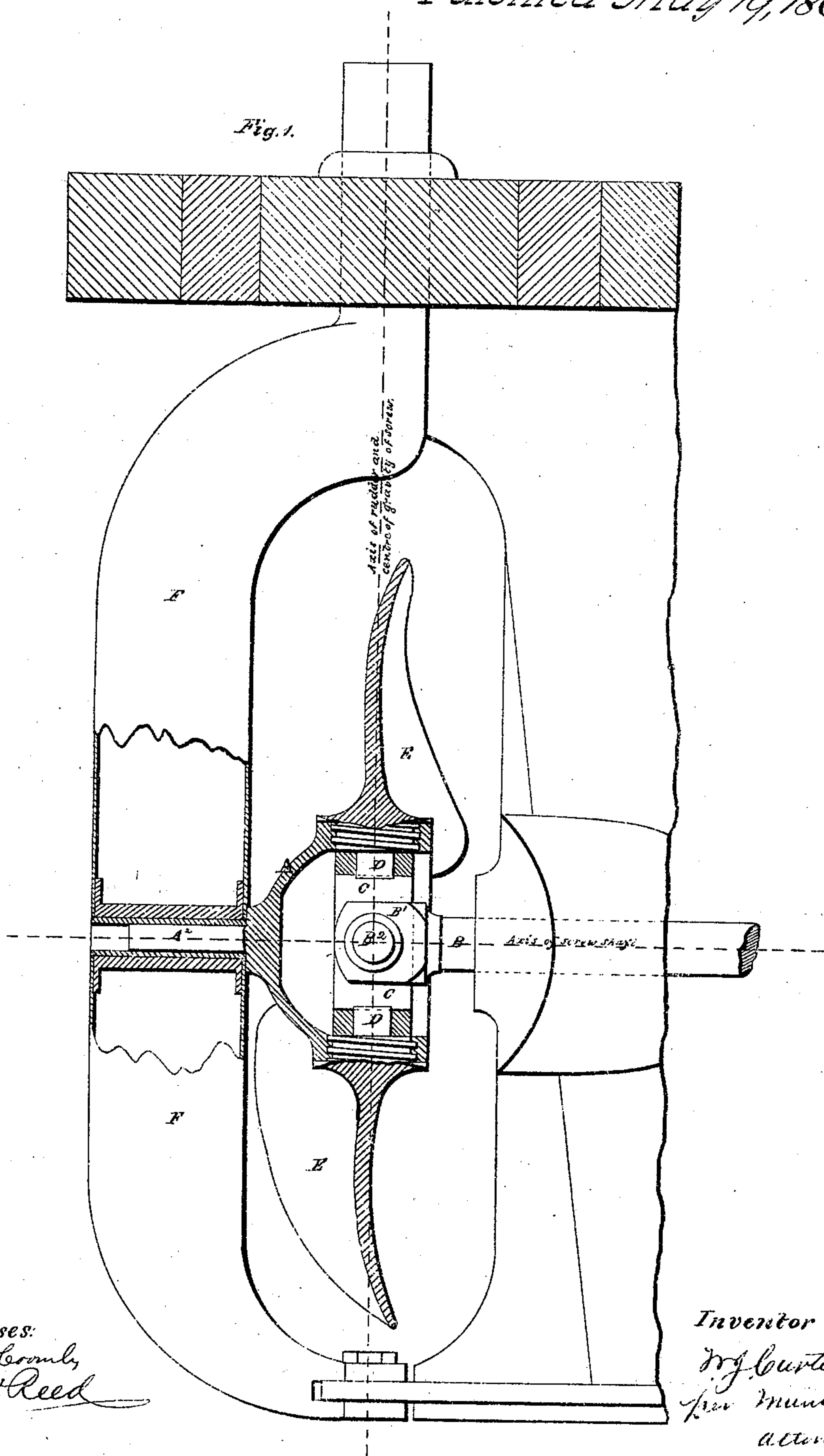


W. J. Curtis
Screw Propeller.

Sheet 1, 2 Sheets.

No. 38,566.

Patented May 19, 1863.



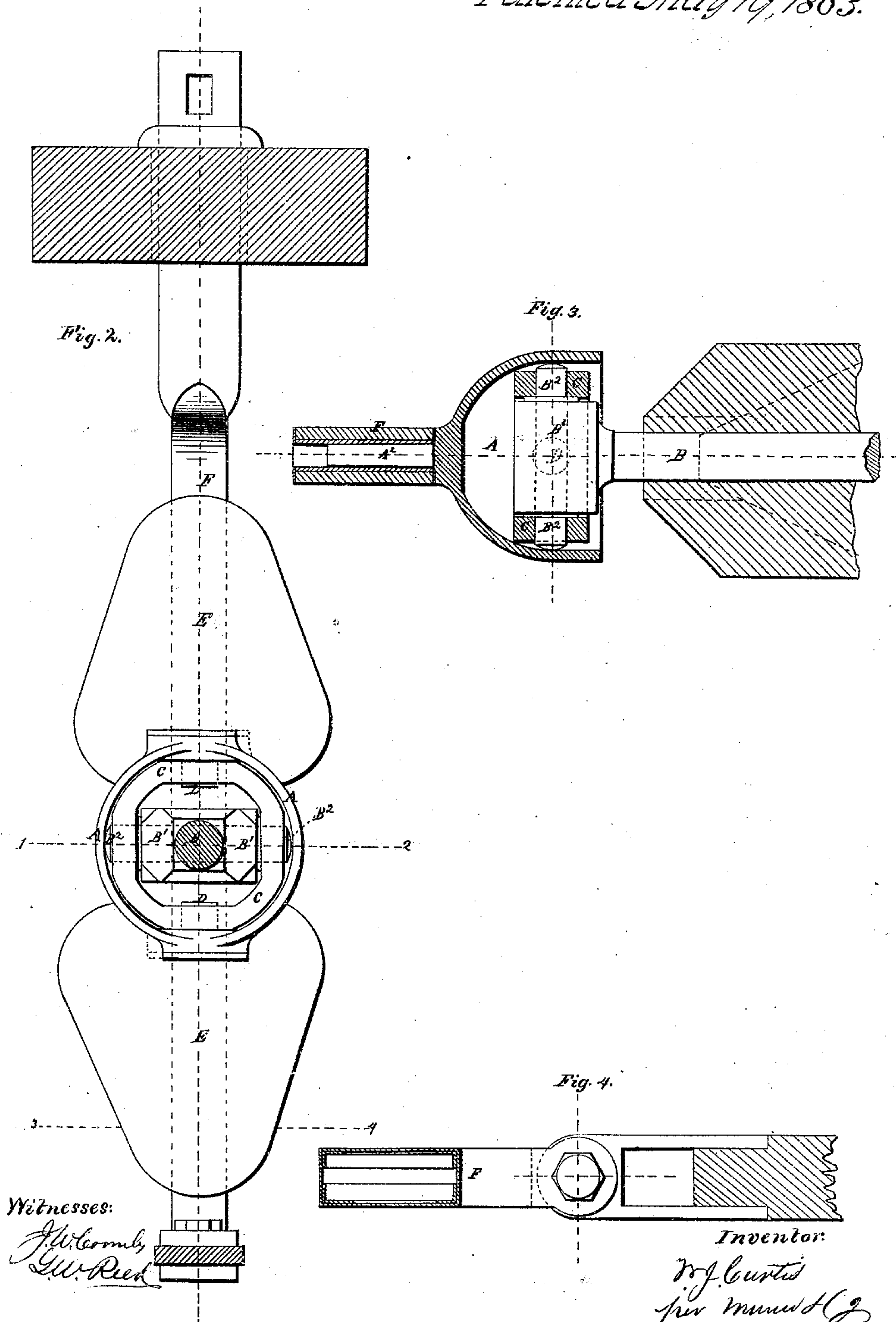
Witnesses:
J. W. Combs
E. W. Reed

Inventor
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per Munn & Co.
Attorneys

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attorneys

UNITED STATES PATENT OFFICE.

WILLIAM JOSEPH CURTIS, OF TUFNELL PARK ROAD, HOLLOWAY,
ENGLAND.

IMPROVED SCREW-PROPELLER.

Specification forming part of Letters Patent No. 38,566, dated May 19, 1863.

To all whom it may concern:

Be it known that I, WILLIAM JOSEPH CURTIS, of Tufnell Park Road, Holloway, in the county of Middlesex, civil engineer, have invented an Improvement in the Construction of Screw-Propellers; and I do hereby declare that the following is a full and exact description of the said invention.

The object of this invention is to render the propelling-screw of steamships available, in combination with the rudder, or even without a rudder, for steering such vessels. Hitherto the difficulty of carrying out this object has been insuperable from the necessity for providing such a connection between the propeller and its driving-shaft as would resist the great strain to which it must be exposed. I now propose to mount the propeller on the extremity of the driving-shaft in such a manner that it will be free to move with the rudder without its power of rotation being in any way interfered with.

In the accompanying drawings, Figure 1 shows in sectional elevation a Griffiths' propeller mounted according to my invention, whereby, at the will of the steersman, it may be placed and temporarily retained at an angle to the course of the ship, and thus by its propelling-power, cause the ship to swing round to any given point of the compass. Fig. 2 is a front elevation of the propeller, the propeller-shaft being in section. Fig. 3 is a sectional plan view taken in the line 1 2 of Fig. 2, and Fig. 4 is a sectional plan view taken in the line 3 4 of Fig. 2.

The propeller is formed with a hollow boss, A, to receive a compound-joint coupling which connects the boss with the driving-shaft B of the screw-propeller. On the outer or coupling end of this shaft B is forged a block, B', which is bored to receive a short horizontal cross-shaft, B². The ends of this cross-shaft form trunnions, which enter sockets made to receive them in a strong wrought-iron or metallic ring, C. This ring is inserted in the hollow propeller-boss A, and it is retained in position therein by means of the stems D of the

propeller-blades E. Holes are bored in the ring at right angles to the trunnion-sockets to receive the stems D. The propeller-blades are made with a broad flange, in order to bear against and bed upon a flat surface on the hollow boss. A coarse screw is cut on an enlargement of the propeller-stems, and the boss is suitably tapped to receive these screws. When, therefore, the blades are brought into position, their stems effectually secure the boss of the propeller-shaft, leaving, however, the propeller free to turn, as on a hinge-joint. Projecting rearward from the boss A is a trunnion, A', which has its bearing in a swing-frame, F. This frame, when constructed as shown in the drawings, and covered with plates of iron, forms a rudder for assisting in the steering of the ship.

To insure the propeller turning freely on its compound joint, it is requisite that the centers of the pintles of the rudder and of the compound joint should be so arranged as to lie in the same plane as indicated by the red lines, Figs. 1 and 2.

It will be seen that the weight of the propeller and the strain to which it will be subjected is sustained entirely by the driving-shaft, the trunnion projecting from the rear of the boss acting simply as a guiding-arm for changing the position of the propeller with respect to the line of progress of the ship.

From the above description it will be understood that when the rudder is moved by the steersman the propeller will swing round with it without its rotary motion being affected by the change of position, and that by acting at an angle to the propeller-shaft it will materially expedite the operation of steering. If it should be thought unnecessary to employ a rudder in conjunction with the propeller thus mounted, the bearing for receiving the trunnion of the boss may be carried by a pendent arm or swinging frame attached like the rudder to the stern-post.

I do not claim, broadly, the use of a universal joint in connection with propeller-shafts, so that the rudder and propeller may be set

at an angle without interfering with the rotation of the propeller; but,

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

The arrangement of the compound joint within the hollow boss of the propeller, substantially as herein shown and described.

In witness whereof I, the said WILLIAM

JOSEPH CURTIS, have hereunto set my hand and seal this 18th day of December, in the year of our Lord 1862.

WILLIAM JOSEPH CURTIS. [L. S.]

Witnesses:

DANL. FORSHAW,

WALTER C. KING,

Both of 24 Royal Exchange, London.