

APPLICATION FILED OCT. 15, 1906.

Patented Nov. 30, 1909.

Fig. 1.

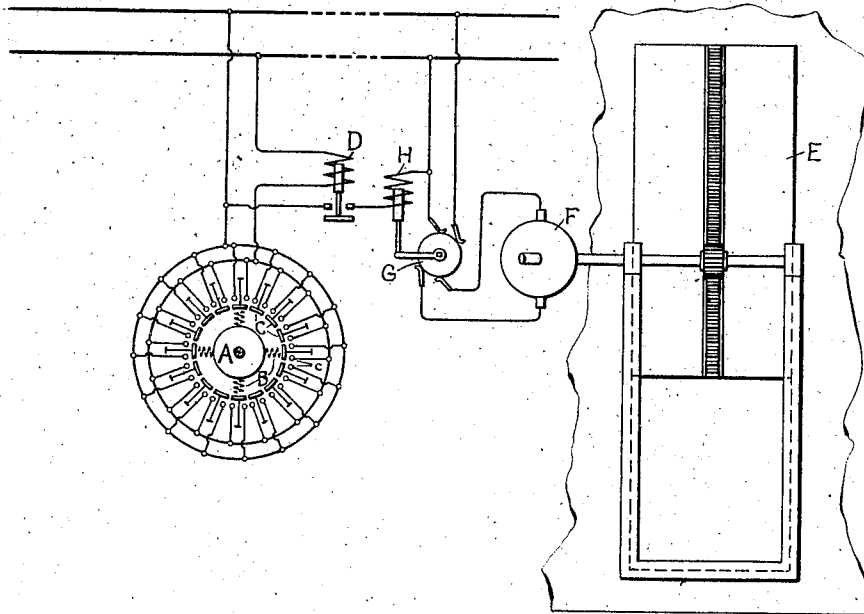
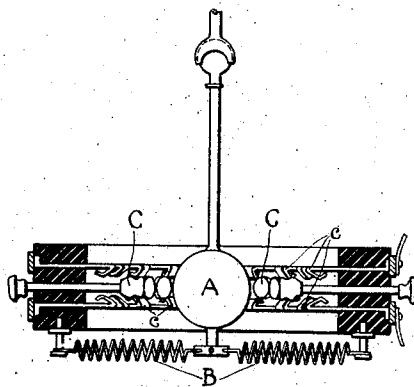


Fig. 2.



Witnesses
 Irving E. Steers.
 J. Ellis Allen.

Inventor
Wilbur L. Merrill,
by *Alfred H. Davis* Atty.

UNITED STATES PATENT OFFICE.

WILBUR L. MERRILL, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

AUTOMATIC CONTROL OF WATER-TIGHT DOORS.

941,428.

Specification of Letters Patent.

Patented Nov. 30, 1909.

Application filed October 15, 1906. Serial No. 338,897.

To all whom it may concern:

Be it known that I, WILBUR L. MERRILL, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Automatic Control of Water-Tight Doors, of which the following is a specification.

My invention relates to the protection of ships provided with water-tight bulk-head doors and hatches, and its object is to provide means for closing the doors automatically in case of an emergency.

My invention consists in providing a device possessing high inertia, which is held normally in a given position during ordinary movements of the ship, with means operated by the movement of the device from its normal position for closing the doors.

More specifically stated, I employ a pendulum provided with centering springs adapted to resist the strains due to the ordinary movements of the ship, but proportioned to allow the pendulum to move in case the ship runs aground, collides with another vessel, or receives an unusual shock from any cause. In the case of doors provided with power-operating mechanism, a simple arrangement for controlling the doors from the pendulum consists in placing a series of contacts around the pendulum so as to be operated when the pendulum is moved from its normal position, with a magnet in circuit with the contacts controlling the power-operated mechanism of the doors.

My invention will best be understood by reference to the accompanying drawings, in which Figure 1 shows diagrammatically an automatic bulk-head door control, arranged in accordance with my invention, the automatic controlling device being shown in plan view; and Fig. 2 shows an elevation in cross section of the controlling device.

In the drawings, A represents a heavy pendulum, which is suspended as shown in Fig. 2, so as to be free to move in any direction, but which is normally restrained in the position shown by centering springs B. These springs are stiff enough to resist ordinary strains, such as arise in the ordinary rolling of the ship, but in case of an extraordinary shock on the ship the pendulum will move from its usual position, straining the centering springs. Surrounding the

pendulum are a series of plungers C, which are arranged to be engaged by the pendulum when it moves in any direction from its central position. Each plunger is arranged, when pushed outward, to bridge a pair of stationary contacts c, and thereby to close the circuit of a magnet D. This magnet sets in motion the operating mechanism for the door E. The operating mechanism is shown diagrammatically, as consisting of a motor F geared to the door, a motor-controlling switch G, and a magnet H controlled by the magnet D, and arranged to shift the controlling switch G so as to start the motor for closing the doors. Although for the sake of simplicity I have shown only a single door, it will be understood that as many doors and hatches as desired may be controlled by a single magnet D.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In combination with a water-tight door or hatch on board ship, operating means for said door or hatch arranged to close the same, and controlling means therefor operated by a sudden variation of motion of the ship.

2. In combination with a water-tight door or hatch on board ship, a motor for operating said door or hatch to close the same, an electric controlling circuit therefor, and a circuit-closing device in said circuit operated by a sudden variation of motion of the ship.

3. In combination with a water-tight door or hatch on board ship, a movable device possessing high inertia, means for holding said device fixed during ordinary movements of the ship but permitting movement of said device during sudden variation of motion of the ship, and means operated by the movement of said device for closing said door.

4. In combination with a water-tight door or hatch on board ship, a movable device possessing high inertia, means for holding said device fixed during ordinary movements of the ship, switch contacts arranged to be operated by the movement of said device, an electro-magnet in circuit with said contacts, and means controlled by said electro-magnet for closing said door.

5. In combination with a water-tight door or hatch on board ship, power-operated mechanism for closing said door, a movable

device possessing high inertia, means for holding said device fixed during ordinary movements of the ship, switch contacts arranged to be operated by the movement of said device, an electro-magnet in circuit with said contacts, and operative connections between said magnet and said power-operated mechanism.

6. In combination with a water-tight door or hatch on board ship, an electric motor geared thereto, a movable device possessing high inertia, means for holding said device fixed during ordinary movements of the ship, switch contacts arranged to be operated by the movement of said device, an electro-magnet in circuit with said contacts, and a switch controlled by said magnet and controlling said motor.

7. In combination with a water-tight door or hatch on board ship, a pendulum, centering springs therefor adapted to resist or-

dinary movements of the ship but permitting movement upon sudden variation of motion of the ship, and means operated by the movement of the pendulum for closing said door.

8. In combination with a water-tight door or hatch on board ship, a pendulum, centering springs therefor adapted to resist ordinary movements of the ship but permitting movement upon sudden variation of motion of the ship, switch contacts arranged to be operated by the movement of said pendulum, an electromagnet in circuit with said contacts, and means controlled by said magnet for closing said door.

In witness whereof, I have hereunto set my hand this 13th day of October, 1906.

WILBUR L. MERRILL.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.