(No Model.)

C. H. WILLITS.

ROWING APPARATUS.

No. 420,137. Patented Jan. 28, 1890.

Fig. 1.

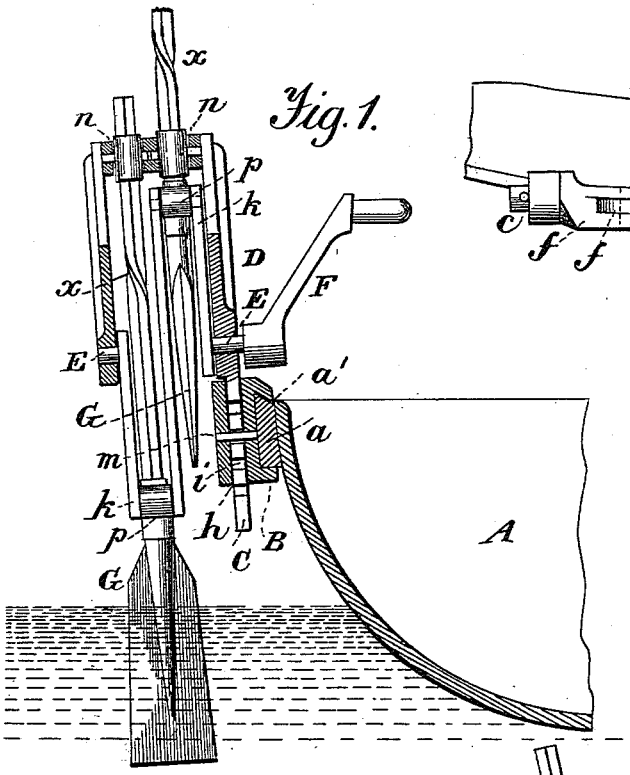


Fig. 3.

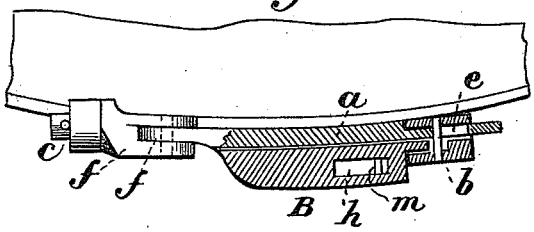


Fig. 4.

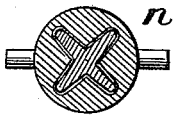
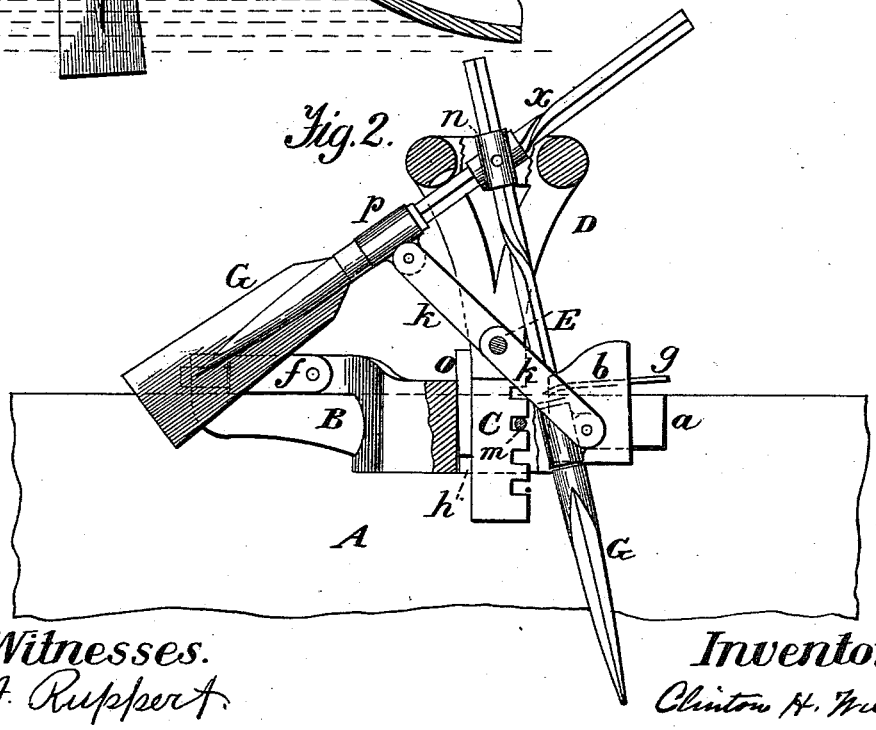


Fig. 2.



Witnesses.
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CLINTON HOMER WILLITS, OF NEW BOSTON, ILLINOIS.

ROWING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 420,137, dated January 28, 1890.

Application filed April 24, 1889. Serial No. 308,493. (No model.)

To all whom it may concern:

Be it known that I, CLINTON HOMER WILLITS, a citizen of the United States, residing at New Boston, in the county of Mercer and State of Illinois, have invented certain new and useful Improvements in Apparatus for Rowing Boats; and I do hereby declare the following to be 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.

This invention relates to apparatus for rowing boats; and it consists in certain improvements in such apparatus, as hereinafter described and claimed, the object of the invention being to provide the most efficient rowing apparatus for propulsion, and also to produce the feathering movement of the oars.

In the accompanying drawings, Figure 1 represents a sectional view of part of a boat with my improvements applied thereto. Fig. 2 is a sectional side view of the apparatus. Fig. 3 is a sectional plan of a holder which is secured to the side of the boat. Fig. 4 is a transverse section of an oar-stem and its pivoted guide.

The apparatus herein described is applied to each side of the boat, two oars being employed at either side. To each side of the boat A is fastened a horizontal piece *a*, which is beveled at its upper edge, as seen at *a'*. The said piece *a* forms a base for a holder B, which fits over the piece, and at one end has a swivel-connection *c* therewith. The opposite ends of the holder and of *a* are reduced, to be inclosed by a sliding keeper *b*, which is connected with the piece *a* by means of a pin, which passes through a slot *e*.

As will be seen in Fig. 3, the holder B may be released by moving the keeper *b* endwise, and may then be raised and turned inward, such movement being allowed by a hinge-coupling *f* and the swivel-coupling *c*. The keeper, when closed, is retained in place by a spring *g*. The holder B has a mortise or slot *h* to receive an adjustable standard C, the lower part of which has notches *i* to connect with a fixed pin *m* in the holder. The standard may be secured by a wedge or key *o*.

The upper part of the standard C is formed with or has secured thereto a frame D, in the top of which are formed two openings, in which are pivoted two guides *n*, through which the stems of the two oars extend, as hereinafter stated.

E indicates a crank-shaft, which has bearings in the frame D, and is provided with a double crank within said frame and hand-crank F on the inner end of the shaft. Two oars, having blades G, are connected with the cranks *k*, the cranks being so constructed that one oar makes its downward stroke as the other is raised. The connection between each crank *k* and an oar is formed by a compound sleeve or boxing *p*, having two parts solidly connected, one of which fits loosely on the crank, and the other fits loosely on a neck or reduced part of the stem of the oar, so that the latter may turn therein.

The stems of the two oars extend upward through the hollow pivoted guides *n*, which turn freely on their horizontal axis, but are held rigidly against turning on a vertical axis.

To produce the feathering movement of the oars, each oar-stem is provided with a number of longitudinal ribs or flanges, which extend along the stem, and the interior of each guide *n* is made to conform to the ribbed stem, so that the latter moves freely in the guide. As shown in Fig. 4, the oar-stem is provided with four ribs or flanges, being cruciform in section, such construction being preferable, and the interior of the pivoted guide conforms thereto. The ribbed stem, being usually made of iron or steel, is twisted somewhat at *x*, so that when the oar is raised by the crank it is turned one-quarter around as the twist *x* passes up through a guide *n*, thus bringing the blade edgewise for its forward movement. The forward movement of the oar being made as the crank is turned, the oar descends, the twist *x* passing down through the guide *n*, and the oar is turned again to its proper position for the stroke. By this construction of the oar-stems, pivoted guides, cranks, and crank-connections two oars connected with a crank-shaft may be alternately raised, turned to position for the feathering movement, and then turned to position for the stroke and alternate strokes of both oars made during one rotation of the crank-shaft. One apparatus being fixed to

each side of the boat, the boatman, sitting in position looking forward, can by turning the cranks operate the oars very rapidly with very effective strokes.

I claim—

1. The combination, with a row-boat, oar, and frame D, of the piece *a*, beveled at *a'* and slotted at *e*, the holder B, fitting on piece *a*, the sliding keeper *b*, connected with piece *a* by a pin passing through slot *e*, the hinged coupling *f*, and the swivel *c*, as and for the purpose set forth.

2. In a rowing apparatus, the combination, with an oar and frame D, of the holder B, having the stud-pin *m* and slot *h*, the standard C, passing through said slot and notched at *i* to receive pin *m*, the frame D, secured to the top of the standard, the oar-guides *n n*, pivoted in said frame, and a shaft E, having a hand-crank and a double crank, all substantially as and for the purpose described.

In testimony whereof I have affixed my signature in presence of two witnesses.

CLINTON HOMER WILLITS.

Witnesses:
CORTNEY WILLITS,
FELTON PROUTY.