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WRIST AND FOREARM MUSCLE EXERCISER

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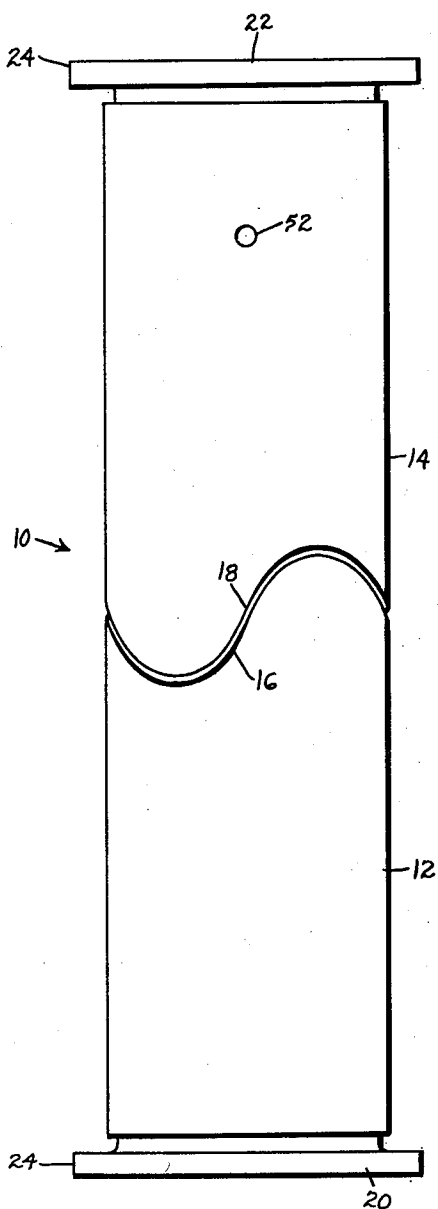


Fig. 1

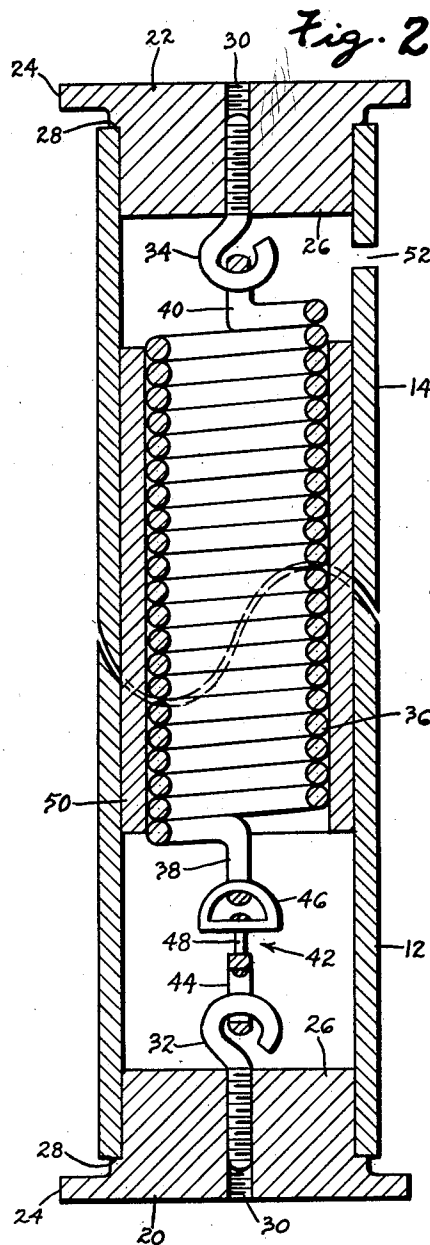


Fig. 2

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WRIST AND FOREARM MUSCLE EXERCISER

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7 Claims. (Cl. 272—68)

(Granted under Title 35, U. S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

This invention relates to a health and physical training device and is especially designed to exercise the wrist and forearm muscles.

There are many forms of exercisers designed to strengthen wrist and arm muscles. One type in use provides a bar with a cable depending therefrom. Weights are attached to the bottom of the cable and the exercise requires that the cable be wound up around the bar, the wrist and forearm being strengthened thereby. Different weights, according to the strength of the individual, are used. Other machines use spring retracted winding rollers.

The objections to these types of machines are that they are cumbersome to use, the weights must be changed during the course of the exercises, and they are expensive to purchase. The present invention overcomes all of these disadvantages by providing a simplified and compact exerciser that is efficient in use and inexpensive to purchase.

A primary object of the invention is to provide a wrist and arm exerciser.

Another object of the invention is to provide a compact exerciser with the component parts contained within a housing member.

Yet another object of the invention is to provide an adjustable exerciser that avoids the use of special tools.

And still another object of the invention is to provide a device that is simple in design and is durable in construction.

A feature of the invention resides in the use of a coil spring to provide the force against which the individual operates the device.

Another feature of the invention resides in the use of a cam surface for exercising the wrists and forearms.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

Fig. 1 is a side view of the exerciser of the invention, and

Fig. 2 is a longitudinal section of the exerciser illustrating the component parts.

Referring to Fig. 1, the wrist and forearm exerciser is indicated generally by numeral 10 and comprises two hollow cylinders 12 and 14 respectively, the cylinders being cooperatively held together, as will presently appear. Cylinder 12 is provided, at its inner end, with an irregular cam surface 16 which is engaged by a complementary cam surface 18 on cylinder 14. The outer ends of cylinders 12 and 14 are each provided with closure plugs 20 and 22. Each plug comprises an outer disk-

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shaped flange 24 and an inner, reduced neck section 26. Neck 26 is adapted to slidably fit within the cylinders, continued movement being prevented by a shoulder portion 28 on the plug members abutting the annular extremities of the cylinders.

Each plug member is axially bored at 30 and is threaded to adjustably retain eye-hook 32 in plug 20 of cylinder 12 and a similar eye-hook 34 in plug 20 of cylinder 14.

A coil tension spring 36 extends axially within cylinders 12 and 14 and straddles the inner cam surfaces 16 and 18. Spring 36 comprises closely wound coils that require a considerable physical effort to expand. End hooks 38 and 40 extend from the ends of spring 36. Hook 40 is connected directly to eye-hook 34.

Link assembly 42 connects eye-hook 32 with free end hook 38. Link member 44 hooks over member 32 and is connected to link member 46, on spring hook 38, by means of a double headed stud or rivet 48. The link assembly acts as a swivel or free rotating device. Thus, link member 46 is capable of rotating freely about the longitudinal axis of rivet 48 without transmitting movement of rotation to link member 44.

Sleeve 50 slips over spring 36 between the spring and the inside diameter of cylinders 12 and 14 and is in the identical straddling relation as coil spring 36 with respect to the cylinders. Sleeve 50 is made of any suitable rigid material and thus provides rigidity to exerciser 10. By use of sleeve 50, cylinders 12 and 14 are maintained in axial alignment and bending of spring 36 during the exercise is not possible.

The operation of the wrist and forearm exerciser of the invention is readily apparent. When in use, cylinder 12 is grasped in one hand while cylinder 14 is grasped in the other hand. The hands are then rotated in opposite directions, around the longitudinal axis of the cylinders. As the cylinders are rotated, the cam surfaces 16 of cylinder 12 frictionally act upon the complementary cam surfaces 18 of cylinder 14. When the cam surfaces are in the position illustrated in Figure 2, no force is being exerted upon spring 36 and it is contracted. Upon rotation of the cylinders, the high points on cam 16 will act on the high points of cam 18, causing spring 36 to stretch. This requires maximum force by the person exercising and will develop the proper muscles.

As the exercises develop the wrist and arm muscles, rotation of the cylinders against the tension of spring 36 becomes easier, and it becomes necessary to increase the tension on spring 36. To accomplish this, a suitable tool (not shown) is inserted through slot 52 to restrain hook 34 from rotation while plug 22 is rotated. This causes the end of eye-hook 34 to thread in bore 30 and expand the spring. It will now require added force to rotate the cylinders in opposite directions and expand the spring further when the high points of the cams engage each other. The link construction 42 permits free rotation on the longitudinal axis of the device to prevent an increase or decrease of the preload tension on spring 36, when cylinders 12 and 14 are rotated in opposite directions.

Sleeve 50 prevents cylinder 12 from becoming skew to cylinder 14 and also prevents spring 36 from bending when the device is grasped in each hand.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. An exercising device comprising a pair of hollow cylinders, sinusoidally shaped cam surfaces on each cylinder and adapted to space the cylinders apart on rotation thereof, said cam surfaces being in frictional engage-

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ment, a tension spring extending between said cylinders and means on said cylinders adjustably retaining said tension spring in said cylinders.

2. A wrist and forearm exercising device comprising a pair of hollow cylinders, sinusoidally shaped cam surfaces on each cylinder and adapted to space the cylinders apart on rotation thereof, said cam surfaces being in frictional engagement, plug means in each cylinder end, a tension spring extending between said cylinders, and eye-hooks adjustably retained in said plug means and secured to said tension spring.

3. A wrist and forearm exercising device comprising a pair of hollow cylinders, sinusoidally shaped cam surfaces on the inner ends of each cylinder and adapted to space the cylinders apart on rotation thereof, said cam surfaces being in complementary frictional engagement, a tension spring extending between said cylinders, holding means on said cylinders engaging said tension spring and link means secured to one of said holding means and to said spring for free rotation of the spring during the operation of the device.

4. A wrist and forearm exercising device comprising a pair of hollow cylinders, sinusoidally shaped cam surfaces on the inner ends of each cylinder and adapted to space the cylinders apart on rotation thereof, said cam surfaces being in complementary frictional engagement, a tension spring extending between said cylinders, holding means on said cylinders engaging said tension spring, and link means secured to one of said holding means and to said spring for free rotation of the spring during the operation of the device, and sleeve means encircling said spring to prevent the spring from bending during the exercise.

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5. The combination of claim 4 wherein said link means comprises a link member secured to said holding means, a second link member secured on said spring, and a pivot pin connecting said link members.

6. A wrist and forearm exercising device comprising a pair of hollow cylinders, sinusoidally shaped cam surfaces on the inner ends of each cylinder and adapted to space the cylinders apart on rotation thereof, said cam surfaces being in complementary frictional engagement, a tension spring extending between said cylinders, holding means on said cylinders engaging said tension spring, link means secured to one of said holding means and to said spring for free rotation of the spring during the operation of the device, and said holding means consists of plug means slidably received in the ends of said cylinders, axially threaded bores in said plug means and eye-hooks adjustably held in said bores, adjustment of the eye-hooks providing a pretension load on said spring.

7. The combination of claim 6, wherein a sleeve member encircles said spring to prevent the spring from bending during the exercise.

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