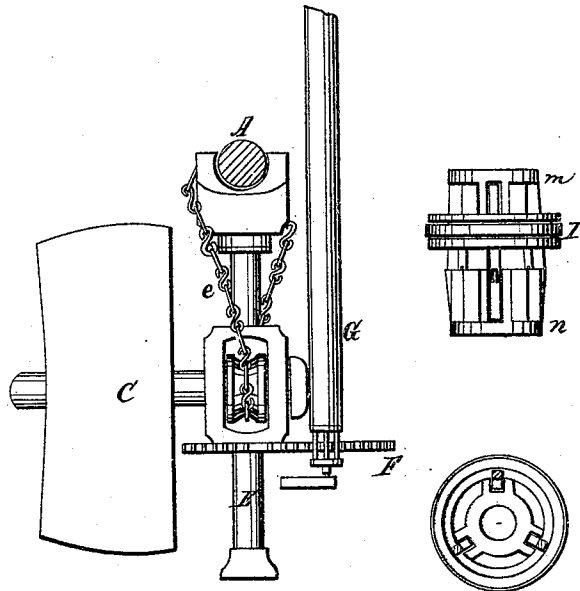
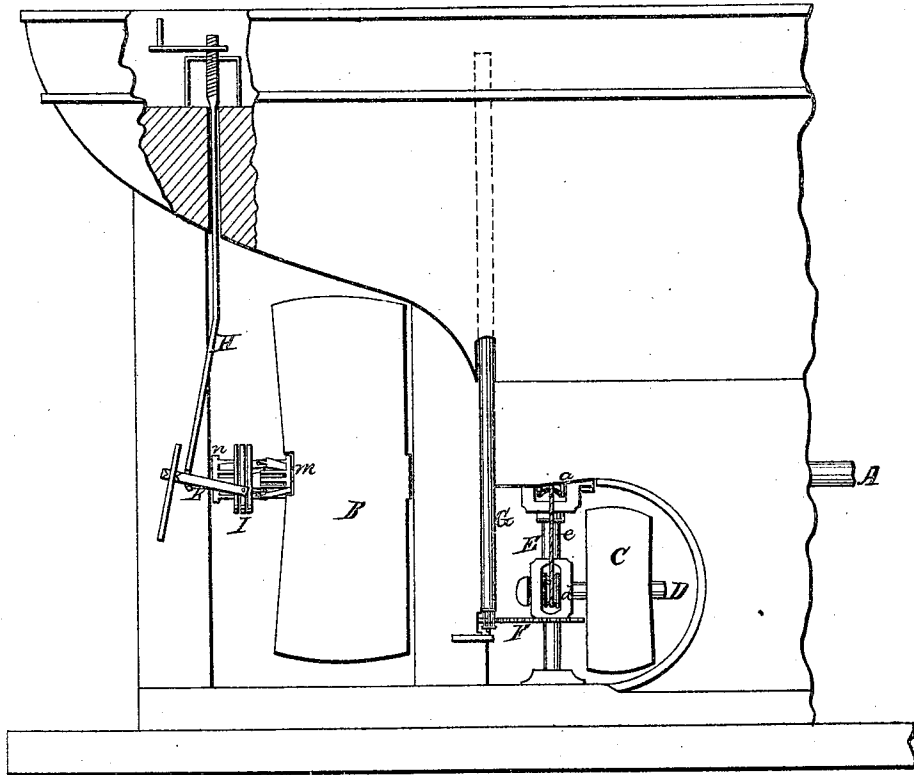


F. Liburn.
Steering.

N^o 53,840.

Patented Apr 10, 1866.



Witnesses:

Jesse Alexander
J. W. Mason

Inventor:

Frank Liburn

UNITED STATES PATENT OFFICE.

FRANK LIBURN, OF NEW YORK, N. Y.

IMPROVED STEERING-SCREW.

Specification forming part of Letters Patent No. 53,840, dated April 10, 1866.

To all whom it may concern:

Be it known that I, FRANK LIBURN, of the city and State of New York, have invented certain new and useful Improvements in Steering Propellers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In the annexed drawings, making part of this specification, A represents the shaft in the vessel, which conveys power from the engines to the propeller, said shaft lying in a horizontal position, as shown.

B represents the propeller, which is secured loosely upon the shaft A.

m and *n* are two sleeves, which fit over the shaft A, and which are connected by bars hinged together so as to form a toggle-joint.

I represents a collar, which fits over the bars, forming the toggle-joint for the purpose of operating it.

K and H represent two bars, which are connected together, and one of which, K, connects with the collar I, for the purpose of moving said collar to operate upon the toggle-joint. The bar H stands in a vertical position and extends up to the deck, at the rear of the vessel, and is there operated by means of a crank-handle, having a female screw upon it which fits over a male screw upon the said bar H. The object of this toggle-joint is to press the collar *m* against the propeller B, and thus make it fast upon the shaft A, or to remove the pressure and allow the propeller to work loosely upon said shaft.

C represents a small propeller-wheel, which is used for steering the vessel. This wheel is secured fast upon a shaft, D. This shaft D lies in a horizontal position and passes through a vertical beam, E.

The beam E is provided with an opening in it at right angles to the shaft D, and in the opening and upon the shaft is a pulley, *d*. A cord passes around this pulley and also around one which has its bearings in a frame secured

to the under part of the vessel, and through which the shaft A passes, said pulley being secured fast to the shaft A, so that when the shaft A turns the small propeller will also turn, being revolved by means of the cord *e* and shaft D.

G represents a shaft, which stands vertically and passes up to the deck of the vessel. To the lower end of this shaft is a small gear-wheel, which works into a gear-wheel, F, which is made fast to the beam E.

By turning the shaft G the wheel F is turned and also the beam E, thus turning or throwing the small steering-propeller to one side or the other of the vessel.

When the shaft of the steering-propeller is in line with the main shaft A the said propeller can be used for giving power for propelling the vessel, and when it is moved to the right or left of said shaft it answers as a rudder to give direction to the vessel.

It will be seen that by unshipping the main propeller B the steering-propeller C can be used either for propelling or for giving direction to the vessel.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of the shaft D, the beam E, cord *e*, gear-wheel F, and shaft G, constructed and used as and for the purpose herein specified.

2. Arrangement of the bars H and K, with the toggle-joint and propeller B, as and for purpose herein specified.

3. The combination of the propeller B with the steering-propeller C, when the two are connected and arranged to operate by the means substantially as herein specified.

In witness that I claim the foregoing I have hereunto set my hand in presence of witnesses.

FRANK LIBURN.

Witnesses:

NUS. MADSON,
J. M. MASON.