

(No Model.)

M. W. NEWTON.
EXERCISING APPARATUS.

No. 480,271.

Patented Aug. 9, 1892.

Fig. 1.

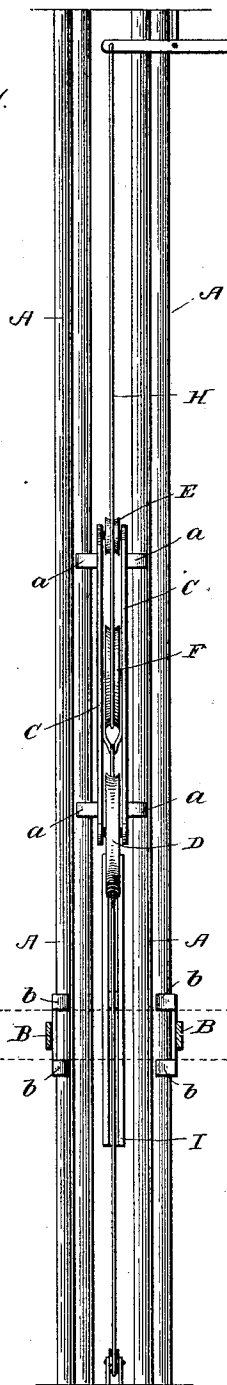


Fig. 2.

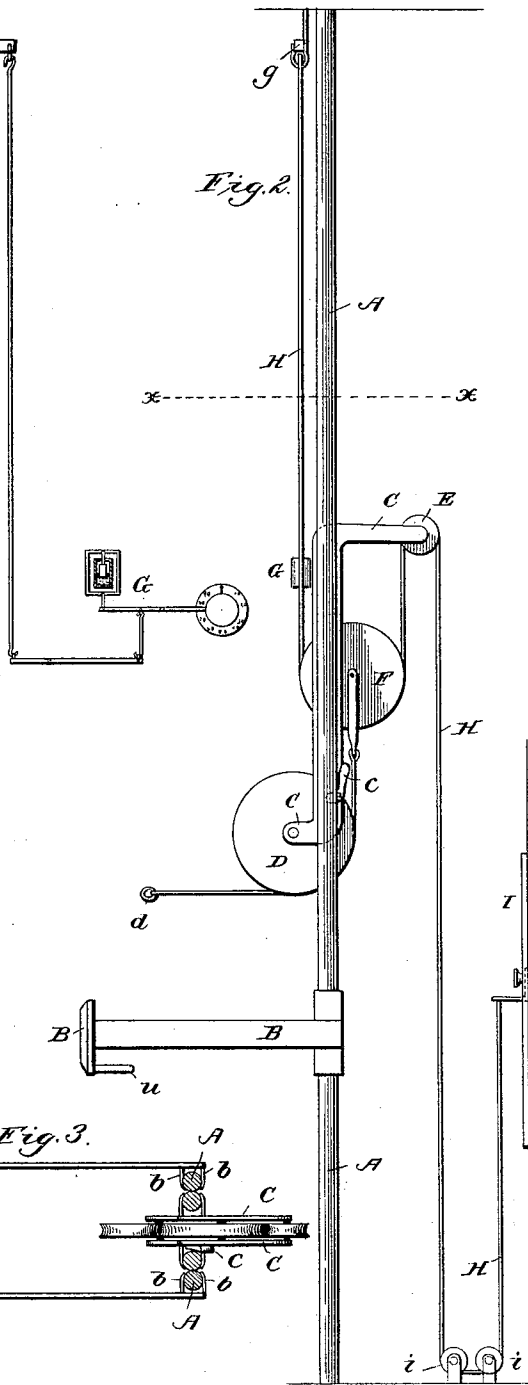
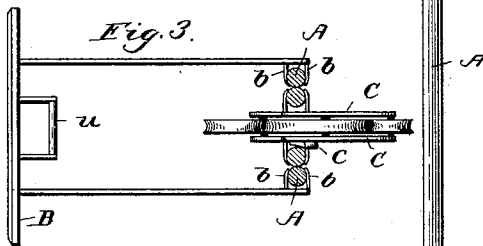


Fig. 3.



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UNITED STATES PATENT OFFICE.

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EXERCISING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 480,271, dated August 9, 1892.

Application filed May 18, 1891. Serial No. 393,134. (No model.)

To all whom it may concern:

Be it known that I, MIRON WALLACE NEWTON, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Exercising Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in exercising-machines and dynamometers for testing the strength of various muscles of the human system.

In order to accomplish my object and to isolate the separate muscles, the acting joint must be supported and the weight or tension which is then applied to the other end of the moving bone must be a pull, sometimes in a horizontal, sometimes in a vertical, and sometimes in oblique directions. To provide an apparatus wherein the support, the pull, and the relative position of the support and pull may be adjusted while the weighing device is stationary, whereby the individual muscles of the human body may be exercised and tested, is a principal object of my invention.

The invention consists in the combination of suitable upright supports or standards and a vertically-adjustable pull-guide connected with said standards.

The invention also consists in the combination of a weighing device, a cord connected with a balance-beam of said device, means for taking up and extending the outer extremity of the cord, and an adjustable pull-guide.

It also consists in other combinations hereinafter described and claimed.

In the drawings, Figure 1 is a front elevation of my improved apparatus. Fig. 2 is a side elevation of the same; and Fig. 3 is a horizontal section on the line *xx* of Fig. 2, showing parts connected with the supporting-rods in place.

A A are vertical rods or rails securely fastened and supported in position and arranged in pairs, each pair riveted together to prevent springing.

B is a frame for joint, limb, or body rest,

adapted to be adjusted up and down on the outer rails *A A*, with which it is connected by gripping-fingers *b b*, thus allowing the rest to be raised above the pull-strap *d* to the same height therewith or below it.

C is an *S*-shaped frame adjustable up and down on the inside standards *A A* and held by gripping-fingers *a a*. This frame, together with the adjustable rest-frame, is counter-weighted, so that it will stay wherever adjusted without fastening whenever the pull is horizontal; but when the pull is in a direction other than horizontal the frame *C* is locked by latch or lever *c*, which crowds between the frame and one of the standards.

D and *E* are pulleys carried by and adjustable with said frame *C*, and *F* is a movable or floating pulley with which the pull *d* is connected through the usual yoke or block, as shown.

G is a suitable weighing apparatus, preferably a hydrostatic device, such as described in my application, Serial No. 392,029, filed May 8, 1891, wherein a pointer indicates the amount of the weight or pull, so that it may be readily observed at a distance. This weighing device is connected through rod and balance-beam *g* with a light rope or cord *H* of wire or other suitable material.

I is a vertically-adjustable frame or friction-clutch with which the outer part of the cord or rope is connected, and is moved up to take in slack or down to give out rope, as may be desired, when the frame *C* and the pulleys carried thereby are to be adjusted up or down. The rope or cord *H* extends from the end of balance-beam *g* down and around pulley *F*, up over *E* and down around the guide-pulleys *i i* near the floor, and thence to clutch-frame *I*.

In operation—for example, for the test “neck anterior”—the rest *B* should be behind the shoulders and the pull applied to the forehead through a suitable strap-coupling, the forehead, and pull-strap. In this case the pull-strap should be, as shown, above the rest *B*; but in testing the muscle which straightens the knee the support should be opposite the knee-joint, behind the knee, and the pull-strap *d*, as well as its guide-pulley *D*, should be near the floor, opposite the ankle or the lower end of the bone to be moved. The pulleys *D*

and F are made of moderate size to counter-act or avoid the friction of small ones and the friction due to a sharp bend in a wire rope; but as pulley E serves only to change direction of the rope and only moves when the frame C is adjusted it may be relatively small without affecting the operation of the apparatus. In testing the gripping-muscles of the hand the thumb would be placed over the round *u*, the hand below it, and the pull-strap guide D would be brought to a level with *u*. The pull-strap handle would be moved to just the proper distance from *u*, varying according to the size of hand by raising or lowering the clutch I, when the fingers of the operator would grasp the handle, and the amount gripped would be imparted to the strap *d*, thence to pulley F, and one-half of it through rope H to the lever *g*, and so on to the scale which is adjusted to indicate upon the dial exactly the number of points pulled.

It will be observed that this is a convenient and useful exercising apparatus outside of its capacity for testing the strength of any individual muscle.

Having now described my invention, what I claim is—

1. The combination of upright supports or standards, a vertically-adjustable limb or body rest, and a vertically-adjustable pull and frame carrying pull-guide, substantially as described.

2. The combination of a weighing device, a

cord connected with a balance-beam of said weighing device, means for taking up and extending the outer extremity of the cord, a pull device, and an adjustable pull-guide, substantially as described.

3. The combination of upright supports or standards, a vertically-adjustable rest, a vertically-adjustable pull and pull-guide, and means, as an adjustable clutch, for taking up slack and paying out rope, substantially as described.

4. The combination of standards, a body or limb rest adjustable on said standards, a fixed weighing device, a movable clutch-frame, a floating pulley, a pull-strap connected with said pulley, a suspended pulley and guide-pulley, and a rope extending from the weighing device around said pulleys to the movable clutch-frame, substantially as described.

5. The combination, in an exercising-machine, of an adjustable body or limb rest, an adjustable frame carrying guide-pulleys, a fixed weighing device, a rope or cord, a pull-strap operatively connected with said rope, and means for paying out or taking in the rope for adjusting the pull-strap to the desired position, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

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Witnesses:

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