A. BARKER & E. ANDERSON.

Exercising Machine.

No. 228,800. Patented June 15, 1880.

Fig. 1.

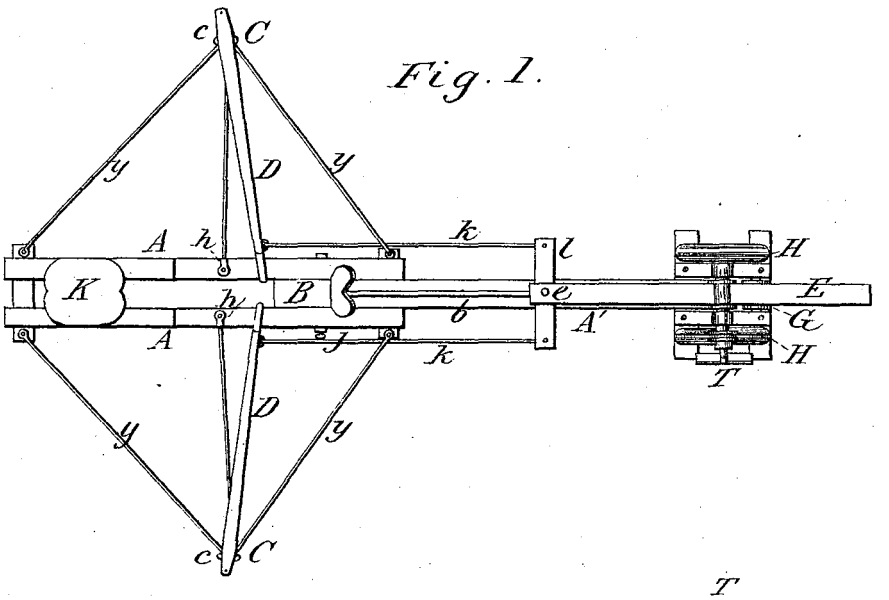


Fig. 2.

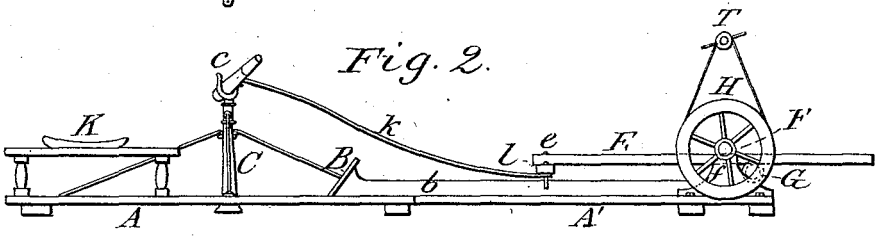
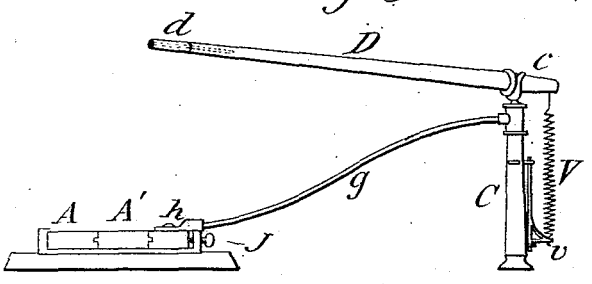


Fig. 3.



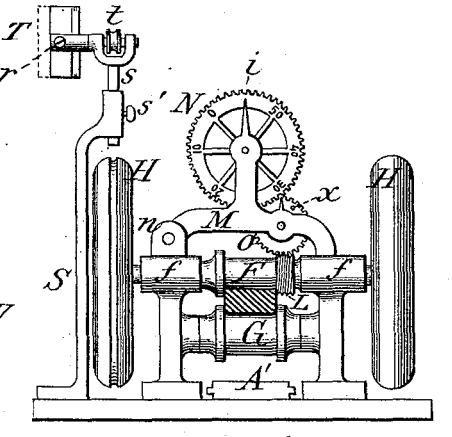


Fig. 4.

Witnesses:
Nelson G. Foskay
Franklin Couch

Inventor:
Asbury Barker
Euclid Anderson

UNITED STATES PATENT OFFICE.

ASBURY BARKER AND EUCLID ANDERSON, OF PEEKSKILL, NEW YORK.

EXERCISING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 228,800, dated June 15, 1880.

Application filed December 18, 1878.

To all whom it may concern:

Be it known that we, ASBURY BARKER, of Peekskill, in the county of Westchester and State of New York, and EUCLID ANDERSON, of the same place, have invented a new and useful Improvement in Exercising-Machines, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a top view of a machine embodying our invention. Fig. 2 is a side elevation of the same with the most of one side removed that the arrangement of parts may be seen. Fig. 3 is an enlarged end elevation of the oar D of Fig. 1. Fig. 4 is an enlarged elevation of the right of Fig. 1.

The object of this invention is to produce a machine that will furnish a means of healthful exercise, and that will not only allow of, but really require, the exact movements and produce the same sensations as actual rowing, thereby enabling persons to become even expert oarsmen without the use of a boat; and, further, to provide means for measuring and indicating the power expended, thereby rendering the machine a means of testing the comparative strength, skill, and endurance of the operators.

We are aware that several kinds of exercising-machines have been used; but they all fail to give the actual movements of rowing, and, owing to their principles of construction, afford no ready means of determining or registering the amount of work done. Those that operate by the friction of clamps or plates present a dead pull at each stroke that is not at all like the yielding and increasing movement of a real boat; and those that operate by compressing a spring or lifting a weight, while free from this objection, present another—that of the reaction of the spring or weight, whereby the body is forced back, instead of being brought back by muscular effort, the result being that there is not that general muscular exercise of the whole body that is obtained in rowing.

We overcome these objections by consuming in our machine the power of the operator mainly in giving impetus to a revolving wheel of sufficient weight to retain its momentum, in part, till the succeeding stroke of the oar. The revolving wheel thus answers to the momentum of a row-boat, and the sensation of motion in the two cases is identical.

In the drawings, A A is a frame supporting the parts. It consists of three parallel strips of wood, A A A′, the latter sliding between the other two, being retained in place by tongues and grooves, and by the clamp J, Figs. 1 and 3. By loosening the clamp J the frame may be pushed together and made compact when not in use.

D D are levers or oars, resting at one end in the oar-lock *c*, which is supported on top of the post C, the lower end of which rests on the floor. The rods *y y* and *g* serve to brace the post, as shown. The two braces *y y* may be unhooked from the post, leaving the latter, as the brace *g* is pivoted at *h*, free to be folded up close to the strips forming the base.

K is the seat, sliding or not, as preferred. *k k* are light and somewhat flexible rods that connect the oars with the cross-piece *l*, which is rigidly attached to the end of the wooden bar E. This bar passes between the two pulleys F and G, Fig. 2, the latter being an idle pulley, and the other secured to a shaft carrying the fly-wheels H H.

As will be seen from the drawings, the two pulleys, the bar E, and the oars are so placed with reference to each other that when the handles of the oars are raised (as they would be to dip the blades in actual rowing) the bar E is pressed firmly against both pulleys, and then as the bar is pulled toward the seat the friction between it and the pulley F causes the latter, and with it the wheels H H, to revolve; but when the oar gets to the end of the stroke and is depressed, the same as for lifting the blade out of water, the inner end of the bar is lowered, so that it does not touch the roller F, and will not during the return stroke, but simply rides back on the idle roller G.

We prefer using two fly-wheels, H, on account of equalizing the pressure on the bearings, though in other respects one wheel will answer as well; and while we prefer using a friction-bar on this style of machine, we do not confine ourselves to that particular mode of communicating the power to the wheels, as it is evident that a rack and pinion or an endless belt passing around F and passing through

a clutch in the piece *l*, or other substantially similar devices, may be used to produce the same result.

In a machine designed for more than one pair of oars we prefer the use of a belt rather than a friction-bar.

The power exerted on the friction-bar E is converted, as above shown, into rotary motion of the wheels H H, which are so adjusted as to weight and speed that they will nearly consume the power exerted on them; but as the power exerted varies with different persons, it is necessary to provide means for adjusting the resistance to be overcome. Otherwise the speed in some cases would become so great as to require too quick a stroke to keep up with it. This additional resistance may be supplied by using a brake with more or less pressure; but we prefer using the revolving fan, as shown at T, Figs. 2 and 4. This fan has adjustable vanes, whose surface can be increased or decreased at pleasure; and, as shown in the drawings, the vane T consists of two strips of thin metal lying in a slotted hub, *r*, and held in place by a set-screw or other means which will allow of their adjustment. Lines placed on one of the vanes serve as a scale by which to adjust the amount of resistance required.

The fan is driven by a belt passing over the pulley *t* and around wheel H. The whole is supported by the standard S. The rod *s* and set-screw *s'* allow of sufficient adjustment to keep the belt tight. The indicator, for showing the amount of work performed, is shown in Fig. 4.

L is a screw-thread on the axle of the pulley F. *o* is a worm-wheel engaging with the screw. On the wheel *o* is a pin, *x*, that at each revolution of *o* engages with and moves forward one tooth of the index-wheel N. On the margin of the latter are figures, which, with the pointer *i*, serve as an index of the number of revolutions made by the wheels H.

That the index may be readily set at the proper starting-point the frame M, that carries the indicator-wheels, is pivoted at *n*, and as the opposite side is free the whole can be lifted far enough to disengage the wheel *o* and screw L. The weight of the whole indicator is sufficient to secure proper contact with the screw when not forcibly lifted apart.

To save weight in the oar, and yet have it properly balanced, the spring V is attached to its outer end and to the lower end of the swinging bracket *v*. This bracket is made so as to swing with the oar, and thus prevent varying pressure during the stroke. The handle *d* of the oar is made free to turn on the oar to allow of the feathering movement of the same.

We are aware that a wheel having an alternate rotation backward and forward imparted to it by pulling on a cord wound about its axle has been used in an exercising-machine; and therefore we do not claim, broadly, the use of a momentum-wheel in its application to rowing-machines.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an exercising-machine, the momentum wheel or wheels H, in combination with a friction-bar or other suitable mechanism for imparting to said wheel a continuous rotary motion, substantially as and for the purpose described.

2. In an exercising-machine, the combination consisting of the momentum wheel or wheels H, pulleys F and G, friction-bar E, and oars D D, substantially as shown and described.

3. In combination with the oars, driving mechanism, and momentum wheel or wheels H, forming an exercising-machine, the indicator N, for showing the number of revolutions of said wheel or wheels, substantially as shown and described.

4. In an exercising-machine, the fan T, or its equivalent, in combination with the momentum-wheel H, for adjusting the resistance of the latter.

5. In an exercising-machine, the spring V, in combination with the lever or oar D, for balancing the latter, substantially as shown and described.

6. In an exercising-machine, the oar D, having its handle *d* free to turn independent of the oar, to allow of the feathering movement of the hand, substantially as shown and described.

ASBURY BARKER.
EUCLID ANDERSON.

Witnesses:
FRANKLIN COUCH,
NELSON G. FOSHEY.