J. F. SPARR.

Steering Apparatus.

No. 136,464. Patented March 4, 1873.

Fig. 1.

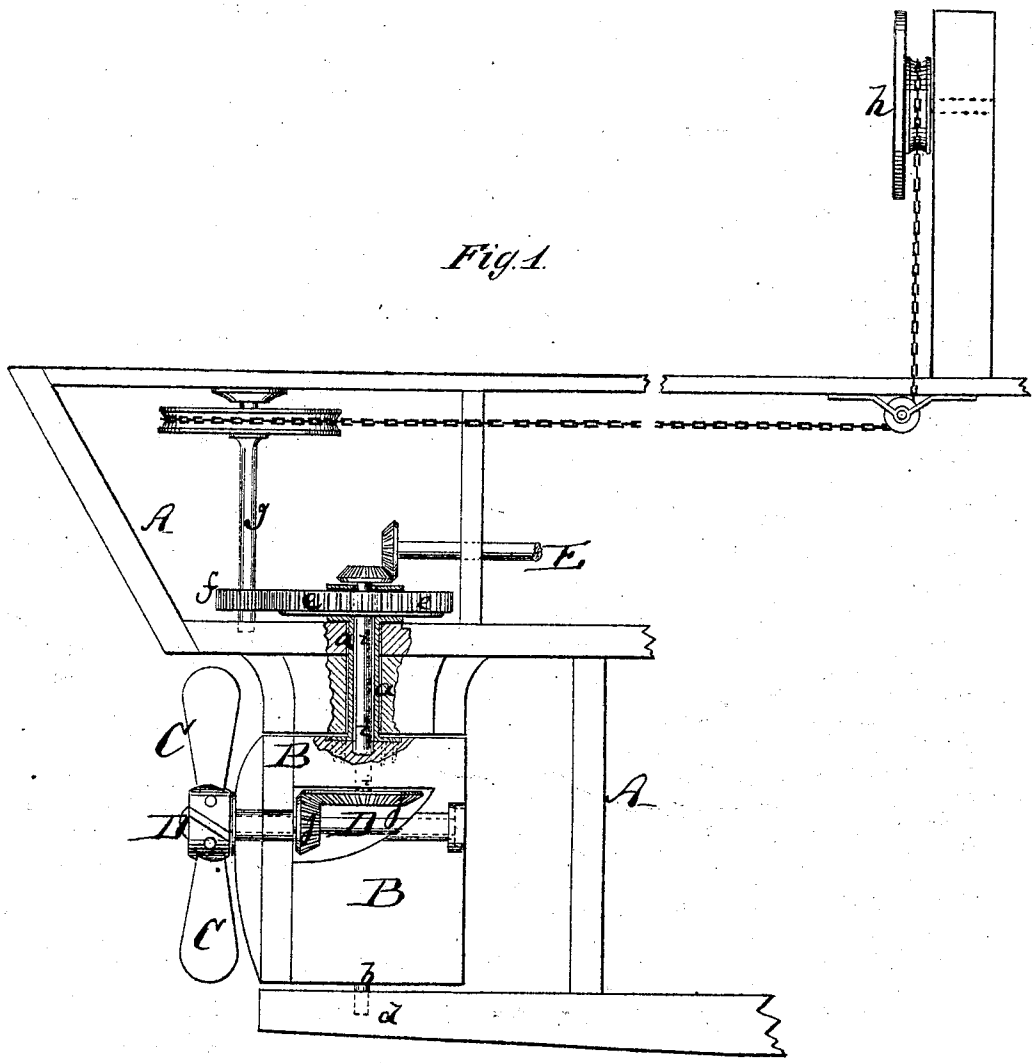
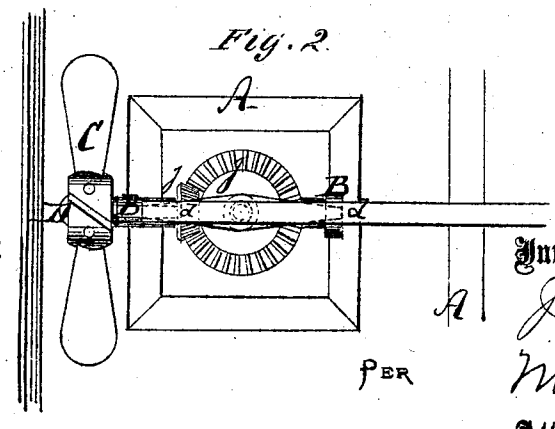


Fig. 2.



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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

JOHN F. SPARR, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN STEERING APPARATUS.

Specification forming part of Letters Patent No. **136,464**, dated March 4, 1873.

To all whom it may concern:

Be it known that I, JOHN F. SPARR, of Rochester, in the county of Monroe and State of New York, have invented a new and Improved Propelling and Steering Apparatus for Vessels, of which the following is a specification:

Figure 1 is a side view, partly in section, of my improved propelling and steering apparatus. Fig. 2 is a bottom view of the same.

Similar letters of reference indicate corresponding parts.

My invention consists in combining a propeller shaft and screw with a balanced rudder, and in certain operative mechanism, substantially as hereinafter described and subsequently claimed. The invention consists, principally, in carrying the shaft which propels the screw through the tubular upper spindle or pivot of the rudder, and in hanging the propeller in the rudder. The propeller can thus be freely revolved without affecting or interfering with the motions of the rudder, and the rudder can be freely turned without interfering with the rotation of the screw; but the screw will follow the oscillations of the rudder, and apply its power in the desired direction to the vessel, thus aiding in the process of steering.

Vessels provided with this apparatus can be turned on sharp curves and rapidly with safety. The invention is, therefore, particularly applicable to canal-steamers and to men-of-war, and also to all other steam-ships.

In the drawing, A represents the stern part of the vessel. B is the rudder of the same. This rudder is held in place by an upper spindle or pivot, *a*, and by a lower pin, *b*. The latter rests on a step, *d*. The upper spindle is tubular, and enters the overhanging stern of the ship, in which it is properly secured, to be able to revolve. A toothed wheel, *e*, is mounted upon the upper end of the tubular spindle *a* within the stern of the vessel, as shown, and is, by gearing *f* or otherwise, connected with a shaft, *g*, which is turned by chain or other connection with the steering-wheel *h*.

In place of the gear-connection herein described, any other may be substituted between the spindle *a* and wheel *h* which will allow the turning of the rudder by means of said wheel *h*.

C is the propeller-screw, mounted upon a shaft, D, which hangs horizontally in the rudder. A shaft, *i*, extends down from within the vessel through the tubular rudder-stem *a*, and connects, by bevel-gear wheels *j j*, with the shaft D.

The steam or other engine in the boat rotates a driving-shaft, E, which gears into the upper end of the shaft *i*, as shown, or otherwise connects with said shaft *i* to revolve the same.

It will be noticed that by this arrangement the shaft *i* is free to revolve within the stem *a*, and the latter free to turn on and about *i* without one interfering with the other. The screw, however, will join in the oscillations of the rudder with the desired effect.

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

A balanced rudder, B, suspended on hollow upper pivot *a* and lower step-pivot *b*, and receiving shaft D of propeller, as and for the purpose described.

JOHN FRIEDRICH SPARR.

Witnesses:

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