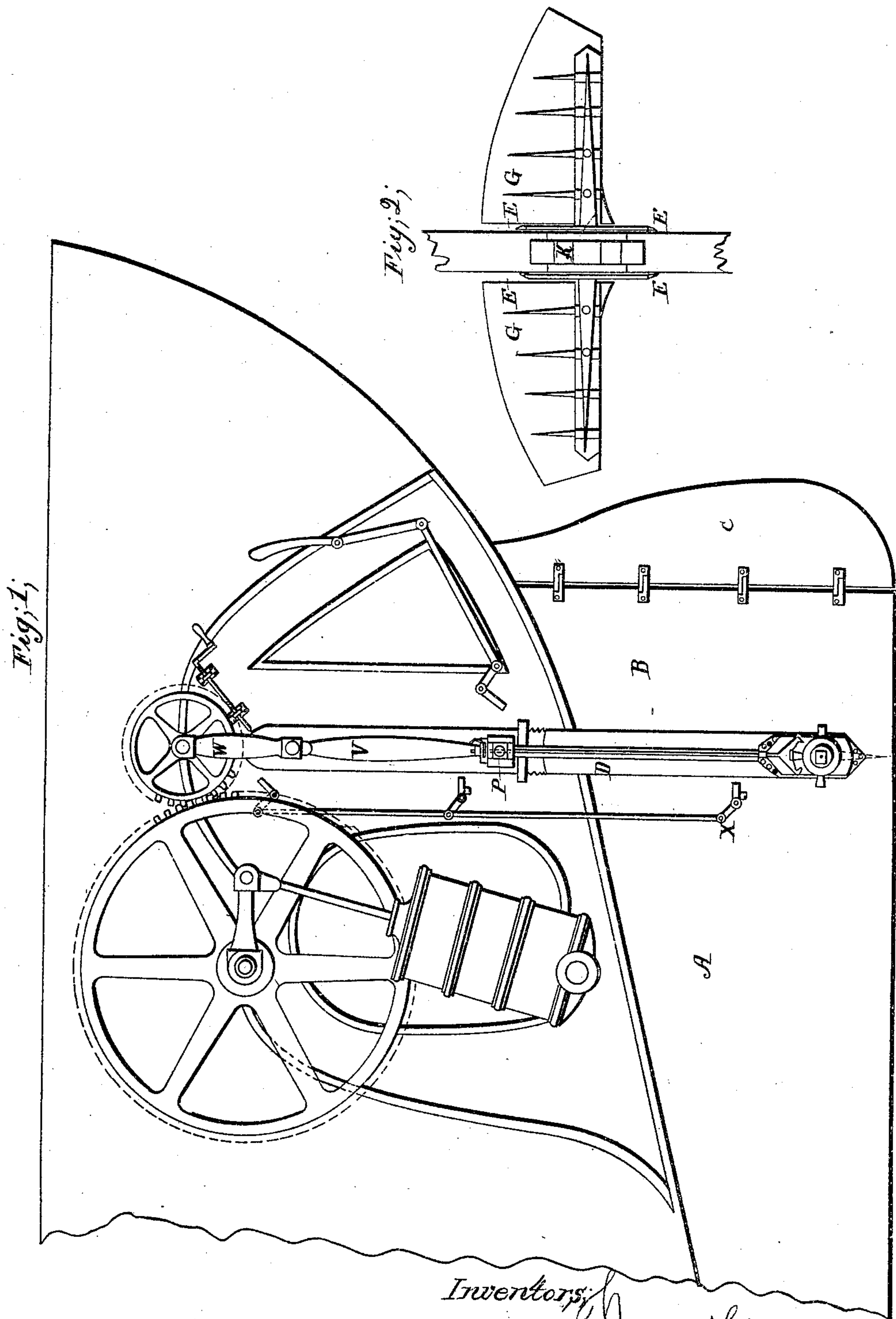


Spiller & Crowhurst.  
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Patented Nov. 8, 1853.

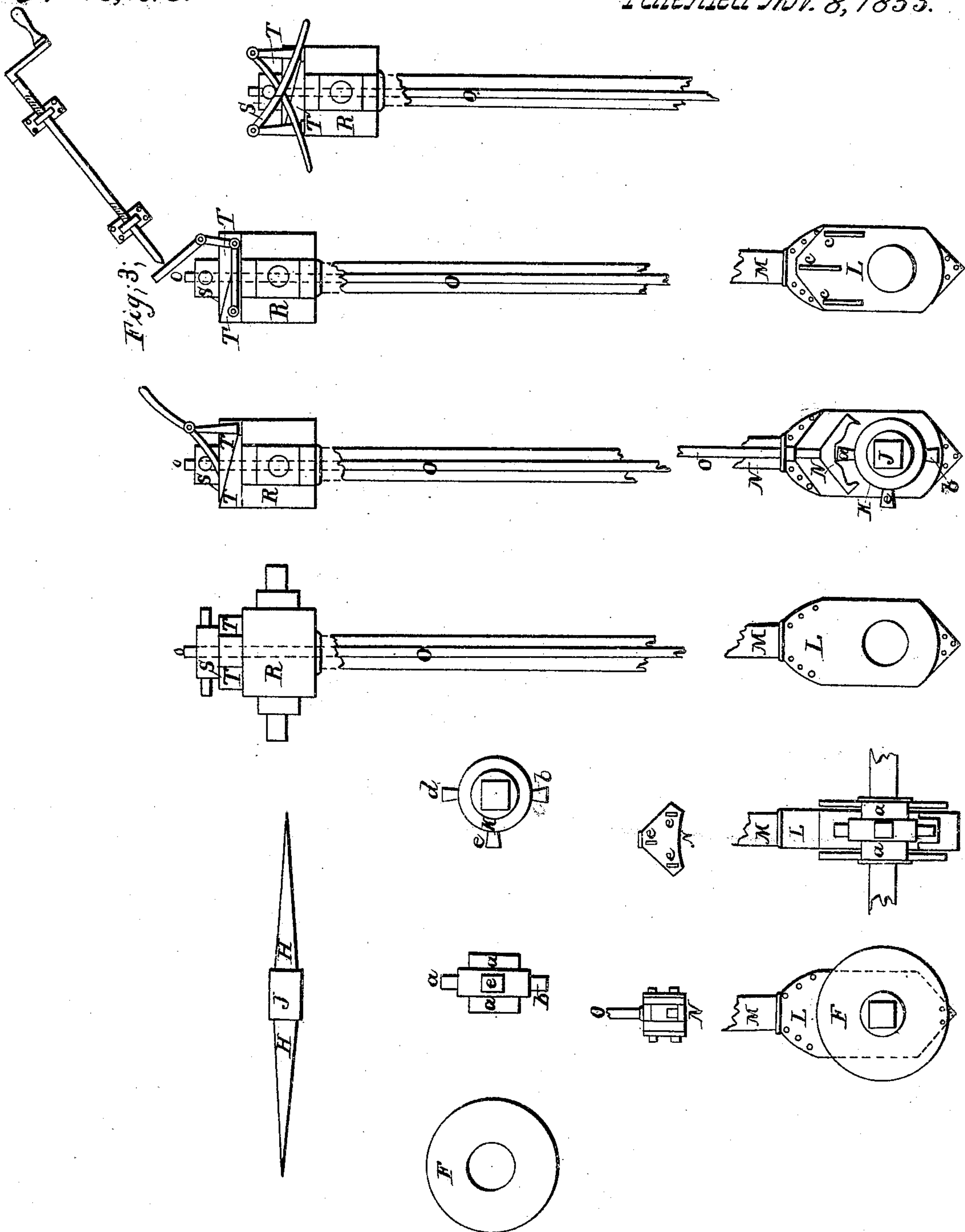


Inventors;  
Thomas Spiller  
Anthony Crowhurst

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Inventors,  
Thomas Sniller  
Arthur Crowhurst



# UNITED STATES PATENT OFFICE.

THOMAS SPILLER AND ANTHONY CROWHURST, OF MIDDLESEX COUNTY, ENGLAND.

## OPERATING VIBRATING PROPELLERS.

Specification of Letters Patent No. 10,215, dated November 8, 1853.

*To all whom it may concern:*

Be it known that we, THOMAS SPILLER and ANTHONY CROWHURST, of No. 5 Red Lion Square, in the county of Middlesex, England, have invented new and useful Improvements for the Propelling of Steam Vessels; and we do hereby declare that the following is a full and exact description thereof.

10 The nature of our invention consists in certain improvements for the propelling of steam vessels.

To enable others skilled in the art to make and use our invention we will proceed to describe its construction and operation and in order to give the best description in our power we have annexed a sheet of illustrative drawings which are hereinafter referred to the same letters or figures of reference being placed upon corresponding parts in the said drawings.

Our invention consists in the application of vanes, blades or fins mounted upon an axle which has free motion in the bearing of a frame which frame slides vertically in a groove or guide prepared for it in the dead wood of the stern or any other part of the vessel below the water line. An alternating vertical motion being communicated by a suitable mechanical arrangement the vanes blades or fins are moved up and down through the water and assume an angle of resistance to it (which is limited or regulated by a suitable arrangement of stops) and thus propels the vessel the angular position which the vanes blades or fins assume in their downward or upward motion through the water working somewhat in the manner of the tail of a fish.

40 In the drawing hereto attached is shown the vanes blades or fins of the form proposed to be applied to the stern of a ship and also the form and arrangements of the various parts in connection therewith which may be varied and modified according to the position and requirements of the particular application.

Figure 1 is a longitudinal section of the stern of a vessel fitted with a single propeller, A, the dead wood of the keel, B, the stern post, C, the rudder, D, a slot or groove cut in the dead wood to admit of the propeller working therein. This groove or slot is faced or protected with metal guide strips or plates E, against which the friction wheels F, run, the vanes G, are fixed by

bolts or otherwise to a strong axle or spindle H, which has a square boss or enlargement at its middle upon the square boss of the spindle or axle J is fixed the cylinder K, this cylinder has three studs or stop pins *d*, *e*, and *f*, projecting from its periphery as shown and is turned smaller at its ends to form collars and bearings therein at *a*. This cylinder K, with the friction rollers axle and vanes works in the bearings in the side of the hollow box or frame L, and turns freely therein.

The box or frame L, is fitted to the lower end of the hollow shaft M, and contains the hollow regulating frame N, which slides up and down therein and is kept securely in its place by the studs *b*, *b*, *b*, sliding in the slots *c*, *c*, *c*, in box L, to the boss of this regulating frame N, a rod O is attached and works through the center of the hollow shaft M, moving the regulating frame N, up and down upon the stud or pins *d*, *e*, or *f*, of the cylinder K, thus the angle that the vanes blades or fins may make can be regulated.

A gland or stuffing box P, is provided for the hollow shaft M, to work through.

To the upper end of the hollow shaft M, is attached a cross tail piece R, through which the regulating rod O, passes having at its end a cross piece S, upon which the wedge pieces T, act to raise or depress the hollow regulating frame N. These wedge pieces may be acted upon by a screw or lever which as the hollow shaft M, and the rod O, move up and down comes in contact with movable lever tongues made to project when necessary by a handle as shown or some such other contrivance to project forward or withdraw the wedge piece as may be required without stopping the working of the engines or machinery.

To the journal of the cross tail piece R, is attached a connecting rod V, communicating motion from the crank W, which is driven by the steam engine in any suitable manner by gearing or otherwise. An arrangement for reversing the action of the propeller is shown in Fig. 1 as fixed in the keel.

Supposing the propeller to be in action propelling the vessel "ahead" the vanes blades or fins would be somewhat in the position shown in plan view Fig. 2 and the three studs or stop pins *d*, *e*, *f*, of cylinder K, somewhat in the position shown at Fig.



3, but upon the regulating frame N, being drawn up the stop pin or stud *a*, is relieved and the propeller falls into the position shown at Fig. 1 where it has no propelling action upon the vessel and the stud *e*, which is larger than *d*, or *f*, being in the position shown is so held by the regulating frame N, the stud *f*, projects as shown and when it is desired to reverse the propeller that the vessel may go "astern" instead of as before "ahead" upon the down stroke of the propeller the regulating piece is raised and at the same time the tongue piece X, is projected forward so that the stud *f* will come into contact therewith and so reverse the position of the vanes blades or fins, whereupon the regulating frame is again lowered and motion being given to the propeller the direction of the vessel is altered and in the same way the operation may be reversed.

The plan view Fig. 2 shows the vanes blades or fins G, G, on the axle or spindle H the shape may however be varied in any manner that is preferred.

The Figs. 3, 4, 5, 6, &c., illustrate the details of the parts before described the letters of reference being the same.

Now we wish it to be clearly understood that we do not confine ourselves to the shape of the vanes blades or fins nor to the number applied, as there may be two or more sets used, or to the part of the vessel where the same may be applied, as at the stern in the midship or elsewhere below the water line, neither do we confine ourselves to the arrangement as described for giving motion to the propeller or for regulating or reversing the action of the same, but

What we claim is—

Vanes, blades or fins of whatsoever form or wheresoever applied in a vessel for the purpose of propelling the same when such vanes blades or fins are mounted on an axle or shaft vibrating or turning freely upon its axis and moving vertically through the water.

In witness whereof we, the said THOMAS SPILLER and ANTHONY CROWHURST, have hereunto set our hands.

THOMAS SPILLER.

ANTHONY CROWHURST.

Witnesses:

WILLIAM SMITH,

WILLIAM CORBITT.