F. D. GRAVES.

ROW-LOCK.

No. 169,537. Patented Nov. 2, 1875.

Fig. 1.

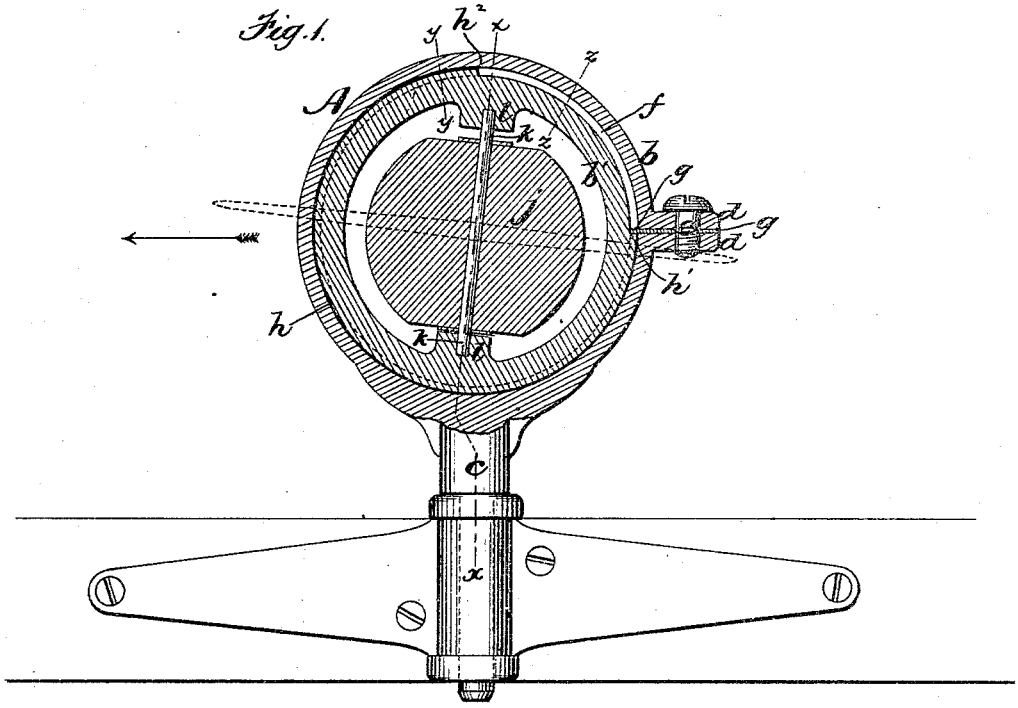


Fig. 2.

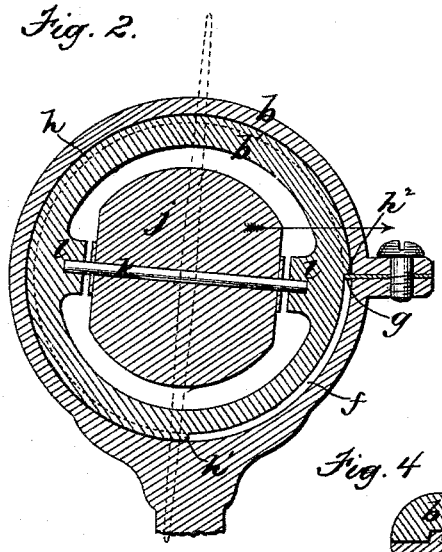


Fig. 3.

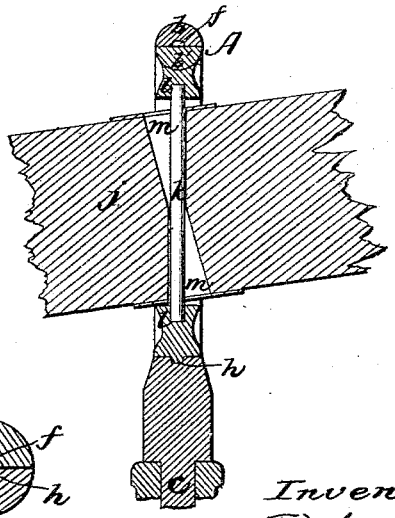


Fig. 4

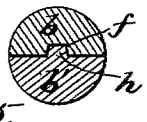
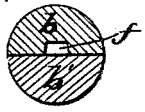


Fig. 5.



Witnesses.
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M. W. Copp.

Inventor
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by his Attys.
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UNITED STATES PATENT OFFICE.

FREDERICK D. GRAVES, OF SOUTH BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ROWLOCKS.

Specification forming part of Letters Patent No. **169,537**, dated November 2, 1875; application filed July 22, 1875.

To all whom it may concern:

Be it known that I, FREDERICK D. GRAVES, of South Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Rowlocks, of which the following is a specification:

In the accompanying drawing forming a part of this specification, Figure 1 represents a sectional view of my invention as applied to a boat, showing the position of the oar when it is being feathered. Fig. 2 represents a sectional view of the same, showing the position of the oar when making a stroke. Fig. 3 represents a section on the planes of line *x x*, Fig. 1; and Figs. 4 and 5 represent sections taken on the planes of lines *y y* and *z z*, Fig. 1.

This invention relates to that class of rowlocks in which the oar is swiveled to the rowlock, and adapted to describe the necessary motions in rowing, at the same time being so engaged with the rowlock that when released by the oarsman it will not escape.

The object of this invention is to improve the construction and operation of the class of rowlocks above mentioned, in such manner as, first, to insure the proper inclination of the blade of the oar, and prevent the liability of its catching the water when feathering or recovering, as well as to insure the proper position of the blade of the oar when making the stroke; and, secondly, to enable the outer end of the oar to be raised when it is being feathered, in order to prevent its contact with the water in rough weather.

To these ends my invention consists in the construction and combination of parts which I will now proceed to describe, and point out in my claim.

In the drawings, A represents my improved rowlock, which is composed of an inclosing-ring, *b*, located on a pintle, *c*, and an inner ring, *b'*, inclosed by the ring *b*, and adapted to be partially rotated therein, as will be explained. The inclosing-ring *b* is divided on one side, and provided at the dividing-line with ears *d d*, which are connected by a screw, *e*, when the device is in working order. The inside of the inclosing-ring *b* is provided with a groove, *f*, which extends almost around it, its continuity being broken only by a stop-plate, *g*, which is clamped between the ears *d d*, as shown in Figs. 1 and 2. The inner ring *b'* is provided on its outside with a segmental projection, *h*, which fits into the groove *f*, and extends around about three-fourths of the perimeter of the inner ring, and terminates in shoulders or abutments h^1 h^2, a segment of the groove *f* being thus left open, and into this segment the stop-plate *g* projects, and limits the rotation of the inner ring by contact with the shoulders h^1 h^2. *j* represents the oar, which is pivoted to the inner ring *b'* by a trunnion-pin, *k*, the ends of which enter suitable sockets *l l* on opposite sides of the interior of the ring. The orifice *m* in the oar, through which the pin *k* passes, is elongated at its ends longitudinally of the oar, as shown in Fig. 3. The pintle *c* of the rowlock is inserted in a socket attached to the gunwale of the boat, the pintle and rowlock being adapted to turn freely in the socket. From the foregoing it will be readily seen that an oar pivoted in the inner ring *b'* is adapted to be partially rotated, in addition to its oscillating movements, so that when its stroke is completed it can be turned, so as to feather the blade in the recover stroke. The stop-plate *g* and shoulders h^1 h^2 of the inner ring *b'* are arranged in such mutual relation that the shoulder h^1 abuts against the stop-plate, in feathering the oar, before the blade becomes horizontal in cross-section, as shown in dotted lines in Fig. 1, so that the cross-section of the oar is necessarily inclined downward from its forward to its rear edge during the feathering stroke, the forward edge during this stroke being the upper edge during the pulling stroke, this inclination of the blade preventing its forward edge from engaging with the water and overturning the rower—or, in other words, causing him to "catch a crab." When the oar is turned to make the pulling stroke the shoulder h^2 abuts against the stop-plate *g* when the cross-section of the oar-blade is in the position shown in dotted lines in Fig. 2, the oar being inclined slightly forward. This limitation of the oar in its rotation prevents awkward accidents in feathering, and enables an unskilled person to row with a considerable degree of certainty.

The elongated ends of the orifice *m* enable the outer end of the oar to be raised or lowered when in position for feathering. With-

out this provision the oar would be immovable vertically when the trunnion-rod is in a vertical position.

The construction of the rings *b b'* (the former being divided and having an annular groove intersected at one point by the stop-plate *g*, and the latter having a segmental tongue or projection fitting into the groove) is well adapted to the purpose for which they are designed, as the inner ring is thereby enabled to be readily inserted and removed, and is held securely in operative position. The divided outer ring affords extremely convenient means for the attachment of the stop-plate *g*, and the latter, as well as the inner ring, can be removed at any time by removing the confining-screw *e*. The segmental tongue or projection *h* of the inner ring serves the double purpose of keeping the ring in place and limiting its rotation, its ends forming abutments, as already described.

I claim—

In a rowlock, the combination of oar *j*, having slot *m m*, narrowing toward the center of said oar, trunnion-rod *k*, and ring *b'*, arranged to slip in the pivoted outer ring *b*, as described.

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

FREDERICK D. GRAVES.

Witnesses:

C. F. BROWN,

A. E. DENISON.