No. 646,041 Patented Mar. 27, 1900.

D. R. SHEEN.

BOW FACING ROWING MECHANISM.

(Application filed Dec. 1, 1899.)

(No Model.)

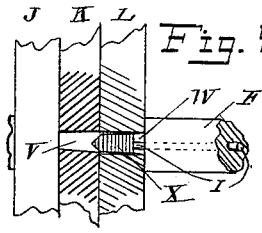

Fig. 5.

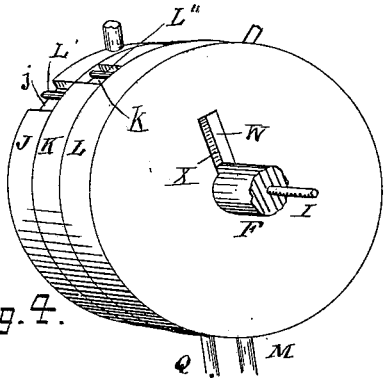

Fig. 4.

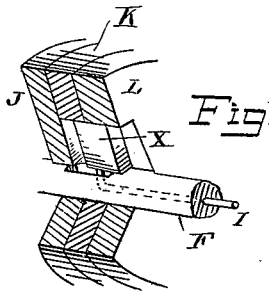

Fig. 6.

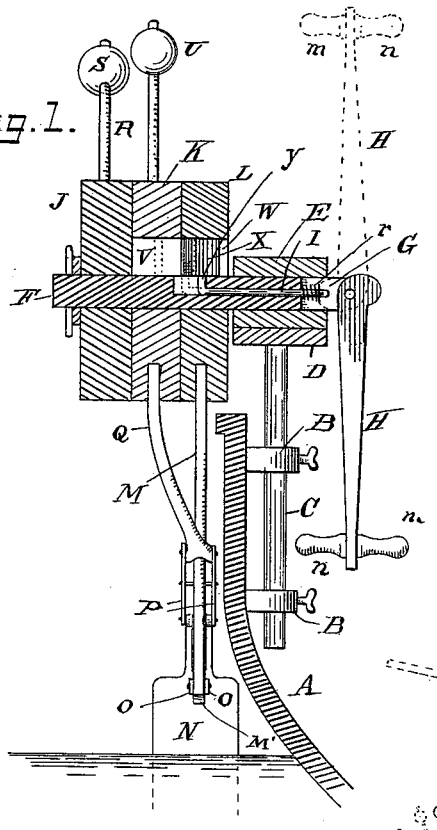

Fig. 1.

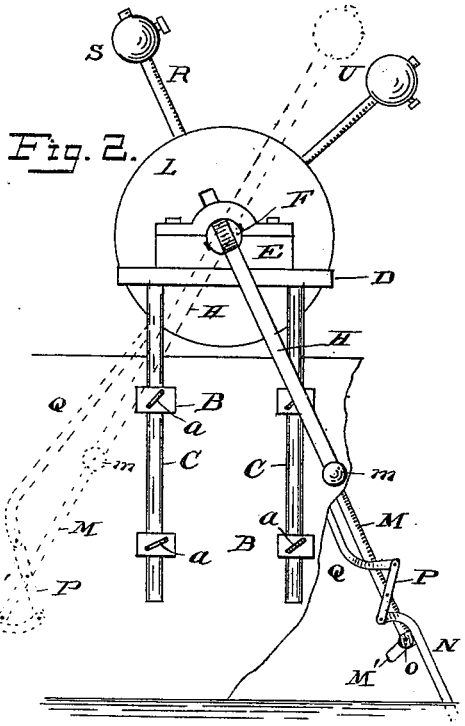

Fig. 2.

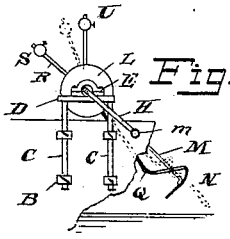

Fig. 3.

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UNITED STATES PATENT OFFICE.

DANIEL R. SHEEN, OF PEORIA, ILLINOIS.

BOW-FACING ROWING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 646,041, dated March 27, 1900.

Application filed December 1, 1899. Serial No. 738,828. (No model.)

To all whom it may concern:

Be it known that I, DANIEL R. SHEEN, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Bow-Facing Rowing Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a simple but efficient arrangement for propelling boats.

One object of such invention is to provide means for rowing boats in the direction the oarsman is facing, or, in other words, provide a bow-facing rowing apparatus.

A further and more important object is to construct a device of this kind that may be employed for both forward and backward rowing.

In the drawings herewith presented, Figure 1 is a sectional elevation of one side of the boat with one of the rowing devices mounted thereon. Fig. 2 is a side view of the same, showing two positions of the paddles. Fig. 3 is also a side view of the arrangement, showing open and closed position of the paddle at the forward part of the stroke. Fig. 4 is a perspective view of three plates and the shaft supporting them, showing slots and pins for operating purposes. Fig. 5 is a partial cross-section of portions of these plates, showing a locking-block therein. Fig. 6 is a perspective view, in part section, of said plates, showing the locking-block therein and the shaft having a longitudinal pin therein for moving said block.

Letters of reference correspond with those of the specification in the several figures.

A is the boat.

B indicates two pairs of brackets suitably attached to the inside of the boat, and C C refer to a pair of vertical rods adapted to pass through said brackets and to be held therein by suitable screws *a*. Said rods carry at their upper ends a plate D, supporting a bearing E, which carries a shaft F. Said shaft projects at each side of the bearing, and its inner end is slotted at G and carries, by means of a pivot, a crank H. The pivotal end of such crank is cam-shaped and is adapted to engage a pin I in the shaft, the purpose of which will appear later. The outer end of the shaft carries three plates J, K, and L, the latter being secured in suitable manner to the shaft, but the other two loose thereon and adapted to shift slightly about said shaft. I provide suitable means for retaining these in their proper positions. A paddle-arm M is secured to the plate L, substantially as shown in Fig. 1, and carries a paddle N at its lower end by means of the ears O. The upper end of the paddle is forked and straddles the said paddle-arm and has pivoted thereto two levers P, which are pivoted at about their middle to the said paddle-arm M. The opposite ends of the said levers are pivoted to the forked end of an arm Q, attached to the plate K, Fig. 1. Said arm Q straddles the arm M, as shown in Fig. 2, and when in the position shown in unbroken lines in said figure the paddle is open for work. In the position shown in dotted lines the paddle is at the limit of its stroke and the arm Q is removed from the arm M, thereby reversing the position of the levers P and swinging the paddle in such a way as to raise and close it against wind-pressure and liability to strike the water in the return movement. I have provided a lug M′ on the end of the paddle-arm, as shown, to limit the closing movement. In the peripheries of the plates J and K are notches *j* and *k*, respectively. In the plate L is a pin L″, which enters notch K, and in the plate K is a pin L′, entering the notch *j*. Secured to the plate J, in line with the paddle-arm, is a stud R, carrying an adjustable weight S. On the plate K also is a similar stud carrying an adjustable weight U, the relative positions thereof being shown in Fig. 2. The said weight S serves as a counterbalance for the paddle-arm and its parts and the weight U serves to throw the arm Q to operate the paddle. The closing operation is necessary or rather preferred in order to present as little surface as possible for wind-pressure in the backward stroke, as well as to prevent striking the water, as above stated.

Fig. 3 shows the beginning of the stroke, the crank H being thrust forward ready for the pull of the operator. It will be noticed that the paddle-arm is necessarily in its forward position and that the weight U is stand-

ing vertically, but falls to the position shown by dotted lines by reason of having just passed beyond the center of gravity. Its movement swings the arm Q toward the arm M and opens the paddle. The stroke now taken carries the paddle into the water, and in so doing the said weight U is carried back to the center by means of the pin L″ of the plate L and notch *k* in the plate K, and after passing that point the tendency is to close the paddle; but owing to the pressure of water against it this position is maintained throughout the entire stroke; but the moment the paddle has left the water at the end of the stroke the paddle must close, due to the weight. If this action does not obtain at once, certain operation is brought about by the weight S as it passes over the center. The notch *j* in the plate J strikes the pin L′ of the plate K and throws said plate and its weight U to operate the paddle. In its closed position after leaving the water the paddle returns to its former position for a new stroke and again opens as before. In passing the center the weight U moves to the dotted-line position, as shown in Fig. 3, for such opening movement. While weight S is employed as a counterbalance for the paddle arrangement, and I prefer to use it, it is not absolutely necessary. Neither is it altogether necessary for the proper throwing of the paddle; but it is an aid to that operation for the reason that, as above stated, if by any chance the said weight U should fail to respond to the force of gravity said weight S will assure its movement and that of the paddle. I have provided in this device means for reversing the direction of movement of the boat, as I have already pointed out.

In a rowing device of this character the reversing idea has been entirely overlooked, either by accident or because of the difficulty of constructing such an arrangement. By having the crank H pivoted to the shaft and providing two handles for operating it, I am enabled at an instant's notice to quickly raise said crank to the position indicated in broken lines in Fig. 1. It will be seen that the handle *m* of the crank will pass to the outside, while the handle *n*, which has hitherto been of no use, is now brought into position and employed in lieu of said handle *m*. It is to be noticed that in the forward-rowing operation the cranks and paddles have a swinging movement; but the reverse movement of the boat requires the cranks to be raised and a rotary direction of movement taken. The studs carrying the weights are short enough to revolve without touching the water. Since the plate K is loose on the shaft and partially revoluble thereon to cause the paddle to close, it is evident that it must be locked in its open position when used to row the boat backward, and in order to do this I cut a slot V in the plate K and a slot W in the plate L and place in the latter slot a block or wedge X. The shaft is centrally bored and has a slot *y* opening from such bore into the slot W. In the bore is placed a pin I, the inner end of which is upturned and has the block X attached thereto. A spring *r* on the outer end of the rod, within the slot G, bears against the bottom of the said slot and against a suitable pin or washer on the extreme end of the pin and serves to normally keep the block X within the plate L. When the crank is raised, its cam engages the end of the pin and forces the block into the slot V of the plate K a sufficient distance to lock the plates K and L together. Said wedge or block is pointed, so that when meeting the slot V, whether squarely or at one side, it will be guided into the slot and accomplish the desired end. Now it will be seen that by revolving the cranks the paddles, which are now locked open, will also revolve and be carried into and out of the water. I have merely shown the means of locking the plates to illustrate my idea; but of course other suitable means may be employed for accomplishing the same end. Furthermore, the handles *m* and *n* may be replaced by a single one pivoted to the crank and held in such manner that no change of hold taken by the hand need be necessary when the positions of the cranks are changed.

The brackets B may be replaced by other means for varying the height of the apparatus, as is obvious, and other methods of connecting the paddle and its several operating parts may of course be used. It is possible to use the crank for the backward movement of the boat while in the position used for the forward rowing movement, as shown in Fig. 1 in full lines; but the direction of rotation would necessarily be the reverse of that taken when the crank is raised to the position indicated in broken lines. In such case other methods of locking the paddle in the open position would necessarily have to be employed.

The entire device is quite simple and effective in operation, and the operator experiences no more inconvenience, and, in fact, not as much, as with a pair of oars. I may not use the plate J with its counterweight S, as has been intimated.

Having made my several objects clear and described the action of my invention, I claim—

1. A rowing apparatus comprising a shaft mounted on the boat, a paddle-arm adapted to move with the shaft, a paddle pivoted to such arm, a partially-revoluble member on the shaft for connection with said paddle for closing the latter, a crank on the inner end of the shaft, for moving the shaft, and means for locking the paddle in its open position for purposes set forth.

2. In a rowing apparatus a suitable shaft journaled on the gunwale of the boat, means for imparting a revoluble movement thereto, a paddle-arm adapted to move with the shaft, a paddle on the free end thereof, an operating-arm adapted to have a partial rotary movement about the shaft, means between the free

end thereof and the paddle for swinging the latter on its pivot, a weight for moving said operating-arm whereby a rocking movement thereof on the shaft causes the closing of the paddle when same is passing out of the water and the opening thereof as it passes into the water all for the purposes set forth.

3. In a rowing apparatus a shaft mounted horizontally on the boat and adapted for both rotary and rocking movements, a paddle-arm moving therewith, a paddle carried on the arm, means for closing the paddle against wind-pressure, a crank pivoted to the shaft at one end, for rocking the shaft, by swinging movement thereof, said crank adapted to be raised for locking the paddle in an open position and to receive a rotary movement whereby the paddle moves through a circular path and reverses the direction of movement of the boat, substantially as set forth.

4. In a bow-facing rowing apparatus adapted for use in both forward and rearward rowing of the boat, a shaft suitably journaled on the boat, a paddle-arm moving with the shaft, a paddle pivoted to the free end of the arm, a partially-revoluble member on the shaft, a paddle-operating arm secured to such member, adapted for moving said paddle for opening and closing the same, a weight for swinging the arm for the purposes described, a depending crank for imparting a rocking movement to the shaft, said crank being on same side of the shaft as the paddle-arm for a forward rowing movement and adapted to be raised so as to be opposite the said paddle-arm whereby a revoluble movement thereof will revolve the paddle to move the boat in a rearward direction, depending on the direction of rotation imparted thereto as set forth.

5. In a bow-facing rowing apparatus, a shaft journaled on the side of the boat, a plate secured thereto, a paddle-arm secured to the plate, a paddle pivoted to the arm, a second plate loosely mounted on the shaft adjacent to the fixed plate, a paddle-operating arm secured thereto and indirectly connected with said paddle whereby a partial movement of said loose plate on the shaft will open and close the paddle, a weight on the said loose plate adapted to operate the said arm and paddle by force of gravity, means for locking the said loose and fixed plates together and a crank for imparting both a revoluble and rocking movement to the shaft to drive the boat in a forward or rearward direction as desired.

6. In a bow-facing rowing apparatus, a shaft journaled to the side of a boat, a plate secured thereto, a paddle-arm secured to the plate a paddle pivoted to the arm, a second plate loosely mounted on the shaft adjacent to the fixed plate, a paddle-operating arm secured thereto and indirectly connected with said paddle whereby a partial movement of said loose plate on the shaft will open and close the paddle, a weight on the said loose plate adapted to operate the said arm and paddle by force of gravity, means for locking the said loose and fixed plates together, a crank for imparting both a revoluble and rocking movement to the shaft to drive the boat forward and rearward as desired, and a counterbalance for the paddle-arm adapted also to assist in the operation of opening and closing the paddle, substantially as described.

7. In a boat-rowing apparatus of the character described, a shaft mounted at the side of the boat, a fixed plate thereon, a paddle-arm affixed to the plate, a paddle on the arm, a loose plate on the shaft adjacent to the affixed plate, a paddle-operating arm secured to the loose plate for opening and closing the paddle, a weight on the said plate for accomplishing this operation, means for locking the paddle in its open position which consists in a block adapted to lock the said fixed and loose plates together, a pin adapted to move longitudinally within the shaft and carry the said block, a crank pivoted to one end of the shaft and adapted to move the pin and block for the purposes set forth, and a spring on said pin adapted to release the plates by removing the block, and weight for counterbalancing the paddle and its parts and assisting in the operation of opening and closing said paddle all substantially as set forth.

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

DANIEL R. SHEEN.

Witnesses:
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C. JOHNSON.