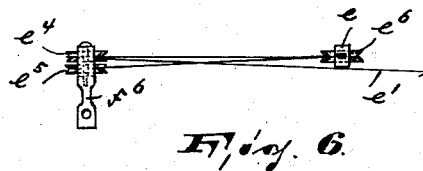
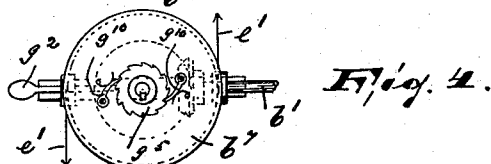
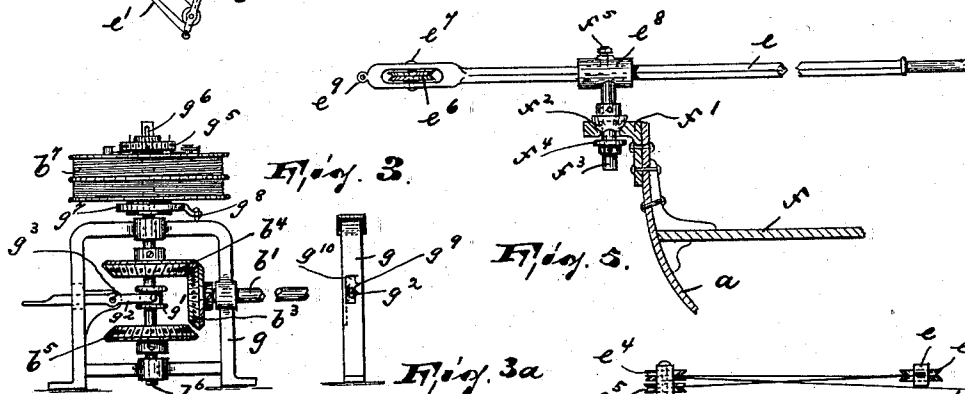
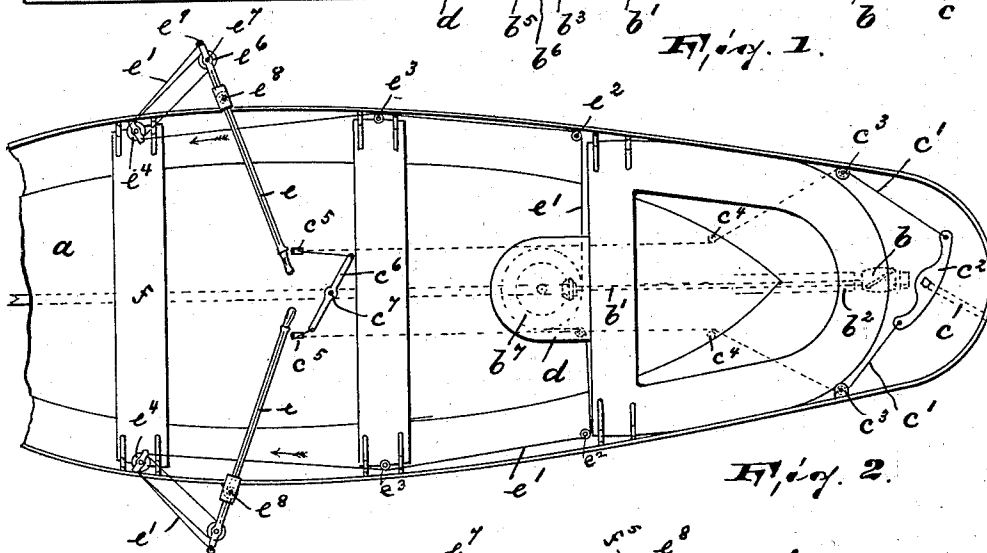
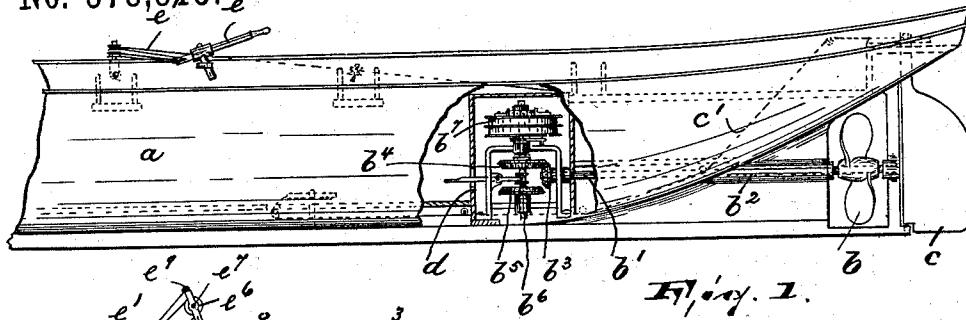


(No Model.)

R. FRYER, Dec'd.
C. S. FRYER, Administratrix.
PROPELLING MEANS FOR BOATS.

No. 578,815.

Patented Mar. 16, 1897.



WITNESSES:

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Duncan M. Robertson.

INVENTOR:

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UNITED STATES PATENT OFFICE.

CAROLINE S. FRYER, OF NEW YORK, N. Y., ADMINISTRATRIX OF RICHARD FRYER, DECEASED, ASSIGNOR OF ONE-HALF TO JOSEPH ERNEST GIBBS, OF SAME PLACE.

PROPELLING MEANS FOR BOATS.

SPECIFICATION forming part of Letters Patent No. 578,815, dated March 16, 1897.

Application filed December 18, 1896. Serial No. 616,110. (No model.)

To all whom it may concern:

Be it known that RICHARD FRYER, late a citizen of the United States, and resident of Brooklyn, county of Kings, and State of New York, did invent certain new and useful Improvements in Propelling Means for Boats; and he hereby declares 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a driving mechanism for screw-propelled boats or vessels for which driving mechanism manual power is required, the same being expended in a manner similar to that of rowing.

The invention consists in the improved propeller-driving mechanism, its connection with hand-operated levers or oars, and in the combination and arrangement of the various parts thereof, substantially as will be herein-after more fully described, and finally embodied in the claims.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a side elevation of a portion of a boat provided with said improvements, certain portions being removed and others broken away to better illustrate the nature of said invention; Fig. 2, a top plan view of Fig. 1; Fig. 3, an enlarged detail side elevation of the propeller operating and controlling mechanism; Fig. 3^a, a detail end view of the operating-shaft-supporting bracket or frame; Fig. 4, a top plan view of Fig. 3; Fig. 5, an enlarged detail view of the oar or lever and its supporting and adjusting means, and Fig. 6 an enlarged detail view of a certain arrangement of pulleys used in connection with the driving mechanism.

In said drawings, *a* represents a portion of a boat provided with the seats *f*, the stuffing-box *b*² for the shaft *b*¹ of the propeller *b*, and also with the rudder *c*, all of the usual and well-known construction. To the shaft of the rudder *c*, which projects through and into the stern of the boat, is secured the yoke *c*², adapted to be operated by the yoke-lines *c*¹,

passing over pulleys *c*³, *c*⁴, and *c*⁵ to the foot-lever *c*⁶, which latter is fulcrumed, as at *c*⁷, within reach of the feet of the rower occupying the seat *f*, as clearly shown in Fig. 2 of the drawings.

On the inner end of the propeller-shaft *b*¹ is secured a beveled pinion *b*³, adapted to be engaged by the beveled gear-wheels *b*⁴ and *b*⁵, respectively, which latter are secured on the vertically-arranged shaft *b*⁶, having its bearings in the bracket or frame *g*. Said frame is secured to the bottom of the boat in any desired manner.

On the projecting portion of the vertically-arranged shaft *b*⁶ is loosely mounted the drum *b*⁷, provided with two annular grooves, as clearly shown. To the hub of said drum is secured one end of the spring *g*⁷, coiled around said hub, and having its other end secured to a pin or stud *g*⁸, arranged on and projecting from the frame or bracket *g*. A ratchet *g*⁵ is also loosely mounted on the shaft *b*⁶ and is slidingly arranged thereon by means of the key and feather *g*⁶ and is adapted to be engaged by the spring-controlled pawls *g*¹⁰, fulcrumed on the upper surface of the drum *b*⁷.

The pawls must be provided with a large engaging surface to prevent them from disengaging the teeth of the ratchet when the drum is raised or lowered together with its supporting-shaft *b*⁶, when the latter is vertically shifted for the purpose of reversing the operation of the propeller. The above is accomplished by means of the lever *g*³, fulcrumed, as at *g*³, and engaging with its forked inner portion the grooved collar *g*¹, secured on the shaft *b*⁶. The free end of said lever penetrates the elongated groove *g*¹⁰, arranged in the frame *g* and provided with notches *g*⁹, adapted to hold the said lever in its respective positions. On the drum *b*⁷ and to each of its grooved sections is secured one end of a rope or cable *e*¹ *e*¹, coiled around said sections in opposite directions and carried over the pulleys *e*² *e*² and *e*³ *e*³, which latter are substantially horizontally arranged and secured to the sides of the boat *a* in any convenient manner.

From the pulley *e*³ the rope or cable *e*¹ passes around the pulley *e*⁴, which latter is loosely mounted on a pin or axle supported in the bracket *f*⁶, arranged on the gunwale of the

boat and near the seat to be occupied by the rower. Hence over the pulley e^6 at the end of lever e , back to a pulley e^5 , loosely arranged on the axle of the pulley e^4 , and thence to the eye e^9 , projecting from the free end of the oar or lever e , to which eye the said rope or cable e' is firmly secured. The pulley e^6 is fulcrumed, as at e^7 , to the oar or lever e . Said oar is adjustably arranged by means of the set-screw f^5 to and within the sleeve e^8 , the downwardly-projecting shaft f^3 of which is swiveled by means of the conical or spherical shaped collar f^2 to the bracket f' , secured to and projecting from the gunwale of the boat a . The swivel motion of the shaft f^3 is limited by means of the collar f^4 , secured to said shaft, as clearly shown in Fig. 5 of the drawings.

In operation when the handles of the oars or levers e are pulled forward the ropes or cables e' are operated—that is to say, are pulled in the direction of the arrows in Fig. 2. The drum b^7 is thus rotated by the uncoiling of said ropes and through its pawl-and-ratchet connection operates the shaft b^6 , which in turn transmits its motion through the beveled gear-wheels b^4 or b^5 to the propeller-shaft. By means of the treble purchase or luff-tackle e^4 , e^5 , and e^6 the rope e' is given a faster movement than that of the handles of the oars, as will be manifest. When the handles of the levers or oars e are pushed forward, the spiral spring, which during the uncoiling of the ropes or cables e' has been uncoiled, returns to its normal position and carries the drum b^7 along with it, whereby the said cables or ropes are again coiled or wound upon their respective grooved sections, as will be manifest.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. The combination with a boat, and the propeller-shaft, of a vertically-arranged shaft, means for transmitting the motion from said vertical shaft to the propeller-shaft, a spring-controlled drum loosely arranged on said vertical shaft, a ratchet-wheel slidingly mounted on said shaft, a series of spring-controlled pawls arranged on said drum and adapted to engage said ratchet-wheel, a rope coiled around said drum and secured thereto with one end, an oar or lever swiveled on said boat, and connected with its outer end to the other end of said rope, and a luff-tackle intermediately arranged between the end of said lever or oar and the drum and having the rope or cable passing through and over the same, all said parts being arranged, substantially as and for the purposes described.

2. The combination with a boat and the propeller-shaft, of a beveled pinion on the inner end of said propeller-shaft, a vertically-arranged shaft, a beveled gear-wheel on said shaft and meshing with the beveled pinion, a spring-controlled drum loosely arranged on

said vertical shaft, a ratchet-wheel slidingly mounted on said shaft, a series of spring-controlled pawls arranged on said drum and adapted to engage said ratchet-wheel, a rope coiled around said drum and secured thereto with one end, an oar or lever swiveled on said boat, and connected with its outer end to the other end of said rope, and a luff-tackle intermediately arranged between the end of said lever or oar and the drum, and having the rope or cable passing through and over the same, all said parts being arranged, substantially as and for the purposes described.

3. The combination with a boat and the propeller-shaft, of a spring-controlled drum, means for transmitting the motion from said spring-controlled drum to the propeller-shaft, a rope coiled around said drum and secured thereto with one end, an intermediate luff-tackle having the rope or cable passing over the same, and an oar or lever swiveled on the boat and having the other end of said rope secured to its outer end, all said parts being arranged, substantially as and for the purposes described.

4. The combination with a boat and the propeller-shaft, of a vertically-arranged shaft, means for transmitting the motion from the vertical shaft to the propeller-shaft, a spring-controlled drum loosely mounted on said vertical shaft, a series of pulleys arranged on the side of the boat, an oar or lever swiveled on said boat, a pulley carried by the outer end of said oar, two pulleys loosely mounted on an axle supported by the boat, and a rope coiled around the drum and secured thereto with one end, and passing over the series of pulleys and secured with its other end to the outer end of the oar or lever, all said parts being arranged, substantially as and for the purposes described.

5. The combination with a boat and the propeller-shaft, of a vertically-arranged shaft, means for transmitting the motion from the vertical shaft to the propeller-shaft, a spring-controlled drum loosely mounted on said vertical shaft, a series of pulleys arranged on the side of the boat, an oar or lever swiveled on the said boat, a pulley carried by the outer end of said oar, two pulleys loosely mounted on an axle supported by the boat, a rope coiled around the drum and secured thereto with one end and passing over the series of pulleys and secured with its other end to the outer end of the oar or lever, and means for reversing the motion of the propeller-shaft, all said parts being arranged, substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of December, 1896.

CAROLINE S. FRYER,

Administratrix of Richard Fryer.

Witnesses:

J. E. GIBBS,

HATTIE A. GIBBS.