

- [54] **EXERCISING DEVICE**
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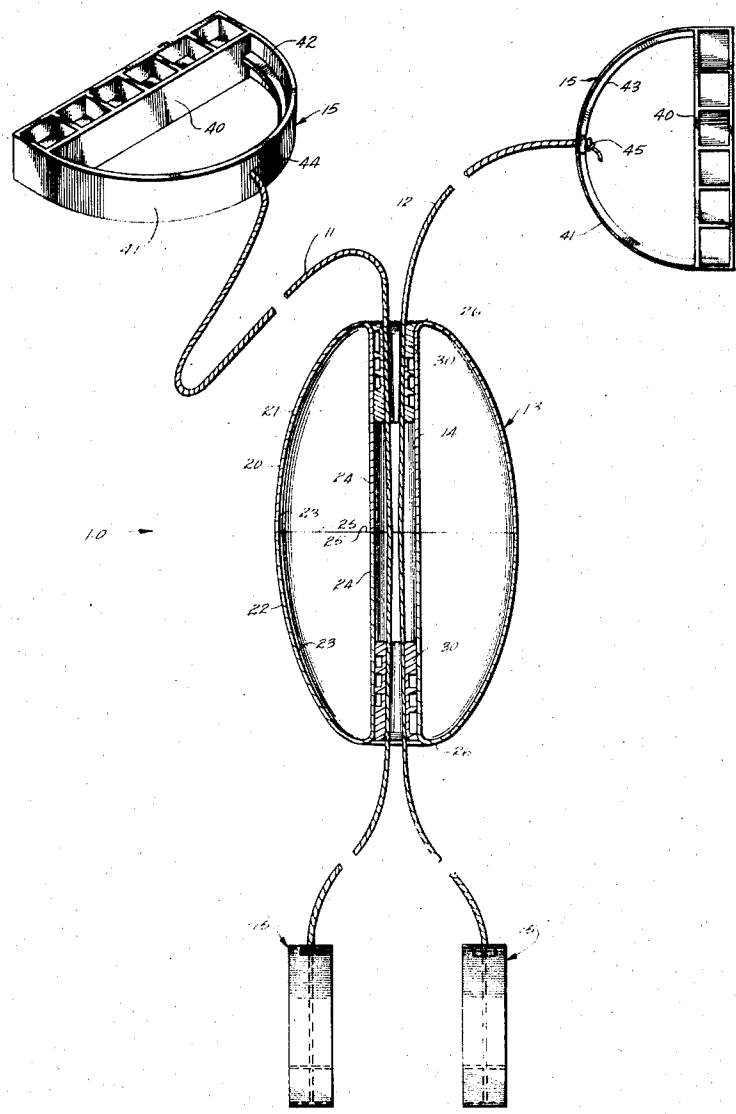
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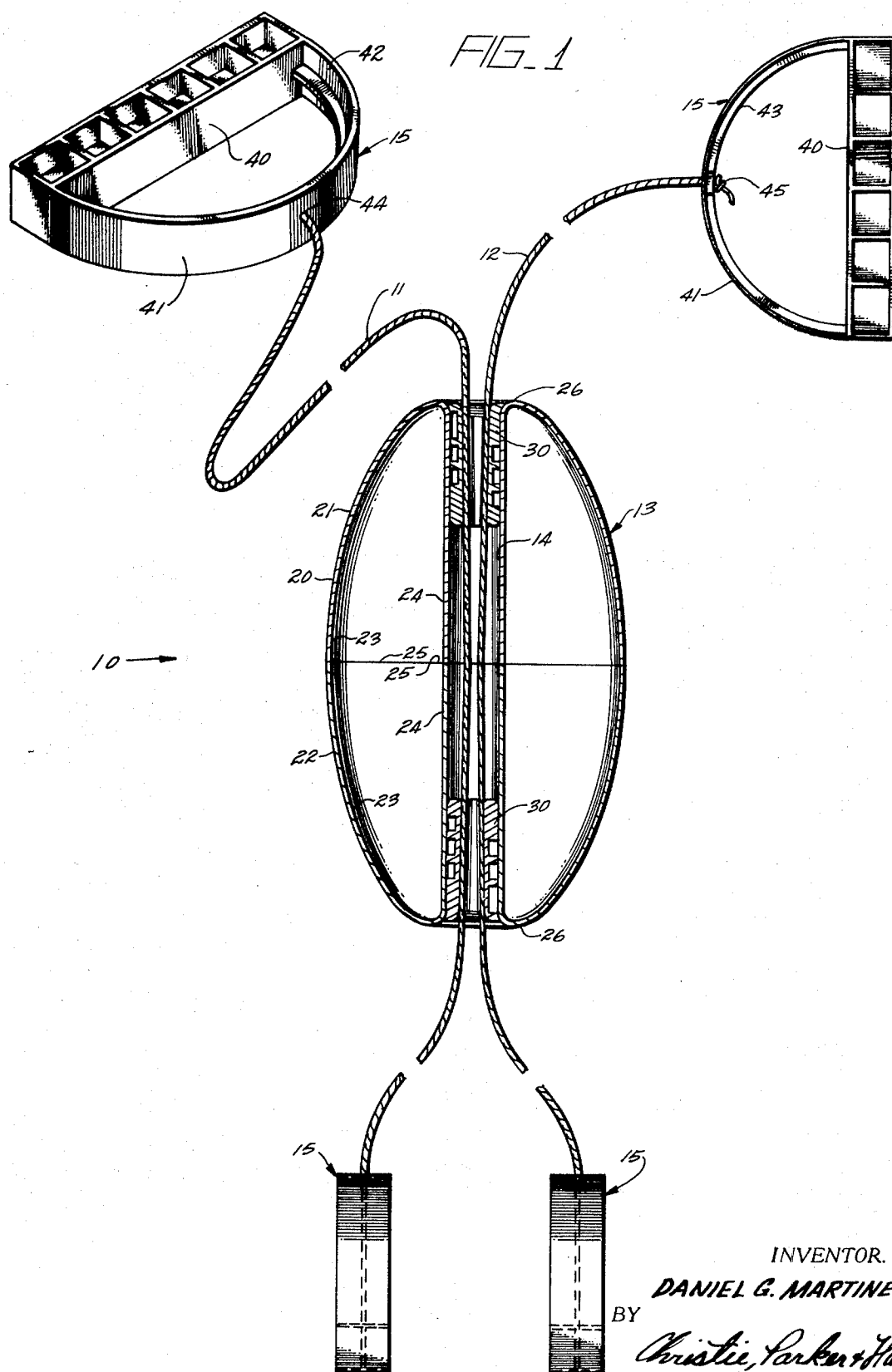
[57] **ABSTRACT**

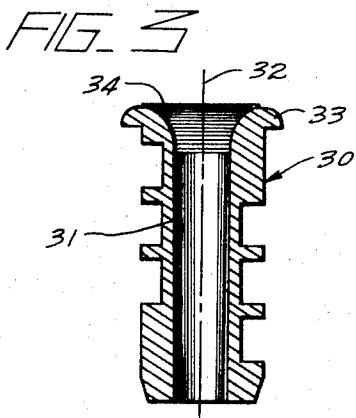
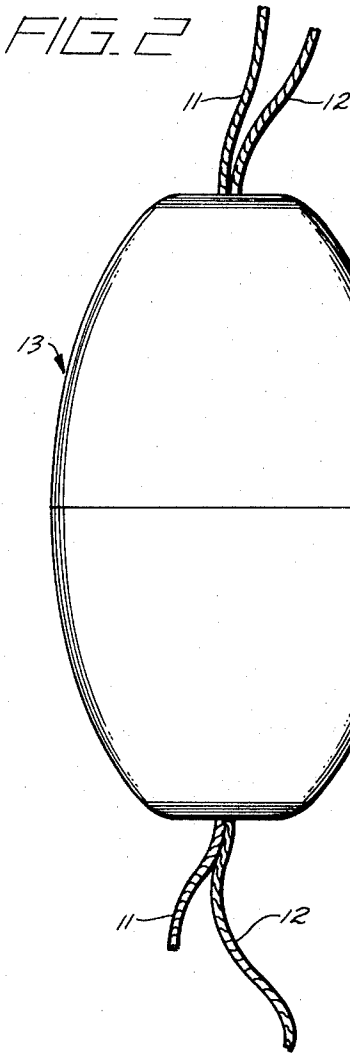
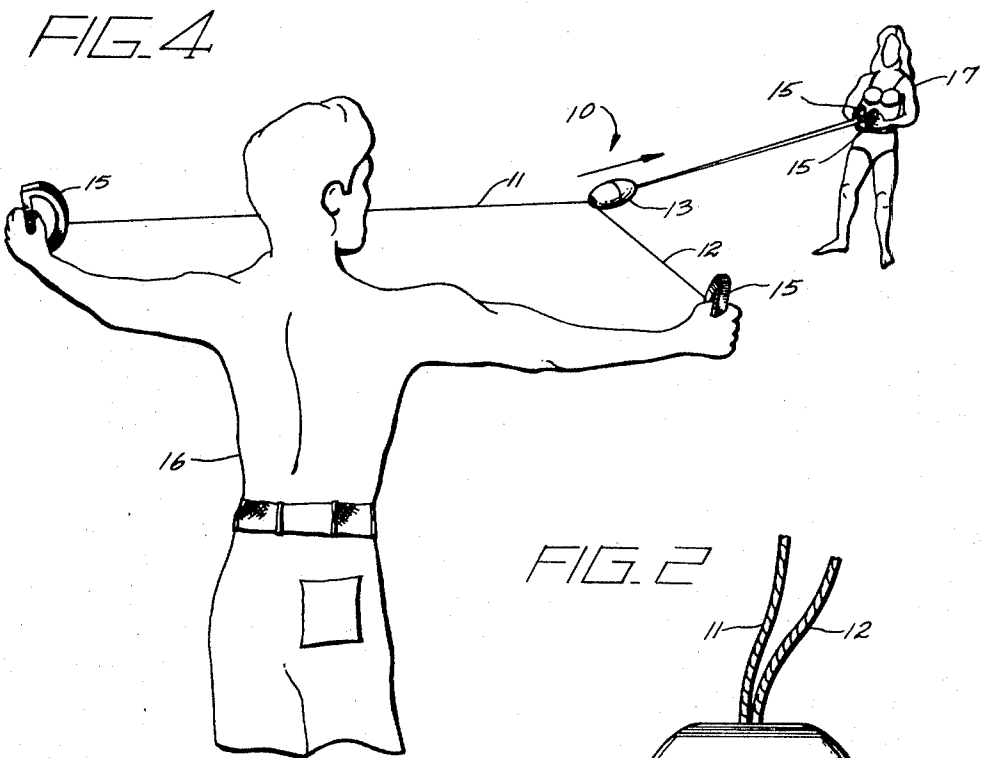
An exercising device includes a pair of elongate flexible cords of substantially equal length which are passed through a hole formed in a shuttle assembly. The cords are passed only once through the hole and are loosely journaled by the shuttle. A handle is connected to each end of each cord so that the shuttle is caused to move rapidly back and forth along the cords when the cords are held relatively taut between two people using the device, and first one person and then the other rapidly moves his handles apart from each other when the shuttle is adjacent him. The cords are of sufficient length and the shuttle is of sufficient weight that enough effort is required to propel the shuttle back and forth along the cords that the device functions effectively as an exercising device which also has significant entertainment value.

15 Claims, 4 Drawing Figures



2 Sheets-Sheet 1





EXERCISING DEVICE

FIELD OF THE INVENTION

This invention pertains to exercising devices. More particularly, it pertains to exercising devices of the type adapted to be used by two people. The device is so arranged as to possess significant entertainment value.

BACKGROUND OF THE INVENTION

Review of the Prior Art

By far the great majority of mechanisms and apparatus provided as physical exercising devices are designed for use by only one person at a time, and also are arranged solely to provide physical exercise at a level required by the particular user. These existing exercising devices provide only very little or no entertainment value. Thus, such devices are used regularly over extended periods of time only by individuals who are dedicated to a physical exercise program. It is common knowledge that persons dedicated to a physical exercise program, based upon the use of existing exercising devices, carry out their exercise program by themselves under solitary conditions apart from others with whom they may be associated in a family or the like.

SUMMARY OF THE INVENTION

This invention provides an improved, efficient, economical and effective exercising device which is adapted for use by two persons and which has high entertainment value. The present exercising device is arranged so that each of two users of the device may operate the device at a level proportionate to his own physical strength without impairing the ability of the other user to operate the device at the same time at a different level proportionate to that individual's physical strength. Thus, father and son may use the present exercising device together, and each may use the device in such manner as to obtain significant exercise, as well as entertainment value from the device.

The high entertainment value of the present exercise device encourages its use over extended periods of time by many individuals, up to four of whom may use the device at any given time as a group, each participating at his own level without impairing the entertainment and exercising benefits obtained from use of the device by others in the group. The device is so constituted that games may be arranged for its use, such as games of competition between individuals in a group, or between groups of users where several exercising devices are available.

The present exercising device is arranged for use both indoors and outdoors and, thus, may be used on a year-round basis by all members of a family.

Generally speaking, this invention provides an exercising device which includes a pair of flexible cords of substantially equal length. The exercising device also includes a shuttle assembly which has a hole formed through it which is greater in diameter than the sum of the diameters of the cords. The cords are passed only once through the shuttle assembly hole so as to be loosely journaled in the hole. Means are connected to each end of each cord adapting each of the cord ends to be held securely in the hand of a user.

DESCRIPTION OF THE DRAWINGS

The above-mentioned and other features of this invention are more fully set forth in the following de-

tailed description of a presently preferred embodiment, which description is presented with reference to the accompanying drawings, wherein:

FIG. 1 is a view of the exercising device showing the shuttle assembly in cross-section;

FIG. 2 is an elevation view of the shuttle assembly with the cords passing through it;

FIG. 3 is an enlarged cross-sectional elevation view of one of the two wear-resistant insert elements which are incorporated in the shuttle assembly shown in FIG. 1; and

FIG. 4 is a perspective view showing one of many possible modes of use of the exercising device.

DESCRIPTION OF THE PREFERRED EMBODIMENT

An exercising device 10 according to this invention, as shown in FIG. 1, includes a pair of elongate flexible cords 11 and 12 which are of substantially identical length. The exercising device also includes a shuttle assembly 13. As shown best in FIG. 2, shuttle assembly 13 is defined to resemble a solid of revolution which has a hole 14 formed through it along its axis of symmetry so that the hole passes through the center of mass of the shuttle assembly. A handle element 15 is connected to each end of each cord. Between the handle elements, cords 11 and 12 are passed only once through the hole formed through the shuttle assembly so that the cords are loosely journaled within the hole.

FIG. 4 illustrates the use of exercise device 10 by a man 16 and a woman 17; it will be understood from the following description, however, that the mode of use illustrated in FIG. 4 is only one of the many manners in which exercising device 10 may be used by as many as four people at one time. Referring to FIG. 4, each of the two users of exercising device 10 grasps the handle at one end of cord 12 in one hand and the handle at the adjacent end of cord 11 in the other hand. The users then move apart from each other until cords 11 and 12 are relatively taut between them. To initiate use of the device, the shuttle is moved toward one or the other users until it is positioned closely adjacent the handles grasped in the hands of that person. The person at the other end of the cord holds his hands together, as shown in the case of woman 17 in FIG. 4. The person adjacent whose body the shuttle is disposed then rapidly moves his hands apart while maintaining tension on the cords. This outward movement of the hands propels the shuttle along the cords toward the other person. Because the cords are loosely journaled within the shuttle, and the hole through the shuttle is straight, the shuttle moves along the cords toward the person whose hands are held together, and such movement occurs at a rate which is related to the rate at which the other person, such as man 16, actually moves his hands apart. Once the shuttle has commenced its travel along cords 11 and 12 toward the other person, i.e., woman 17, the man brings his hands back together so that, once the shuttle reaches the woman, she may move her hands apart, thereby to propel the shuttle back along the cords to the man. The woman should not move her hands apart until the shuttle reaches the handles in her hands or is within about a foot or so of the handles. Premature outward movement of the handles held by woman 17 before the shuttle reaches her will interrupt the movement of the shuttle and make it difficult to

propel the shuttle in the opposite direction back along cords 11 and 12.

As noted above, the mode of use of exercising device 10 shown in FIG. 4 is merely but one of many possible modes of use of the present exercise device. For example, either or both of the users of the device may hold their hands together over their heads and move their hands downwardly apart from each other to propel the shuttle back and forth along the cords. Also, the users of the device may face away from each other and rely upon the "feel" of the device as the shuttle moves back and forth along the cords to ascertain when the particular user should move his hands apart to propel the shuttle. It is also possible for a user to lie on his back and engage his feet in respective ones of handles 15, and thereby operate the device by his legs rather than his arms. Further, the device may be operated by two people at one or both ends of cords 11 and 12. That is, one person may have control of the handles at one end of the cords of the exercising device, whereas at the other end of the cords each of two people may have control of one of the remaining two handles of the exercising device.

It will be apparent from an examination of FIG. 4 and the preceding description concerning FIG. 4, that the rapid, forceful outward movement of the handles 15 at each end of the exercising devices produces beneficial exercise for the user. Continued regular use of the exercising device in the manner described above produces good muscle tone and development in the arms, chest, back and legs of the user, depending upon the manner in which the exercising device is used by the individual.

Shuttle 13, shown in the drawings, is provided in the exterior form of a solid of revolution, and preferably is ellipsoidal in nature. That is, the outer surfaces of shuttle 13 correspond to the surface which is generated by rotation of an ellipse about its major axis. An ellipsoidal configuration of shuttle 13 is preferred since such configuration results in a stream-lined shuttle which moves rapidly and efficiently along cords 11 and 12 as the exercising device is operated in the manner described above. It will be apparent, however, that shuttle 13 may be provided in the form of other solids of revolutions, such as spheres or the like, or may be provided in forms not consistent with that of a solid of revolution. It is preferred, however, that the hole through the shuttle through which cords 11 and 12 are passed be arranged so that the axis of the hole intersects and passes through the center of mass of the shuttle. Such a relationship between the axis of the cord passage and the shuttle center of mass means that the shuttle is stable as it moves along the cords and does not wobble and unnecessarily consume the energy imparted to the device by unnecessary interaction between the shuttle and the cords; instead, the shuttle moves swiftly and smoothly along the cords from one user to the other.

Preferably, shuttle 13 has a body 20 which is fabricated in halves 21 and 22 which are geometrically identical to each other. Each half 21, 22 of the body has an outer wall section 23 and a tubular inner wall section 24, the inner and outer wall sections of each half of the shuttle body being joined to each other at mating edges 25 to which both the inner and outer wall sections of each half extend. The inner and outer wall sections of each half of the shuttle body are faired into each other at their opposite ends, as at 26, as shown in FIG. 1. Preferably, halves 21 and 22 of shuttle body 20 are fab-

ricated by injection molding techniques out of low density polyethylene, although it is within the scope of this invention that the shuttle body may be fabricated of high density polyethylene, or polypropylene, or whatever other material is desired. Where the shuttle body is fabricated of low density polyethylene and has the hollow cross-sectional configuration shown in FIG. 1, the shuttle body is soft and resiliently deformable; this characteristic enables exercising device 10 to be used safely with minimum likelihood of harm to the user whether used indoors or outdoors.

As shown in FIG. 1, the hole 14 longitudinally through shuttle body 13 is defined by the inner surfaces of inner wall sections 24 and is substantially greater in diameter than the diameter of either of cords 11 and 12. An insert element 30 is fixed in hole 14 adjacent each of its ends to provide low-friction, abrasion-resistant cooperation with cords 11 and 12. As shown best in FIG. 3, each insert element is elongated and has a bore 31 formed through its length along an axis 32 of the element. The outer diameter of each insert element along a major portion of its length is sized sufficiently greater than the inner diameter of hole 14 so that the insert elements may be fixed in position within shuttle body by an interference fit with the shuttle body. A circumferential flange 33 is provided around the insert element at one end, as shown in FIG. 3. This flange provides a convenient stop for proper positioning of the insert element in the shuttle body as it is force-fitted into hole 14 during fabrication of the exercise device. Also, as shown in FIG. 3, it is preferred that bore 31 be tapered so as to increase slightly in diameter proceeding from that end of the insert opposite from flange 33 toward a flared outlet end 34 of the bore adjacent flange 33. Flare 34 is desired in the configuration of bore 31 to prevent unnecessary wear of cords 11 and 12 as the exercising device is operated, and also to minimize the friction which would be encountered between the insert element and the cords if the bore terminated at a right angle shoulder or the like.

The diameter of the bore at its smaller end is sized to be greater than the sum of the diameters of cords 11 and 12, it being preferred that cords 11 and 12 are of identical diameter. Preferably, the minimum diameter of bore 31 is on the order of about three times larger than the diameter of one of the cords.

In a presently preferred embodiment of exercising device 10, cords 11 and 12 are provided by $\frac{1}{8}$ inch diameter multistrand braided nylon cord of the type which is often commonly referred to as parachute cord. Such cord has the beneficial characteristics of being strong, flexible and relatively inelastic. Other cord materials may be used, if desired. Polypropylene cord is less strong and more elastic than nylon, but does have the additional beneficial property of being less abrasive than nylon cord in the context of this invention.

It was noted above that insert elements 30 are provided in shuttle 13 to provide abrasion-resistant low-friction bearings for the cords as the shuttle moves back and forth along the cords during use of the device. Preferably, particularly where the cords are fabricated of multi-strand braided nylon, the insert material may advantageously be fabricated of a polycarbonate material such as LEXAN resin available from General Electric Company. It is within the scope of this invention, however, that other insert materials may be used such as polysulfone resins which have high melting tempera-

tures, metals, ceramics such as porcelain, or compression molded materials such as phenolic resins or nylon.

To maximize the entertainment value of exercising device 10, it is desired that shuttle 13 move freely along cords 11 and 12. For this reason, it is preferred, particularly where cords 11 and 12 are fabricated of multi-strand braided nylon, that the cords be at least coated, and preferably impregnated with a material which provides a low coefficient of friction between the cords and insert elements 30. In a presently preferred exercising device, the braided nylon cords are impregnated, not merely surface coated, with a wax. It has been found that WARCO 150-A yellow wax, obtainable from E. S. Brown and Company, Los Angeles, may be used to advantage for this purpose. This wax has a melting temperature of about 160° F and maintains its flexibility at temperatures as low as -30° F. Regardless of the particular wax or solid lubricant material used, it is desired that the material have a relatively high melting point in view of the friction generated between the shuttle and the cord as the shuttle is moved rapidly back and forth along the cords.

As shown best in FIG. 1, each handle 15 includes a grip portion 40 which preferably is straight and has substantial thickness so that this portion of the handle may be gripped securely in the hand of a user of the exercise device. An arcuately curved guard portion 41 is connected across the opposite ends of grip portion 40 to impart a substantially D-shaped configuration to the entire handle. The guard portion has a web element 42 which is smoothly curved in a semi-circular manner between the opposite ends of the grip portion, and which presents a smooth exterior to the outside of the handle. A reinforcing rib 43 is connected to the concave surface of the web and extends along the entire length of the web. The rib lends strength to the guard portion and enables the guard portion of each handle to accommodate the shocks which are imposed to it by the rapidly moving shuttle during use of the exercise device. In a presently preferred exercising device, each handle element 15 is fabricated of injection molded linear polyethylene. This material flexes sufficiently to provide an effective shock absorber in the operation of the exercising device. It should be understood, however, that the nature of the material from which the handles are made is not critical, and that any suitable material may be used, as desired.

As shown in FIG. 1, the end of each cord 11 and 12 is passed through a hole 44 formed through the guard portion of each handle adjacent the midlength of the grip portion of the handle. The end of the cord is secured to the handle by knotting the cord, as at 45, in the space provided in the handle between the grip and guard portions.

The D-shaped configuration of the preferred handles described above adapts the handle for convenient engagement in the hands of the user. Also, this handle configuration accommodates the front portion of the foot of a user of the exercising device so that the device may be used to exercise the leg muscles when used in the manner described above.

To lend aesthetic appeal to the exercising device, the two halves 21 and 22 of shuttle 13 may be fabricated of different colored materials. The handles 15 may be fabricated of an entirely different colored material or may be of the same color as one of the halves of the shuttle.

In a presently preferred exercising device according to this invention, each of cords 11 and 12 is defined by a 20 foot length of $\frac{1}{8}$ inch multi-strand braided nylon cord which has been impregnated with the WARCO 150-A yellow wax identified above. The shuttle of this exercising device is of the ellipsoidal form shown in the drawings, is 9 inches long, and has a 5 inch maximum outer diameter. The minimum diameter of the bore 31 through each of the two insert elements 30 provided in the shuttle of this exercising device is three-eighths inch, and each insert element is 2 inches long; each insert element has an outer diameter of seven-eighths inch along a major portion of its length. The cords of this exercising device are connected to the handle elements in the manner shown in FIG. 1, i.e., as by knotting after passing the cords through the hole formed in the guard portion of the handle element. This mode of connection of the cords to the handle elements makes it possible for the user of the exercising device to shorten the cords as desired.

It has been found that a 20 foot cord length provides an exercising device suitable for effective entertainment and exercising applications by adults and teenagers. It is within the scope of this invention, however, that other cord lengths, say cord lengths in the range of from 10 feet to 50 feet may be used effectively, although it should be noted that the longer the length of the cords the greater the physical strength required to operate the device to maximum advantage, both in terms of its properties as an exercising device and as an amusement or entertainment device.

The present invention has been described above with reference to a single presently preferred embodiment of the invention. Certain materials and dimensional relationships have been identified above merely for the purposes of example. Workers skilled in the art to which this invention pertains will readily appreciate that this invention can take forms other than the specific form illustrated in the drawings and described above, and may be fabricated of materials different from those specifically mentioned above. Accordingly, the foregoing description should not be considered as limiting the scope of this invention.

What is claimed is:

1. An exercising device comprising a pair of cords of substantially equal length, separate means connected to each end of each cord adapting each of the cord ends to be separately held securely in a hand of a user of the device, a shuttle assembly having an axially straight, continuous hole completely therethrough which is greater in diameter than the sum of the diameters of the cords and through the entire length of which the cords are passed once only to be loosely journaled in and freely slidable through the hole and means located at opposite ends of said shuttle assembly to maintain said cords in substantially continuous parallel relation within said shuttle assembly.

2. Apparatus according to claim 1 wherein the hole passes substantially through the center of mass of the shuttle assembly.

3. Apparatus according to claim 1 wherein the hole is effectively defined through a material of the shuttle assembly which is abrasion resistant relative to the cord material.

4. Apparatus according to claim 1 wherein the cords are impregnated with a lubricant material.

5. Apparatus according to claim 4 wherein the lubricant material is a wax.

6. Apparatus according to claim 1 wherein the means connected to each end of each cord comprises a handle element arranged to be gripped by a human hand and to receive a human foot.

7. Apparatus according to claim 1 wherein the means connected to each end of each cord comprises a handle member having a grip portion and a guard portion connected across the grip portion and to which the corresponding cord end is connected.

8. Apparatus according to claim 1 wherein the shuttle assembly is configured as a solid of revolution, and the hole is defined along the axis of symmetry thereof.

9. Apparatus according to claim 8 wherein the shuttle has a body which is fabricated of a relatively deformable material.

10. Apparatus according to claim 9 wherein said means at the opposite ends of said shuttle assembly includes an axially bored insert element received in the hole of the shuttle body at each end thereof for loosely journalling the cords, the bore of each insert having a

diameter greater than the sum of the diameters of the cords.

11. Apparatus according to claim 10 wherein said inserts are fabricated of a material which is more resistant to abrasion by the cords than the material of the shuttle body.

12. Apparatus according to claim 10 wherein the cords have equal diameter, and the insert bore has a diameter on the order of at least about three times the diameter of one of the cords.

13. Apparatus according to claim 12 wherein each insert bore has a length which is substantially greater than its diameter.

14. Apparatus according to claim 13 wherein the length-to-diameter ratio of each insert bore is on the order of about five.

15. Apparatus according to claim 1 wherein the hole has a minimum diameter on the order of at least about three times the diameter of one of the cords, and the hole has a length which is at least about 10 times greater than the diameter of the hole.

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