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Bankston

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[54] **HAND EXERCISING AND FRICTIONAL
RESISTANT-TYPE EXERCISING
DEVICE**

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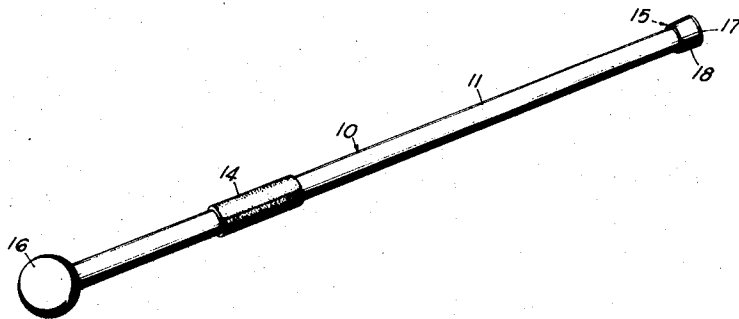
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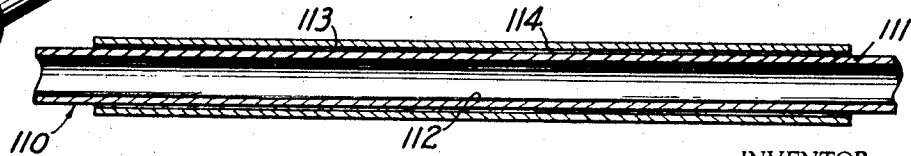
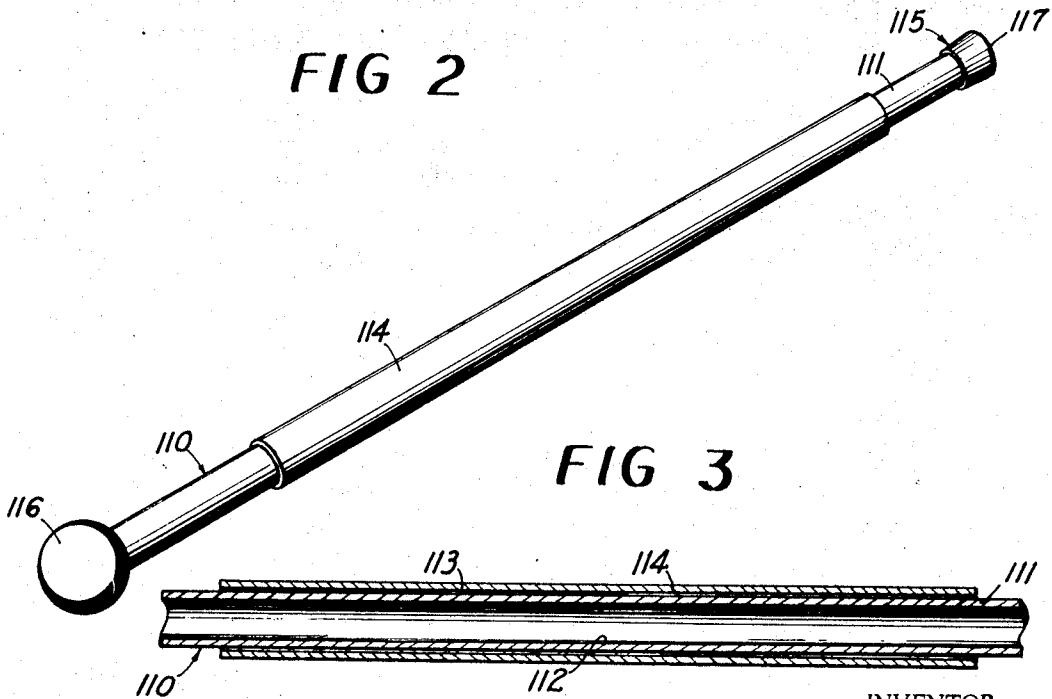
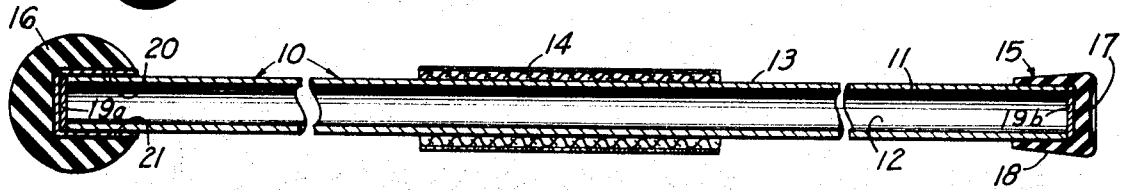
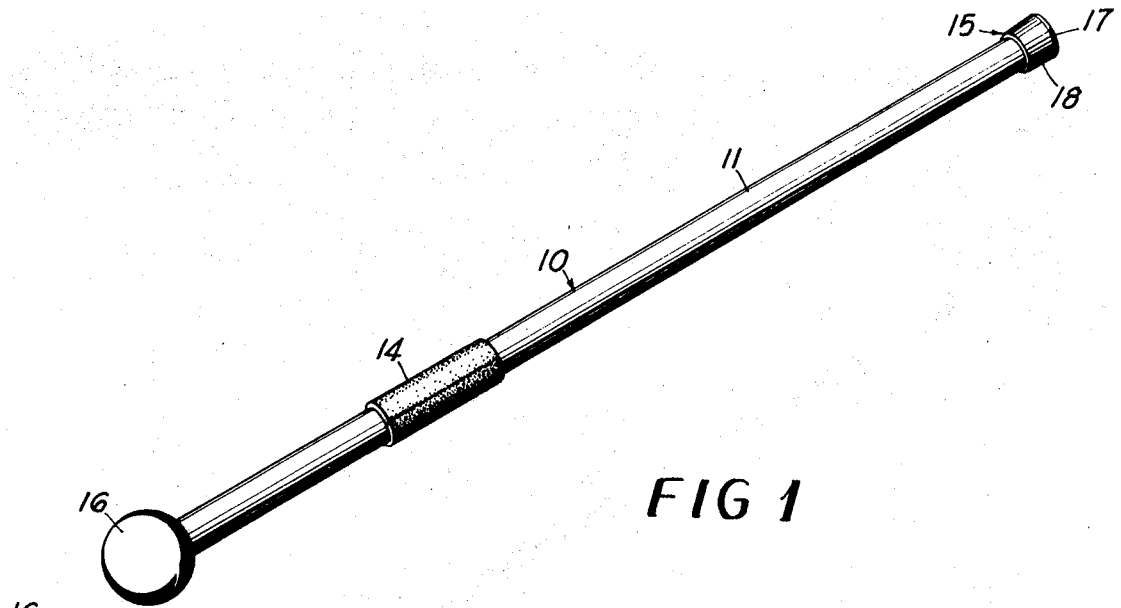
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[57] **ABSTRACT**

An exercise device comprising an elongated cylindrical bar member having a slideable sleeve moveable along the elongated member, the sleeve being flexible will engage the member, and the member will resist such movement when pressure is exerted to the sleeve. The member has a resilient spherical gripping element secured to one end, and a ferrule at the other. By various manipulations with the bar member, the user is able to exercise various body muscles.

12 Claims, 4 Drawing Figures





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HAND EXERCISING AND FRICTIONAL RESISTANT-TYPE EXERCISING DEVICE

BACKGROUND OF THE INVENTION

This invention relates to an exercising device and more particularly to a portable exercising bar for use in the development of various body muscles.

Portable exercising devices have been developed in the past. By design and operation, however, these prior devices were limited in their exercising capabilities to a few types of muscles, such as hands, wrists, and arms. Thus, no one device was capable of selective use in both isometric and isotonic exercising of the hands, wrists, arms, shoulders, back, stomach, and legs of the user.

Furthermore, most of the devices involved mechanical systems. These devices also were complicated structures, expensive to manufacture, unreliable in their use, and susceptible of malfunctions.

SUMMARY OF THE INVENTION

Briefly described, the present invention, as pointed out in the abstract, includes a straight rigid cylindrical tubular bar member having at one end a resilient spherical gripping head element and at the other a resilient ferrule. In one embodiment, the bar member has one or two flexible sleeves loosely encompassing the bar member. The tightness with which the flexible sleeve is gripped determines the frictional resistance to movement of each sleeve. In another embodiment, a rigid hollow tubular sleeve is substituted for the flexible sleeve or sleeves so as to be rotatably carried by the bar member. Movement in a radial direction of the bar member, enables the device of the present invention to act as a roller to move across the body.

It is, therefore, a primary object of this invention to provide an exercising device for the development of the muscles of the hands, wrists, arms, shoulders, back, stomach, and legs of the user.

It is a further object of this invention to provide an exercising device which is lightweight and portable.

It is a still further object of this invention to provide an exercising device which is simple, practical, cheap and efficient to use.

An additional object of this invention is to provide an exercising device which is sturdy and durable in construction.

Other objects, features and advantages of the present invention will become apparent from the following description when taken in conjunction with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the figures of the drawings, and wherein:

BRIEF DESCRIPTION OF THE FIGURES OF DRAWINGS

FIG. 1 is a perspective view of an exercising device constructed in accordance with the present invention;

FIG. 2 is a vertical sectional view taken substantially longitudinally of the exercising device in FIG. 1;

FIG. 3 is a perspective view of another embodiment of the invention; and

FIG. 4 is a vertical sectional view taken substantially longitudinally of the exercising device in FIG. 3.

DESCRIPTION OF THE INVENTION

Referring now in detail to the embodiments chosen for the purpose of illustrating the present invention, numeral 10 denotes generally the exercising device depicted in FIGS. 1 and 2.

This device 10 includes a straight rigid, hollow, circular, cylindrical, rod or shaft, or bar member 11 of uniform diameter. The bar member 11 is of a diameter which can be grasped in a person's hand with his fingers encircling a major segment thereof being preferably approximately $1\frac{1}{4}$ inch in diameter. The bar member 11 is approximately 36 inches long. The length of bar member 11 should not be under about 24 inches

in length since it must be long enough to provide for a stroke of a person's arm. If the bar member 11 is over about 48 inches in length it is unwieldy and may prove difficult to use.

In the present embodiment, the shaft is formed of 19-gauge iron tubing and is provided with a porcelain coating inside and outside. The inside coating 12 and outside coating 13 prevent the rusting of the metal while the outside coating 13 provides a smooth uniform surface which is free from burrs and protuberances which may injure a person or deter sliding movement along the length of the bar member 10.

The diameter of the bar member 10 is sufficiently large that it provides an appreciable resistance to sliding movement of the flexible sleeve 14, while, at the same time is not so large that the sleeve 14 carried thereon cannot be gripped with a person's hand in such a way that the circumscribing fingers extend at least more than one-half the way around the sleeve 14.

The bar member 11 is also to be relatively light in weight, i.e., it should preferably be less than about 10 pounds so that, if dropped, it does not injure the user.

The flexible sleeve 14 is formed of lightweight or medium weight "Nugahyde" or synthetic flexible leather. Other flexible fabrics or flexible hides which also have insulating qualities to protect the hand from a friction burn may be substituted for the Nugahyde material. In any event, the diameter of the sleeve 14 is slightly larger than the diameter of the bar member 11, i.e., about $\frac{1}{8}$ inch to $\frac{1}{4}$ inch larger in diameter, so that it loosely engages the surface of the bar member 11 and, when not constricted, will quite readily slide from one end to the other.

The flexible sleeve 14 is slidably received along the circumference of the bar member 11 and has an axial bore therethrough of circular cross section to fit on the member 11. The sleeve 14 is so constructed as to be rotatable and slidable along the member 11, but under pressure, applied externally by the hand of the user, sleeve 13 is deformed and resists movement along the member 12.

The sleeve 14 is of such length as to fit the grip of the user's hand, being formed from an initially rectangular swatch of fabric, the opposite edges of which are stitched together with thread (not shown) to form an axially extending seam throughout the length of the sleeve 14.

The sleeve 14 is coaxially or concentrically received on the bar member 11 with the smooth hidelike surface of the Nugahyde forming the outer surface and the fabriclike inner surface being disposed adjacent the outer surface of the bar member 11.

The sleeve 14 is preferably about 5 inches in length i.e., greater than the largest width of a person's hand when grasped in an encircling grip, yet, providing only slight protruding end portions of the sleeve therebeyond, on both sides. Thus the sleeve 14 protects the hand from friction burns through engagement with the bar member 11 and permits maximum movement of the sleeve 14 along the length of the bar member 11 while, at the same time, providing bumpers formed by the protruding end portions which prevent violent engagement of a hand with either the ferrule 15 on one end of bar member 11 or the head element 16 on the other end thereof.

The ferrule 15 is preferably a No. 21 rubber ferrule secured over one end of the bar member 11, the ferrule 15 being of conventional construction in that it is a cup-shaped member, closed at only one end by a flat radially extending or transverse base 17 integrally joined to the tubular shank or body 18 of the ferrule 15. The ferrule 15 is frictionally received over and held in place on its end portion of bar member 11, the end portion protruding into ferrule 15 so that the end of bar member 11 abuts the inner surface of base 17. The bottom or outer surface of its base 17 is sufficiently rough to resist lateral movement of the ferrule 15 when any appreciable pressure is extended axially against the ferrule 15 by bar member 11.

The head element 16, being spherical and being received on the other end portion of bar member 11, is provided with a cylindrical outwardly opening recess or cavity 20 which extends from the outer surface of element 16 inwardly and ter-

minates at, or adjacent, the center of the head element 16. Because it is inexpensive and readily available, the head element 16 may be produced from a conventional solid rubber ball, having a diameter of preferably about 2¾ inches. The element 16 is, therefore, of resilient material which will "give" only to a limited extent, providing firm resistance to any appreciable collapsing force. Sponge rubber, hard rubber, yieldable plastic and other resilient materials can be used for element 16. It may be cured directly to the end of bar member 11, in the event that the head element 16 is not to be removed, periodically.

In the preferred embodiment of FIGS. 1 and 2, the head element 16 or the ferrule 15, or both, are to be removable so that the sleeve, such as sleeve 14, are removable. Otherwise, these end elements i.e., ferrule 15 and head element 16 form stops limiting the movement of the sleeve 14.

In order to protect the head element 16, and the ferrule 15, it may be found desirable to insert washers 19a, 19b transversely across the ends of the bar member 11 within the recesses of the element 16 and ferrule 15.

If head element 16 is to be removable within the hollow recess 20 is an outwardly opening, metal cup 21, adapted to be received on the end of bar member 11. The metal cup 21 is firmly fixed within recess 20, however, the frictional engagement of the metal cup 21 and the bar member 11 is such that the gripping head element 16 can be periodically pulled off when, for example, it is necessary to remove or replace sleeve 14 or two such sleeves (not shown) are disposed on the bar member 11 at one time in end to end fashion.

In FIGS. 3 and 4, the modified form of the invention includes an exercise device 110 provided with a bar member 111, having coatings 112 and 113, a ferrule 115 and a head element 116, all identical to the structure of the preceding embodiment. The difference between this embodiment of FIGS. 3 and 4 and the embodiment of FIGS. 1 and 2 is that the sleeve 114 of this second embodiment is quite rigid, being tubular and cylindrical and being substantially longer than a sleeve 14.

The purpose of the different sleeve 114 is to provide a freely rotatable roller journaling the bar member 111. Contrary to the preceding embodiment, the sleeve 114 is not intended to shaft axially to any appreciable extent, nor is it intended to be deformed in its shape for frictional sliding movement, as is sleeve 14. Instead the sleeve 114 simply rotates about the common axis of sleeve 114 and bar member 111 as the bar member is moved in a radial direction with a portion of the periphery of sleeve 114 in engagement with the body of a person.

Hence, the inside diameter of sleeve must form a bearing surface for readily sliding along the outside coating 113 of bar member 111. Furthermore, the diameter of sleeve 114 should be slightly larger than the outside diameter of bar member 111 to provide a base and hence sliding fit.

Lengthwise, the sleeve 114 is only about 3 or 4 inches shorter than the bar member 111 so as to provide protruding end portions on the longer bar member 111 when the sleeve 114 and bar member 111 are disposed concentrically, whereby its end portions can receive the head element 116 and the ferrule 115, respectively. The sleeve 114 should be long enough to cover the body of a person and not shift axially to any great extent.

The outside surface of sleeve 114 is uniformly smooth since it must come in contact with the body or with the clothing. Its ends are rounded or chambered and smooth. Preferably the sleeve 114 is made of metal, however, a hard plastic would be suitable.

OPERATION

The present invention can be used in three types of exercises: isometric exercises with the flexible sleeve 14 and the resilient sphere 16; stomach exercises with the rigid sleeve 114; and a bicycle exercise bar or device 10.

There are a number of variations of the isometric exercises that can be performed with the present invention. One of the simplest operations of the exercise bar 10 is to alternatively squeeze the resilient sphere element 16 or 116 with each hand. This operation exercises the users fingers and hands. Another effective and simple exercise with the present invention, which helps develop the users hand and arm muscles, is to engage the resilient sphere element 16 between both hands and squeeze and push against the sphere element 16.

An isometric exercise employing the flexible sleeve 14 is to grip the resilient element 16 in one hand and grip the sleeve 14 near the ferrule 15, squeezing the sleeve 14, slowly pulling the sleeve 14 along the elongated member 11 toward the resilient sphere 11. As the user proceeds along the member 11, while squeezing the sleeve 14, the tension in the user's arm is transferred from the biceps muscle to the triceps muscle. Thus, both types of muscles of the arm are exercised in this operation.

An exercise which conditions many of the user's muscles at the same time involves sliding an additional flexible sleeve 14 onto the elongated member 11. This is accomplished by removing the ferrule 15 or the element 16, placing another flexible sleeve 14 onto the member 11, and replacing the ferrule 15 of the element 16, as the case may be. The two sleeves 14 are placed at opposite ends of the member 12. The user grasps each sleeve 14 and slowly slides the sleeves 14, together. This exercise can be reversed with the user placing the two flexible sleeves 14 together in the middle of the member 11, grasping each sleeve 14, and slowly pulling the sleeves 14 apart toward the opposite ends of the member 11. In these two exercises, the exercise bar 10 can be held in front of the user or can be held high over the user's head. The muscles of the user's chest, back, stomach, and arms are developed by these two exercises.

To exercise the stomach muscles, the user removes the ferrule 15 or element 16, slides the flexible sleeve off of the member 12, and places the rigid sleeve 14 on the member 11, to replace sleeve 14. This converts member 11 into member 111. Lying in a horizontal position, the user grips the member 111 adjacent each end of the rigid sleeve 114 and repeatedly rolls the sleeve 114 back and forth across his stomach.

To condition the user's leg muscles, the user lies in a horizontal position perpendicular to a vertical surface such as a wall or door. The ferrule 15 is placed against the vertical surface with the resilient sphere 11 held in both hands between the user's legs and against his stomach. The user then pumps his legs up and down in the air, as if riding a bicycle. While in this position, the user can also alternate placing one leg over the member 12, thus stretching the leg muscles.

While the head element 16 or 116 and the ferrule 15 or 115 form stops which prevent inadvertent removal of the sleeve 14 of 114 from the bar member 11 or 111, they being resilient, also perform an added function of protecting the floor from damage by the sleeve 114 or the bar member 11 or 111. This is true since the ferrule 15 of 115 and for the head element 16 or 116 are of larger dimensions, i.e., diameter, than its associated bar member 11 or 111 or its associated sleeve 116. Hence, the bar member or sleeve cannot normally engage the floor.

It is thought that the invention and its advantages will be understood from the foregoing description and it is apparent that various changes may be made in the form, construction, arrangement of parts, and operation of the invention without departing from the spirit and scope of the invention or sacrificing its material advantages, the form hereinbefore described and illustrated in the drawings being merely preferred embodiments thereof.

What is claimed as invention is:

1. An exercising device comprising:

- a. A straight rigid bar member having a smooth outer surface;
- b. a sleeve means received on said bar member for sliding movement with respect thereto; and

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c. a pair of resilient stops respectively on the end portions of said bar member for preventing inadvertent removal of said sleeve means from said bar, said sleeve means is flexible and sufficiently deformable to engage the bar member that when grasped in a person's hand the frictional resistance of the bar member will resist longitudinal movement of the sleeve during an exercise program.

2. The exercise device defined in claim 1 wherein one of said stops is a ferrule.

3. The exercise device defined in claim 1 wherein the other of said stops is a spherical head element.

4. The exercise device defined in claim 1 wherein said stops include a rubber ferrule and a rubber ball, the bar member projecting into the interior of said ferrule and into the interior of said ball.

5. The exercise device defined in claim 1 including a coating on said bar member for forming a smooth uniform outer surface thereon.

6. The exercise device defined in claim 1 wherein said sleeve is formed of Naugahyde.

7. The exercise device in claim 1 wherein said sleeve is slightly wider than a person's hand.

8. The exercise device defined in claim 1 wherein said

sleeve is a flexible fabric having heat insulating qualities.

9. The exercising device defined in claim 1 wherein one of said stops is a resilient spherical ball which is of a diameter which can be grasped in a person's hand.

10 The exercise device defined in claim 1 wherein said bar member is a straight cylindrical member having a smooth outer surface and of a diameter which can be grasped in a person's hand with his fingers encircling a major segment thereof and wherein said sleeve is formed from a heat insulating flexible fabric and is of a length substantially shorter than the length of said bar member, said sleeve being longer than the width of a person's hand so that it will protect the hand against frictional burns when the sleeve is moved by such hand along the length of said bar member.

11. The structure defined in claim 10 wherein one of said stops is a resilient spherical element of a diameter which can be grasped in the palm of a person's hand with the fingers and palm encompassing a major segment of the diameter of the element.

12. The structure defined in claim 11 wherein the other of said stops is a ferrule.

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