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(54) **SHOULDER MOUNTED WALKING EXERCISER**

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(57) **ABSTRACT**

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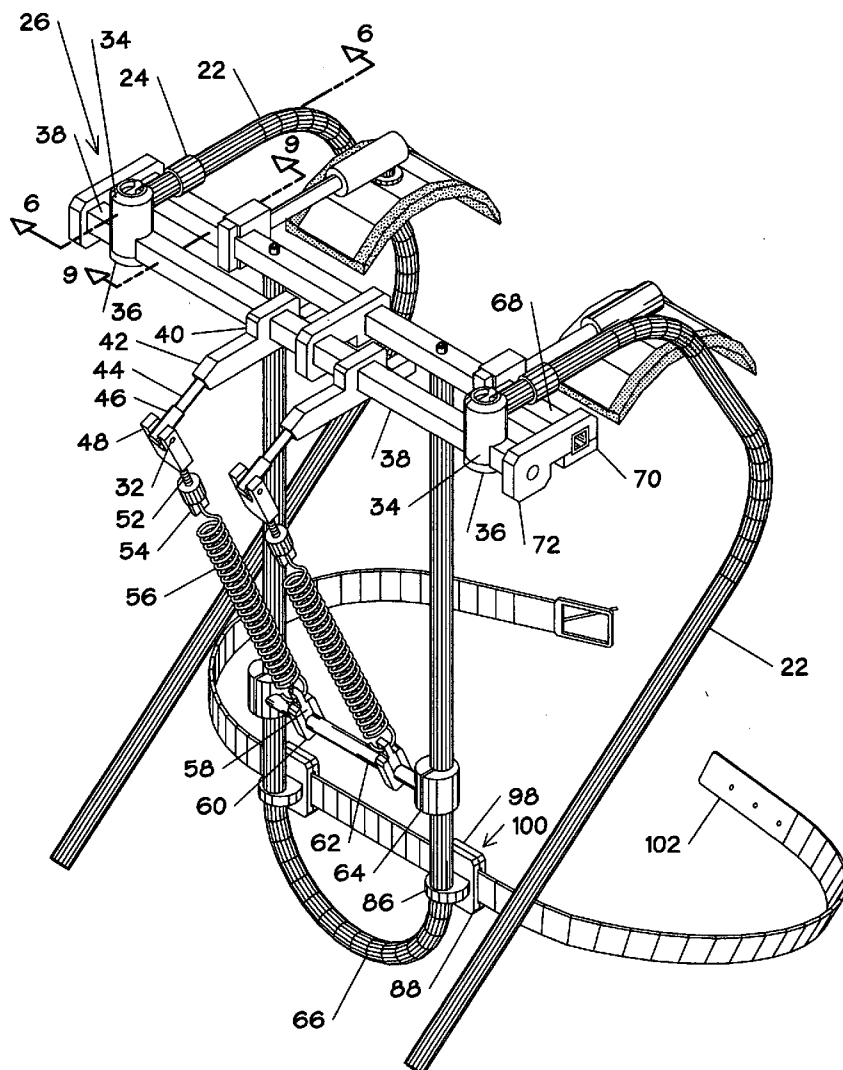
A shoulder mounted walking exerciser with padded shoulder hooks compliantly rest on the user's shoulders and a belt around the waist secures the device to the user. The shoulder hooks attach to a frame that extends to below the waist and two handles attach to rotatable axles located shoulder high on the aforementioned frame. The handles extend vertically upward from the frame, and then upwardly forward, and downwardly forward, over the user's shoulders, ending at shoulder height, providing a grip for the user to interact with the device. The handles have an optional rubber grip for user comfort. For ease of handling and storing the device, the handles have a pivotal connection and rotate to a stowed position. A spring connected to the aforementioned frame produces a resistance to handle movement that the user must overcome.

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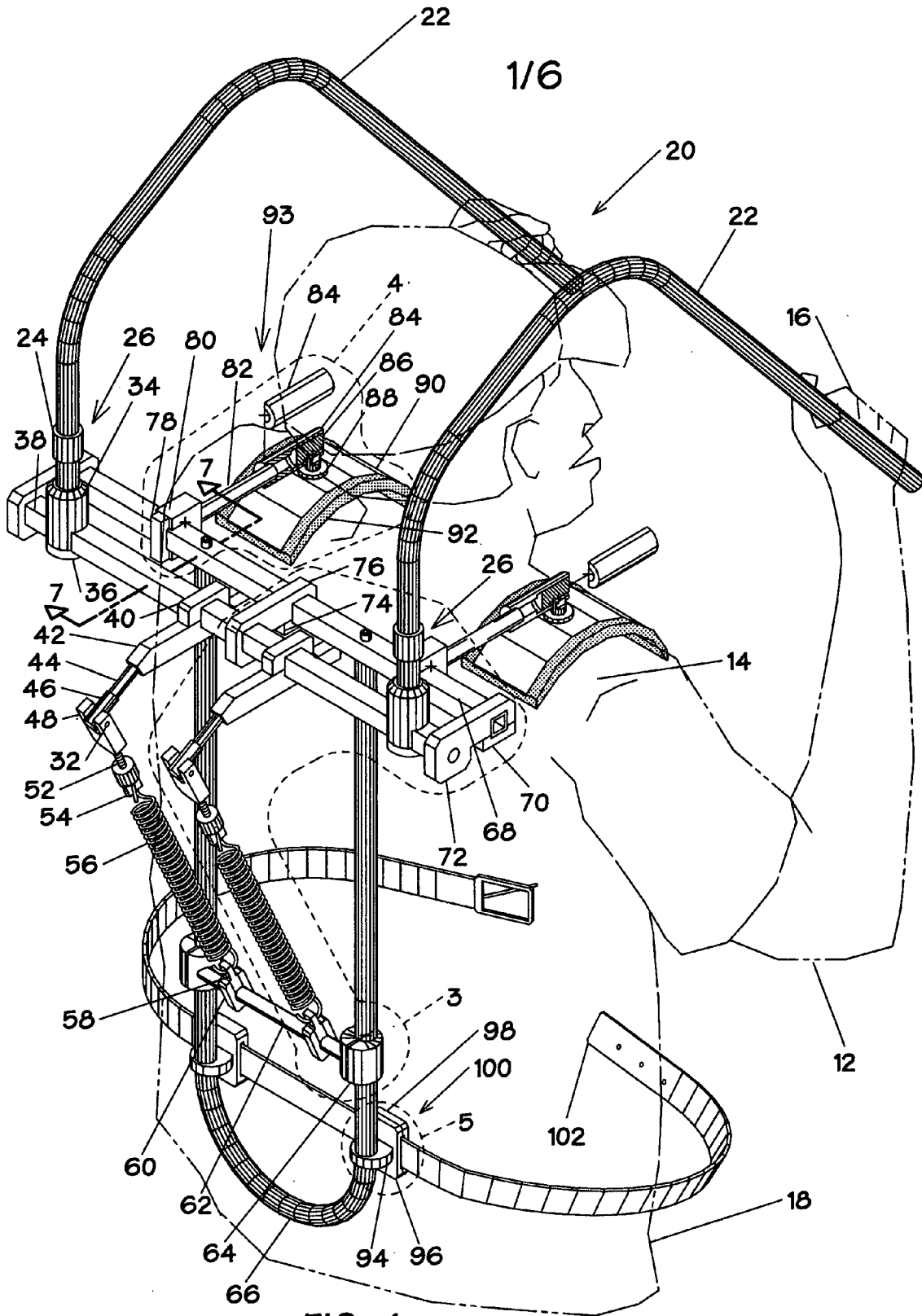


FIG. 1

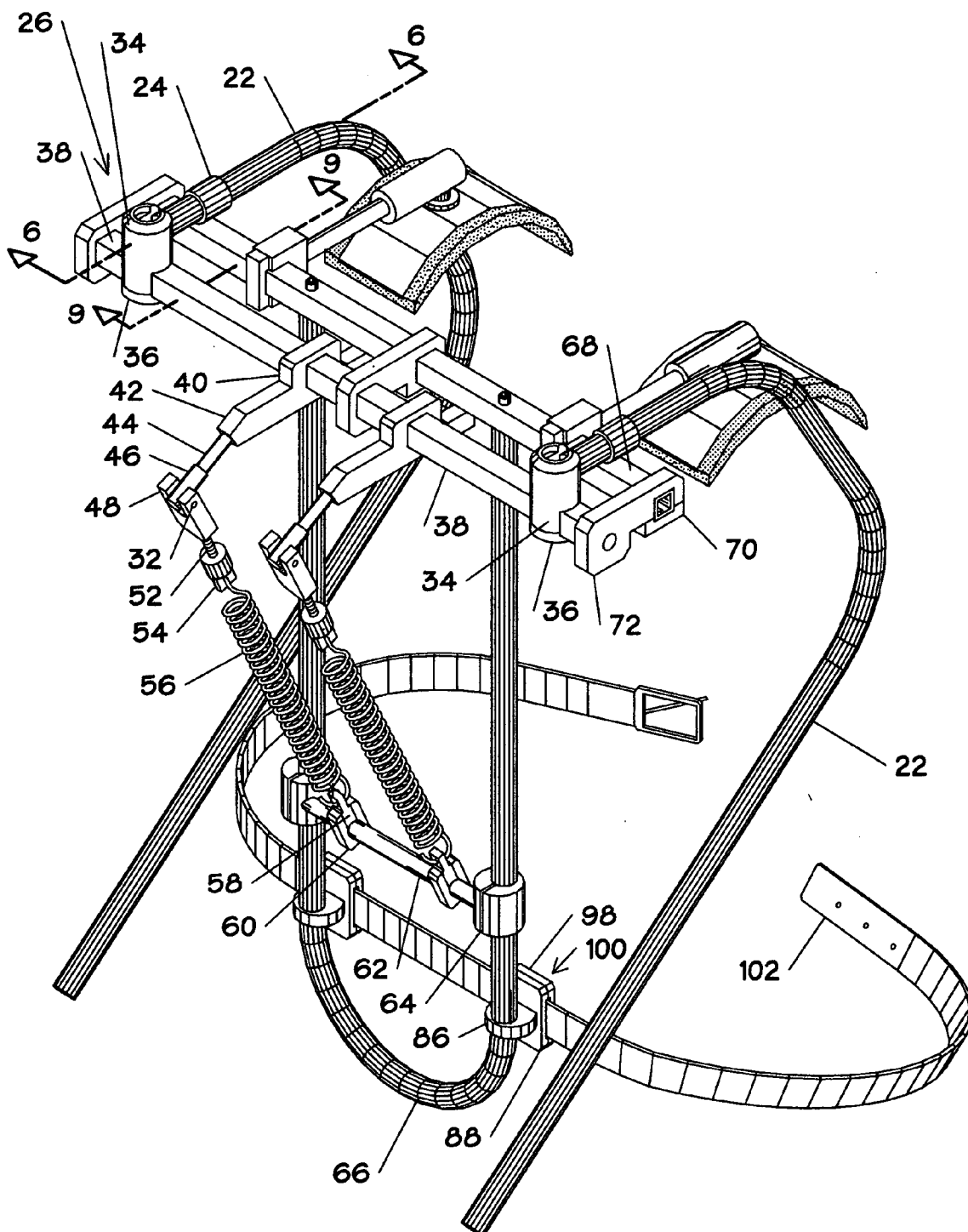


FIG. 2

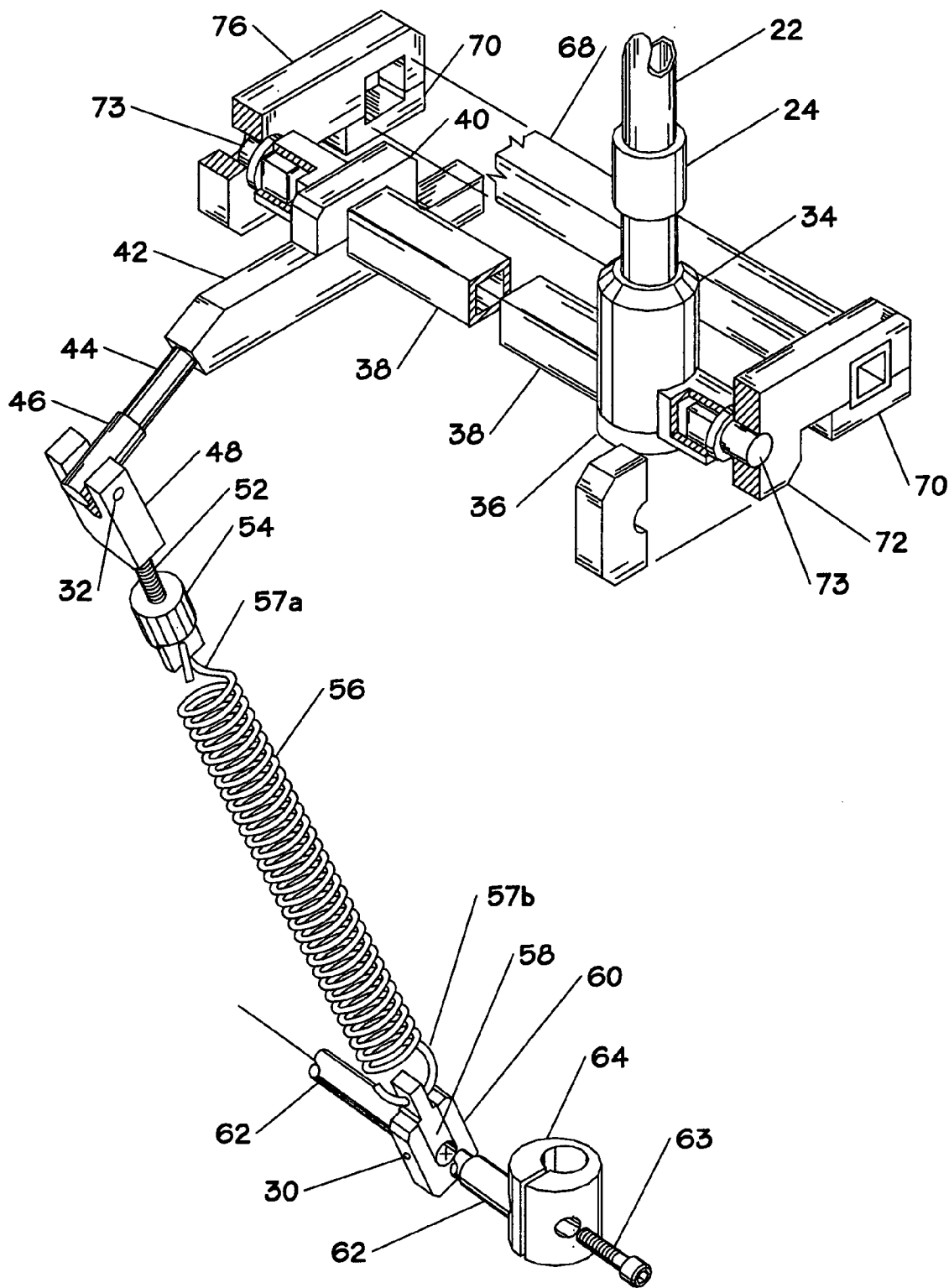


FIG. 3

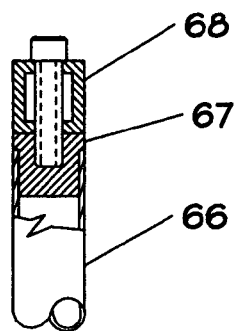


FIG. 7

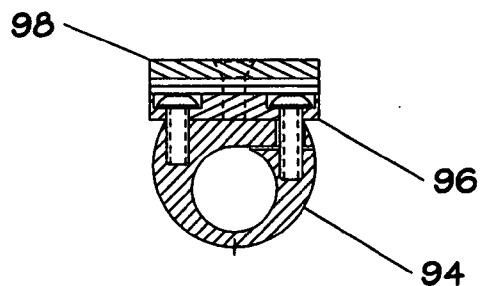


FIG. 8

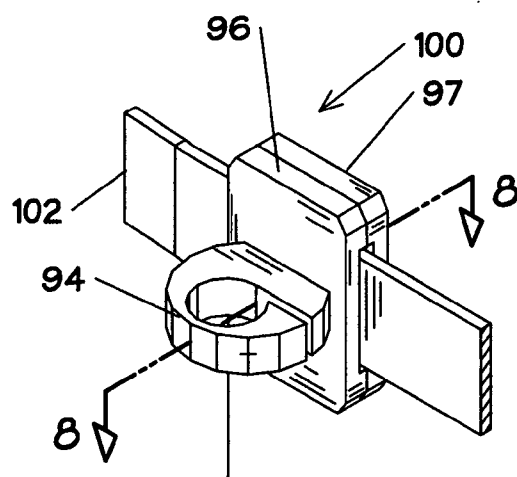


FIG. 5

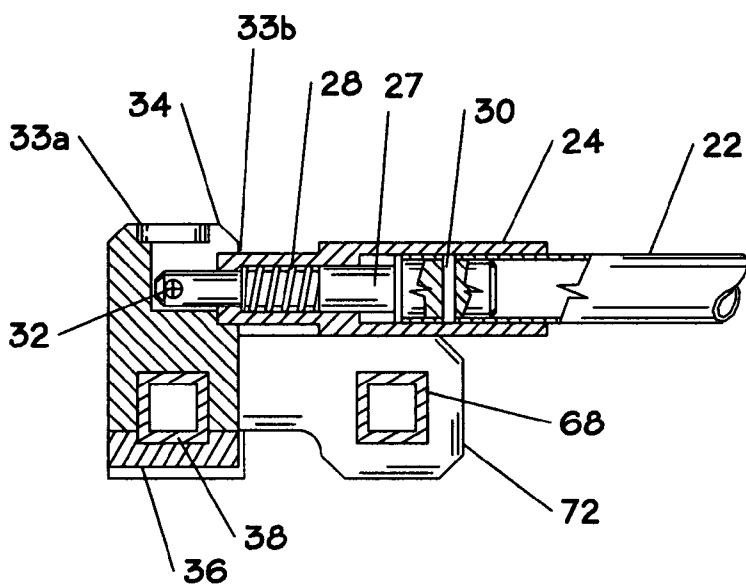


FIG. 6

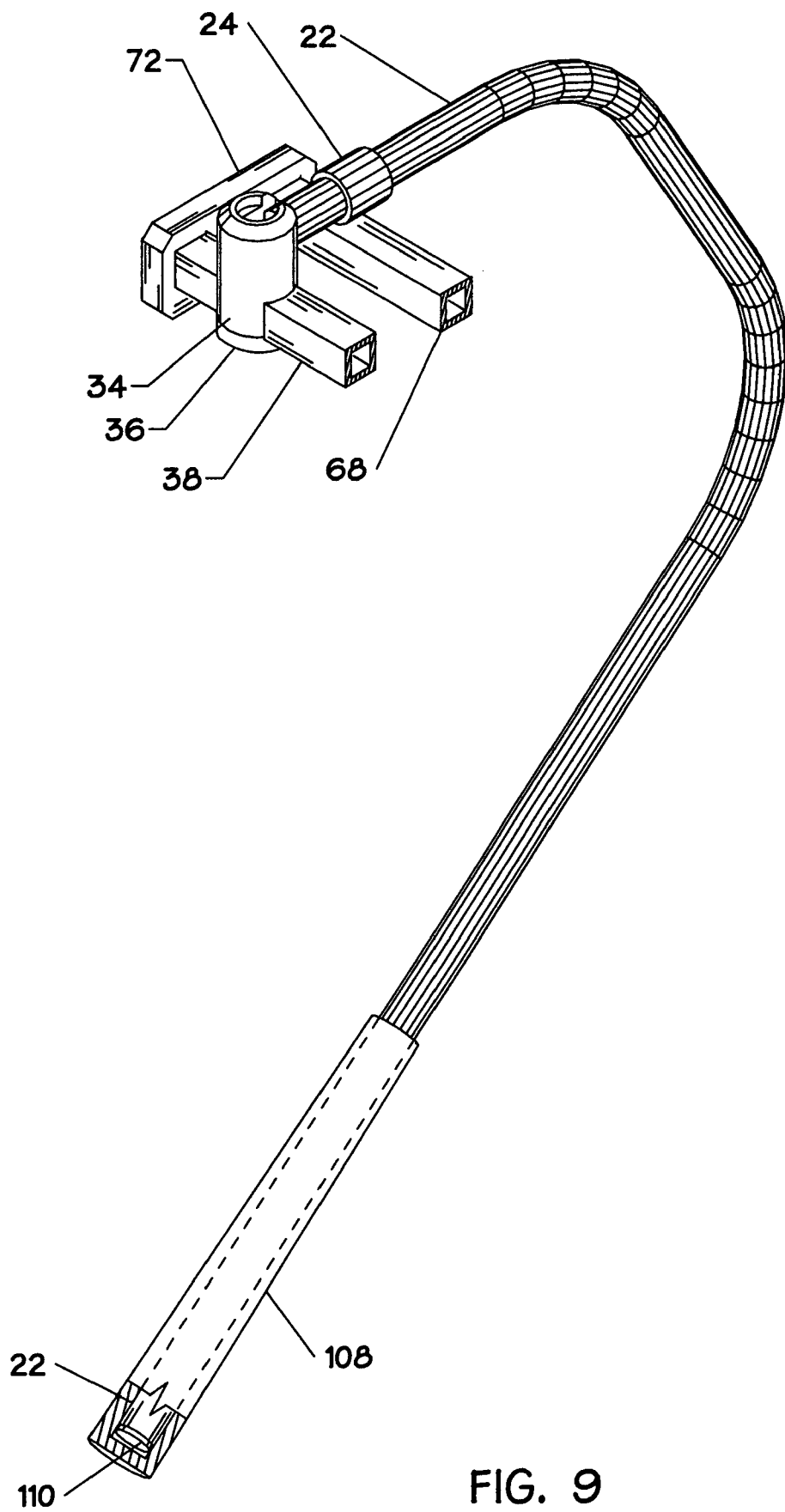


FIG. 9

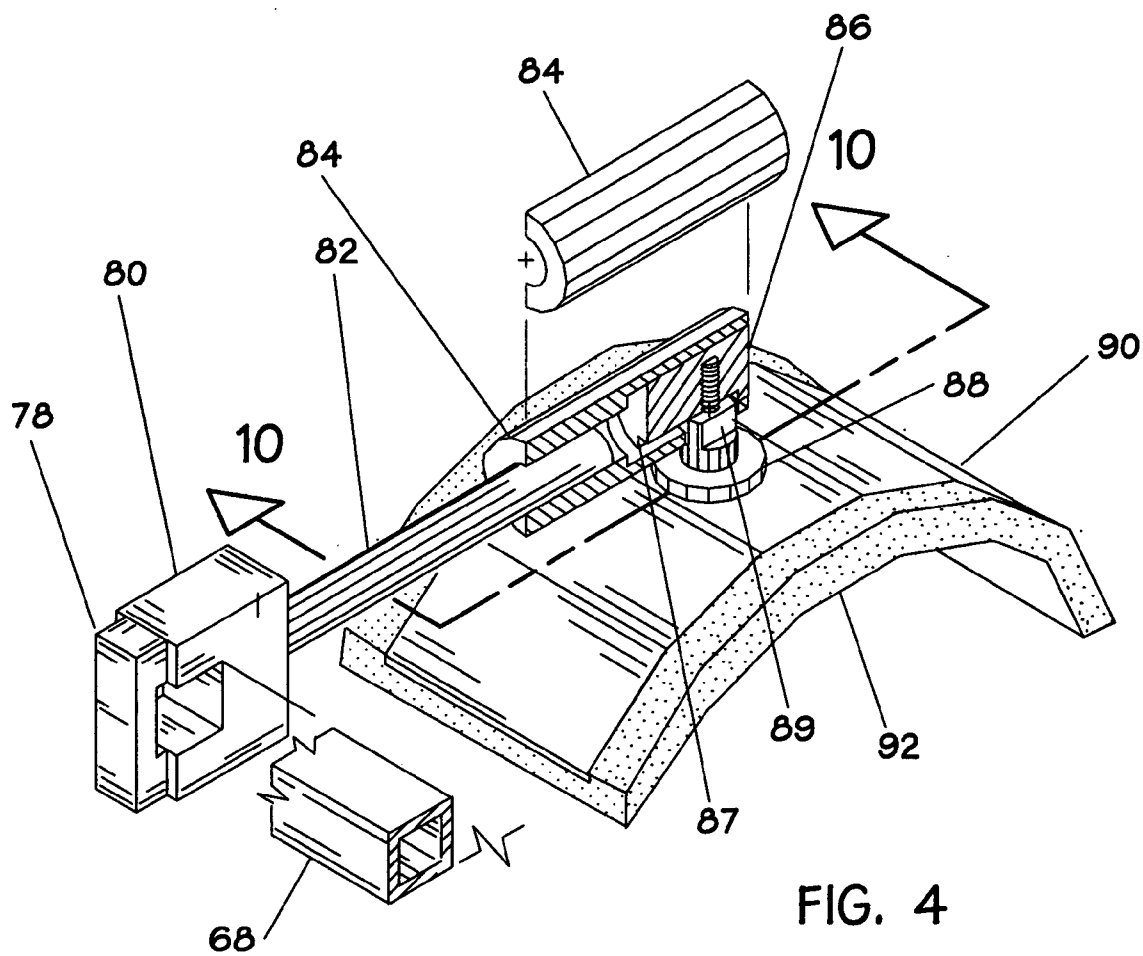


FIG. 4

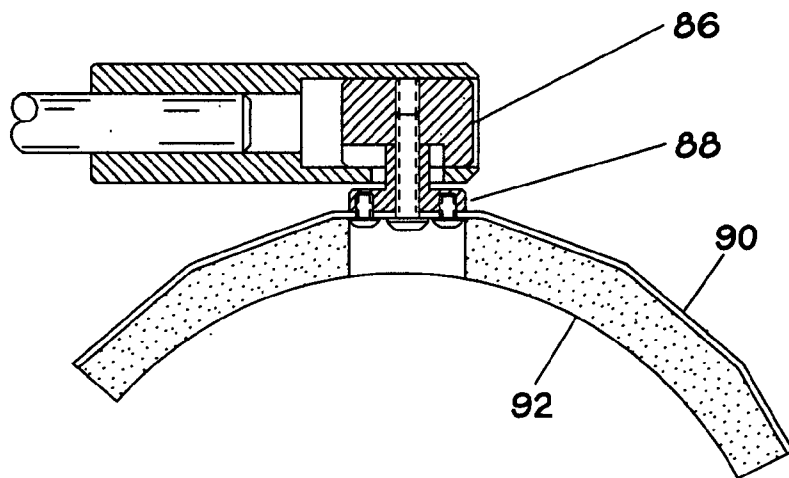


FIG. 10

**SHOULDER MOUNTED WALKING EXERCISER**

FIELD OF THE INVENTION

[0001] The present invention relates to exercising devices and more particularly to a shoulder mounted walking exerciser.

BACKGROUND OF THE INVENTION

[0002] Sedimentary life styles, detrimental to health and happiness, have caused many people to seek means of exercising to maintain their health. Walking, while it does not use the upper body muscles vigorously, is the most natural, fundamental, and popular exercise for many people. A device worn, when walking, to exercise the upper body will increase the amount of exercise (calories burned)/(unit of time) for a healthier and better life style.

[0003] Devices to expand the amount of exercise achieved while walking are as follows: lightweight dumb bells carried in ones hands while swinging their arms and a variety of devices worn by a person with means for attaching weights. Harnesses and vests having elastic straps with handgrips, for stretching them to overcoming their elastic properties, for producing work. Vests and harness in the form of a grid, made of elastic straps, for simultaneously-exercising the upper body and legs. A number of exercising devices have been described in prior art. Examples are: U.S. Pat. No. 2005/0282689A1 to Weinstein; U.S. Pat. No. 6,659,921B2 to Vernon; U.S. Pat. No. 5,820,533 to Goldman; U.S. Pat. No. 2,097,376 to Marshman; U.S. Pat. No. 1,402,179 to Piscitelli; U.S. Pat. No. 4,911,439 to Kuhl; U.S. Pat. No. 1,432,013 to Blake; U.S. Pat. No. 1,618,273 to Davidson; U.S. Pat. No. 6,132,346 to Weeks; U.S. Pat. No. 650,656 to Raabe; U.S. Pat. No. 5,328,432 to Gvoich; U.S. Pat. No. 5,358,461 to Bailey; U.S. Pat. No. 6,099,446 to Johnson;

[0004] Complicated devices that are difficult to put on and have a plurality of time-consuming adjustments diminish the ease of use and consequently the time spent exercising. Elastic straps, attached to a device, having a direction of use in front and away from the user can accidentally snap back and strike the user causing discomfort and injury. Elastic straps, on devices not having confined paths of travel, can rub on the user's torso and arms causing chafing and discomfort.

[0005] It is an object of the invention to provide a device to increase the amount of exercise a user would normally experience while walking.

[0006] It is a further object of the invention to provide a method of exercising the whole body, and increase deep breathing while walking.

[0007] It is a further object of the invention to provide an exercise device that the user can position on or off oneself easily and device that the user can position on or off oneself easily and quickly.

[0008] It is a further object of the invention to provide an adjusted amount of exercise provided by simply adjusting the length of movement of the hands.

[0009] It is a further object of the invention to provide adjustments of the device's elements contacting the user's hands and shoulders to prevent interference with any of the user's body or hand motions.

SUMMARY OF THE INVENTION

[0010] In accordance with the present invention, there is provided a shoulder mounted walking exerciser to increase the amount of exercise a person can experience while walking. The device has padded shoulder hooks to support it on the user's shoulders, and a belt to secure it around the user's waist. The belt is mounted on a frame, located on the backside of the user that attaches to the shoulder hooks and extends to below the user's waist. There are two handles, each attached to its axle, located at shoulder height on the aforementioned frame. Through a linkage, the handle's axle attaches to a spring, mounted on the aforementioned frame, and provides a resistive handle movement that the user must overcome resulting in exercise. The handles extend vertically upwards from their axels on the said frame, then upwardly forward over the user's shoulder, and then downwardly forward to shoulder height of the user, providing a surface for the user to grip while using the device. In addition, the handles may have an optional rubber grip on them for user comfort. For ease of handling and storing the device, a pivotal connection between the handles and their axles allows the user to place the handles in a stowed position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] A complete understanding of the present invention may be obtained by reference to the accompanying drawings, when considered in conjunction with the subsequent, detailed description, in which:

[0012] FIG. 1 is a rear perspective view of the preferred embodiment in accordance with the present invention of a shoulder mounted walking exerciser;

[0013] FIG. 2 is a perspective view of the embodiment of FIG. 1 with handles in the stowed configuration;

[0014] FIG. 3 is an enlarged perspective view of the elements related to handle movement illustrated in reference number 3 of FIG. 1;

[0015] FIG. 4 is a perspective view of the shoulder hook illustrated in reference number 4 of FIG. 1;

[0016] FIG. 5 is a perspective view of the belt attachment shown in detail 5 of FIG. 1;

[0017] FIG. 6 is a section view of the detent assembly taken along section line 6-6 in FIG. 2;

[0018] FIG. 7 is a section view of the frame connection taken along section line 7-7 in FIG. 1;

[0019] FIG. 8 is a sectional view of the belt attachment taken along section line 8-8 in FIG. 5;

[0020] FIG. 9 is a perspective view of a handle in its stowed position taken along section line 9-9 in FIG. 2; and

[0021] FIG. 10 is a section view of the shoulder hook illustrated in FIG. 4 taken along section line 10-10.

[0022] For purposes of clarity and brevity, like elements and components will bear the same designations and numbering throughout the Figures.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0023] With reference to FIG. 1 the embodiment illustrates a gender-neutral shoulder mounted walking exerciser 20, that



is symmetrically identical left and right about a center bearing 76, with a person 12 in position to perform exercise. A shoulder 14 illustrates how the person's shoulders support the apparatus, and a belt 18 around the person's waist 15 illustrates the securing of the apparatus in place on the person 12. A hand 16 on a handle 22 represents the position of the person's hand on each handle 22 of the apparatus' when the person 12 is exercising with it. The handle 22 upwardly slopes towards the person's back and head then it bends to a downwardly slope that bends to a vertical slope just past the shoulder 14 connecting rigidly to a detent assembly 26. The handle 22 has a hollow cross section and its material is light weight and having proper strength. When the person 12 pulls on the handle 22 it moves with a resistive motion in a constrained path downwardly and toward the waist 15 of the person 12, thus producing exercise. With reference to FIG. 3 and FIG. 6, a detent shaft 27, utilizing a location pin 30, rigidly connects to the handle 22, having both a compression spring 28 and a bayonet 24 slidably connected to it, rotatably connects to a pivot pin 32 frictionally connected to the detent base 34. The detent shaft 27 rotates about the pivot pin 32 and provides alignment between the bayonet 24 and cavity a 33a or cavity b 33b in the detent base 34, and the spring 28 forces the bayonet 24 into one of the two cavities locking the arm into one of two position. Cavity a 33a and cavity b 33b, in the detent base 34, are located ninety degrees apart and having a surface deviation of precisely removed material from the detent base 34 to fit its function. The cavity a 33a locks the handle 22 in an extended position providing a grip for the user to interact with the apparatus during its use. With reference to FIG. 2, a perspective view, illustrates the handle 22 in a stowed position. The cavity b 33b provides a stowed position for the handle 22 making easier handling available when a person 12 is carrying or storing the apparatus.

[0024] With reference to FIGS. 1 and 3. The detent base clamp 36 frictionally and slidably connects a detent assembly 26 to a rotatable axle 38; it provides an adjustable lateral location of the detent assembly 26 and its connected handle 22 for different size users of the apparatus. A axle journal 73 securely inserts in each end of the axle 38 that is hollow for weight reduction; it connects the ends of axle 38 to an end bearing 72 and a center bearing 76. The preferred properties of the axle 38 are a geometric form consisting of a thin walled tube and material that is of proper strength and lightweight. The axle 38 is the pivot for producing a resisting and controlled motion of the handle 22 that is essential for producing exercise. The crank clamp 40 rigidly connects the axle crank 42 to the rotatable axle 38. A directional extension 44, with a linkage connector 46 rotatably fastened to one of its ends, rigidly connects to the end of the axle crank 42. The directional extension 44 locates the linkage connector 46 with its frictionally connected pivot pin 32 that rotatably connects to the spring clevis a 48; and it provides a proper length moment arm from the axle 38 to the line of force generated by a handle spring 56 to provide resistive force for the handle 22. The spring clevis a 48 rotatably connects to an adjustable link 52. The adjustable link 52 removes the slack in the connections and sets the initial resistive force of the handle 22; it also rotationally fastens to a spring hook adapter 54, which has a properly sized hole through it, to receive the spring hook a 57a of the handle spring 56. In addition, the adjustable link 52 combined with the spring hook adapter 54 compensate for the misalignment of spring hook a 57a and spring hook b 57b on

the handle spring 56. The handle spring 56 rotatably connects to the clevis keeper 58 utilizing the spring hook b 57b passing through a properly sized hole in the clevis keeper 58. A location pin 30 securely connects the clevis keeper 58 and spring clevis b 60 together and rotatably about a groove 87 in the clevis rod 62 allowing for handle spring 56 alignment. A frame clamp 64 with a cap screw 63 inserted in it rigidly connects the clevis rod 62 to the vertical frame 66 providing the required reactionary force to expand the handle spring 56 providing resistive force that the user's hand must overcome to produce exercise. The end bearing 72 and the center bearing 76 are rigidly connected to the spar 68 using a bearing clamp 70.

[0025] With reference to FIG. 7, the cap screw 63 rigidly connects the vertical frame 66 to the spar 68 utilizing a frictionally connected threaded insert 67. The spar 68 is the central structural member that connects and supports the other structural elements of the apparatus. The vertical frame 66 extends below the waist 15 of the person 12 and provides a mounting surface for the frame clamp 64 and belt attachment assembly 100. The belt 18 slidably connects to the belt attachment assembly 100 and provides the reactionary forces to overcome the torsional forces produced by the handle 22 when pulled on by the user while exercising, thus providing stability of the apparatus.

[0026] With reference to FIG. 4, a clamp 78 rigidly connected to a bracket 80 rigidly and slidably connect the shoulder hook 93 to the spar 68 and provide adjustability of the shoulder hook 93 laterally along the longitudinal direction of the spar 68, to fit individual users of the device. A shaft 82 rigidly connects to both the bracket 80 and a stem bearing 84 providing a structural element to support the device. A rotary-linear axle 86 slidably and rotationally connect to the stem bearing 84, which has an opening through one wall, with suitable clearance for a stem 88 to move linearly and rotationally. The stem 88 rotatably connects to the rotary-linear axle 86 and rigidly connects to a hook 90, which has a pad 92 adhesively attached to it. The stem 88 has symmetrical parallel flats dimensionally limited to the mating groove 87 in the rotary-linear axle 86 to provide limited rotation about its axis that is perpendicular to the rotary-linear axle 38. The stem 88 and rotary-linear axle 86 rotate about and move axially along the longitudinal axis of the stem bearing 84 providing a compliant position of the hook 90 and pad 92 on the shoulder 14 of the person 12. The compliant position distributes the unit loading generated when the hand of the person 12 pulls the handle 22 to provide exercise. With reference to FIG. 10, the section view of the shoulder hook 93 illustrates the stem 88 connection to both the hook 90 and the rotary linear axle 38.

[0027] With reference to FIG. 9, a plug 110 is frictionally inserted into the end of the handle 22, covering the sharp edge, to protect the user and other objects from scratches and providing a lead for frictionally connecting an optional handgrip 108 to the handle 22. The optional handgrip 108 is the kind used on golf clubs and available at most sporting goods suppliers such as Golf Smith at 11000 North IH-35 Austin Tex.

[0028] With reference to FIG. 5, a belt frame clamp 94 rigidly connects a belt attachment assembly 100 to the vertical frame 66. The belt frame clamp 94 rigidly connects to a belt support 96 that rigidly connects to a support loop 97 creating a structurally supported rectangular hole for a slidable belt 18 connection. With reference to FIG. 8, it shows the belt frame clamp 94 attributes for clamping the belt attachment assembly 100 to the frame.

[0029] In operation with reference to FIG. 1, a person 12 using the shoulder mounted walking exerciser 20 places it on their back by resting a shoulder hook 93 on each shoulder 14 and fastening the belt 18 around his or her waist 15. The compliant motions of the shoulder hook 93 provide easy and comfortable support of the apparatus on each shoulder 14 of the person 12. With the shoulder mounted walking exerciser 20 in place the person 12 places a hand at the end of each handle 22 and starts walking while simultaneously and alternately pulling a handle 22 toward his or her body. Also a person 12 may pull each handle 22 simultaneously and use the apparatus while standing or setting. The handle 22 provides a constrained resistive motion the person 12 must overcome when pulling on it, thus producing exercise and muscle toning while walking. The handle 22 moves in an arc about its axle 38 located near the backside of the user. Changing the distance the user moves the handle 22 will increase or decrease the resistive force on the handle 22 and the amount of exercise received from the apparatus. The source of the resistive force on the handle 22 is from the handle spring 56 attached to the frame and the axle 38 utilizing a number of linkage elements. With reference to FIG. 2, illustrating each handle 22 of the shoulder mounted walking exerciser 20, folded down, in position for transporting and storing it.

[0030] Since other modifications and changes varied to fit particular operating requirements and environments will be apparent to those skilled in the art, the invention is not considered limited to the example chosen for purposes of disclosure, and covers all changes and modifications which do not constitute departures from the true spirit and scope of this invention.

[0031] Having thus described the invention, what is desired to be protected by Letters Patent is presented in the subsequently appended claims.

What is claimed is:

1. A shoulder mounted walking exerciser for increasing the amount of exercise experienced by an user during the time spent walking, comprising:

- means for providing a controlled resistant motion the user must overcome to produce exercise;
- means for locking a handle in a desired position quickly and easily;
- means for receiving the bayonet to lock the handle in the use position;
- means for receiving the bayonet to lock the handle in the stow position;
- means for providing locked positions of the handle and connecting the handle to the axle;
- means for providing rotation of the handle and transmitting the handle spring force to the said handle required to produce exercise, slidably and rigidly connected to said means for providing locked positions of the handle and connecting the handle to the axle;
- means for providing force for the handle that the user must overcome to produce exercise;
- means for providing a structural member for counteracting the torsional forces produced by the handle during use of the device and providing mounting surfaces for the frame clamp and belt attachment;
- means for being the main structural member to which other parts are connected, rigidly connected to said means for providing a structural member for counteracting the tor-

- sional forces produced by the handle during use of the device and providing mounting surfaces for the frame clamp and belt attachment;
- means for supporting a shaft journal, rigidly connected to said means for being the main structural member to which other parts are connected;
- means for providing a journal for the axle, rotatably connected to said means for supporting a shaft journal, and rigidly connected to said means for providing rotation of the handle and transmitting the handle spring force to the said handle required to produce exercise;
- means for providing a common support for each axles at the center of the device's frame, rotatably connected to said means for providing a journal for the axle, and rigidly connected to said means for being the main structural member to which other parts are connected;
- means for providing vertical support for the device during its use, rigidly connected to said means for being the main structural member to which other parts are connected;
- means for supporting the rotary-linear axle;
- means for providing a compliant motion of rotation and linear movement for the shoulder hook, rotatably connected to said means for supporting the rotary-linear axle;
- means for connecting the hook to the rotary-linear axle, rotatably connected to said means for providing a compliant motion of rotation and linear movement for the shoulder hook;
- means for supporting the device on the user's shoulders, rigidly connected to said means for connecting the hook to the rotary-linear axle;
- means for cushioning and distributing the load of the device on the user's shoulders, adhesively connected to said means for supporting the device on the user's shoulders;
- means for connecting the belt to the frame, rigidly and slidable connected to said means for providing a structural member for counteracting the torsional forces produced by the handle during use of the device and providing mounting surfaces for the frame clamp and belt attachment;
- means for securing the device to the user and counteracting the torsional loading produced by the handle during use of the device, slidingly connected to said means for connecting the belt to the frame;
- means for providing user comfort, frictionally connected to said means for providing a controlled resistant motion the user must overcome to produce exercise; and
- means for covering up the handle's sharp edges and providing a lead for applying the grip, frictionally connected to said means for providing a controlled resistant motion the user must overcome to produce exercise.

2. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for providing a controlled resistant motion the user must overcome to produce exercise comprises a hollow cross section, light weight and adequate strength handle, having a shape starting at the user's shoulder; vertically upwards then bends vertically forward; then bends downwardly forward to the user's shoulder height.

3. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for locking a handle in a

desired position quickly and easily comprises a bayonet, having a material of low friction bearing properties and a serrated grip.

4. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for receiving the bayonet to lock the handle in the use position comprises a cavity a, having a surface deviation of precisely removed material from its supporting mass to fit its function.

5. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for receiving the bayonet to lock the handle in the stow position comprises a cavity b, having a surface deviation of precisely removed material from its supporting mass to fit its function.

6. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for providing locked positions of the handle and connecting the handle to the axle comprises a detent base, having cavity a and cavity b.

7. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for providing rotation of the handle and transmitting the handle spring force to the said handle required to produce exercise comprises an axle, having properties of a hollow cross section and material that is of proper strength and lightweight.

8. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for providing force for the handle that the user must overcome to produce exercise comprises a handle spring, having tension force.

9. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for providing a structural member for counteracting the torsional forces produced by the handle during use of the device and providing mounting surfaces for the frame clamp and belt attachment comprises a vertical frame, being a structural member and having a hollow cross section of light weight material.

10. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for supporting a shaft journal comprises an end bearing, having low friction.

11. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for providing a common support for each axles at the center of the device's frame comprises a center bearing, having low friction.

12. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for providing vertical support for the device during its use comprises a shoulder hook, having compliant properties to distribute forces on the shoulder of a person using the device and the elements: clamp, bracket, shaft, stem bearing, rotary-linear axle, stem, hook and pad.

13. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for supporting the rotary-linear axle comprises a stem bearing, having a tubular shape and light weight low friction material.

14. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for providing a compliant motion of rotation and linear movement for the shoulder hook comprises a rotary-linear axle, having a cylindrical shape with a longitudinal groove radially positioned on its surface to accept a stem.

15. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for connecting the hook to the rotary-linear axle comprises a stem, having parallel flats on its cylindrical shape that are properly sized with its mating part to allow limited rotation.

16. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for supporting the device on the user's shoulders comprises a shape that complies to the persons shoulder, a material of light weight and proper strength hook.

17. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for securing the device to the user and counteracting the torsional loading produced by the handle during use of the device comprises an easily adjustable belt.

18. The shoulder mounted walking exerciser in accordance with claim 1, wherein said means for providing user comfort comprises an accessory optional handgrip, having an adaptable elastic material that is comfortable on the user's hands.

19. A shoulder mounted walking exerciser for increasing the amount of exercise experienced by an user during the time spent walking, comprising:

a hollow cross section, light weight and adequate strength handle, having a shape starting at the user's shoulder; vertically upwards then bends vertically forward; then bends downwardly forward to the user's shoulder height, for providing a controlled resistant motion the user must overcome to produce exercise;

a bayonet, having a material of low friction bearing properties and a serrated grip, for locking a handle in a desired position quickly and easily;

a cavity a, having a surface deviation of precisely removed material from its supporting mass to fit its function, for receiving the bayonet to lock the handle in the use position;

a cavity b, having a surface deviation of precisely removed material from its supporting mass to fit its function, for receiving the bayonet to lock the handle in the stow position;

a detent base, having cavity a and cavity b, for providing locked positions of the handle and connecting the handle to the axle;

an axle, having properties of a hollow cross section and material that is of proper strength and lightweight, for providing rotation of the handle and transmitting the handle spring force to the said handle required to produce exercise, slidably and rigidly connected to said detent base;

a handle spring, having tension force, for providing force for the handle that the user must overcome to produce exercise;

a vertical frame, being a structural member and having a hollow cross section of light weight material, for providing a structural member for counteracting the torsional forces produced by the handle during use of the device and providing mounting surfaces for the frame clamp and belt attachment;

a spar, being a main structural member and having properties of a hollow cross section, for being the main structural member to which other parts are connected, rigidly connected to said vertical frame;

an end bearing, having low friction, for supporting a shaft journal, rigidly connected to said spar;

an axle journal, for providing a journal for the axle, rotatably connected to said end bearing, and rigidly connected to said axle;

- a center bearing, having low friction, for providing a common support for each axles at the center of the device's frame, rotatably connected to said axle journal, and rigidly connected to said spar;
- a shoulder hook, having compliant properties to distribute forces on the shoulder of a person using the device and the elements: clamp, bracket, shaft, stem bearing, rotary-linear axle, stem, hook and pad, for providing vertical support for the device during its use, rigidly connected to said spar;
- a stem bearing, having a tubular shape and light weight low friction material, for supporting the rotary-linear axle;
- a rotary-linear axle, having a cylindrical shape with a longitudinal groove radially positioned on its surface to accept a stem, for providing a compliant motion of rotation and linear movement for the shoulder hook, rotatably connected to said stem bearing;
- a stem, having parallel flats on its cylindrical shape that are properly sized with its mating part to allow limited rotation, for connecting the hook to the rotary-linear axle, rotatably connected to said rotary-linear axle;
- a shape that complies to the persons shoulder, a material of light weight and proper strength hook, for supporting the device on the user's shoulders, rigidly connected to said stem;
- a pad, having an adaptable elastic material, for cushioning and distributing the load of the device on the user's shoulders, adhesively connected to said hook;
- a belt attachment assembly, having parts, belt frame clamp, belt support, support loop, for connecting the belt to the frame, rigidly and slidable connected to said vertical frame;
- an easily adjustable belt, for securing the device to the user and counteracting the torsional loading produced by the handle during use of the device, slidingly connected to said belt attachment assembly;
- an accessory optional handgrip, having an adaptable elastic material that is comfortable on the user's hands, for providing user comfort, frictionally connected to said handle; and
- an acetal material plug, for covering up the handle's sharp edges and providing a lead for applying the grip, frictionally connected to said handle.

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