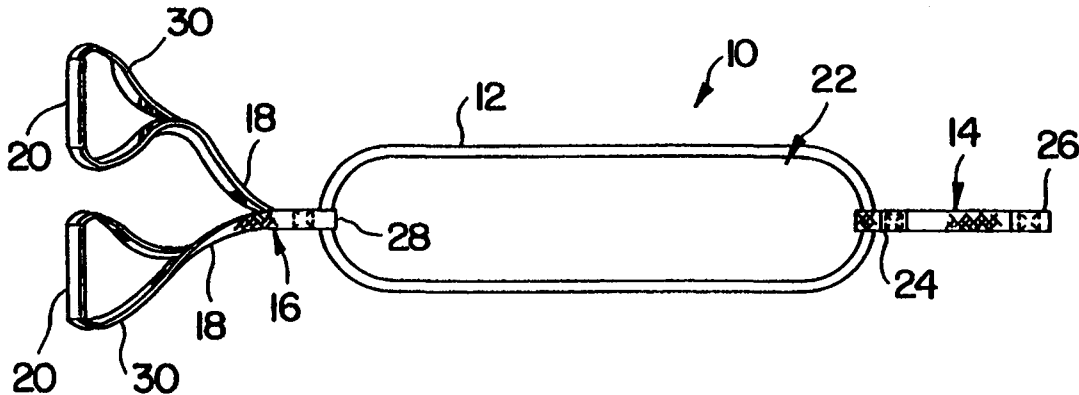




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>6</sup> : <b>A63B 21/04</b></p>	<p><b>A1</b></p>	<p>(11) International Publication Number: <b>WO 00/10647</b> (43) International Publication Date: 2 March 2000 (02.03.00)</p>
<p>(21) International Application Number: PCT/US99/22745 (22) International Filing Date: 25 August 1999 (25.08.99) (30) Priority Data: 09/139,244 25 August 1998 (25.08.98) US (71)(72) Applicants and Inventors: NIES, Eric, John [US/US]; 510 Woodland Road, West Allenhurst, NJ 07711 (US). NIES, John, Richard [US/US]; 304 Lakeview Avenue, Ocean Township, NJ 07712 (US). (74) Agent: MARLOTTE, Todd, E.; Suite 200, 704 South 18th Street, Arlington, VA 22202 (US).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>

(54) Title: PORTABLE EXERCISE APPARATUS



(57) Abstract

This invention is a portable exercise apparatus which comprises a tension member (12), coupling device, attachment strap (14), and handle assembly (16). The tension member is made of tubular elastic. The coupling device secures the ends of the tension member together to form a loop. The attachment strap is coupled to the elastic tension member through a loop (24) at the first end of the attachment strap. The handle assembly extends from the first end (16) to a pair of handles (20). The portable exercise apparatus is capable of collapsing into a storage configuration.

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**Title of the Invention**

PORTABLE EXERCISE APPARATUS

**Background of the Invention**

5           This invention relates generally to exercise equipment and more particularly, to a lightweight, portable exercise apparatus which utilizes a resistance element in conjunction with a plurality of handles and attachment devices to perform a wide variety of cardiovascular and muscle strengthening exercises in  
10 most any location.

          The use of exercise equipment to increase strength and improve fitness has been known to the public for quite some time. However, in more recent times, the general awareness that there is a direct relationship between fitness and one's health  
15 has significantly risen. In particular, the importance of regular cardiovascular and muscle training with respect to one's health has been clearly established by health experts and the medical profession. In fact, the medical profession strongly promotes an intelligently applied exercise program, including  
20 both weight training and cardiovascular training, as a way to both lengthen and improve the quality of one's life, overcome physical disfunction, as well as to provide other life related advantages.

          In conjunction with this increased awareness of the  
25 benefits of a fitness program is a growing social acceptance of exercise in general. As a result of this increasing awareness and popularity, the demand for exercise equipment has also increased. Particularly, the demand for new and improved exercise equipment which allows for simple and safe work outs  
30 while effectively isolating a particular muscle group has greatly increased.

          Exercise facilities, such as gyms, health clubs and similar facilities, typically offer a variety of such equipment. These work out facilities have the advantage of large budgets which  
35 can afford the latest equipment and provide the required floor space. However, such work out facilities are often undesirable because, among other things, they have expensive membership fees

and are commonly subject to over-crowding. In addition, few work out facilities are conveniently located, requiring a particular user to drive and find parking. Thus, even a member who wants or needs to work out may avoid the work out facility because of these inconveniences, including, lack of energy or motivation to both drive to the facility and exercise.

In addition to the many disadvantages of the larger work out facilities described above, many people prefer to exercise at home, at their office or even at smaller or more local work out facilities, such as apartment or condominium work out rooms. However, these smaller work out facilities tend to have a limited number and type of equipment. A person may find that a complete work out is not possible at such a smaller facility or even at home. Thus, there is a need for an exercise device which could be used within the home, at the office or even at a smaller facility, which could provide an efficient work out and also could supplement existing equipment. There is also a need for such a device to be sufficiently compact so as to readily store and transport when not in use.

In addition to the disadvantages associated with all work out facilities, there is also the problem that one might not even be available. For example, when traveling or when in a more rural area, a person may desire a work out, but not have access to any work out equipment. Even if the hotel or local area has a work out room, it may be lacking in equipment, busy, closed or even undesirable. In addition, when traveling it is often difficult to devote much time to exercise. Thus, there is a need for an exercise device which is sufficiently compact and simple to use that a person could bring it with them while traveling and readily accomplish an efficient work out at a convenient time.

There is also a need for such a device that can be easily utilized at home, in the office or a hotel room, while on vacation or at any other number of locations.

### Summary of the Invention

The present invention overcomes the aforementioned problems by providing a portable exercise device that is truly portable and both easy and effective at exercising muscles. The use of flexible and lightweight materials which are constructed to be collapsible into a very compact storage configuration, allows for excellent portability. In addition, limiting the essential components to three simple parts, allows the present exercise device to be inexpensive to manufacture as well as quite simple to use. Further, the use of an attachment strap and handle assembly which are looped around a circular elastic tension member provides for unique versatility and interchange ability of components.

The present invention is generally directed to a portable exercise device for exercising the major muscles of the human body and particularly, the abdominal muscles. Broadly speaking, an embodiment of a portable exercise device according to the present invention includes an elastic cord or tension member which extends between opposing ends. A coupling device secures the ends together to form a continuous loop. An attachment strap having a loop at a first end and an enlarged portion at an opposing end is coupled to the tension member and adapted to allow removable coupling within the spacing formed between a closed door and a respective door jam. The loop at the first end passes around the tension member and secures the two together. The enlarged portion of the attachment strap is sufficiently sized to prevent passage between the jam and the closed door.

A flexible handle assembly is also coupled to the tension member. The handle assembly includes a first loop at a first end and extends to a handle at a second end. The first loop is formed around the tension member, securing the handle assembly to the tension member. The second end is formed into a second loop which passes through and secures a handle. The exercise device may be collapsed into a storage configuration and released into an operative configuration.

In another aspect of the present invention, the portable exercise device includes a handle assembly which has a handle strap coupled to a pair of spaced apart handles. In this aspect, the handle assembly comprises at least one strip of a flexible material. The strip of material is formed into the first loop at the first end and extends to form two separate loops at second or distal ends. Each of the second loops passes through a tubular handle.

In yet another aspect of the present invention, the portable exercise device includes a swivel connection inserted between the tension member and the handles. The swivel is coupled to the handle straps somewhere between the first loop and the distal second loops.

In yet another aspect of the present invention, the portable exercise device includes a tubular mesh sleeve which tightly surrounds the exterior of the elastic cord. The mesh is made from a flexible and elastic material so that it moves and stretches with the elastic tension member. The mesh extends along at least a portion of the circumference of the circular tension member.

These and other features and advantages of the invention will be apparent to those of ordinary skill in the art in view of the detailed description of the preferred embodiments, which is made with reference to the drawings, a brief description of which is provided below.

#### **Brief Description of the Drawings**

FIG. 1 is a top view of an embodiment of a portable exercise device constructed according to the principles of the present invention;

FIG. 2 is a perspective view of the exercise device of FIG. 1 showing the device secured within a doorway;

FIG. 3 is a perspective view of the exercise device of FIG. 2 showing the device being used;

FIG. 4 is a perspective view of the exercise device of FIG. 1 showing the device in a storage configuration;

FIG. 5 is a top view of an alternative embodiment of a portable exercise device constructed according to the principles of the present invention;

FIG. 6 is a top view of a second alternative embodiment of a portable exercise device constructed according to the principles of the present invention; and

FIG. 7 is a top view of a third alternative embodiment of a portable exercise device constructed according to the principles of the present invention.

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#### **Detailed Description of the Preferred Embodiment**

Referring now to the drawings, wherein like reference numerals designate like parts throughout the several views and embodiments, a portable exercise device is illustrated in FIG. 1 and designated by reference numeral 10. As shown, the portable exercise device 10 includes a corded elastic tension member 12, an attachment strap 14 and a handle assembly 16. The handle assembly 16 further include a handle strap 18 and a pair of attached handles 20.

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More specifically, the portable exercise device 10 generally includes three simple parts, the attachment strap 14, the handle assembly 16 and the elastic tension member 12. The use of only three parts simplifies the present exercise apparatus 10 and its use while keeping manufacturing costs low. The elastic tension member 12, in conjunction with a coupling device 22, is advantageously used to secure the components together. The coupling device 22 secures the ends of the tension member 12 together. Preferably, the coupling device 22 allows separation and reattachment of the ends of the tension member 12 to allow versatility, such as repositioning or even replacement of the supported attachment and handle assemblies 14 and 16.

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The tension member 12 comprises a continuous length of a flexible elastic member having a corded shape, such as a rubber or other elastic cord. In the illustrated embodiment, the tension member 12 extends between two ends and the coupling device 22 is used to secure the ends together and form the

continuous loop of elastic corded material. The tension member 12 has a relaxed or unstretched state, i.e., without any tension in the tension member, and a tension or stretched state, i.e., supporting a tension in the tension member. When elongated or otherwise stretched, the tension member 12 creates a resistance to further elongation and further, attempts to return to it's relaxed state. Thus, the tension member 12 has responsive qualities similar to a spring, but without the weight and other disadvantages of a spring.

The tension member 12 comprises a section of an elastic corded material that is capable of repetitive stretching and relaxing cycles without weakening, wearing out and preferably without altering its resistive characteristics. Indeed, it is important that the elastic tension member 12 be made from a tough material and have a high breaking strength so that it is not altered or broken during use. Preferably, the tension member is made from a 100% rubber compound. A portable exercise apparatus which is designed for use by females preferably has an elastic tension member which is a 9mm solid rubber tube. On the other hand, a portable exercise apparatus which is designed for use by males preferably has an elastic tension member which is a 12mm solid rubber tube. The elastic tension member is preferably made by pouring molten rubber compound into a mold.

Alternatively, the elastic tension member 12 may be made from surgical type tubing, or the like, which is commonly known to those of skill in the art of such exercise devices. An example of such tubing can be obtained from Spri Products, Inc, of Mundelein, IL, under the name "EXER TUBE". However, most any type of elastic tubing having the properties described herein or otherwise used in tension type exercise devices may also be used.

Examples of other types of corded tension material which may be used include: rubber, polyurethane, silicone, as well as other plastics. The tension member 12 may be supplied in either a solid or tubular configuration and may have any cross-sectional shape and diameter. In fact, by altering the diameter and/or wall thickness, the resistance and response of



a particular tension member 12 may be tailored. In addition, the material of the tension member 12 may be formulated to have a particular resistance and response. For example, the tension member 12 may be made from a rubber formulated to have a particular elasticity and resistance appropriate for an average human abdominal crunch. However, differing formulations may be used to create exercise devices 10 having differing resistances and responses.

The coupling device 22 is used to attach the two ends of the elastic cord 12 together to form a continuous loop. As shown, the coupling device 22 is cylindrical member having opposing legs, each of which is inserted into an open end of the tubular elastic tension member 12. Each leg of the coupling device has a series of concentric barb-like structures which permanently captures the respective end of the tension member 12. Once forced over the barb-like structures, the tubular tension member 12 cannot be removed from the leg. A suitable coupling device 22 may be obtained from Spri Products, of Mundelein, IL, for use with their "EXER TUBE". However, any type of device for coupling two ends of a corded member may also be used, including devices for coupling about the exterior of the cord.

The coupling device 22 advantageously allows repair or replacement of the tension member 12. For example, repair of a cut or abraded tension member 12 is accomplished by merely cutting the tubular member, removing the damaged portion and reinserting a second coupling device 22 into the newly formed ends. Similarly, replacement of the tension member is accomplished by merely cutting the tension member 12 to remove it from the attached components 14 and 16. A new section of tension member 12 is obtained and connected to the attachment and handle assemblies 14 and 16 and a coupling device 22 is used to connect the ends. The original coupling device 22 may be advantageously removed from the replaced tension member 12 and reused in the new tension member. Thus, replacement of the tension member 12 only requires an additional section of the elastic corded material.

The coupling device 22 may also be configured to be separable. In this configuration, a quick disconnect type connection is provided between the two coupling legs. Separation of the legs of the tension member 12 allows for the installation, removal and or replacement of the attachment strap 14 and handle assembly 16, as well as any other components that may be desirable. For example, a second attachment strap may be desired for a two point securement of the tension member, or even attachment of a second handle assembly. The quick-disconnect is preferably a secure connection having a simple release and may take any configuration of such commonly known devices as is well known to those of skill in the art. In addition, the coupling device 22 may be configured to fit within the tubular tension member 12. In this configuration, the coupling device 22 is actually attached within the tension member 12 inside the distal end such that a sufficient portion of the distal end remains to enclose the coupling.

The coupling device 22 may also include a swivel or a connector, or both. Preferably, this swivel and/or connector is incorporated between the two opposing swivel legs. In addition, the opposing legs of the coupling device 22 may be positioned at any angle relative to each other. Providing a coupling device 22 having an angle may facilitate the stretching and relaxing of the tension member 12 without creating stress concentrations at the coupling itself. The use of a coupling device 22 having an integral swivel advantageously prevents twisting of the tension member 12 during handling or even use of the exercise device 10. The use of a coupling device 22 having an integral connector advantageously allows connection of a third component to the tubular member 12, such as a second attachment strap, handle-type assembly or any other device.

The attachment strap 14 is designed to couple the exercise device 10 to a fixed object, such as a wall, doorway, post or the like. Preferably, the attachment strap 14 is a flexible, or at least partially flexible member which extends between a first strap end 24 and a distal or second strap end 26. The first strap end is adapted to be coupled to the tension member cord 12

while the second strap end 26 is adapted for removable connection with the fixed object. Alternatively, the second strap end 26 may be coupled to a special bracket allowing connection with a particular fixed object, eyebolt, hook or other connection object.

In the illustrated embodiment, the attachment strap 14 is a cloth strap, such as a nylon, forming a relatively small loop at the first end 24 and an enlarged portion at the second strap end 26. The first loop 24 has a diameter sufficient to surround the tension member 12 and secure the two together. In addition the width of the first loop 24 must be sufficient so as not to cut into or over stress the tension member 12 when elongated. The size of this first loop 24 also allows the attachment strap 14 to slide or otherwise move along the perimeter of the circular tension member 12 so as to be positioned exactly opposite the applied force from the handle assembly 16 during use. As shown, the first loop 24 is formed by folding over the cloth strap material and securing the loose end by stitching.

The enlarged portion at the second strap end 26 is configured specifically for attachment between a closed door and a respective door jam. As shown, the enlarged portion of second strap end 26 merely includes multiple folds of the cloth strap 14 which has been secured together, for example through stitching or an adhesive. In particular, the second strap end 26 has been twice folded over and sewn together to form the enlarged distal portion. The narrow thickness of the attachment strap 14 can easily fit through the spacing between a closed door and a respective door jam. However, the greater width of the enlarged portion of second strap end 26 cannot. Thus, the attachment strap 14 is secured within a closed door and easily removed by merely opening the door. A more detailed description of the enlarged portion of second strap end 26 is set forth below.

As an alternative, the second strap end 26 may be configured with almost any attachment device or bracket, such as a second loop or any other type of connector.

The handle assembly 16 is also coupled to the circular tension member 12. As shown, the handle assembly 16 includes the handle strap 18 which is a flexible strip that extends between a handle attachment end 28 and a pair of handle ends 30. Each handle end 30 is adapted to couple to and support each handle 20 or other gripping device. Handles 20 are preferably foam covered plastic handles. The handle assembly 16 provides a gripping means for actually performing the exercises associated with the exercise apparatus 10 of the present invention. Preferably, the flexible strip of material 18 is a cloth material such as a nylon, however, other flexible materials may also be used. For example, a flexible plastic or rubber strip may be used, or even a flexible wire. Preferably, the actual handle 20 or other gripping device is a generally rigid member which facilitates a secure grip during a workout.

The handle assembly 16 is adapted to support the handles 20 in a spaced apart fashion and to directly connect those handles to the tension member 12. More specifically, the handle attachment end 28 forms a loop which surrounds the tension member 12. This configuration of connection allows the handle assembly 16 to move along the perimeter of the tension member 12 and be naturally positioned opposite the attachment strap 14. The loop may be formed in any way as is commonly known, for example by folding the flexible handle strip material 18 over itself and stitching it together. Alternatively, an attachment component such as a clip, buckle or the like may be used to couple the handle assembly 16 to the tension member 12.

In particular, the handle assembly 16 comprises a single strip of flexible material 18 which is folded over and stitched at the folded end to form the loop at the handle attachment end 28. This forms two legs of the handle strap 18 which extend away from the looped attachment end 28. Each of the legs of the flexible strap 18 is passed through a hollow tubular handle 20, folded over and secured to itself to form a pair of second loops. These second loops each capture the respective hollow handle 20. Similar to the loop at the first end 24 of the attachment strap 14, the loop at the handle attachment end 28 of

the handle assembly 16 is sufficiently flexible and wide to generally conform to the shape of the tension member 12 during use. This action prevents high stress concentrations at the handle assembly 14 and tension member 12 interface.

5 The handles 20 are preferably sufficiently rigid to resist significant bending during use and may even be provided with a contoured surface to facilitate gripping. The handles 20 may also be coupled to the handle strap 18 through numerous other methods of attachment. For example, the legs of the handle  
10 strap 18 may be split into opposing halves with each half secured to an opposing side of a particular handle 20.

Referring now to FIGS. 2 and 3, the use and operation of the portable exercise device 10 of the present invention will be described. In general, the present portable exercise device 10  
15 is designed for exercising the major muscles of the human body and particularly, the abdominal muscles. This is accomplished by using the abdominal or other targeted muscles to actually elongate and controllably relax the tension member 12. By targeting the specific muscle which will actually accomplish the  
20 work required to elongate and/or controllably relax the tension member 12, specific muscles may be exercised.

In addition to allowing the targeted exercising of specific muscles, the present exercise apparatus 10 is designed to be motivational because of its high portability and simple methods  
25 of use. As shown in FIG. 2, the exercise device 10 must first be positioned in an unbound or operational configuration. In addition, the exercise apparatus 10 must be secured to a fixed object. As shown, the attachment strap 14 is coupled between a closed door 32 and its respective door jam 34. Preferably, the  
30 attachment strap 14 is positioned over the top of the door 32 with the enlarged portion at the second end 26 exposed into an adjoining room. The enlarged portion is sufficiently sized to prevent passage between the jam 34 and the closed door 32. Placing the attachment strap 14 over the top of the door 32  
35 prevents the possibility of sliding down the side of the door. The enlarged portion may include a door clip which is a "U" shaped device that seats on the top of the door 32.

According to an embodiment of the present invention, the enlarged portion of second strap end 26 is made from a 15mm solid rubber stopper which is 3/4" in length. Polypropylene is then sewn around the 15mm stopper to resemble a sandbag.  
5 Preferably, two solid rubber stoppers are used such that the stoppers are placed on alternative sides of the door during use.

A marker 36 is attached to the second end 26 of the attachment strap 14. The marker 36 is configured and displayed to alert anyone in the adjoining room that the door should  
10 remain closed. The marker 36 may be a simple tag attached to the second end 26 or any other type of warning indicator. For example, the marker 36 may be a flag-type indicator which hangs or dangles from the attachment strap 14.

Once the exercise apparatus 10 is connected to the door 32  
15 or other fixed object, it is ready for use. In one form of exercise, a user kneels in front of and facing the door 32 and grabs the handles 20. The abdominal muscles are then exercised by the user rotating forward at the hips to elongate the tension member 12. This movement requires that the user utilize the  
20 abdominal muscles to elongate the tension member 12. Likewise, the user slowly rotates back to an upright kneeled position resisting the pull from the tension member 12. Repetitive cycles of this movement strengthen the abdominal muscles and can also provide cardiovascular conditioning. Many other forms of  
25 exercises may be accomplished through similar movements as is known to those of skill in the art.

Referring now to FIG. 4, the portable exercise apparatus 10 of the present invention is shown in the collapsed or storage configuration. As previously noted, the exercise apparatus 10  
30 can be folded into this collapsed or storage configuration and also released into an operative configuration. To accomplish the collapsed configuration, the tension member 12 is folded together in a very tight ball and at least one of the second loops at the handle end 30 is passed over the collapsed ball.  
35 Preferably, the other second handle loop is also passed over the collapsed ball of tension member 12 to remain it in the collapsed configuration.

Referring now to FIG. 5, an alternative embodiment of a portable exercise device constructed in accordance with the principles of the present invention is shown. In this embodiment, like features to those of the previous embodiment are designated by like reference numerals succeeded by the letter "A". As illustrated, the portable exercise device 10A includes a tension member 12A, an attachment strap 14A, and a handle assembly 16A. However, in this embodiment, the handle assembly only includes a single handle 20A. In addition, the tension member 12A is a continuous piece of elastic material. Thus, in this embodiment, there is no coupling device (reference numeral 22 in FIG. 1). This embodiment illustrates the wide variety of handle assemblies 16 and handle assembly configurations which may be provided with the present invention.

Referring now to FIG. 6, a second alternative embodiment of a portable exercise device constructed in accordance with the principles of the present invention is shown. In this embodiment, like features to those of the previous embodiments are designated by like reference numerals succeeded by the letter "B". As illustrated, the portable exercise device 10B includes a tension member 12B, an attachment strap 14B, and a handle assembly 16B. However, in this embodiment, the handle assembly 16B includes a swivel 38. The swivel 38 allows the handles 20B to freely rotate during use without twisting or binding. The swivel may also include a quick-connect type coupling which allows the quick variation or even assembly of the handles 20B. Preferably, the swivel 38 is coupled at opposing ends to the handle strap 18B, between the attachment end 28B and the handle end 30B.

The portable exercise apparatus 108 also includes an attachment strap 14B having an attachment bracket 40 coupled to the second end 26B. This bracket 40 is a hook member. Alternatively, the bracket could be for connection with a door, and include tie straps, a loop or have any other configuration. Thus, this embodiment also illustrates the wide variety of configurations of attachment straps 16B and attachment brackets 40 which may be coupled to the attachment strap 14B.

Referring now to FIG. 7, a third alternative embodiment of a portable exercise apparatus constructed in accordance with the principles of the present invention is shown. In this embodiment, like features to those of the previous embodiments are designated by like reference numerals succeeded by the letter "C". As illustrated, the portable exercise apparatus 10C is similarly constructed to the previously described embodiments and includes an attachment strap 14C, a handle assembly 16C, and an elastic tension member 12C. However, in this embodiment, a flexible sleeve 42 surrounds the tension member 12C.

More specifically, the flexible sleeve 42 is a tubular mesh of a flexible material which snugly surrounds the exterior of the elastic tension member 12C. The sleeve 42 is made from a high strength flexible and elastic material so that it moves, stretches and conforms with the movements forced upon the tension member 12C. Examples of materials which may be used for the sleeve 42 include, Lycra, Nylon, rubber or any other material which can provide a high strength elastic sleeve.

As shown, the sleeve 42 extends around the entire circumference of the circular tension member 12C. However, the sleeve 42 may advantageously only cover a portion of the circumference, such as over the coupling device 22C. The flexible sleeve 42 provides a tough, frictionless outer surface which resists wear and chaffing. The sleeve 42 resists wearing of the tension member 12C about the interface with the attachment strap 14C and the handle assembly 16C. Importantly, the sleeve 42 acts to retain the tension member 12C if it is inadvertently broken or if the coupling fails. Thus, the sleeve 42 provides a safety net around the tension member 12C.

The present invention overcomes the aforementioned problems by providing a portable exercise device that is truly portable and both easy and effective at exercising muscles. The use of flexible and lightweight materials which are constructed to be collapsible into a very compact storage configuration, allows for excellent portability. Further, the use of an attachment strap and handle assembly which are looped around the circular



elastic tension member provides for unique versatility and interchange ability of components.

5 It will be understood that various modifications and alternatives can be made to the present invention herein disclosed without departing from the spirit and scope thereof. For example, various types, configurations and quantities of elastic tension members may be used. For example multiple tension members may be used to increase the devices 10 resistance as well as safety. Also, various modifications may be made in the size, thickness, shape, diameter and configuration of the parts and their interaction as well as various overall configurations, including most any variation of decorative form. Therefor, the above description should not be construed as limiting the invention, but merely an 15 exemplification of preferred embodiments thereof. Those of skill in the art will envision other modifications within the scope and spirit of the present invention as defined by the claims appended hereto.

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What is claimed is:

1. A portable exercise device comprising:

an elastic corded material extending between opposing ends;

5 a coupling device connecting the ends of the elastic material to form a continuous loop;

an attachment strap for connection with a fixed object, the attachment strap coupled to the elastic material at a first end and extending to a connection device at a second end;

10 a flexible handle assembly extending between a first end and a second end, the first end being coupled to the elastic material and the second end forming a handle loop; and

a tubular handle;

15 wherein the attachment strap is spaced apart from the handle assembly along the circumference of the elastic material and the handle loop passes through and secures the handle to the handle assembly; and

wherein the exercise device may be collapsed into a storage configuration and released into an operative configuration.

20 2. The exercise device as recited in claim 1 wherein the coupling device comprises a separable joint.

25 3. The exercise device as recited in claim 1 wherein the coupling device comprises opposing ends and each of the opposing ends is adapted for non-removable insertion into the respective ends of the tubular elastic material to form the continuous loop.

30 4. The exercise device as recited in claim 1 wherein the elastic material comprises a surgical type tubing.

35 5. The exercise device as recited in claim 1 wherein the elastic material has a length of between approximately two feet and approximately four feet.

6. The exercise device as recited in claim 1 wherein the connection device is removable from the attachment strap.

7. A portable exercise device comprising:

an attachment strap for removable securement between a closed door and a respective door jam, the attachment strap having a loop at one end and an enlarged portion at an opposing  
5 end, the enlarged portion being sufficiently sized to prevent passage between the closed door and the door jam;

a flexible handle assembly having a first loop at a first end and a handle at an opposing second end; and

a continuous loop of a tubular elastic cord, the elastic  
10 cord passing through the loop formed in the attachment strap and the loop in the handle assembly;

wherein the exercise device may be collapsed into a storage configuration and released into an operative configuration.

15 8. The exercise device as recited in claim 7 wherein the handle assembly comprises a flexible strap and at least one generally rigid tubular handle.

9. The exercise device as recited in claim 8 wherein the  
20 flexible strap of the handle assembly comprises a second loop at the second end, the second loop being adapted to secure the exercise device in the storage configuration.

10. The exercise device as recited in claim 9 wherein the  
25 handle assembly comprises a continuous flexible strap and a pair of tubular handles, the strap being folded at its center to form the first loop and extending to two second ends, each of the second ends forming a second loop which passes through and secures one of the respective handles.

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11. The exercise device as recited in claim 10 wherein the tubular handles are interconnectable to form a single axially aligned handle.

35 12. The exercise device as recited in claim 9 wherein the handle assembly further comprises a swivel coupling between the first loop and the second loop.

13. The exercise device as recited in claim 7 wherein the attachment strap comprises a nylon strap with the loop being formed from a folded over portion of the nylon.

5 14. The exercise device as recited in claim 7 wherein in the enlarged portion forms a second loop.

15. The exercise device as recited in claim 7 wherein the attachment strap has an indicator coupled to the enlarged  
10 portion, the indicator adapted to extend across the door jam and into an adjoining room.

16. The exercise device as recited in claim 15 wherein the indicator includes a warning marking.

15

17. A portable exercise apparatus comprising:

an attachment strap for removable securement between a closed door and a respective door jam, the attachment strap having a loop at one end and an enlarged portion at an opposing  
20 end, the enlarged portion being sufficiently sized to prevent passage of the attachment strap through the space between the closed door and the door jam;

a flexible handle assembly having a first loop at a first end and extending to a pair of spaced apart handles;

25 a tubular elastic cord extending between opposing ends; and a coupling device connecting the ends of the elastic cord to form a continuous loop;

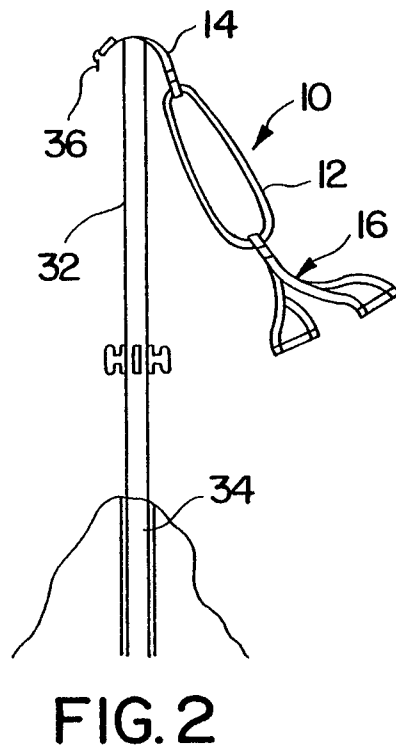
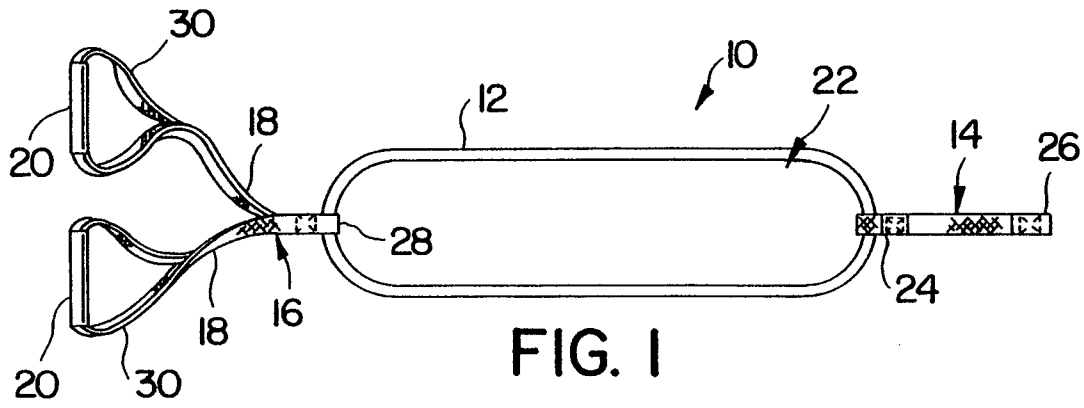
30 wherein the continuous loop of elastic cord passes through the loop formed in the attachment strap and the loop in the handle assembly; and

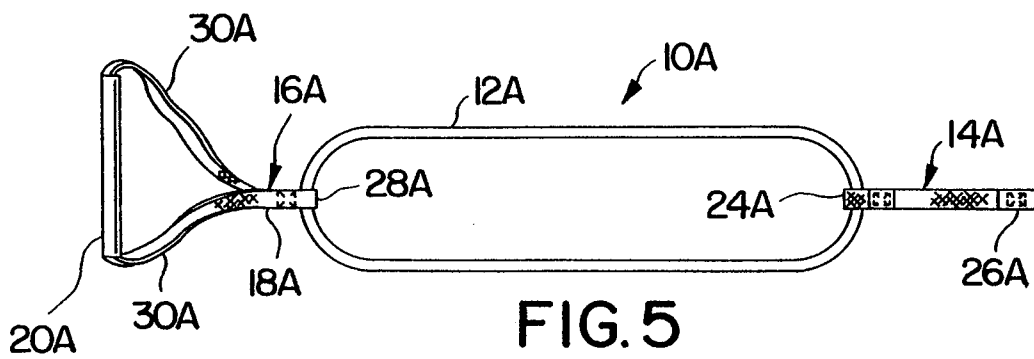
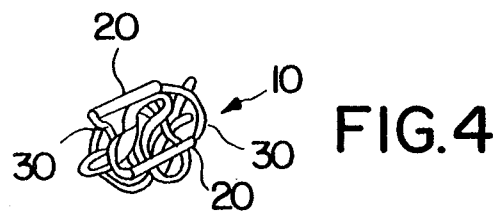
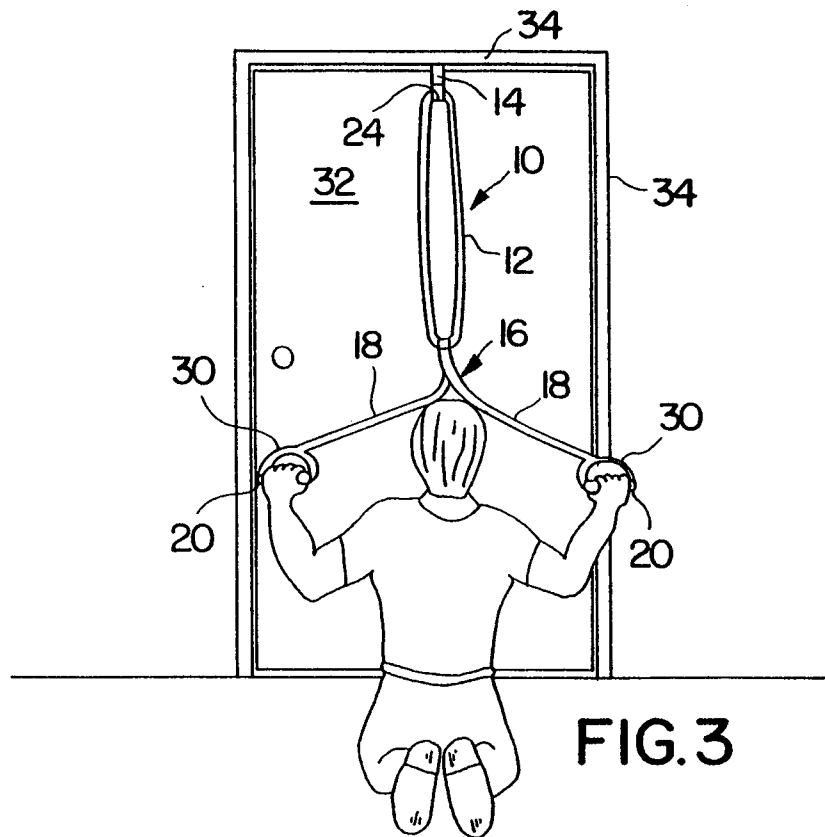
wherein the exercise apparatus may be collapsed into a storage configuration and released into an operative configuration.

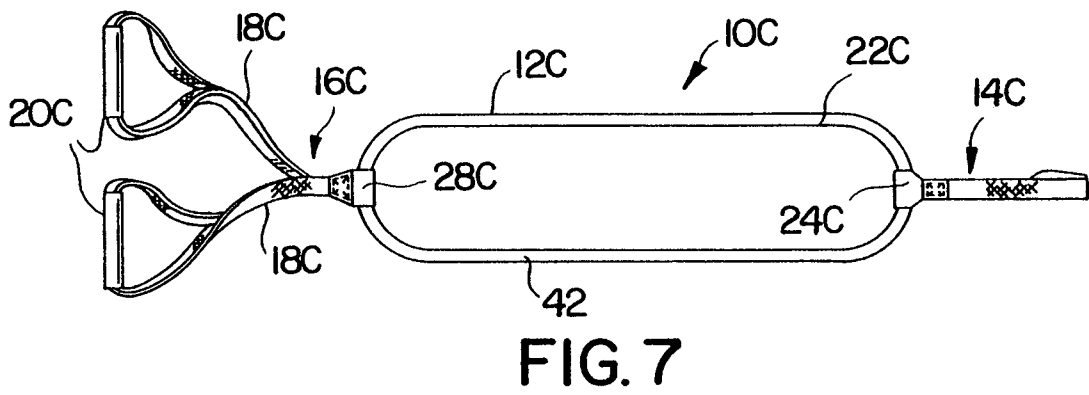
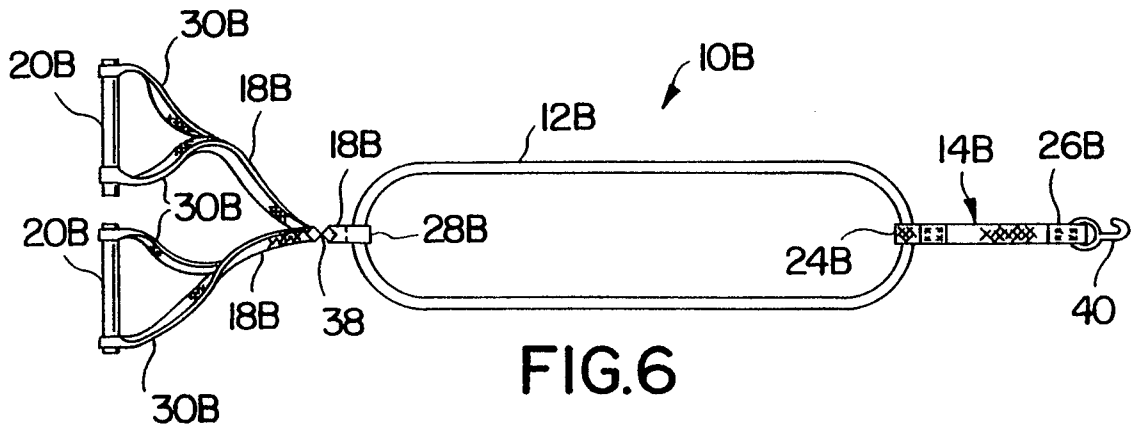
35 18. The exercise apparatus as recited in claim 17 wherein the coupling device comprises a separable joint to allow removal of the attachment strap and the handle assembly.

19. The exercise apparatus as recited in claim 17 wherein the elastic cord has an exterior coloring.

20. The exercise apparatus as recited in claim 17, and further  
5 comprising a tubular elastic mesh surrounding the elastic cord  
and extending along at least a portion of the circumference.









INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/22745

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC(6) :A63B 21/04  
 US CL :482/129  
 According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**  
 Minimum documentation searched (classification system followed by classification symbols)  
 U.S. : 482/121-131, 140, 904

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 4,909,505 A (TEE) 20 March 1990, Figs. 1a, 1b, 3b, 4b, 4c, 4d, 5b.	1-10, 12-14, 17-19 ----- 11, 15, 16 20

Further documents are listed in the continuation of Box C.  See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 06 DECEMBER 1999	Date of mailing of the international search report <b>23 DEC 1999</b>
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