

(No Model.)

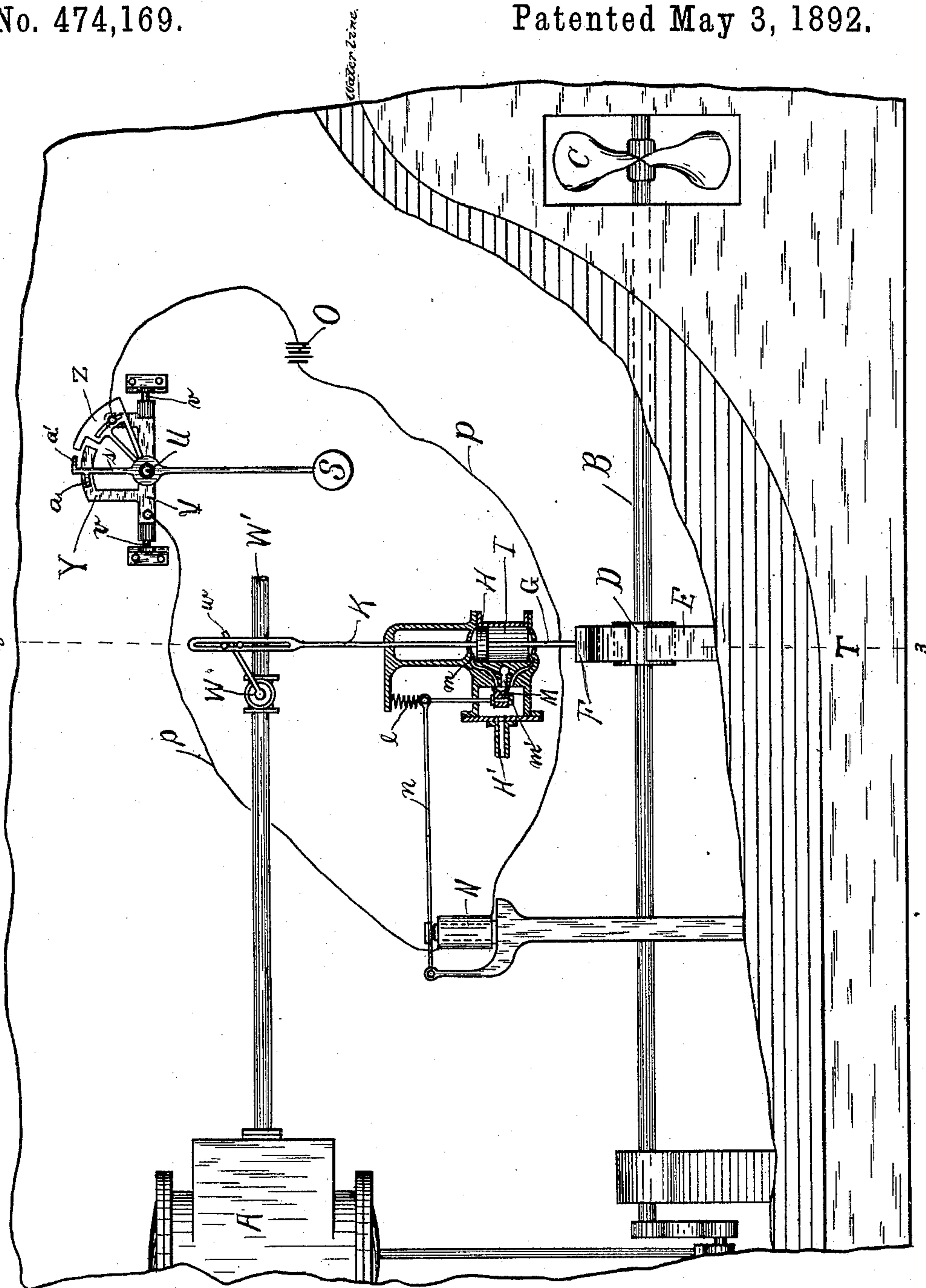
4 Sheets—Sheet 1.

A. HELLINGER.
REGULATING PROPELLERS OF VESSELS.

No. 474,169.

Patented May 3, 1892.

FIG. 1.



WITNESSES.

John W. Brooke
John W. Brooke

INVENTOR.

Adclph Hellinger, by
Paul Bakerwell
his attorney

(No Model.)

4 Sheets—Sheet 2.

A. HELLINGER.
REGULATING PROPELLERS OF VESSELS.

No. 474,169.

Patented May 3, 1892.

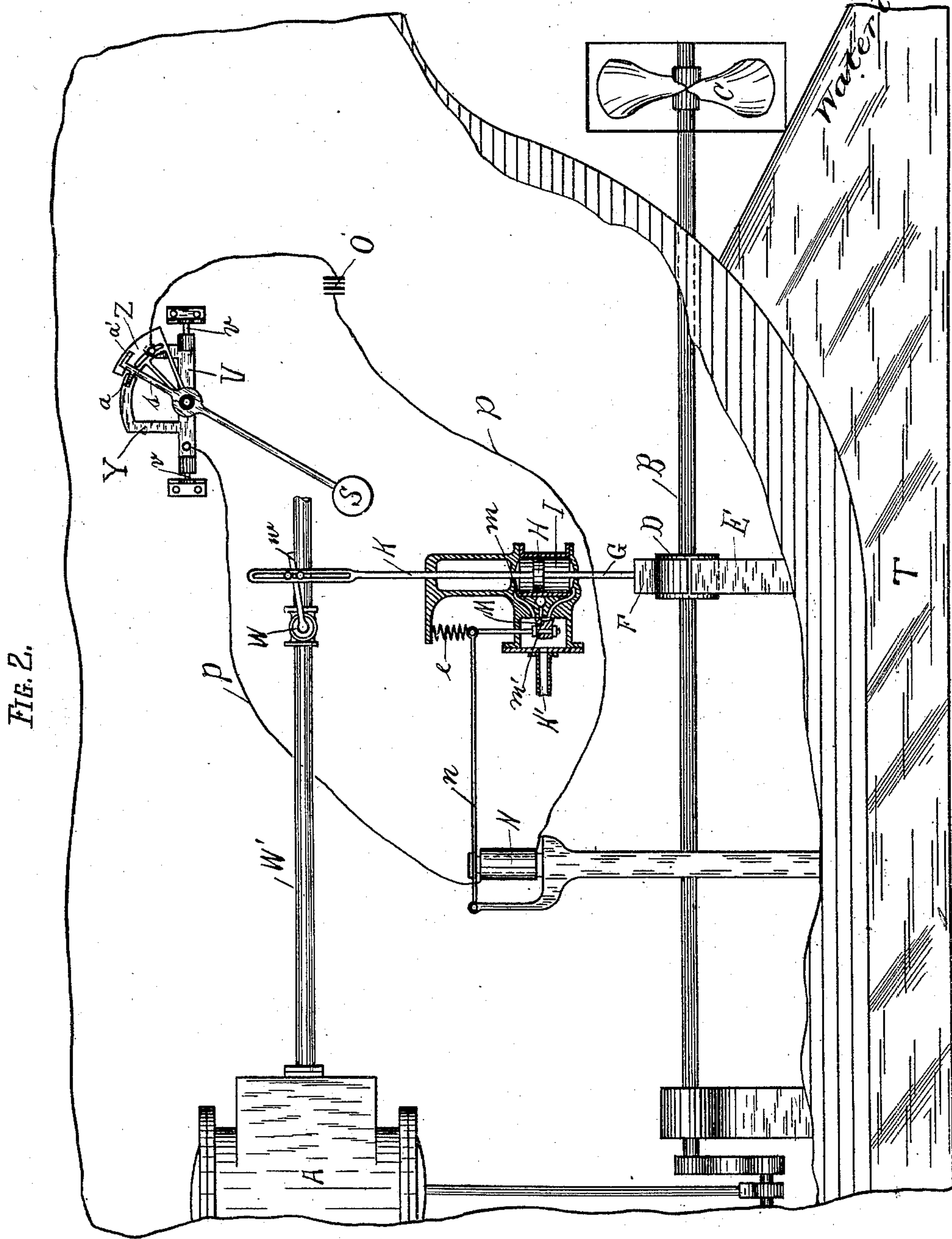


Fig. 2.

WITNESSES.

John Crookes
H. Mansby

INVENTOR.

Adopted by
Paul Bakewell
his attorney

(No Model.)

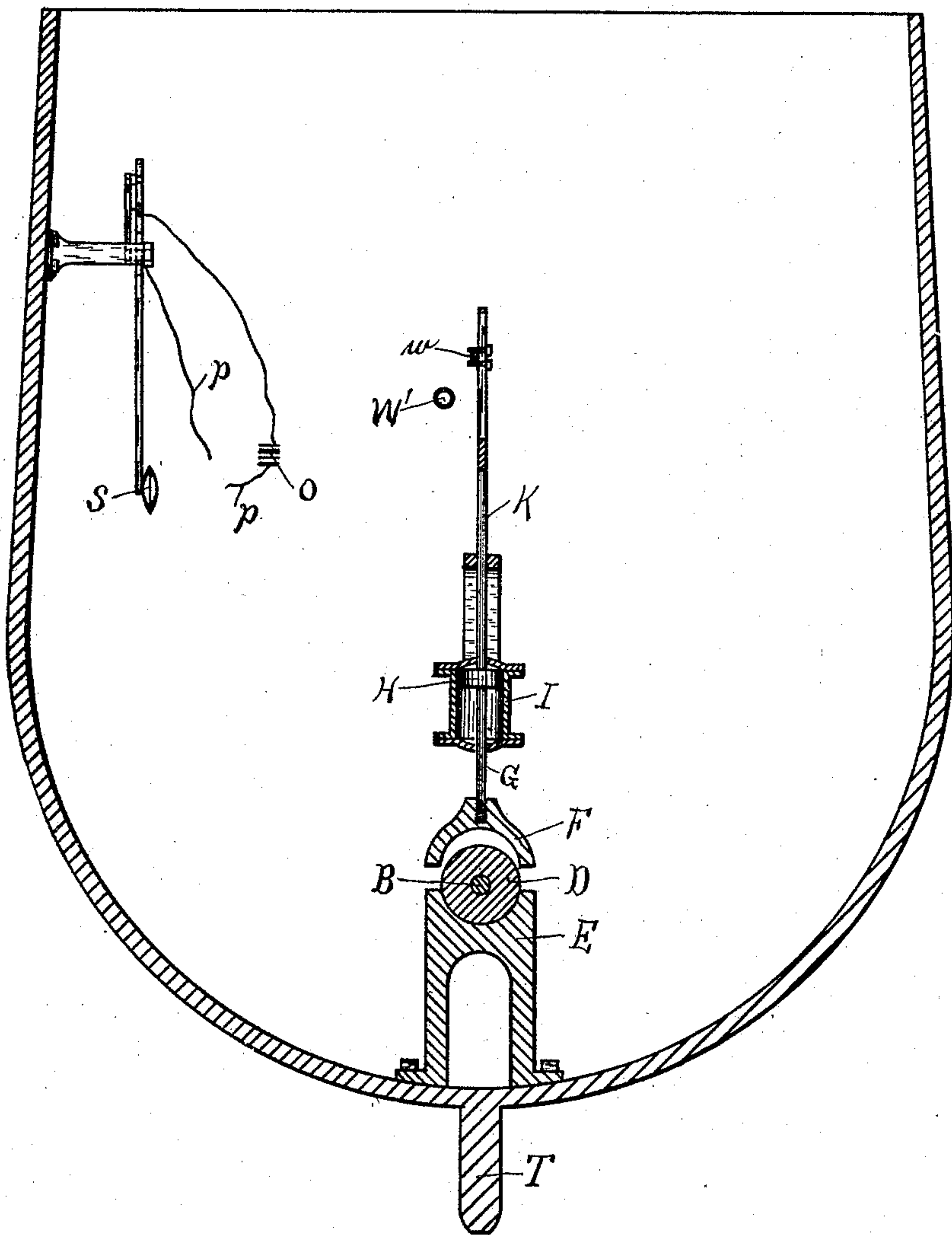
4 Sheets—Sheet 3.

A. HELLINGER.
REGULATING PROPELLERS OF VESSELS.

No. 474,169.

Patented May 3, 1892.

FIG. 3.



WITNESSES.

Joe H. Crookes
J. Crookes

INVENTOR.

Adolf Hellinger
Paul Bakewell
his attorney

(No Model.)

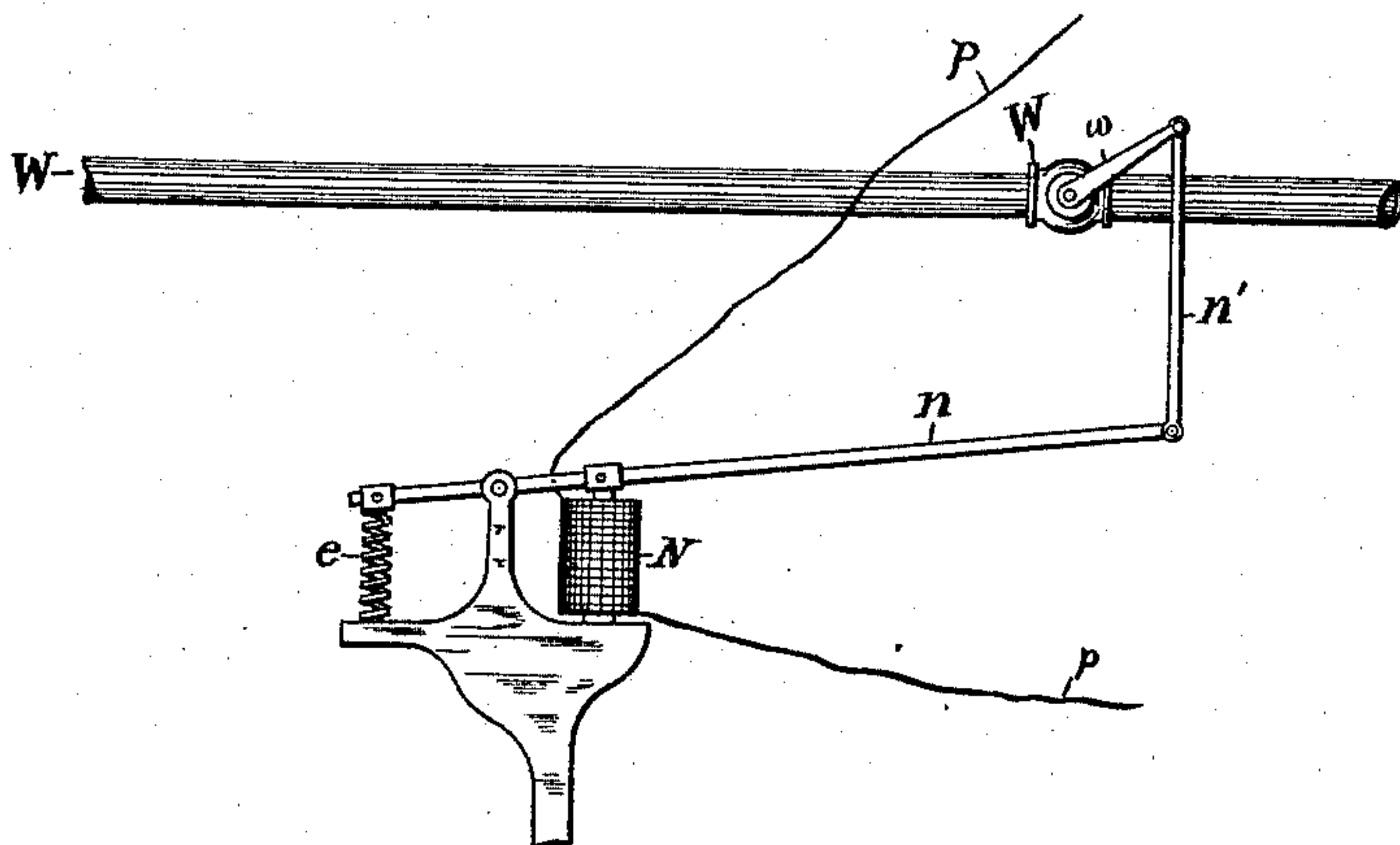
4 Sheets—Sheet 4.

A. HELLINGER.
REGULATING PROPELLERS OF VESSELS.

No. 474,169.

Patented May 3, 1892.

Fig. 4.



Witnesses.

Amos R. Samuel
J. M. Crookes

Inventor.

Adolph Hellinger
Paul Bakewell
his attorney

UNITED STATES PATENT OFFICE.

ADOLPH HELLINGER, OF ST. LOUIS, MISSOURI.

REGULATING PROPELLERS OF VESSELS.

SPECIFICATION forming part of Letters Patent No. 474,169, dated May 3, 1892.

Application filed January 16, 1891. Serial No. 377,977. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH HELLINGER, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have
5 invented certain new and useful Improvements in Marine Governors, of which the following is a full, clear, and exact description.

My invention relates to means and devices for regulating the speed of revolution of the
10 screw-shaft of propellers under the varying conditions under which it has to work, due to rough sea.

It has for its object the automatic regulation of the screw, so as to prevent the too-rapid
15 revolution or racing of the same occasioned by the screw being raised out of the water by the pitching of the vessel in an uneven sea.

It consists in regulating the amount of motive fluid supplied to the screw-engine and in
20 applying a brake to the screw-shaft, both of which are operated by means of the devices hereinafter described and controlled by an electro-magnet, the electric current for which is supplied by the closing of an electric circuit
25 by means of a pendulum swung in such a manner as to be operatively susceptible to the pitching of the vessel.

In the accompanying drawings, in which like letters of reference denote like parts in the several figures, Figures 1 and 2 are side
30 elevational views of the stern of a steam-propeller with a portion of the hull removed, showing in Fig. 1 the several parts of my invention, hereinafter described, in their relatively normal positions, or as when the screw
35 is normally immersed in the water, and Fig. 2 showing the relative positions of the different parts of my device as when from the pitching of the vessel the screw rides out of the
40 water. Fig. 3 is a cross-section taken as on the line 3 3 in Fig. 1, and Fig. 4 is a detached detail view of the direct application of the action of the electro-magnet to the throttle-valve without the intermediate mechanism
45 shown in Figs. 1 and 2.

A represents the cylinder of the screw-engine, and B the shaft of the screw C. To the shaft B is rigidly secured the brake-drum D.

Immediately under the drum D is placed the pillow-block E to relieve the shaft B from the
50 strain when the brake F is applied. The brake F is operated by being secured on one end of the piston-rod G of the piston H, which is made to oscillate within the cylinder I by the
55 admittance of steam or other motive fluid above or below the piston H. To the piston H is also attached, so as to operate with it, the rod K, which is adjustably connected with and operates lever *w* of the throttle-valve W
60 for controlling the supply of steam to the screw-engine.

The admittance of steam to the cylinder I above and below the cylinder H is controlled by means of the sliding valve M, and this in
65 turn is operated by the electro-magnet N, to which the operative current is furnished from the battery O by closing the circuit P. The closing of the circuit P may be effected by circuit-closing devices automatically operated
70 by the pendulum S, as hereinafter described. The pendulum S is pivotally mounted by being hung on the pivot-pin U, so as to swing in a plane parallel to the keel T of the vessel, and this pivot U is secured to the rock-frame V, which has pivot-bearings at *v v* in a
75 line parallel to the keel T of the vessel, whereby the frame V, and with it the pendulum suspended therefrom, is permitted a motion of revolution in a plane at right angles to the
80 direction of the keel. The object of this is to permit the pendulum to always freely assume a perpendicularly-dependent position without being influenced by the rolling of the vessel.

To the pendulum S is attached the arm *s*, which carries on its end the two contact-making
85 springs *a a'*. To the frame V is rigidly attached an arm, which terminates in the arc-shaped contact-plate Y, described from the center of the pivot-pin U as a center. To this
90 frame V is also pivotally secured the adjustable arc-shaped contact-plate Z, which is pivoted on a center corresponding with the pivot-pin U. This contact-plate Z is electrically insulated from the rest of the frame V, and
95 it is only when the contact-spring *a'* touches it in the swing of the pendulum, the contact-

spring a always being in contact with the plate Y, that the circuit P is closed. The object of making the contact-plate Z adjustable is to make circuit for comparatively different 5 degrees of movement of the pendulum—as, for instance, might be required when the vessel is differently loaded and the screw leaves the water with a proportionately-slighter pitch of the vessel.

10 In Fig. 4 I have shown the armature-lever n of the magnet N connected to the throttle-valve lever w by means of the connecting-rod n' , so that any movement in the armature-lever n is transmitted directly to the throttle- 15 valve W. This arrangement may be found of advantage in cases when the shaft-brake can be dispensed with.

In operation, the circuit P being closed by the devices shown and described in the man- 20 ner and for the reasons specified, the current from the battery O will instantly cause the armature of the magnet to be attracted. This will cause the armature-lever n to operate the sliding valve M against the reactive tension of 25 the spring e , (to the position shown in Fig. 2,) so as to open the port m to the top of the cylinder H for the ingress of the motive fluid from some suitable source, as the boilers, from the pipe H', at the same time forming 30 communication from the lower end of the cylinder through the port m' to the open air. This will force the brake F against the drum D, which will tend to stop the rotation of the shaft B. In the downward movement of the 35 piston H the rod K, secured to it, operates the throttle-valve lever w , controlling the supply of steam flowing through the supply-pipe W' to the cylinder A of the screw-engine. When the vessel regains its normally-horizontal po- 40 sition, the pendulum S resumes its normal position, (that shown in opening the circuit,) and the tension-spring e will draw the armature-lever n and with it the sliding valve M to the position shown in Fig. 1, which admits 45 the steam to the under side of the piston H, thereby relieving the drum D of the pressure

of the brake F and turning on a full head of steam to the screw-engine cylinder A.

I claim—

1. In devices for the regulation of propel- 50 lers for steam-vessels, a throttle-valve for controlling the supply of motive fluid to the screw-engine, and a brake capable of being applied to the screw-shaft, said throttle-valve and said shaft-brake being operated by being mechani- 55 cally connected with a piston, said piston being operated by motive fluid under the control of electric appliances, the operative current to said electric appliances being furnished by closing an electric circuit by devices oper- 60 ated by contrivances susceptible of and capable of being actuated by the varying depths to which the stern of the vessel is immersed in the water, combined and operating substan- 65 tially as described, and for the purposes specified.

2. In devices for the regulation of propel- lers for steam-vessels, the combination, with a throttle-valve W and shaft-brake D, with piston H and piston-rods G and K, cylinder I, 70 valve M, magnet N, circuit P, and battery O, rocking frame V and attached rigid arm Y and adjustable arm Z, pendulum S, and pendulum-arms s and attached contact-springs a and a' , operating substantially as described, and 75 for the purposes specified.

3. In a marine governor, the combination, with a throttle-valve W, of piston H, piston-rod K, cylinder I, valve M, magnet N, circuit P, battery O, rocking frame V, having rigid 80 arm Y and adjustable arm Z, and pendulum S, having arms s , provided with contact-springs a a' , substantially as and for the purposes specified.

In testimony whereof I affix my signature, in 85 presence of two witnesses, this 30th day of December, 1890.

ADOLPH HELLINGER.

Witnesses:

J. W. CROOKES,
A. RAMEL.