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[54] **WRIST EXERCISER**

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[52] **U.S. Cl.** ..... **272/67,** 272/83 R, 272/83 A

[51] **Int. Cl.** **A63b 21/32**

[58] **Field of Search** ..... 272/67, 68, 83 R, 272/83 A; 273/81.4; 73/379, 380, 381

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[57] **ABSTRACT**

An exerciser to be used for reinforcing wrist muscles, which comprises a pair of spaced grips to be grasped by left and right hands, a pair of rod members for connecting at the prescribed constant interspace and supporting the grips in a manner such that they can freely turn about their longitudinal axis, and springs for exerting resilient resistance and restoring force upon turning of the grips.

2 Claims, 7 Drawing Figures

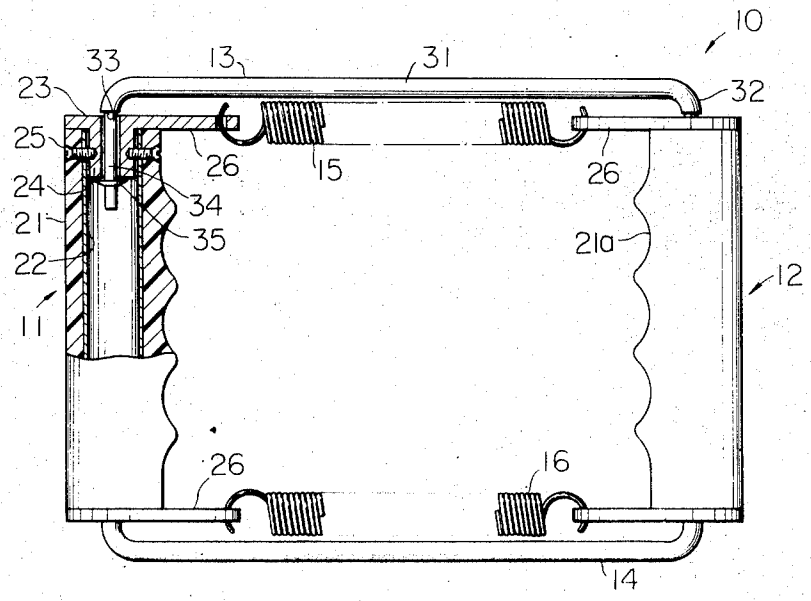


Fig. 1

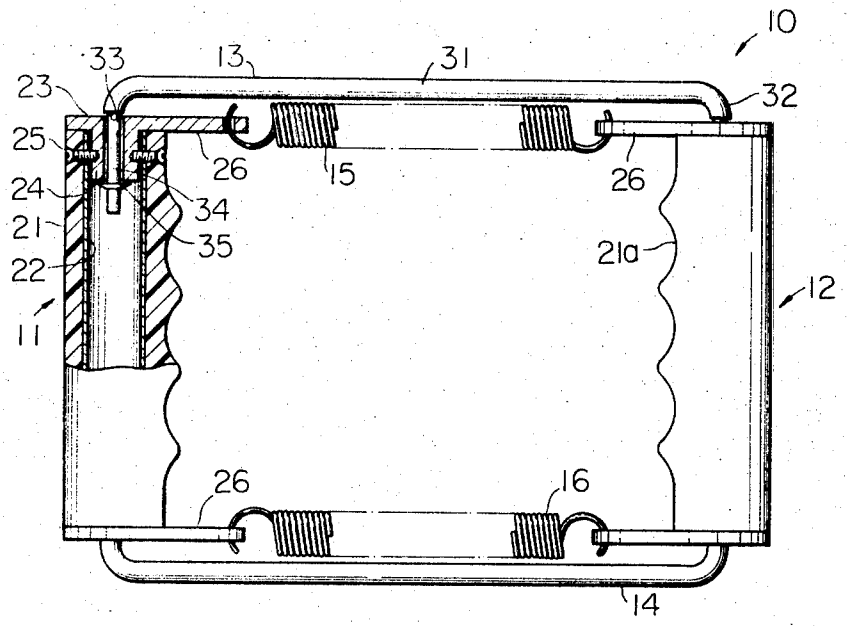


Fig. 1A

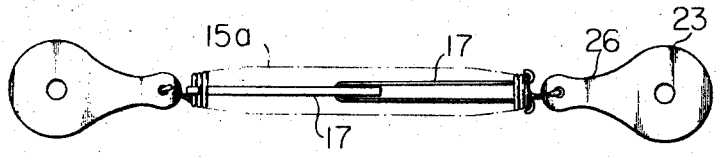


Fig. 2A

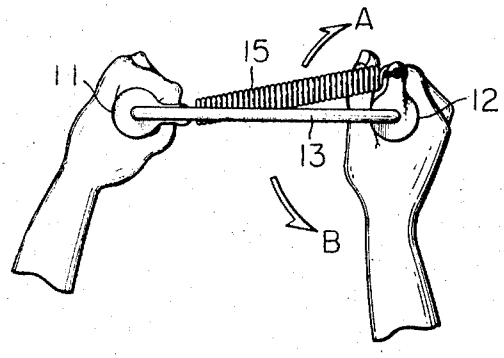


Fig. 2B

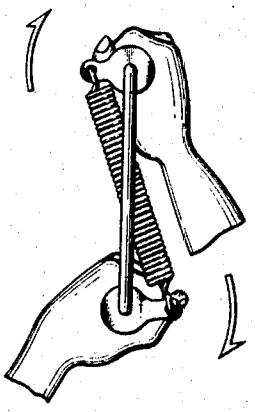


Fig. 3

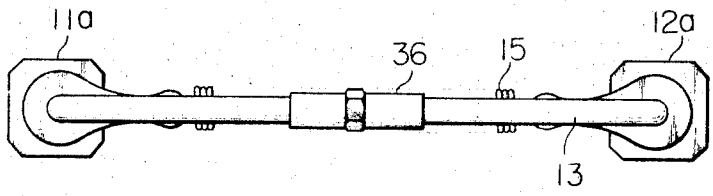


Fig. 4

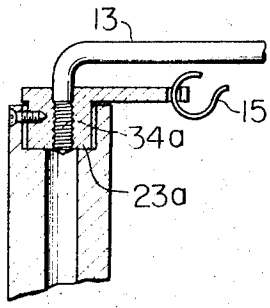
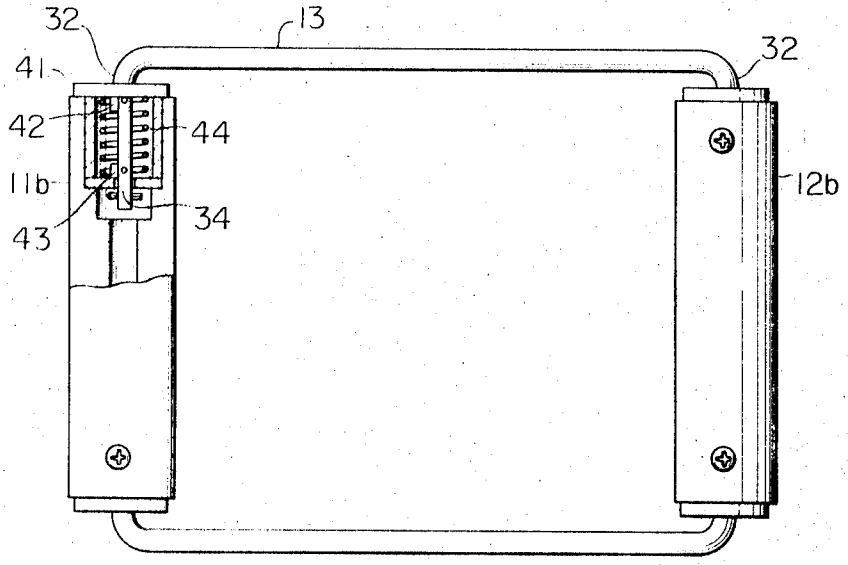


Fig. 5



WRIST EXERCISER

BACKGROUND OF THE INVENTION

My invention generally concerns a physical training apparatus and, more particularly, an apparatus suitable for use in reinforcing the muscular strength of wrists.

It is generally accepted that in various sports games the part played by a wrist or wrists of a player is very important, and it is well known that to have a wrist strength which is very powerful is highly advantageous in the cases of, for example, boxing, swimming, tennis, golf, baseball and so forth.

Currently, for muscular training of wrists various exercisers are utilized, such as iron dumbbells, spring expanders and so forth. However, such training methods which rely on use of those conventional exercisers are not necessarily satisfactory. For instance, these methods require a relatively broad space in which to practice same. Further, to practice these methods is likely to harden wrist muscles rather than impart to them flexible or resilient strength.

The principal object of my invention is therefore to provide a wrist exerciser capable of imparting a resilient reinforcement to the user's wrist muscles.

A further object of the invention is to provide a wrist reinforcing exerciser of a simple and compact structure, of which use can be made at any time in a very limited space to achieve the expected results.

A still further object of the invention is to provide a wrist reinforcing exerciser which can be manufactured without complexity and at a low cost, and can therefore have wide sales.

The foregoing and other objects, features and advantages of the present invention will become apparent upon consideration of the following detailed description of the invention, appended claims and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view, partially cut away, showing a preferred embodiment of the present invention;

FIG. 1A is a schematic plan view, showing a variation in which another tension springs illustrated in FIG. 1 are operably associated tension springs stopper means for restricting extension of the springs;

FIGS. 2A and 2B are plan views illustrative of manners in which the apparatus of the invention is used;

FIG. 3 is a plan view of another embodiment of the invention, in which the distance between the pair of spaced grips shown in FIG. 1, accordingly the spring force of tension springs, is made adjustable;

FIG. 4 shows a partial sectional view of the embodiment illustrated in FIG. 3; and

FIG. 5 is a partially cut away elevational view, showing a still aother embodiment of the invention, in which in substitution for the tension used in the embodiment of FIG. 1 or FIG. 3 torsion springs housed within grips are employed.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to the drawings, particularly FIG. 1 initially, the wrist reinforcing exerciser of the present invention which is indicated by a numeral **10**, broadly comprises a pair of grips or handles **11** and **12** to be grasped by hands, a pair of rod members **13** and **14** for connecting at the prescribed interspace and supporting the left and right grips in a manner such that they can freely turn about their longitudinal axis, and tension springs **15** and **16** for exerting resilient resistance and restoring force upon turning of grips.

Grips **11** and **12** are of substantially the same structure, and therefore to make an explanation of only the grip **11**, this member is composed of an outer casing **21** of a material having high strength and friction resistance, such as rubber, plastics or the like, and an inner metal sleeve or tube **22**, which is fixed to the outer casing. This casing **21** can be formed with a wavey portion for positioning fingers on, as indicated at **21a** in FIG. **1**. Further, in order to prevent slipping of fingers it may be devised to make the outer surface of the casing a knurled surface. At each end the grip **11** has an anchoring block **23** comprising integral main body **24** and extended body **26**, the former body being inserted into the sleeve **22** and immovably secured thereto by, for example, a screw **25**, and the latter being for anchoring thereto an end of the spring **15** or **16**, The main body **24** has a central bore along its longitudinal axis for the purposes to be described later. In connection with screws **25**, preferably these should be disposed at such portions of grips where fingers or palms of the user are not susceptive of injury upon touch.

The grip connecting and supporting rods **13** and **14** similarly have an identical structure, and each comprises a relatively long rectilinear portion **31** and hooked end portions **32** bent in the same direction. Each hooked portion has a shouder **33** formed near the end of the rectilinear portion and a successive reduced portion **34**, which is loosely and rotatably received within the aforementioned central bore of the main body **24** of the block **23** and has a fastening ring **35** press-fitted at its lower end and bearing against the lower end surface of the body **24**. By this fastening structure, coming out of the hooked portion **32** from the block **23** can completely be checked. Alternatively, it may be designed to employ such a structure which utilizes a split pin (not shown), which is inserted through the reduced portion **34**, near the end thereof. Further, as hereinafter mentioned in connection with the illustration in FIG. **4**, it may be devised to make threadably engageable the central bore of the block **23** and the reduced portion **34** of the rod **13** by suitably threading the inner wall of the bore and correspondingly threading the outer periphery of the reduced portion.

In using the wrist reinforcing exerciser of the foregoing structure of the present invention, for example the grip **11** will be immovably held with the left hand as shown in FIG.. **2A**, and the right hand wrist is turned against the spring force of springs **15** and **16**, in the direction of an arrow A or B, or alternately in the two directions. Similarly, the right hand grip **12** will be fixed for training the left hand wrist. It is also feasible to do training of both wrists at the same time, and for this the wrists will be turned in mutually opposing directions as illustrated in FIG. **2B**. It will be readily recognized that there are various other manners in which the wrist exerciser of the invention is used. Regardless of any specific training method, if they are caused to repeat tension and relief through repeated bending and stretching of the wrist with the use of the exerciser of the invention, the wrist muscles will be reinforced without fail.

If the grip is turned more than 180° with respect to its original stationary position due to a fact that the

force of springs **15** and **16** is insufficient or that the specific user has too strong a wrist power in comparison to the spring force, it is likely that such end portions of the springs which have undergone an extreme expansion become wound about the grips or hooked portions **32** to a result that the springs cannot restore their original condition; if the expansion of springs is not to the utmost extend but considerably great, then an unexpected injury will be caused to the user by abrupt contraction of the springs.

In order to keep such accidents from occuring, the variation shown in FIG. **1A** of the structure of FIG. **1** has a spring **15***a* having an associated inner stopper means. The illustrated stopper means is composed of two hairpin elements **17** mutually entwined about their points of bend and firmly secured to the edges of the spring **15***a* at their free ends which are outwardly turned. As soon as said points of bend of pins **17** become completely engaged so that the pins in combination cannot undergo any further elongation, expansion of the spring is restricted. Preferably, the pair of haripin elements should have a total length almost equivalent to the length of the rectilinear portion **31** of the rod **13**, namely, the central distance between grips **11** and **12**. With reference to FIG. **1A** it will be appreciated that the spring **15***a* (and **16***a* not shown) is slightly tapered toward each end so as to accommodate the outwardly turned ends of the hairpins **17** within the maximum diametral space of the spring.

In FIG. **3**, there is illustrated another embodiment of the present invention, and in this embodiment the distance between two grips **11***a* and **12***a*, accordingly the degree of spring tension, is adjustable. Also, grips of this embodiment are made of wood having a polygonal configuration in section and, more preferably, a sectional configuration correspoding to a quadrangle with its each corner chamfered. The grip connecting rod **13** is provided with a turnbuckle **36** at its almost middle portion, and by turning this turnbuckle, the distance between the grips **11***a* and **12***a* can be lengthened or shortened to accordingly increase or decrease the tension of spring **15** (or **16**, not shown), whereby relative to the specific wrist strength a suitable spring tension value can be selected. Further, with reference to FIG. **4** it will be readily observed that the inner periphery of the block **23***a* is threaded and that the rod **13** correspondingly is formed with a threaded portion **34***a* near the end of its hooked portion, as mentioned hereinbefore.

FIG. **5** shows a still another modification of the wrist exerciser of the invention, in which the spring means for exerting resilient resistance upon turning of grips comprise torsion springs housed within the grips. In greater detail, the hooked portion **32** of the connecting rod **13** extends into the grip through a central portion of a supporting plate member **41** attached to each end surface of the grip. The supporting plate **41** is formed at its back with a protrusion **42** for securing thereto one end of a torsion spring **44**. Also, near the lower end of the reduced portion **34** of the hooked portion **32**, a protrusion **43** is provided for securing thereto the other end of the spring **44**. Thus, in this modification those tension springs which are provided in the previously mentioned embodiments are replaced by torsion springs housed within the grips, whereby the entire structure of the wrist exerciser can present an improved appearance.

Whereas I have described and illustrated specific embodiments of the invention, the embodiments described in conjunction with several figures can be readily modified, for example, by mutually exchanging or combining the various components, and therefore the scope of my invention should not be understood to be limited to only those forms as specifically disclosed and illustrated in the foregoing specification and accompanying drawings but is to be defined and limited only by the claims which follow.

I claim:

1. In a wrist reinforcing exerciser having a pair of grips to be grasped by left and right hands, means for connecting at the prescribed interspace and supporting said grips in a manner such that they can freely turn about their longitudinal axis, and spring means for exerting resilient resistance and restoring force upon turning of the grip, said spring means being tension springs provided between the corresponding ends of the pair of grips and extensible upon turn of the grip, the improvement therein in which each of said grips has an anchoring block fixed thereto at least at one end thereof, each end of said tension springs is anchored to an extended portion of said anchoring block and said grip connecting and supporting means comprise a rectilinear portion and bent end portions, said bent end portions being received wtthin central bores in said anchoring blocks in a manner such that they can freely turn within said centrll bores but not removable from the bores.

2. A wrist reinforcing exerciser comprising:

a. a pair of grips to be grasped by left and right hands, each of said grips having at each end theeof an anchoring block, said block comprising a main body portion fixed to the associated grip end and provided with a central bore, and an extended portion laterally protruding from said main body toward another grip;

b. a pair of rods for connecting at the prescribed interspace and supporting said grips, each of said rods comprising a rectilinear portion and bent end portions, each bend end portion being received within said central bore in said main body of said anchoring block in a manner such that each bent end portion can freely turn within said bore but not removable from the bore; and,

c. a pair of tension springs positioned between corresponding ends of each of said grips and anchored at their ends to the respective extended portions of said anchoring block so that said springs can be extended upon turning of said grips and exert resilient resistance and restoring force to the grips.

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