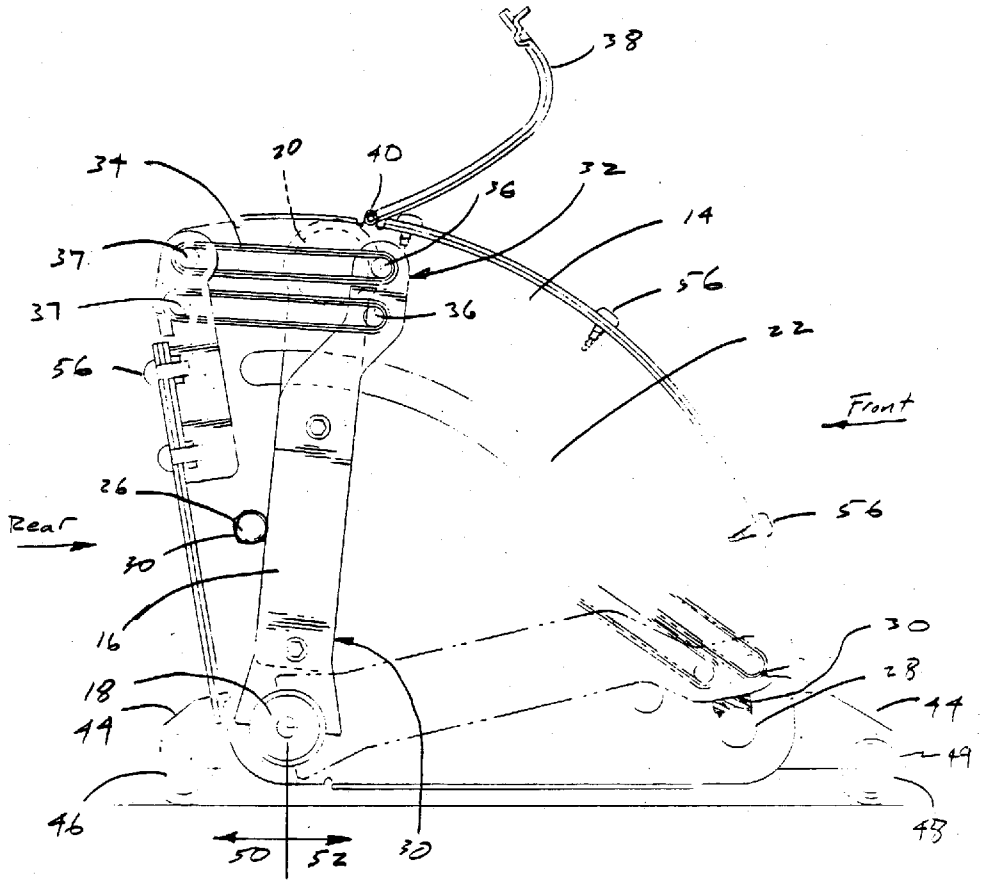
(57) **ABSTRACT**

An exercise device for lower and upper body exercising. The exercise device is configured for lower and upper body exercising. The exercise device includes a pair of connecting rods. The connecting rods are movable and restrained by a resistance element for exercising.



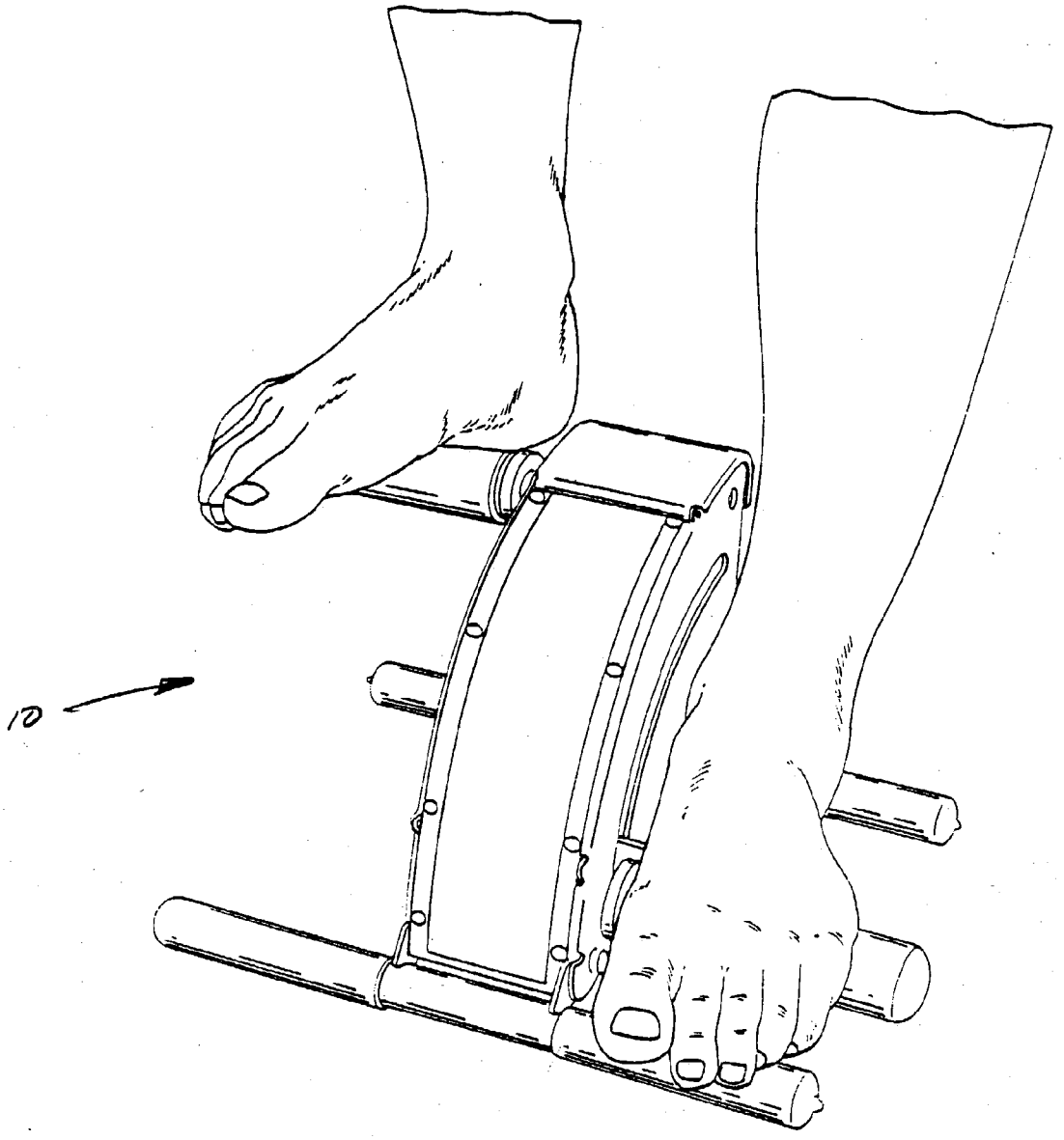


FIG. 1

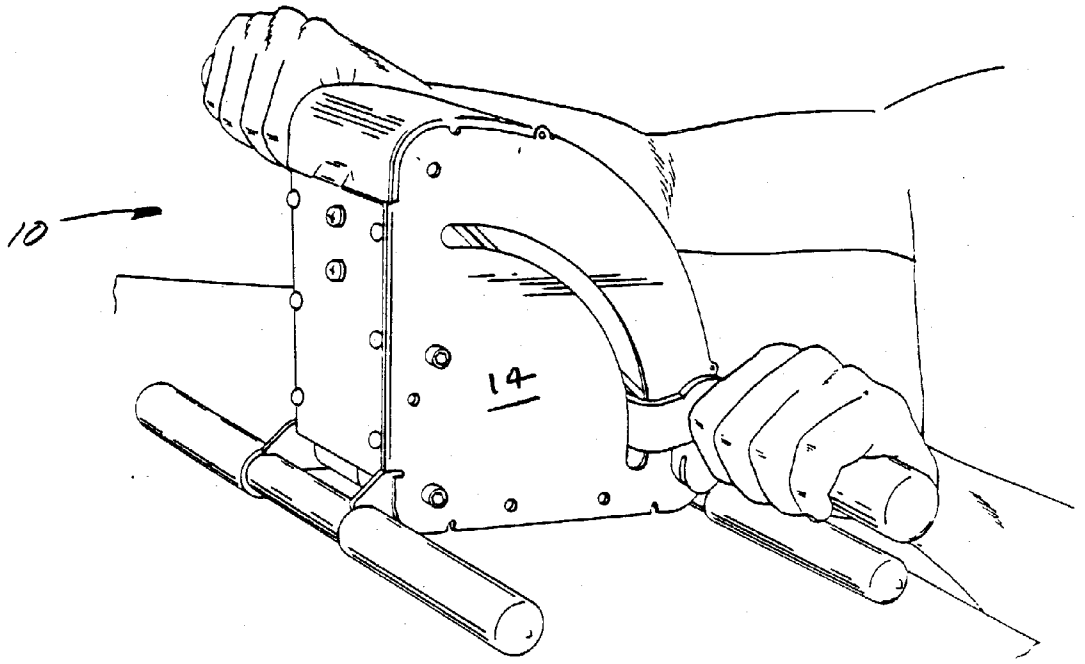


FIG. 3

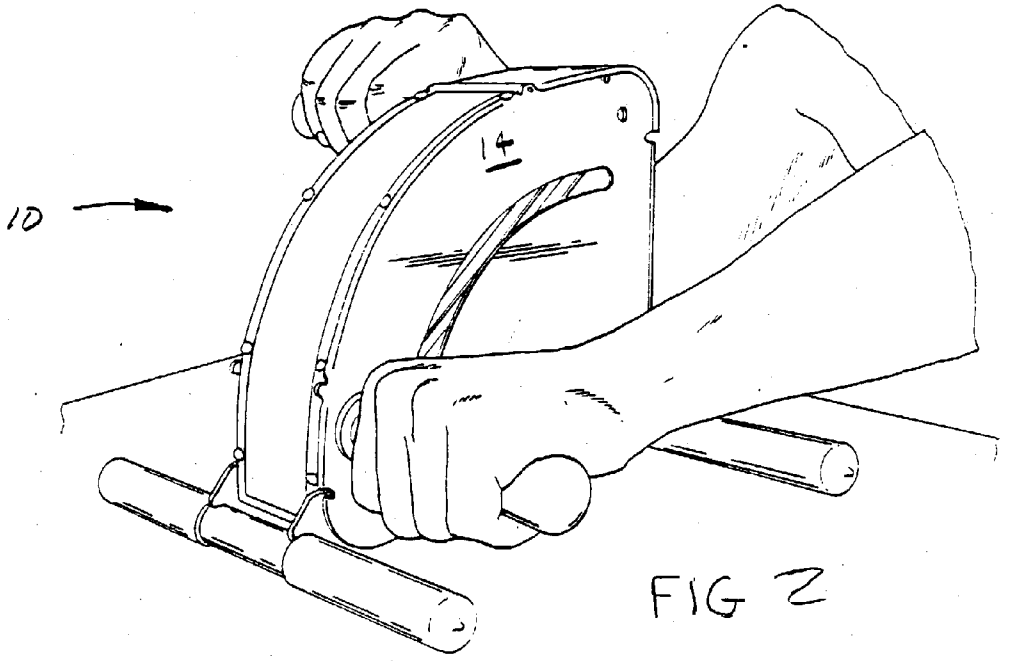
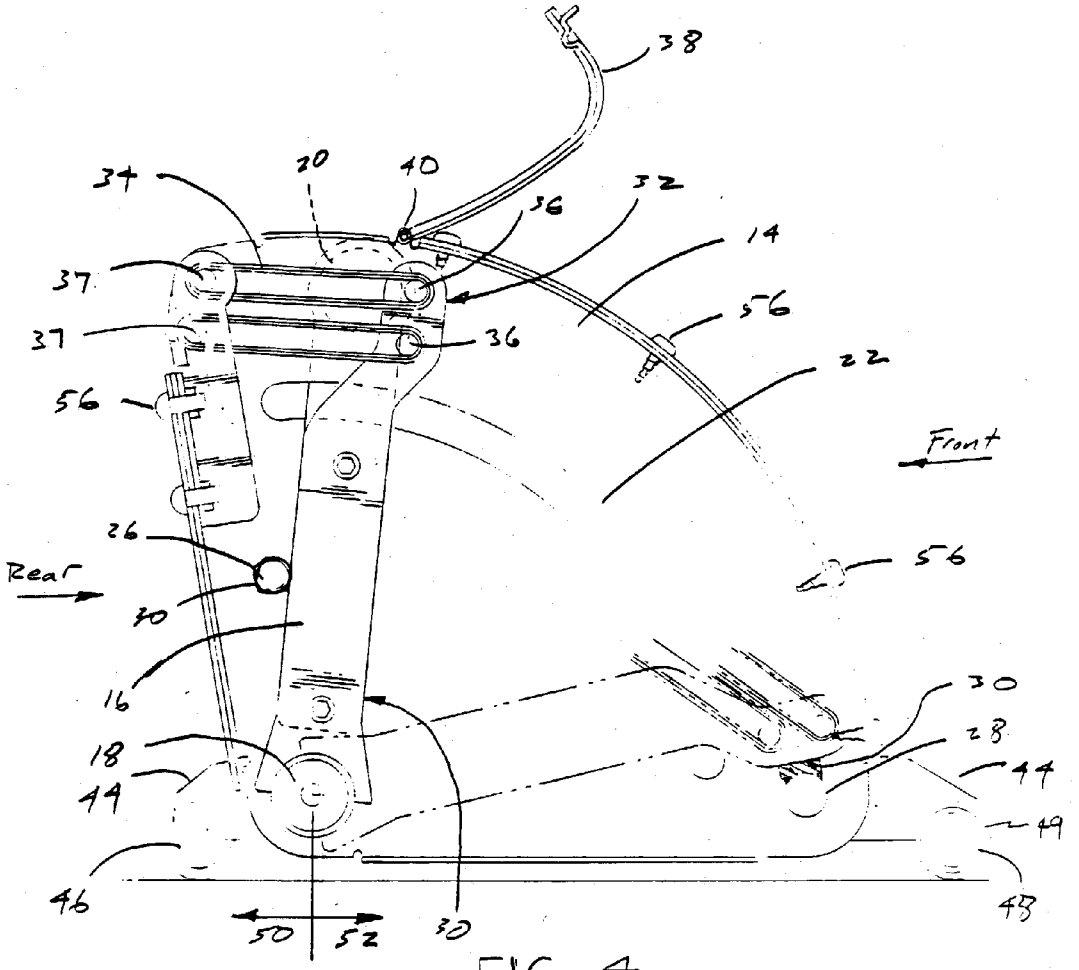


FIG 2


38
34
20
40
32
36
14
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37
36
22
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Front
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Rear
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16
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FIG. 4

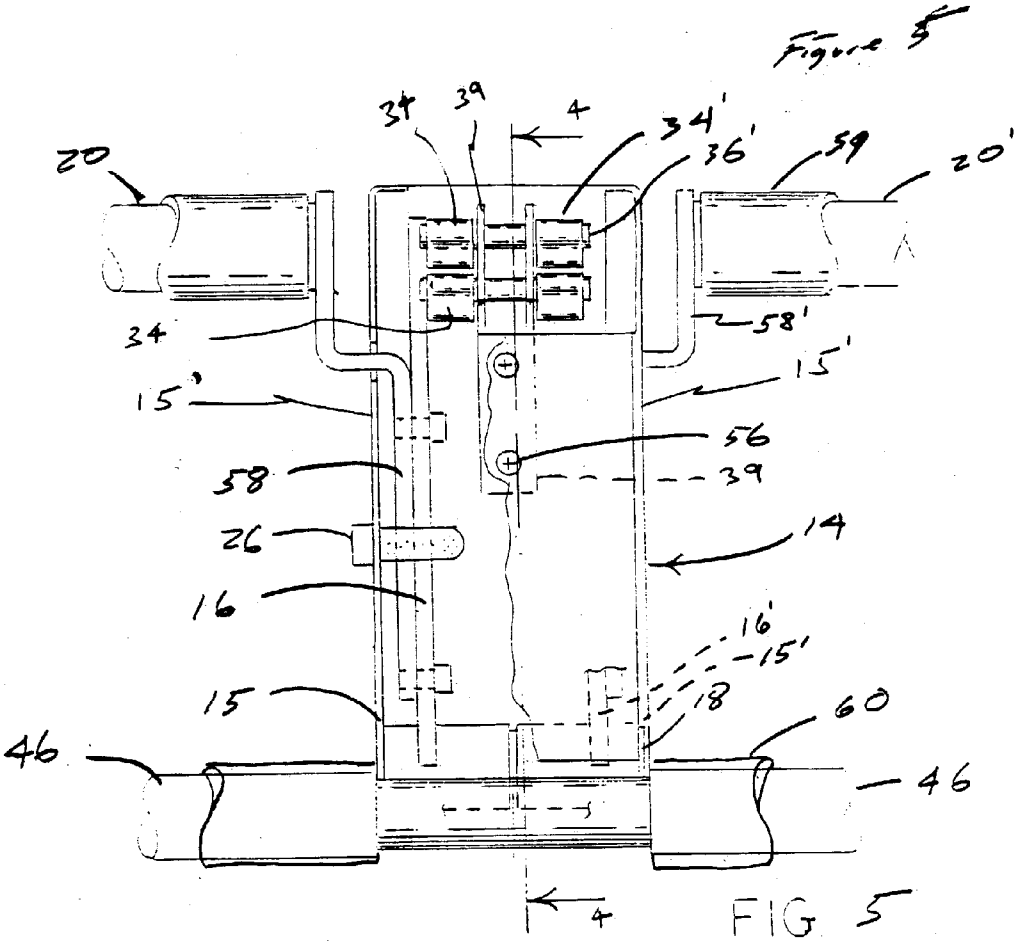
Figure 5
20
34
39
4
34'
36'
59
20'
34
58'
15'
15'
56
58
39
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14
16
16'
15'
15
18
60
46
46
4

FIG 5

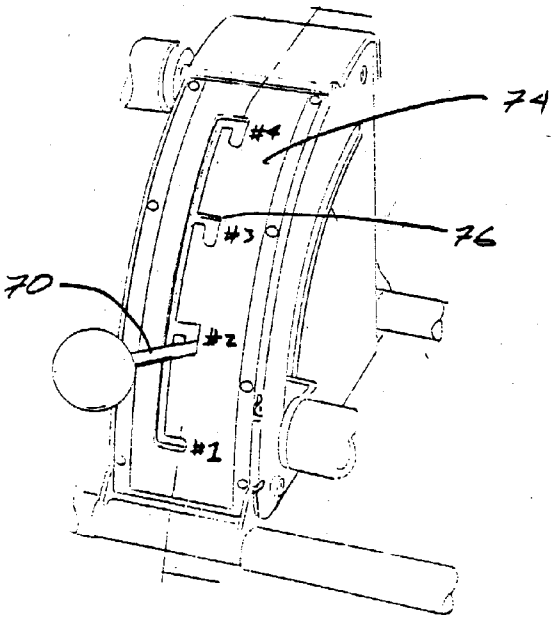
74
#4
#3
76
70
#2
#1

FIG 8

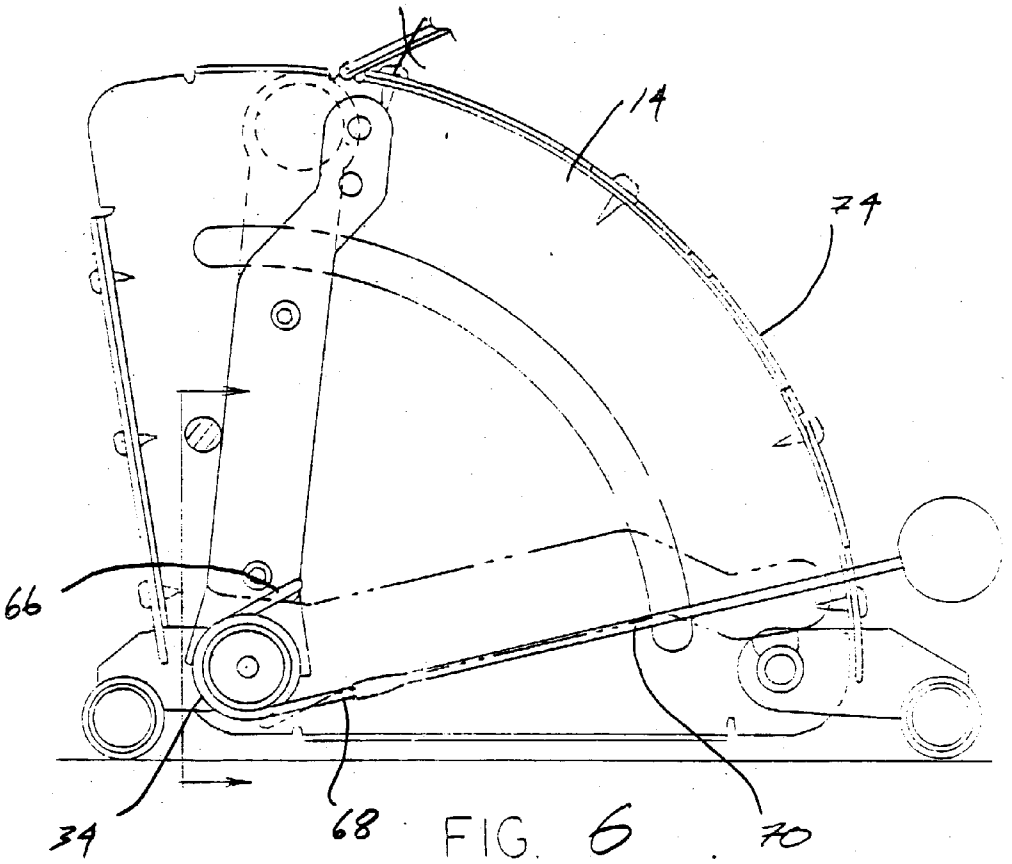

FIG. 6

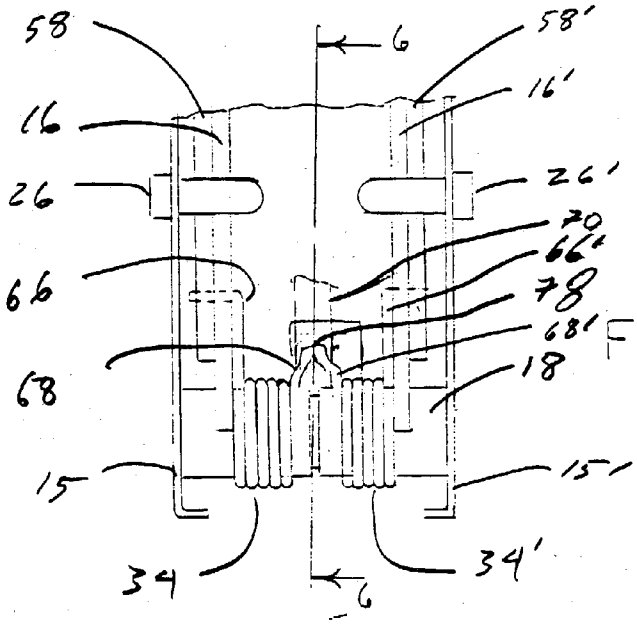

FIG. 7

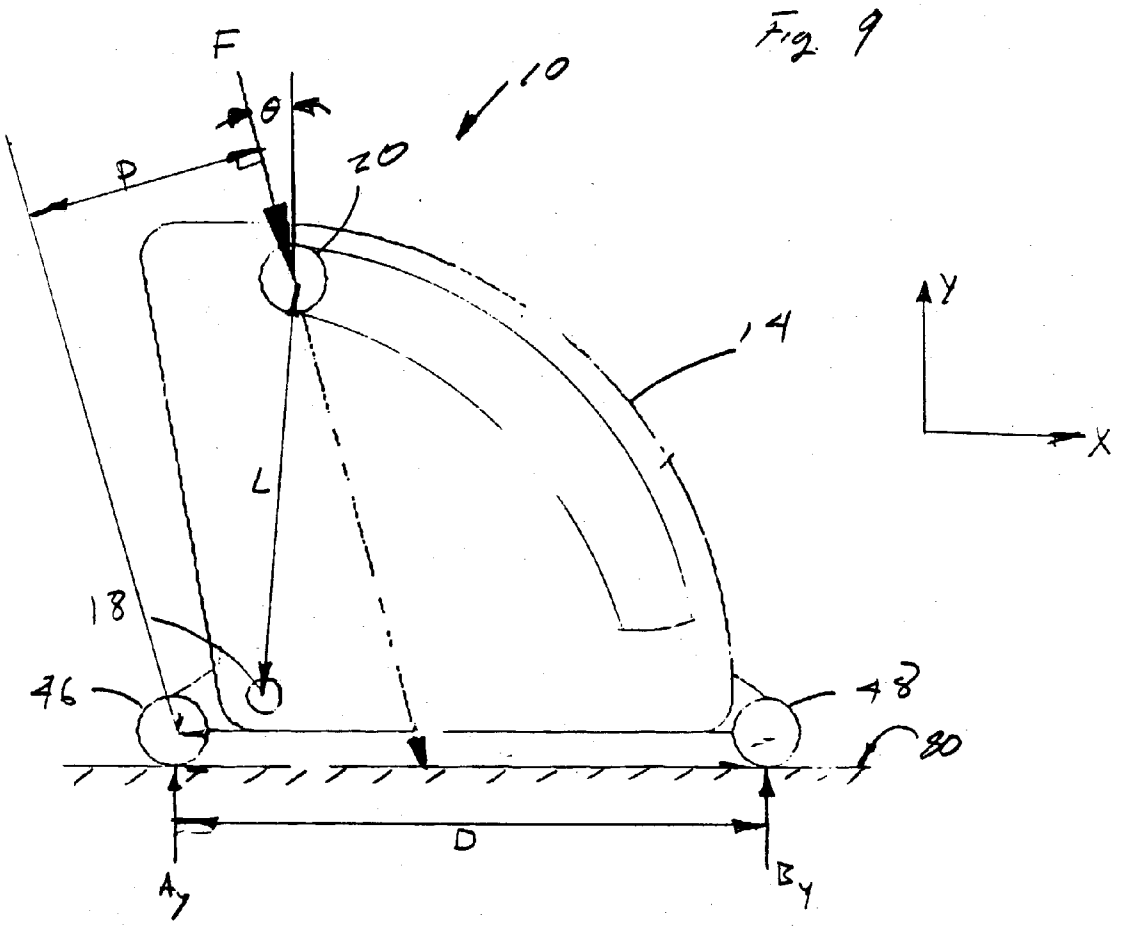

Fig. 9

EXERCISE DEVICE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to an exercise device. The exercise device is configured for lower and upper body exercising.

[0003] 2. Background Art

[0004] The advantages of exercising are widely know and numerous exercise devices are available. Typically, the exercises devices include a structure that allows the user to move a portion of their body against a resistive element. The resistive element resists the movement and thereby exercises the muscle performing the movement. The exercising movement determines the muscle group that is exercised.

[0005] Leg muscles can be exercised with a pushing action. The pushing action requires the suer to exert force while pushing their legs in a pushing their legs from a crouched position relative to the body to an extended position relative to the body. This type of motion is advantageous for increasing lower body circulation and muscle mass.

[0006] Arm muscles can be exercised with both a pushing action and a pulling action. The pushing motion requires the user to exert force while pushing their arms away from a crouched position relative to the body to an extended position relative to the body. The pulling motion requires the user to exert force while pulling their arms from an extended position relative to the body to a crouched position relative to the body. These types of motions are advantageous for increasing upper body circulation and muscle mass.

[0007] When a person remains in a fixed position for a period of time, such as while seated or lying down, the upper and lower body tend to receive little if any physical movement. As such, when the muscles are not in motion the blood supplied thereto tends to decrease or become stale. In response, muscles can stiffen, atrophy, and the like. As a result, blood clots and other maladies can occur. Exercising leg or arm muscles while in the fixed position decreases the effects of remaining inactive for extended periods of time. Accordingly, there exists a need for an exercise device that can be used for leg or arm exercises while an operator is in a fixed position.

[0008] There are numerous locations where a user is in a fixed position for a period of time and desire to perform leg or arm exercises. Such positions may include the user sitting at desks and tables, in planes, trains, boats, wheelchairs, hospital beds, or as a passenger in an automobile. Accordingly, there exists a need for an exercise device that can be used for leg exercises while the user is seated in these types of locations.

[0009] Many of the exercise devices that can perform such exercising movements are not sufficiently sized for use in compact areas. In addition, many of the devices that are sufficiently sized to perform such movements in compact areas have a tendency to tip over during operation.

SUMMARY OF THE INVENTION

[0010] One aspect of the present invention relates to an exercise device. The exercise device includes an elongated pivot and at least one connecting rod having a first connecting end and a second connecting end. The first connecting end of the connecting rod is connected to the pivot for rotating around the pivot. A user can apply force to the second connecting end for causing the first connecting end to rotate around the pivot. In addition, the exercise device further includes a resistive element for resisting the rotation of the connecting rod. To prevent the exercise device from tipping over, the exercise device still further includes a first support and a second support. The supports are sufficiently positioned on a first side of the pivot and a second side of the pivot so that the user applied force is substantially projected between the first support and the second support to prevent the exercise device from tipping over.

[0011] Another aspect of the present invention relates to an exercise device for exercising in a compact area. The exercise device includes a three dimensional housing defining an interior cavity. A pivot and two separately movable connecting rods supported within and are covered by the housing. The pair of connecting rods separately connect to the pivot for rotating around the pivot. Handle bars are connected to each connecting rod and extend beyond the housing for a user to apply force to the connecting rod to separately rotate each connecting rod around the pivot. A recessed resistive is connected to each connecting rod for resisting rotation of the connecting rod. A pair of supports connect to the housing to support the exercise device in operation.

[0012] Yet another aspect of the present invention relates to an exercise device for humans to operate while the exercise device is positioned on a generally horizontal surface. The exercise device includes a pair of spaced apart feet for resting on the generally horizontal surface. The feet support a pivot disposed between the feet and having an axis extending generally parallel to the horizontal surface. A connecting arm is journalled on the pivot for swingable movement, the feet projected from the swingable movement in a plane that intersects the feet. A resistive element resists the swingable movement on the connecting arm.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] **FIG. 1** illustrates an exercise device being used for lower body exercising, in accordance with the present invention;

[0014] **FIG. 2** illustrates the exercise device being used for upper body pushing exercising, in accordance with the present invention;

[0015] **FIG. 3** illustrates the exercise device being used for upper body pulling exercising, in accordance with the present invention;

[0016] **FIG. 4** is a cross-sectional view taken on the line **4-4** of **FIG. 5** of the exercise device showing an elastic resistive element, in accordance with one aspect of the present invention;

[0017] **FIG. 5** is a fragmentary end view of the exercise device shown in **FIG. 4** taken from a rear position, in accordance with the present invention;

[0018] **FIG. 6** is a cross-sectional view taken on the line **6-6** of **FIG. 7** showing a torsion spring resistive element rather than the elastic element of **FIG. 4**;

[0019] **FIG. 7** illustrates a fragmentary end view of the exercise device shown in **FIG. 6** taken from a rear position, in accordance with the present invention;

[0020] **FIG. 8** illustrates a tension adjustment panel for use with the torsion spring resistive element of **FIG. 6** in accordance with the present invention; and

[0021] **FIG. 9** is a force diagram having a force projection between supports of the exercise device to prevent the exercise device from tipping over, in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

[0022] **FIG. 1** illustrates an exercise device **10** being used for lower body exercising in accordance with the present invention. In this position, the user is required to move their legs in a pushing motion against resistance provided by the exercise device. The pushing motion requires the user to exert force while pushing their legs from a crouched position relative to the body to an extended position relative to the body. As shown, the user is seated above the exercise device **10**, but the user could also be seated or lying on the floor at substantially the same elevation as the exercise device. In both arrangements, this type of motion is advantageous for increasing lower body circulation and muscle mass.

[0023] The exercise device **10** can also be positioned for upper body exercising. As shown in **FIGS. 2 and 3**, the exercise device can be positioned on top of a table and the user can move their arms against the resistance provided by the exercise device. In this position, the exercise device is elevated above the user's seated position.

[0024] **FIG. 2** illustrates the user moving their arms in a pushing motion. The pushing motion requires the user to exert force while pushing their arms away from a crouched position relative to the body to an extended position relative to the body. **FIG. 3** illustrates the user moving their arms in a pulling motion. The pulling motion requires the user to exert force while pulling their arms from an extended position relative to the body to a crouched position relative to the body. These types of motions are advantageous for increasing upper body circulation and muscle mass.

[0025] Clearly the ability to use the exercise device **10** to exercise both the upper body and the lower body is advantageous. Moreover, the exercise device can be used to exercise both portions of the body without having to perform any mechanical adjustments to the exercise device **10**. The user does not have to adjust any positional mechanisms or resistive mechanisms. Rather, the user simply places the exercise device relative to the portion of the body they desire to exercise.

[0026] Especially advantageous is the relatively compact size of the exercise device. As shown in FIGS. **1-3**, the entire exercise device is not much larger than the user's feet and hands. Accordingly, the exercise device can be used in virtually any location. The relatively small size allows the exercise device to be used in compact areas, such as, under or on top of a work desk, on a floor within an automobile, on a floor within the all too narrow floor areas of an airplane, and in restrained seating arrangements like hospital beds and wheelchairs. Moreover, the relatively small size allows the exercise device to be relatively light and easy to transport to such areas.

[0027] As shown, the exercise device moves in a semi-rotational or swingable manner. In **FIG. 4** the use of the exercise device **10** is illustrated with a pictorial representation of the exercise device **10** in a non-actuated, resting position and a fully actuated, resisting period.

[0028] For exemplary purposes described more fully below, the non-actuated, resting position corresponds with a rear of the exercise device, and the actuated, resisting position corresponds with a front of the exercise device. In the non-actuated, resting position, sufficient force has not been provided to overcome the force provided by the exercise device. In the actuated, resisting position, sufficient force has been supplied to overcome the resistance provided by the exercise device.

[0029] The exercise device generally comprises a three dimensional housing **14**. The three dimensional housing **14** defines an inner cavity. The cross-section shown in **FIG. 4** is taken longitudinally and approximately through the middle of the housing **14** as shown in **FIG. 5**. The swingable exercising motion provided by the exercise device is accomplished by rotating a pair of connecting rods **16** and **16'** journalled on an elongated pivot **18** which is connected at opposite ends to the opposite side walls **15** and **15'** of the housing **14**.

[0030] The connecting rod **16** and pivot **18** are substantially covered by the housing **14** to protect the user from pinching the user's fingers in the moving parts. A handle bar **20** is attached to the connecting rod **16** and extends beyond the housing **14**. The user can push and pull the handle bar **20** for applying force to the connecting rod **16** to conduct the exercising movements. An angular slot **22** is provided in the housing **14** so that the handle bar **20** can move as shown.

[0031] To prevent over extending the movement of the connecting rod **16** and damaging the housing **14** or other components in the housing **14**, a rear stop **26** and a front stop **28** are provided. The stops mechanically prevent the connecting rods **16** from moving past the stops. The stops can include a coating **30** to prevent wearing and noise from the contact generated by the connecting rods **16** contacting the stops.

[0032] The portion of the connecting rod **16** connecting to the pivot **18** corresponds with a first connecting end **30**, and a portion of the connecting rod connecting to the handle bars **20** corresponds with a second connecting end **32**. The user applied force causes the connecting rod **16** to rotate on the pivot **18** to provide the upper body and lower body exercising.

[0033] The exercise device **10** generally rotates around the pivot **18** from the rear to the front of the housing. The exercise device includes a resistive element **34** to resist the movement of the exercise device from the rear to the front of the housing.

[0034] In **FIG. 4**, the resistive element **34** comprises rubber bands, or other flexible or elastic elements. The resistive element **34** wraps around pegs **36** mounted on the connecting rods **16** and **16'** and pegs **37** mounted on a bracket **39** which in turn is mounted on the housing as by screws **56**. As shown, multiple pegs **36** and **37** provide for attaching multiple resistive elements. The additional pegs **36** and **37** and resistive elements **34** can be used to adjust the resistance to control the amount of force the user must apply

to move the connecting rods **16** and **16'**. A hatch **38** and a hinge **40** is provided to access the interior cavity. The resistive elements **34** can be changed by opening the hatch **36** and removing or replacing the rubber bands.

[**0035**] Attached with brackets **44** to the front and rear of the housing are a first, rear support **46**, and a second, front support **48**. The first, rear support **46** is considered to be on a first side **50** of the pivot and the second, front support is considered to be opposite the first support on a second side of the pivot. The supports **46** and **48** are shown as generally cylindrical, but they need not be. In addition, as shown in FIGS. **1-3**, the supports **46** and **48** extend the entire width of the housing **14** and beyond. The supports **46** and **48** do not have to extend the entire width as a single structure, but it is advantageous to at least extend some portion of the supports **46** and **48** beyond the width of the housing **14** for stabilizing the exercise device **10** from side to side movements. If the exercise device **10** is not stabilized in such a manner it may fall over on its side.

[**0036**] The exercise device **10** can be constructed with any type of plastic or metal. As shown, the exercise device **10** comprises a metal with different components and sections held together with a number of screws.

[**0037**] **FIG. 5** illustrates a fragmentary end view of the exercise device **10** shown in **FIG. 4**, as taken from the rear. The device **10** includes a pair of connecting rods **16** and **16'** with corresponding handle bars **20** and **20'** extending beyond the housing **14** for the user to grasp to apply force. The connecting rods **16** and **16'** are separately movable against the separate resistive elements **34** and **36'** such that each arm or leg can be exercised as desired.

[**0038**] The handle bars **20** and **20'** have brackets **58** and **58'** which extend through the curved slots **22** in the sides **15** and **15'** of the housing for attachment to the connecting rods. In addition, the supports **46** and **48** and the handle bars **20** and **20'** can include a coating **60**. The handle bars **20** can be coated with a foam or other material **59** that may be used for user comfort and gripping. The supports **46** and **48** can be coated with a rubber or other material **60** that can help to prevent skidding of the exercise device relative to the surface upon which it rests. The coating or other material should have a coefficient friction relative to the surface that prevents such skidding.

[**0039**] **FIG. 6** presents a cross-sectional view of another embodiment of the exercise device **10** taken longitudinally and approximately through the middle of the housing **74** as shown in **FIG. 2**. While most of the components are the same as the exercise device **10** shown in **FIG. 4**, the main difference occurs with the resistive element **34**. Rather than a rubber band, the resistive element comprises a torsion spring.

[**0040**] The torsion spring wraps around the pivot **18** and includes fingers **66** and **68** at each end of the spring. One of the fingers **66** presses against the connecting rod **16** and one of the fingers **68** at the other end of the spring connects to a tension adjustment arm **70**.

[**0041**] Depending on how tightly coiled the fingers **66** and **68** are, the resistance provided by the torsion spring can vary. The resistance provided by the torsion spring can be adjusted to control the amount of force the user needs to apply to move the connecting rods **16** and **16'** to conduct the upper and lower body exercises.

[**0042**] **FIG. 7** illustrates a fragmentary end view of the exercise device shown in **FIG. 6**, as seen from the rear. As shown, ends of the finger **66** and **66'** presses against the connecting rods **16** and **16'** and other ends of the finger **68** and **68'** inserts within a relief **78** provided by the adjustment arm **70**. In addition, two torsion springs are shown for separate movement of the connecting rods **16** and **16'** such that each arm or leg can be exercised as desired.

[**0043**] The preceding demonstrates two types of resistive elements that may be used with the present invention. Other resistive elements could similarly be used, such as a coil spring or pulley.

[**0044**] The housing **14** includes a tension adjustment panel **74**, as shown in **FIG. 8**, for positioning the tension adjustment arm **70**. The tension adjustment arm **70** is positioned within a notch **76** of the panel. The notch **76** positions cause the fingers **66** and **68** of the torsion spring to be arranged into a tighter or looser coil.

[**0045**] The tension provided by the torsion spring against the connecting rod **16** can be controlled in combination with the tension adjustment panel **74**. For example, the tension supplied at a notch #**1** is less than the tension supplied at a notch #**4**. As such, when the tension adjustment arm **70** is positioned at notch #**4** the torsion spring is wrapped in a tighter coil and thus provides greater resistance to the connecting rod **16**. The user can position the tension adjustment arm **70** in any of the notches **76** for controlling the desired amount of resistance.

[**0046**] Turning to **FIG. 9**, yet another aspect of the present invention relates to configuring the connecting rods **16** and **16'** the pivot **18**, the first support **46**, and the second support **48** to prevent the exercise device **10** from tipping over the second, front support **48**. To prevent the exercise device **10** from tipping over the force F applied by the user pushing or pulling the handle bar must be projected between the first support **46** and the second support **48**.

[**0047**] The connecting rod **16** defines a linear line stretching from the pivot **18** at the first connecting end to the handle bar **20** at the second connecting end. The distance therebetween is a connecting rod length L. Likewise, the first support **46** and the second support **48** define a linear line stretching from the center of the first support **46** to the center of the second support **48**. The distance therebetween is a spacing distance D.

[**0048**] The first support **46** and the second support **48** are coplanar for level operation on a generally horizontal surface **80**, whether it be a floor or a table top. For any given position of the pivot point **18**, the connecting rod length L and the support spacing distance D must be proportionally configured to prevent the exercise device **10** from tipping over.

[**0049**] Static equilibrium analysis is used to determine the appropriate connecting rod length and the support spacing distance D. The analysis begins by summing all the forces in the vertical Y direction and solving the summation by deriving the unknown forces from a summation of the moments about the first support **46**.

[0050] Please note, the present invention makes the assumption that the coating **60** on the supports is sufficient to prevent the exercise device **10** from skidding during operation. Accordingly, the forces acting on the horizontal X direction are assumed to be sufficient to prevent skidding and are not required for configuring the proportionality of the connecting rod length to the support spacing distance.

[0051] The summation of the forces in the vertical Y direction is given by the following equation (1):

$$A_y+B_y-F\cdot\cos(\theta)=0 \quad (1)$$

[0052] wherein A_y is the reactionary force of the surface **80** pressing upwardly against the first support **46**, B_y is the reactionary force of the surface **80** pressing upwardly at the second support **48**, F is the user applied force, and θ is the angle of the user applied force F relative to a vertical axis that stretches through the center of the handle bar **20** to perpendicularly bisect a horizontal axis stretching through the centers of the supports **46** and **48**.

[0053] The summation of the forces in the vertical Y direction shows the force F applied by the user and must be matched by the reactionary forces applied by the surface **80** against the supports **46** and **48** as shown with force arrows A_y and B_y. The forces A_y and B_y are unknown, but can be derived for the purposes of determining tipping by solving for the summation of the moments about the first support **46**.

[0054] The summation of the moments about the first support **46** equation (2) is given by the following.

$$D\cdot B_y-P\cdot F=0 \quad (2)$$

[0055] wherein D is the support spacing distance, B_y is the upward reactionary force supplied by the surface **80** against the second support **48**, P is the perpendicular distance of the handle bar **20** relative to the first support **46**, and F is applied user force, and θ is the angle of the user applied force F.

[0056] A tipping equation (3) is provided below and determined by combining equations (1) and (2) and solving for A_y.

$$A_y = F\left[\cos\theta - \frac{P}{D}\right] \quad (3)$$

[0057] If the reactionary force A_y at the first support **46** is zero, then the surface **80** is not supplying any reactionary force against the first support **46**. The exercise device **10** may tip over in such a situation. As long as the value in a portional relationship shown below in equation (4) is greater than zero for all movements of the handle bars **20**, then there is some force A_y and the exercise device **10** will not tip over.

$$\cos\theta - \frac{P}{D} > 0 \quad (4)$$

[0058] The proportional relationship shown in equation (4) can be used to develop general design parameters for the exercise device **10**. More specifically, design parameters can be determined based on the intended usage of the exercise device.

[0059] The intended usage of the exercise device **10** can be used to determine maximum and minimum values for applied force angle θ. As the equation illustrates, the value for cos(θ) decreases as the applied force angle θ increases and increases as the applied force angle θ decreases. The relationship of the perpendicular distance P to the support spacing distance D can be designed accordingly.

[0060] If the intended applied force angle is relatively large, such as when the user is applying force F when lying down or pulling from a seated position, then the relationship of P to D requires P to be correspondingly less than D in order to maintain a positive value when P/D is subtracted from cos(θ). The perpendicular distance P can be designed accordingly by lowering the pivot **18** toward the supports, moving the pivot closer to the first support **46**, decreasing the connecting rod length L, or increasing the support spacing distance D. In general, as the intended use requires larger applied force angles θ, the exercise device can be relatively longer between the supports for a longer length and relatively shorter between the supports and the handle bars for a smaller height.

[0061] If the intended applied force angle θ is relatively small, such as when the user is applying force F by pushing with their hands or feet, then the relationship of P to D allows P to be a larger value than in the conditions described above where the force angle θ was larger. As such, the connecting rod length L can be larger, the pivot **18** can be raised, the pivot **18** can be move closer to the second support **48**, and the support spacing D can be decreased. In general, as the intended use requires smaller applied for angles θ, the exercise device can be relatively shorter between the supports for a shorter length and relatively longer between the supports and the handle bars for a larger height.

[0062] While embodiments of the invention have been illustrated and described, it is not intended that these embodiments illustrate and describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. A exercise device, the device comprising:

an elongated pivot;

at least one connecting rod having a first connecting end and a second connecting end, wherein the first connecting end is operatively connected to the pivot for rotating around the pivot and a user can apply force to the second connecting end for causing the first connecting end to rotate around the pivot;

a resistive element for resisting the rotation of the connecting rod; and

a first support and a second support for supporting the pivot, wherein the first support is sufficiently positioned on a first side of the pivot and the second support is sufficiently positioned opposite the first support on a second side of the pivot to substantially project the applied force between the first support and the second support to prevent the exercise device from tipping over.

2. The exercise device of claim 1 wherein the first support and the second support are spaced apart by a support spacing distance and wherein a length from the first connecting end to the second connecting end defines a connecting rod length, wherein the support spacing distance is sufficiently proportional to the connecting rod length to prevent the exercise device from tipping over.

3. The exercise device of claim 3 wherein a connecting rod angle α represents the angular rotation of the connecting rod rotates around the pivot and wherein a force angle θ represents the angle of the force applied to the second connecting end and wherein a perpendicular distance P represents the perpendicular distance of the force applied to the second connecting end relative to the first support, wherein the support spacing distance is sufficiently proportional to the connecting rod angle α the force angle θ and the perpendicular distance to preventing the exercise device from tipping over.

4. The exercise device of claim 4 wherein the support spacing distance is determined according to the following equation:

$$\cos\theta - \frac{P}{D} > 0$$

wherein D is the support spacing distance, θ is the force angle, α is the connecting rod angle, and P is the perpendicular distance.

5. The exercise device of claim 4 wherein the connecting rod length and the support spacing distance are sufficiently sized for operation of the exercise device in a compact area.

6. An exercise device for exercising in a compact area, the exercise device comprising:

a three dimensional housing defining an interior cavity;

a pivot supported within the housing;

two separately moveable connecting rods covered by the housing and connected to the pivot for rotating around the pivot;

a handle bar connected to each connecting rod and extending beyond the housing for a user to apply force to the connecting rod for separately rotating each connecting rod around the pivot;

a resistive element connected to each connecting rod for resisting rotation of the connecting rod; and

a pair of supports connected to the housing.

7. The exercise device of claim 6 wherein the housing includes an angular track that corresponds with the rotational movement of the handle bars.

8. The exercise device of claim 6 further comprising a coating over each support for preventing the exercise device from skidding.

9. The exercise device of claim 6 wherein the resistive element is a number of rubber bands.

10. The exercise device of claim 9 wherein the housing includes a hatch for accessing the housing and connecting the rubber bands to the connecting rod and the housing for adjusting the amount of force required to rotate the connecting rod around the pivot.

11. The exercise device of claim 6 wherein the resistive element is a torsion spring.

12. The exercise device of claim 11 wherein the torsion spring includes a tension adjustment arm having sufficient length to extend beyond the housing for adjusting the amount of force required to rotate the connecting rod around the pivot.

13. The exercise device of claim 12 wherein the housing includes a tension adjustment panel having notches for securing the adjustment arm and each notch adjusts the amount of force required to rotate the connecting rod around the pivot.

14. The exercise device of claim 6 wherein the pair of supports are sufficiently spaced apart by a support spacing distance to prevent the exercise device from tipping over.

15. The exercise device of claim 14 wherein the support distance is sufficiently spaced for the user applied force to be substantially directed within the space defined by the support distance to prevent the exercise device from tipping over.

16. The exercise device of claim 6 wherein the housing includes a stop for positioning the connecting arm at an inclined angle relative to a vertical axis that stretches through the center of the handle bar to perpendicularly bisect a horizontal axis stretching through the centers of the supports, wherein the inclined angle insures normally applied force is directed toward the supports.

17. An exercise device for humans to operate while the exercise device is positioned on a generally horizontal surface, the exercise device comprising:

a pair of spaced apart feet for resting on the generally horizontal surface;

a pivot disposed between and supported by the feet and having an axis extending generally parallel to the horizontal surface;

a connecting arm journalled on the pivot for swingable movement in a plane intersecting the feet; and

a resistive element supported by the feet for resisting the swingable movement of the connecting arm.

18. The exercise device of claim 17 wherein the connecting arm and the pivot are disposed for lower body exercising from a lying position, wherein the horizontal surface is elevated approximately with the lying position.

19. The exercise device of claim 17 wherein the connecting arm and the pivot are disposed for lower body exercising from a seated position, wherein the horizontal surface is elevated below the seated position.

20. The exercise device of claim 17 wherein the connecting arm and the pivot are disposed for upper body exercising from a seated position, wherein the horizontal surface is elevated above the seated position.

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