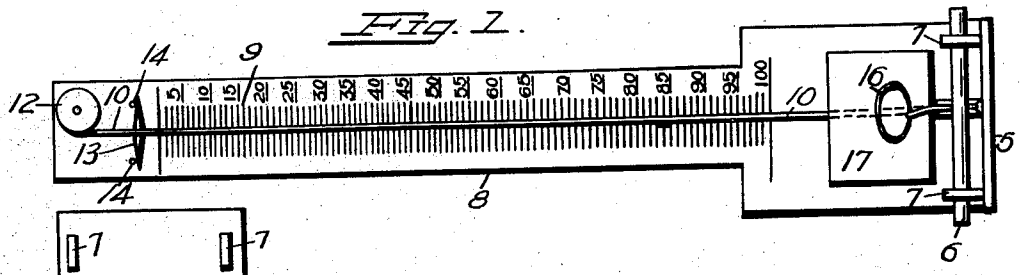
Aug. 20, 1940. K. N. JULSRUD ET AL 2,212,119

ATHLETIC APPARATUS

Filed April 15, 1938

Fig. 1.



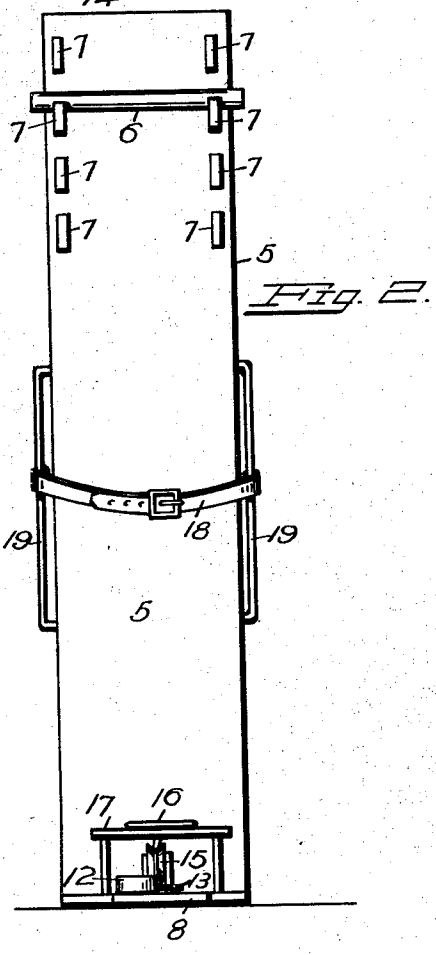




Fig. 2.

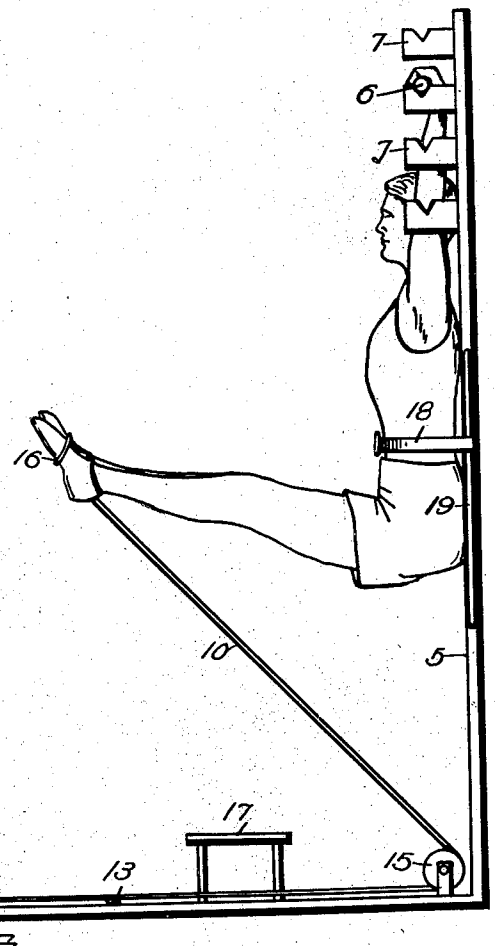






Fig. 3.

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## ATHLETIC APPARATUS

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Application April 15, 1938, Serial No. 202,197

2 Claims. (Cl. 272—57)

This invention relates to apparatus for measuring the relative strength of the abdominal muscles.

Strength in the abdominal muscles is an important factor in physical development but so far as the applicants know there has been no adequate means for indicating the condition or development of these muscles.

An object of the present invention is to provide apparatus whereby comparative tests of abdominal muscle strength may be made and indicated on a scale or the like.

Another object is to provide apparatus of this character that is adapted for use in gymnasiums and athletic clubs as well as in private homes for individual use.

A further object is to provide apparatus for this purpose that is adjustable so that it may be used by any normal person.

Other objects and advantages reside in details of design and construction which will be more fully disclosed in the following description and in the drawing wherein:

Figure 1 is a plan view of apparatus that embodies the features of the present invention;

Figure 2 is a front elevation thereof; and

Figure 3 is a side elevation of a similar apparatus in use.

In the drawing reference character 5 represents an upright support for the back of a user. At 6 is shown a hand-grip bar that is supported adjacent or on the back support and which is preferably movable to be held at various selected elevations as by a plurality of notched brackets 7. Extending forwardly from the back support is a scale element 8 having arbitrary calibrations as shown at 9.

At the outer end of the scale element is attached a retractable cord 10 which, in the instant case, is partially wound on a retracting reel 12 which is provided with a flat spiral spring of a well-known type, not shown. The retracting feature of the cord 10 may be in the form of a longitudinally expansive coil spring, a piece of elastic such as rubber, or a weight. The reel illustrated has proven very satisfactory. An indicative element is carried on the cord as shown at 13 and, when the device is not in use, may rest against stops 14. The retracting feature of the cord 10 is definitely not intended to offer physical resistance to leg movements of the user, but rather it is merely a convenient means for retracting the indicative element to its normal position. The indicative element and the entire apparatus is intended to register the degree of forward and upward angular movement of the legs of a user as compared with other users or with any arbitrary standard. The device is not an exerciser.

The other end of the cord 10 passes around a pulley 15 and terminates in a loop 16 which may be made of elastic or partially of elastic. A movable step 17 is provided for the convenience of a user in grasping the hand-grip bar 6, and an adjustable band or strap is shown at 18 which is movable up and down along side bars 19 to suit the height of the user.

*Operation*

When a person desires to measure his abdominal muscle strength he mounts the step 17 and his toes are inserted in the loop 16, or the cord 10 may be attached to his legs or feet in any other convenient manner such as, for instance, by spring clips to the heels of his shoes. Then he adjusts the band or strap 18 around his waist as shown in Figure 3, so that his back is held against the support 5 and is thereby prevented from forward movement or displacement. While Figure 3 of the drawing illustrates the cord 10 as being attached to the feet of the user by means of the loop 16, it will be understood that the object is to measure the forward and upward angular movement of the legs. Therefore, it is immaterial whether the cord 10 is attached to the actual feet of a user or to any other part of the leg anatomy. The feet merely offer a convenient place of attachment. Since the feet of a human being are part of his legs broadly speaking, the terminology "legs" in the appended claims is intended to broadly mean any part of the anatomy below the hip joints.

The hand-grip bar 6 has first been positioned to accommodate his upward reach and he grasps the bar, thus supporting his entire weight hanging by his hands and arms, as illustrated. The step 17 is then removed and he raises his legs from the hips forwardly as high as possible, thus pulling the retractable cord 10 around the pulley 15 and drawing the indicative element 13 along the calibrations 9 of the scale element 8. This operation is clearly shown in Figure 3 and the degree to which an individual can raise his legs forwardly is a direct indication of the strength of his abdominal muscles.

The band or strap 18 prevents forward movement of the back or the body which would increase the movement of the indicative element and thereby cause a false registration since the abdominal muscles which are being tested are

concerned only in elevating the legs and not in bending the back or body above the hips.

The calibrations 9 of the scale element 8 may be in centimeters, inches or any arbitrary marking, as the main value of the readings is to make comparative tests between different individuals and also comparative tests of the development of a single individual over a period of time. The various adjustable features make the apparatus adaptable to any normal human being, and in calculating the indicated results the height of the individual, the length of the inseam and the exact starting point of the indicative element should be recorded as well as the extreme advanced position of the indicative element to which the individual is able to move it and sustain it.

The apparatus is particularly well adapted for use in gymnasiums and athletic clubs where individuals are undergoing physical tests or physical instruction of any kind and it is just as well suited for private use in a home because a user can manipulate it entirely alone, and since the calibrations on the scale are marked at a side of the retractable cord, the user can make his own reading by observing the indicative element while at the same time he is operating the cord as described. Or an indicative element may be provided that will leave a mark indicating its extreme position of advance, which may be later read by the user after he has descended from the apparatus. Obviously the movement of the indicative element 13 is a direct function of the strength of the abdominal muscles which are used for forward leg movement from the hips.

The essential elements, then, of the present apparatus are a hand-grip by which a user may support himself, means to prevent forward displacement of the back or body above the hips, and a scale and indicative element to record the degree of forward leg movement from the hips.

The various details of design and construction as herewith disclosed may be varied over a wide range of equivalents without departing from the spirit of the invention as set forth in the appended claims.

In order to economize on floor space obviously the retractable cord may take the form of a flat ribbon and the scale may be placed thereon after the manner of a "tape measure." In this arrangement the retracting reel 12 may be placed much closer to the user and the flat scale element as shown at 8 may be wholly or partially dispensed with. When the scale is on the cord or ribbon it becomes movable therewith, and therefore a stationary marker or indicative element would be used to read the scale.

What we claim and desire to secure by Letters Patent is:

1. In a device of the character described, a hand-grip, means for supporting the hand-grip, a back support adjacent and below the hand-grip, and means for holding the back of a user hanging on the hand-grip, against the back support.

2. In a device of the character described, a hand-grip, means for supporting the hand-grip at selected elevations, a back support adjacent and below the hand-grip, and means for holding the back of a user hanging on the hand-grip, against the back support.

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