(No Model.) 2 Sheets—Sheet 1.

R. REACH.

EXERCISING MACHINE.

No. 368,111. Patented Aug. 9, 1887.

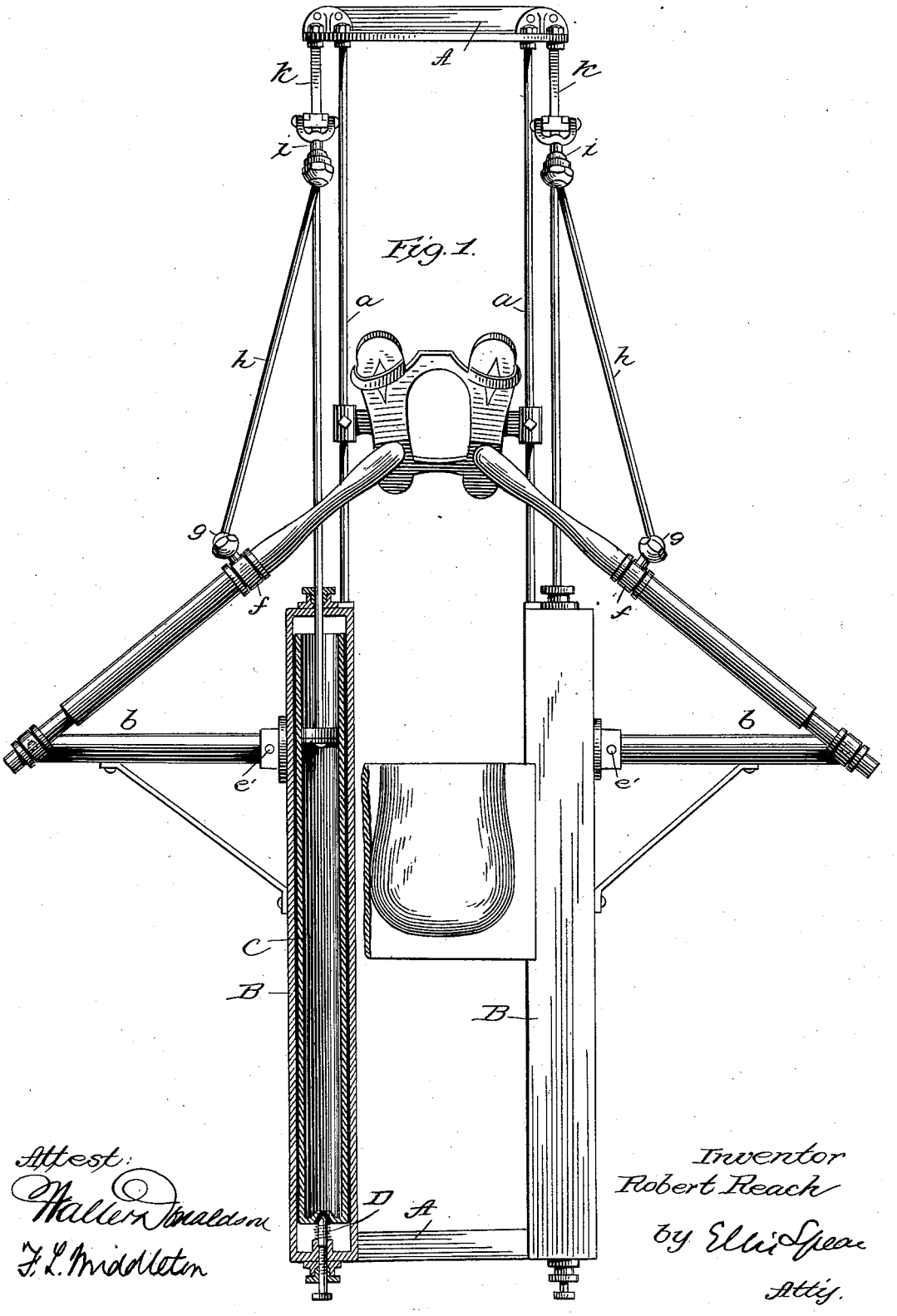

Fig. 1.

Attest:
Walter Baldwin
F. L. Middleton

Inventor
Robert Reach
by Ellis Spear
Atty.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

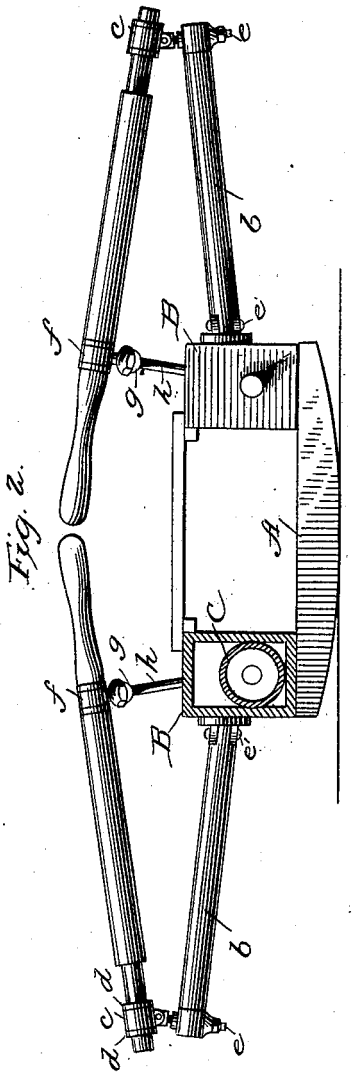


Fig. 3.

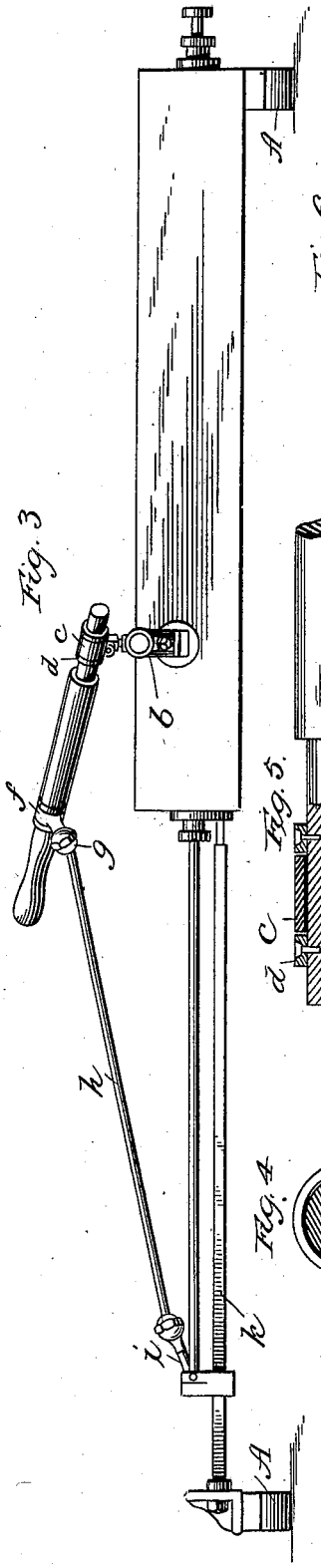


Fig. 6.

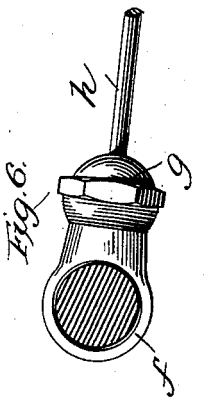


Fig. 5.

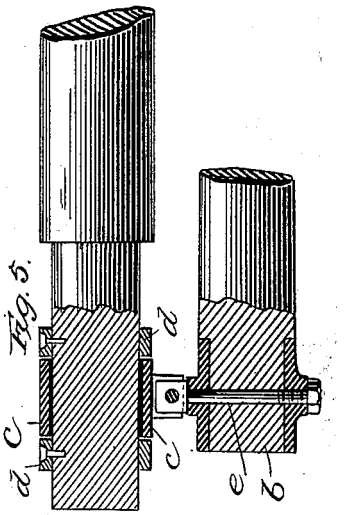
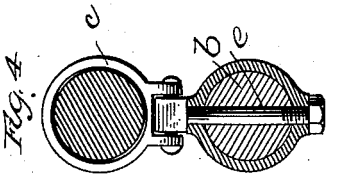


Fig. 4.



Attest:

Walter Donaldson

F. L. Middleton

Inventor

Robert Reach

by Ellis Spear

Atty.

UNITED STATES PATENT OFFICE.

ROBERT REACH, OF PHILADELPHIA, PENNSYLVANIA.

EXERCISING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 368,111, dated August 9, 1887.

Application filed February 25, 1887. Serial No. 228,854. (No model.)

To all whom it may concern:

Be it known that I, ROBERT REACH, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Exercising-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to exercising apparatus, particularly to that class known as "rowing-machines." Its object is to provide a convenient form of apparatus which will enable the operator to exercise every set of muscles which are exercised in rowing.

The invention consists in the devices and combination of devices, hereinafter particularly described.

In the accompanying drawings, Figure 1 represents a plan view of the apparatus, one of the cylinders being in section. Fig. 2 represents a rear view of the apparatus. Fig. 3 is a side elevation of the machine. Fig. 4 is a transverse section through one of the outriggers and the oar connected thereto, showing the manner of forming the connection. Fig. 5 is a longitudinal section, partly in side elevation, of said connection. Fig 6 is a detail view of the connection between the oar and its connection-rod.

In the drawings the apparatus is shown as supported upon a rocking frame, A, which rocks from side to side under the irregular pulling of the operator upon the oars, as in the ordinary exercise of rowing upon the water. At one end of the frame, upon either side thereof, I arrange closed compartments B B, made water-tight, and within these compartments I place cylinders C C. These cylinders are open at their front ends and are in connection with the compartments in which they are placed. The opposite ends of these cylinders are closed, with the exception of a small opening in the center, the size of which may be increased or diminished by means of a suitable valve, D. Pistons are located within these cylinders, connected to operating piston-rods, as shown. These pistons are of ordinary construction and have openings through them covered by a clapper or any suitable disk.

The compartments and the cylinders are filled with water, and the action of the valves will force the water from the front to the rear through the openings in the cylinders, and it will flow above the cylinders back to and through the open ends. This gives the necessary resistance to the stroke of the piston, and this resistance may be increased or diminished by increasing or diminishing the size of the opening at the rear of the cylinders. In the return-stroke of the valve the buckets will open and the water will pass through, very little resistance thus being offered to its return. It will thus be seen that as these compartments are filled with water the cylinders are submerged and the water will always be upon both sides of the valve and all danger of a vacuum avoided. Above these compartments and resting upon them I provide a seat, which may be stationary or an ordinary sliding seat, and in suitable relation to said seat I fix the foot-rests, attaching them to supporting-rods *a a*. The outriggers I have shown at *b*. They consist of a bracket suitably supported from either side of the frame and braced in any desirable manner. A bolt, *e*, passes through the end of this bracket, and the head of said bolt is fastened loosely by means of a pin to the depending flanges of a ring or collar, *c*, which supports the oar. Upon either side of this collar, encircling the oar, is a ring, *d*. The bracket above referred to is preferably secured to the side of the frame by means of projecting lugs, and in transportation the braces may be removed and the connecting-pin taken out which holds the bracket in place, and thus permit it to be folded against the side of the frame; or this pin may remain in place to act as a pivot when the bracket is swung to the side of the frame.

The oar is loosely held within the collar *c*, and as the rings *d* are upon rither side of this collar and fixed to the oar, they serve as guides, and the oar can be freely turned, as in the act of feathering, within the collar *c*. Sufficient vertical movement is permitted the oar by means of the loose connection of the bolt *e* with the depending flanges of the collar, and horizontal movement is permitted the oar by reason of the said bolt *e* being permitted to turn within its bearings in the supporting-brackets.

I will now describe the connection between the oar and the piston which operates the valve within the cylinder.

At a convenient point between the handle of the oar and the end which is pivoted upon the bracket I fix a collar, *f*. This collar has a projection upon its front side, and in this projection is formed a socket adapted to receive the ball *g* upon the end of a rod, *h*, making a ball-and-socket joint at this point. The rod *h* has a ball formed upon its opposite end, and this is adapted to a socket corresponding thereto and formed in the end of a pivoted link, *i*. The opposite end of the link is bifurcated, and has a pivoted connection with a sliding block which is connected to the end of the operating piston-rod.

The sliding rod is guided upon a squared rod, *k*, arranged directly below the piston-rod. Instead of being squared, however, it may be splined and a feather arranged upon the sliding block. By means of the numerous universal joints and pivoted connections the operator has complete control over the oars, and they may be made to describe any variety of movements without danger of bending the piston-rod or getting the other parts out of order. The supporting-rod for the foot-rests and the guiding-rod for the sliding block are extended to the front of the machine and suitably secured.

I am aware that prior to my invention a pivoted water-chamber has been provided containing suitable valves and a piston therefor, with a connecting-pipe between the front and rear of said cylinder for the passage of the water in the back-and-forth movement of the piston, and I do not broadly claim this.

I claim as my invention—

1. A rowing-machine consisting of cylinders, water-compartments surrounding the same, pistons and piston-rods arranged within the cylinders, and suitable connections with the oars, substantially as described.

2. In a rowing-machine, and in combination, the cylinders, the compartments B, inclosing the same and forming water-compartments, pistons and piston-rods and suitable connections between said rods and the oars, and a seat supported from the said water-compartment, substantially as described.

3. In combination, the cylinders, the compartments B, inclosing the same and forming water-compartments, the pistons and piston-rods and suitable connections between said rods and the oars, a seat supported by the said water-compartments, and the outriggers, also supported thereby, substantially as described.

4. The combination, in a rowing-machine, of the water-compartments, the cylinders contained within the same, the valves within the cylinders, the piston-rods for operating the valves, the oars having a universal connection with their supporting-brackets, a pivoted link connected to the end of the piston-rod, and a rod having a universal connection with said pivoted link and also with the oar, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT REACH.

Witnesses:
EMANUEL HOFF,
J. H. BEECROFT.