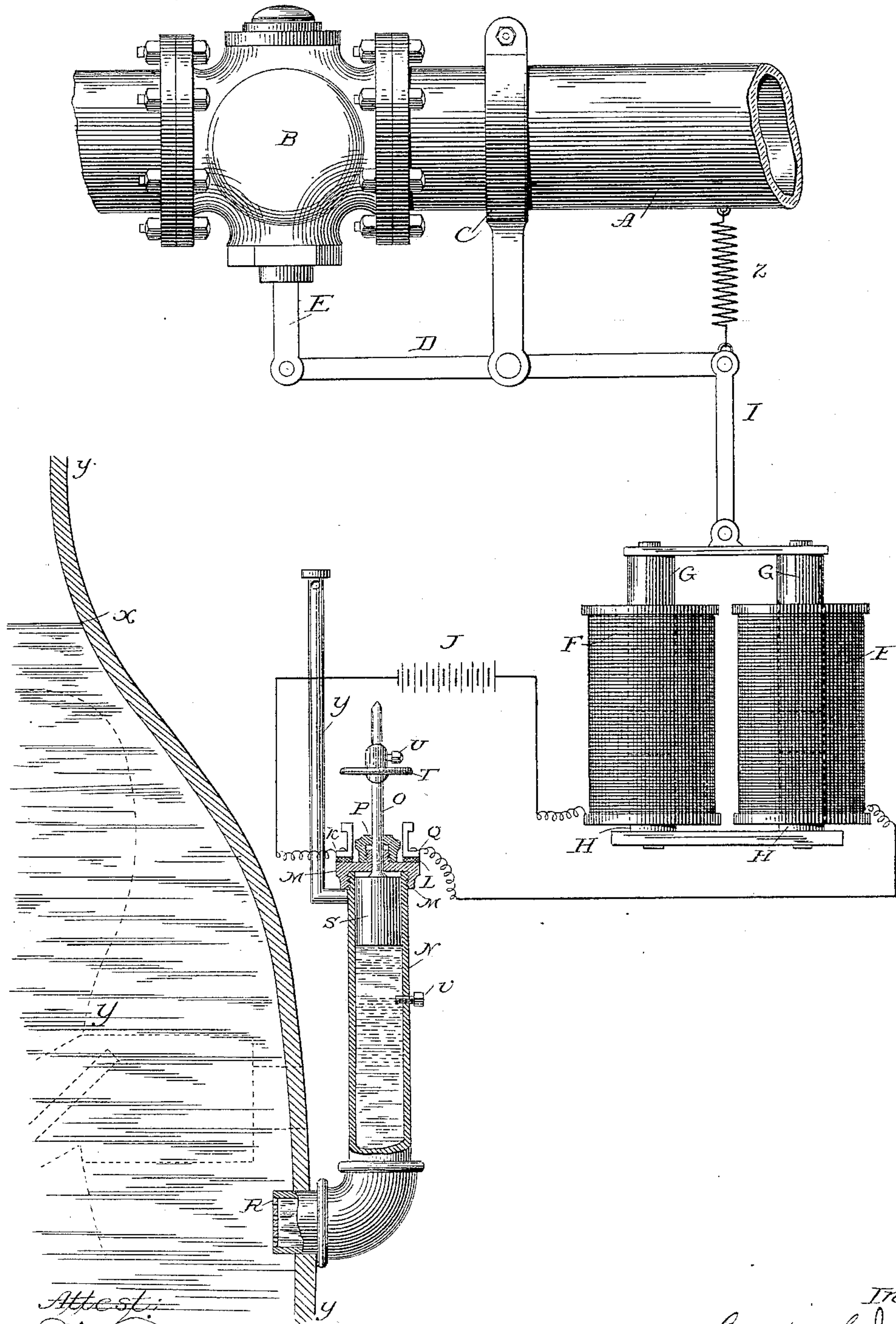


(No Model.)

B. J. CARROLL.  
ELECTRIC MARINE GOVERNOR.

No. 318,417.

Patented May 19, 1885.



Attest:  
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# UNITED STATES PATENT OFFICE.

BRADISH J. CARROLL, OF NEW BRIGHTON, NEW YORK.

## ELECTRIC MARINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 318,417, dated May 19, 1885.

Application filed May 7, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, BRADISH J. CARROLL, of New Brighton, in the county of Richmond and State of New York, have invented a new and useful Improvement in Electrical Marine Governors; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is designed for marine engines for the purpose of preventing the "racing" of the engine when by the motion of the ship the screw is lifted from the water. Its main principle lies in the direct application of a column of water, in connection with that outside the ship, to make and break apparatus of an electric circuit, in which an electro-magnet directly controls the valve which shuts off steam from the engine.

The invention consists, also, in certain improved details of construction, whereby the invention is more effectually and economically embodied.

In the accompanying drawing, the figure shows the apparatus in side elevation in connection with the section of the main steam-supply pipe containing the column of water, being partly in section. In this figure the line *y y* represents the stern of the ship, and at *Y* is represented the screw-propeller in dotted lines.

A section of the steam-pipe located between the boiler and the throttle-valve is represented at *A*. This section is provided with valve *B*, auxiliary to the ordinary throttle-valve, the stem *E* of which is connected to the lever *D*, fulcrumed on a standard supported upon the pipe *A* by a band, *C*, or in any suitable way. The lever *D* is connected by a pitman, *I*, to the yoke of a pair of cores, *G*, of an electro-magnet, *F F*. These coils I prefer to make one foot in diameter, with holes preferably four inches in diameter. Cores *G G* move freely toward and from the fixed cores *H H*. A spring, *Z*, connected to the lever *D*, is of sufficient strength to open the valve *B* when the circuit is broken. Within the circuit is a battery, *J*, and the wires from opposite poles of the battery, one including the magnet, are connected to points *K I*. These points are insulated by means of a hard-rubber block, *L*, upon the cap *M*, which is screwed upon the

top of the pipe *N*. The pipe *N* is set vertically, and in it slides freely a closely-fitting metallic float, *S*, carrying a vertical stem, *O*, which passes through a stuffing-box, *P*, and carries a metallic disk, *T*, which is held at a proper point on the stem by a screw, *W*. The disk *T* is adapted to bear upon the points *K* and *I* when the float falls a suitable distance in whatever way the float be turned.

It will be apparent that when the float rises so as to lift the disk *T* off from the points the circuit will be broken, and will be closed when the float falls so as to let the disk *T* rest upon the points. The pipe *N* is turned at the bottom, and passes through the stern of the ship, preferably near shaft of the screw. It is provided with a grating, *R*, over the end of it, with openings large enough to admit of the free passage of the water, but sufficiently small to exclude any floating debris. A screw-plug, *V*, is set in the tube *N*, so that if by any chance the disk *T* should become loose the float *S* cannot fall to the bottom of the tube. Supposing the water at the point *X* on the ship, or at any point so as to cover or approximately cover the screw, the column of water in the tube *N* will lift the float *S* and hold the disk *T* away from the points *K I*, so as to break the circuit, and while the parts are in this position the spring *Z* will hold the valve *B* open; but after the ship rises so as to cause the column of water to fall in the tube *N* sufficiently to let the disk *T* fall to the point the circuit will be closed, the cores *G G* drawn down, and the valve *B* instantly shut, and this operation will be repeated as often as the column of water falls.

It will be apparent that the position of the disk *T* on the spindle *O* will determine the point or rise of the ship at which the circuit will be closed, and in practice this must be set so as to cause the circuit to close at a limit of emersion sufficient to prevent racing of the engine.

In order that there may be no vacuum formed in the top of *N*, I provide an air-tube, *Y*, which supplies air above the float *S* when the latter falls. This pipe may be carried to any safe point above the water-level.

I am aware that it is not new to control the valve marine engines by means of the electro-



magnet in a circuit opened and closed by the motion of the ship, and I do not broadly claim this invention.

As the governor is applied to an auxiliary valve, its movements do not interfere with the properly-regulated movement of the ordinary throttle-valve. The auxiliary valve is either thrown wide open or quite closed as the screw is immersed or out of water; but the regulator of the steam-supply for the ordinary work remains the same.

I am aware of the British Patent No. 2,710 of 1873, which shows a chamber divided by a diaphragm, in the upper part of which chamber is a stem resting upon the diaphragm, and operating the lever adapted to make and break the electric connections, the lower part of the chamber being connected by a pipe with the water outside the ship; and I do not claim, broadly, a pipe opening to the water outside the ship, whereby the column of water is adapted to operate the devices which make and break the circuit. My invention on this point is limited to a float directly in contact with the water.

I claim as my invention—

1. In combination, a valve in a steam-supply pipe, an electro-magnet connected to said valve and in a suitable battery-circuit, and devices for opening and closing said circuit, con-

nected to a float operated by a column of water, and directly in contact therewith, in communication with the water outside of the ship.

2. The tube N, having its opening to the outside near the shaft of the screw, a float in said tube, the stem of which carries a disk adapted to close the circuit when the float falls, and an electro-magnet and means for opening and closing the valves through the said magnet, substantially as described.

3. The tube N, opening to the outside near the shaft of the screw, the float S, having a metallic disk upon its stem, an air-tube, Y, and points K and L, in connection with the wires of the circuit, all substantially as described.

4. In combination with the steam-supply pipe, a valve in the steam-supply pipe auxiliary to the ordinary throttle-valves, an electro-magnet connected to the auxiliary valve and in a suitable battery-circuit, and devices for opening and closing said circuit by the rise and fall of the stern of the ship, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BRADISH J. CARROLL.

Witnesses:

WM. S. MADDOX,

EDWARD B. MERRILL.