

(No Model.)

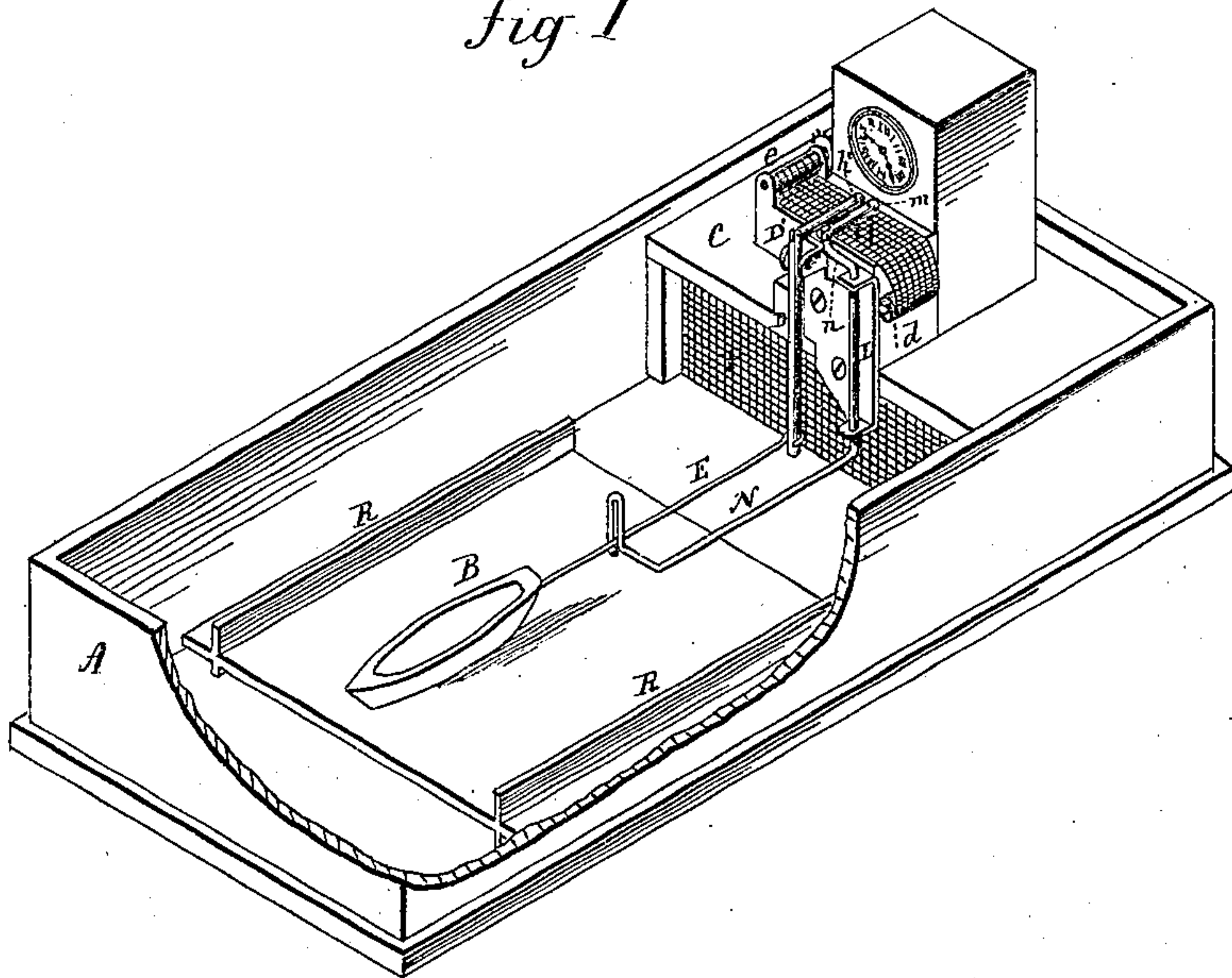
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APPARATUS FOR PRACTICE ROWING.

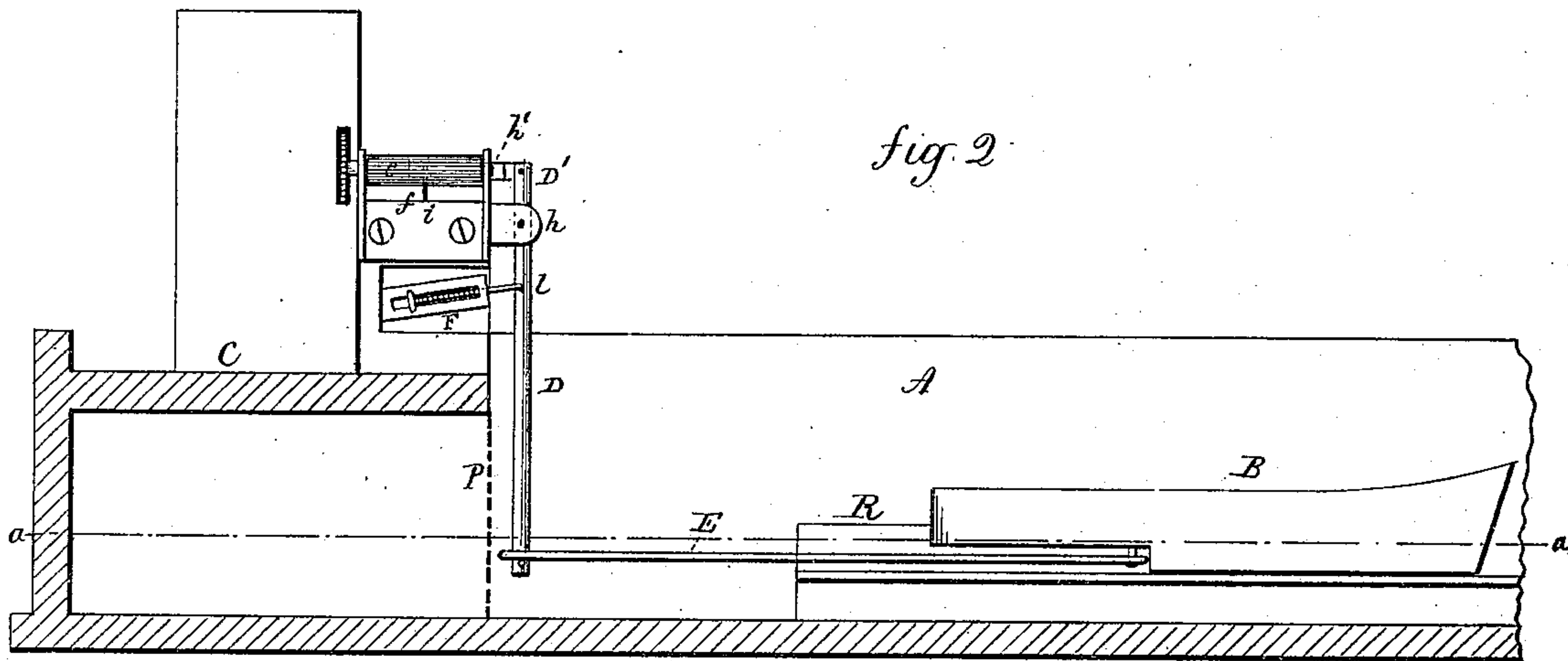
No. 249,644.

Patented Nov. 15, 1881.

*fig 1*



*fig 2*



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR PRACTICE ROWING.

SPECIFICATION forming part of Letters Patent No. 249,644, dated November 15, 1881.  
Application filed August 13, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. LOMAS, of West Haven, in the county of New Haven and State of Connecticut, have invented new Apparatus for Practice Rowing; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view; Fig. 2, a sectional side view.

This invention relates to an apparatus for practice rowing wherein the oarsman may row precisely as if in a boat, the object being an apparatus whereby the oarsman may know the power which he applies to the oars, and also the uniformity with which he applies that power to the oar of each hand; and it consists in a mechanism arranged at a stationary point, with the boat resting in the water connected to said mechanism, whereby the power which the oarsman applies through his oars in the water will be indicated, and also in mechanism which will indicate the difference, if there be any, in the power applied to the two oars which he holds, as more fully hereinafter described.

A represents the tank, which in size is sufficient to contain the boat B, in which the oarsman is to sit, and allow for movement of that boat to some extent longitudinally, and also sidewise movement. This tank is filled with water—say to the line *a a*—and the boat set upon the water within the tank. The boat may be of any suitable construction, according to the taste or requirements of the oarsman. At one end of the tank is a platform, C, which contains a clock-work that will impart to a roller, *d*, and a roller, *e*, a rotative movement, so as to carry a strip of paper which is wound upon one over a table, *f*, at a given or predetermined rate of movement. This paper is preferably ruled with longitudinal and transverse lines—say ten to the inch. D is one arm of a lever, hung upon a stationary fulcrum, *h*, and, extending down, is connected by a rod, E, to the boat. The connection between the rod E and the boat is such as to give perfect freedom to the boat

to swing to the right or left or to rock. The shorter arm D' of said lever extends upward, and from it an arm, *h'*, projects over the table, and carries a marker, *i*, which bears upon the surface of the paper and will mark on that surface as the paper moves over the table. If the boat be stationary, that mark will be straight. If the boat advances or retreats, such movement will be indicated on the surface of the paper by variations in that mark.

F is a spring, one end of which has a stationary bearing, the other connected to the arm D of the lever, as at *l*, so that as the boat advances the spring will be compressed. Thereaction of the spring will draw the boat astern. The oarsman takes his place in the boat and applies his oars to the water in the usual manner for rowing, and whatever power he applies draws correspondingly upon the spring F and moves the marker *i* on the surface of the paper. The power of the spring being known, the marker on the paper will indicate the power which the oarsman has applied in rowing, and will also indicate the regularity with which he has applied that power and the rapidity with which he gathers himself for a new stroke, because after each stroke there will be a reaction of the spring to draw the boat astern, which will be indicated on the surface of the paper, and the time he takes to reapply his power will therefore be indicated by the variation in that line. Thus while rowing in the usual manner he attains all the exercise which rowing gives him in open water, and a record is made of every stroke which he takes, not only to show what amount of power he applies, but the regularity with which he applies it.

One thing essential to good rowing is that the oarsman shall pull with uniformity upon both oars. To indicate any irregularity which he may make and which he may cure by knowing it, I arrange a vertical rock-shaft, L, carrying a crank, *n*, at its upper end, from the pin of which a marker, *m*, extends over the paper, similar to the arm and marker *i*. From the lower end of the rock-shaft L an arm, N, extends outward toward the boat and engages with the rod E, so that any side movement of



the boat, which will, of course, impart a corresponding vibration to the arm E, will also give the arm N a like vibration and turn the rock-shaft L, which will draw the marker attached to it toward or from one edge of the paper, as the case may be. If the rowing be regular, so that a constant forward straight line is maintained by the boat, then the mark made by the marker *m* will be a constant straight line; but if a greater force be applied to one oar than to the other, which will tend to throw the boat to one side or the other, then such side movement will be indicated, and the oarsman, discovering such irregularity, may endeavor to cure it in future. Thus in a single tank, which may be in any convenient place for the oarsman, he is enabled to practice under instruction better than can be done by any coaching on open water, because any possible variation in his rowing will be indicated by the markers.

To break the "swash" produced by the rowing, a perforated partition, P, is placed across the tank at some distance astern of the boat, so that the waves are broken at that point as the water flows through. As there will be naturally a return movement in a tank of this character produced by the return of the water from the effect of the oar, and as this return will naturally flow to the outer sides of the tank, I arrange a partition, R, at each side longitudinally of the tank, and between the partitions the boat rides. The space outside the said partitions will form a channel, through which the return water will pass.

While designed with special reference to gymnasiums or other places where rowing practice is desirable, it will be understood that the recording apparatus may be applied at any stationary point on the bank of a stream or lake, and the boat attached thereto in the same manner as herein described as applied to the apparatus in a tank, the platform C representing the bank or any stationary point near or upon the surface of the water. I therefore do not wish to be understood as confining my invention to a tank.

In some cases it may not be desirable to record the regularity of the strokes of the two oars held by the oarsman, or that feature may be desirable without recording the power applied or the regularity of the pull; hence I do not wish to be understood as confining myself to the combined apparatus for recording both.

Other arrangements for moving the paper or surface on which the record is made may be employed. For instance, it may be a cylinder and the marking produced on the surface of the cylinder, a single revolution of the cylinder indicating a certain time.

Instead of a spring, it will be understood a weight may be applied as resistance against which the pulling is to be made.

I claim—

1. The combination of a boat resting upon

the surface of the water, a yielding resisting device attached at a stationary point and connected to the boat, and a recording mechanism substantially such as described at said stationary point, and also in connection with the boat, whereby the direct pull upon the boat will be indicated by said recording mechanism, substantially as described.

2. The combination of a boat resting upon the surface of the water and secured by connection to a stationary point, so as to be free to swing to the right or left, a recording mechanism substantially such as described, in connection with the boat, whereby the sidewise movement of the boat is indicated by said recording mechanism, substantially as described.

3. The combination of a boat resting upon the surface of the water, a yielding resisting device attached at a stationary point and connected to the boat, and a recording mechanism substantially such as described at said stationary point, and also in connection with the boat, whereby the direct pull upon the boat will be indicated by said recording mechanism, and a mechanism substantially such as described at said stationary point, also in connection with the boat, whereby the side swinging movement of the boat is recorded, substantially as specified.

4. The combination of a tank containing water, a boat resting upon the surface of the water in the tank, a yielding resisting device arranged upon a stationary platform and connected to the boat, and a recording mechanism substantially such as described on said platform, and also in connection with the boat, whereby the direct pull upon the boat will be indicated by said recording mechanism, substantially as described.

5. The combination of a tank containing water, a boat resting upon the surface of the water and secured by connections to a stationary point, so as to be free to swing to the right or left, a recording mechanism substantially such as described, in connection with the boat, whereby the sidewise movement of the boat is indicated by the said recording mechanism, substantially as described.

6. The combination of a tank containing water, a boat resting upon the surface of the water in the tank, a yielding resisting device arranged upon a stationary platform and connected to the boat, and a recording mechanism substantially such as described on said platform, and also in connection with the boat, whereby the direct pull upon the boat will be indicated by said recording mechanism, and a recording mechanism substantially such as described, in connection with the boat, whereby the sidewise movement of the boat is indicated by the said recording mechanism, substantially as described.

7. The combination of a tank containing water, a boat resting on the surface of the wa-



ter, in connection with a stationary recording mechanism which will indicate the pull by the oarsman, and channels at each side the tank for the return flow of the water, substantially as described.

5 8. The combination of a tank containing water, a boat resting on the surface of the water, in connection with a stationary recording

mechanism which will indicate the pull by the oarsman, and the perforated partition P across 10 the tank astern of the boat, substantially as and for the purpose described.

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Witnesses:

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