No. 655,742. Patented Aug. 14, 1900.

D. R. SHEEN.

PROPELLING MECHANISM FOR BOATS.

(Application filed Sept. 5, 1899.)

(No Model.)

Fig. 1.

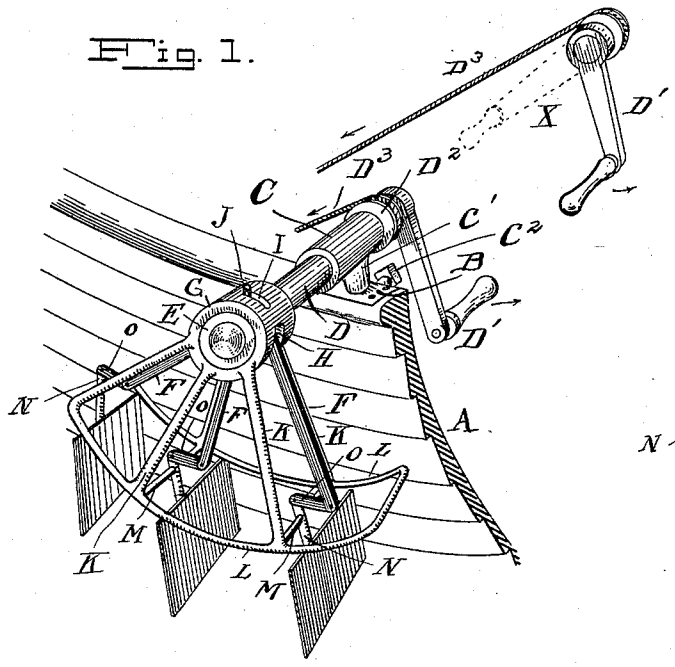


Fig. 1a.

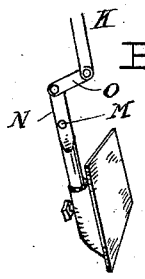


Fig. 2.

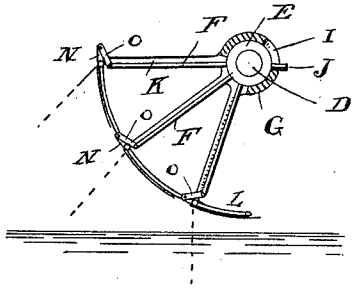


Fig. 3.

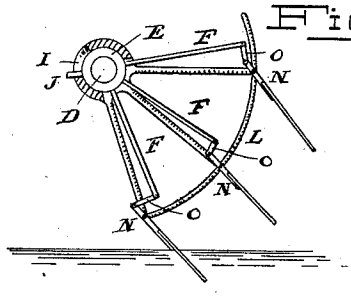
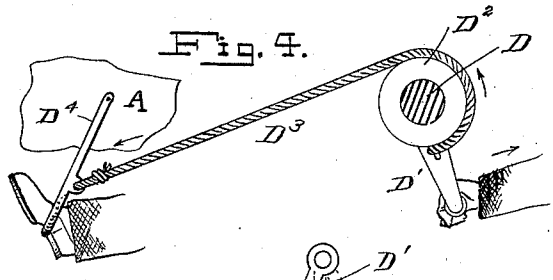


Fig. 4.



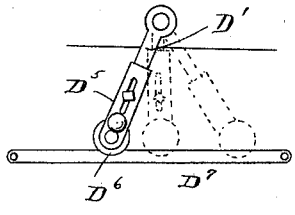


Fig. 5.

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UNITED STATES PATENT OFFICE.

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PROPELLING MECHANISM FOR BOATS.

SPECIFICATION forming part of Letters Patent No. 655,742, dated August 14, 1900.

Application filed September 5, 1899. Serial No. 729,428. (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 Propelling Mechanism for Boats and Sleds; 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 pertains to propelling devices for boats, but it may be used for propelling sleds on ice or snow as well.

One object of the invention is to provide an improved paddle mechanism that can be used on boats in all weathers.

A further object is to provide paddles adapted to be folded after each stroke, so that no wind-surface is presented.

A still further and important object is to arrange a hand-power device for propelling boats wherein the power of the operator can be utilized to the best advantage in rowing.

In the appended drawings, Figure 1 is a perspective view of a portion of a boat having one of my propelling devices secured thereto and showing the crank portion of another directly opposite. Fig. 1^a is a perspective view of a paddle and the arm supporting it, showing means for adjusting the same or removing it bodily. Fig. 2 is a side view of the device in raised position. Fig. 3 is the same shown in a raised position, but opposite to that shown in Fig. 2. Fig. 4 is a view of a shaft of one of the propellers, showing a crank for hand-power and a lever for foot-power employed in rowing the boat. Fig. 5 is a modified form of crank for the propeller, showing a sliding handpiece.

In the figures, A is the boat, having the usual socket-plate B secured to the gunwale. A T-bearing C has a depending stem C', which is inserted in the said socket and adjustable for any height by means of a screw C^2. The bearing portion C supports a shaft D, adapted to oscillate therein. The outer end of the shaft rigidly carries a paddle arrangement, consisting of a hub E, having radiating spokes F. Upon the hub is a sleeve G, having a slot H, through which the spokes F project, such slot permitting a slight rotary movement of the sleeve on said hub. A slot I in said sleeve and a pin J in the hub limit the movements of such hub and sleeve and are also instrumental in opening and closing the paddles, as will appear hereinafter. The sleeve has a series of arms K at each end parallel with the spokes F. These are connected by rims L, concentric with the sleeve. Between the arms at the rim are horizontal bars M, acting as pivots for paddle-arms N, and the upper ends of the arms are connected by links O to the free ends of the spokes F, as shown. The inner end of the shaft D is provided with a crank D', and a drum D^2, the latter having a rope or strap D^3 wound around it. The opposite end of the rope is attached to a foot-lever D^4, Fig. 4, pivoted to the inside of the boat. In Fig. 5 the crank D' is provided with a sleeve D^5, carrying a wheel D^6, adapted to run on a track or guide D^7, secured to the side of the boat. A slot in the sleeve and a set-screw in the crank serve to limit the movements of the said sleeve and crank and permit the wheel and crank-handle to move in a straight line and also prevent the separation of the sliding parts. Fig. 1^a shows how the paddle may be arranged to be adjusted on the arm N or removed therefrom.

In rowing the operator, with the arrangement shown in Fig. 1, moves his hands and body forward, swinging the crank to the position shown by dotted lines at X, at the same time drawing his feet toward him in order to allow the rope or strap D^3 to wind upon the drum. This action moves the paddles to the position shown in Fig. 2. In acquiring that position the paddles are made to close and lie parallel with the rims L L, due to the forward movement of the spokes F, which push the paddle-arms in a direction to raise the paddles. Now by moving the crank in an opposite direction or toward himself and at the same time pushing his feet from him the operator instantly opens the paddles to the position shown by dotted lines, and the continued movement carries the said paddles into the water, and they finally immerge at the end of the stroke and appear as in Fig. 3. By reversing the movement for a new stroke the arms F are moved first and close the paddles for the return movement, and the pin J reaches

the end of the slot I, carrying the outer arrangement forward bodily. It is evident that the slot and pin just mentioned are not absolutely necessary to the proper working of the device but I provide them in order to make the operation certain. It is observed that I have by this arrangement provided a bow-facing propelling mechanism, and, furthermore, I have provided a propelling mechanism that is more easily operated than any of which I am aware, since the best position for applying the power is obtained by placing the cranks below the center of the shaft and moving them only a portion of a revolution at the most advantageous position. By the construction shown in Fig. 5 I am enabled to move the crank-handle in a straight line by means of the guide D^7, as well as to have the leverage nearly uniform at all positions. The said guide may be slanted in either direction or may be curved, as best suited to the wants of the user. I may dispense with the foot-lever entirely; but I find it an aid to rowing, and hence prefer to use it. By closing the paddles all wind-surface is avoided. The drawings show the paddle-frame made in a quarter-circle; but I may employ a semicircular one or longer, if needed, and employ a greater or less number of the paddles. Heretofore paddle-wheels have been employed on pleasure-boats, and an entire revolution thereof was necessary; but the operator had only one advantageous point in the entire revolution where he could exert the most power, and that was when the crank was being drawn toward him. The speed gained at that moment was lost in the remainder of the cycle. Now by providing my device I am enabled to put all power into the stroke, the same as in rowing with oars, and return immediately to the starting-point for another stroke without loss of speed. While the drawings show only one propeller on the boat, Fig. 1, at the left side, it is understood that one on the right side is employed also. One device may be operated independent of the other in order to steer or turn the boat around in any desired direction.

Having thus described my invention, I claim—

1. In a propelling mechanism for boats, a horizontal shaft having bearing on the gunwale thereof, a series of spokes secured to the shaft at right angles thereto, a series of paddles adapted to open and close, supports for the paddles, loose connections between the paddles and the spokes for opening and closing the former, as described, and means for imparting an oscillatory movement to the shaft whereby the paddles are swung concentric to the shaft, as set forth, and closed when out of the water but opened when immersed.

2. In a propelling mechanism for boats the combination with a bearing supported on the gunwale, a shaft held in such bearing and adapted to oscillate therein, a hub on the outer end of the shaft, spokes on said hub, a sleeve on the hub and having the spokes projecting therethrough, arms on the sleeve substantially parallel with the spokes on the hub, pivots between the arms, paddles supported on the pivots and links connecting the paddles and spokes as and for the purposes described and means for imparting an oscillatory movement to the shaft substantially as specified.

3. In a propelling mechanism for boats the combination with an adjustable bearing on the gunwale, a shaft for such bearing and adapted to oscillate therein, a crank and drum on the inner end of the shaft, the former having a rope or strap wound thereon, a foot-lever pivoted on the boat and having the said rope, or strap, attached thereto, a hub on the outer end of the shaft, spokes on the hub, a sleeve on the hub and having the spokes projecting therethrough, arms on the sleeve substantially parallel with the spokes on the hub, pivots between the arms, paddles supported on the pivots and links connecting the paddles and spokes as and for the purposes described and means for imparting an oscillatory movement to the shaft substantially as specified.

4. In a propelling mechanism for boats, a shaft mounted on the gunwale, bearing for the same, adjustable for height, a crank and drum on the inner end of the shaft, a rope, or strap, wound on the drum for the purposes set forth, a foot-lever for the said rope or strap, a hub on the outer end of the shaft, a pin therein, a sleeve on the hub, a slot in the sleeve for the pin, spokes on the hub, a slot in the sleeve for the passage of the spokes, arms on the sleeve, paddles pivoted between the arms, links between the spokes and paddles, the latter adapted to be opened and closed by the shifting movement of the spokes substantially as and for the purposes set forth and described.

5. The combination with a boat-rowing mechanism constructed substantially as shown, of a guide D^7 secured to the inside of the boat, a crank for operating the said rowing mechanism, a sleeve adapted to slide thereon, means for limiting the movement of the sleeve, a wheel on the free end of such sleeve for engaging the guide and a handle for operating the crank substantially as shown.

6. In a boat-propelling mechanism the combination of adjustable paddles therefor, spokes for operating them, a wheel-section for supporting them, means for adjusting same for any height, all being arranged so that a forward movement of the said paddles and their operating parts, together with the reversed movement thereof, will collapse said paddles to a position substantially at right angles to the open or working position, and, by the backward movement such paddles will, by their momentum and the reversing movement, open into position for work, a shaft for carrying all the parts named, a crank on the shaft for hand use, a lever on

the boat for foot-power, a drum on the shaft, flexible connection between the drum and foot-lever for assisting the hand-power, both the foot and hand powers combining to produce an oscillatory or partially-rotary movement of the shaft and paddles in an arc of a circle such arc lying in the lowest portion of that circle whereby the greatest power is exerted by the operator in drawing the crank toward him substantially as and for the purposes specified.

7. In a boat-rowing mechanism, the combination with the bearing C secured to the gunwale of the boat, the shaft D revolubly mounted thereon, a crank D′ for operating it the same being operated inside the boat, a hub E secured to the outer end of the shaft, arms F secured thereto, a sleeve G surrounding the hub, a slot therein for the passage of the said arms F, a slot I in said sleeve, a pin J in the hub adapted to pass through the said slot, a series of arms K on the sleeve and carrying the rims L, paddle-arms M pivoted between the rims, links O connecting the said paddle-arms and said arms F all arranged for the purposes set forth.

8. In a boat-rowing mechanism, the combination with the bearing C secured to the gunwale of the boat, the shaft D revolubly mounted thereon, a crank D′ for operating it, the same being operated inside the boat, a hub E secured to the outer end of the shaft, arms F secured thereon, a sleeve G surrounding the hub, a slot therein for the passage of the said arms F, a slot I in said sleeve, a pin J in the hub adapted to pass through said slot, a series of arms K on the sleeve carrying the rims L, paddle-arms K pivoted between them, links O connecting the said paddle-arms and said arms F, a drum D^2 secured to the shaft within the boat, a foot-lever D^4 pivoted to the side of the boat and flexible means attached to said lever at one end, and surrounding the said drum D^2 at the other, whereby a movement of the said crank D^2 in one direction will wind the said flexible means upon the drum and a movement of the lever, by the foot, will unwind the same in propelling the boat, substantially as described.

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

DANIEL R. SHEEN.

Witnesses:
C. JOHNSON,
W. C. ANDREW.