J. A. SVEDBERG.

Governor for Marine-Engines.

No. 208,274. Patented Sept. 24, 1878.

Fig. 1

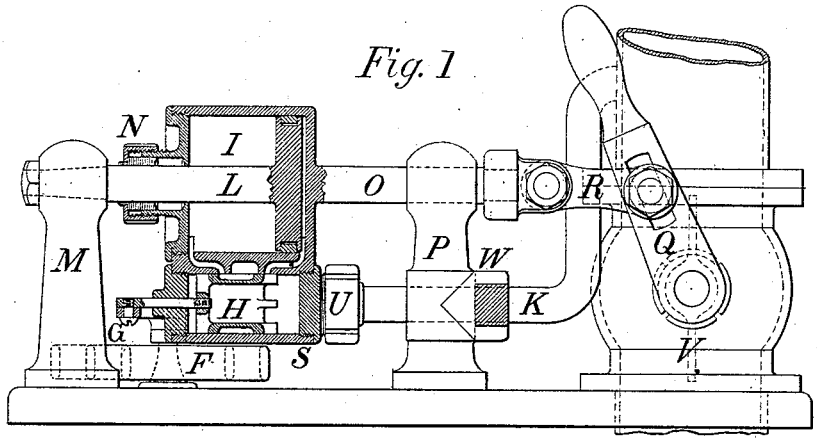


Fig. 2

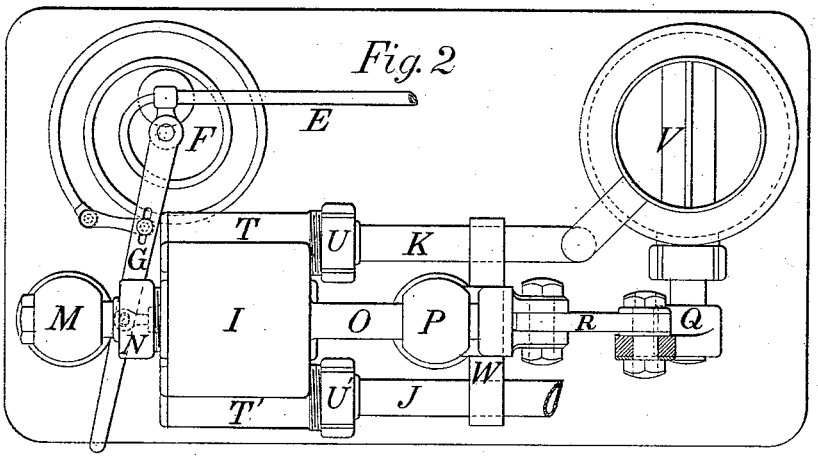


Fig. 3

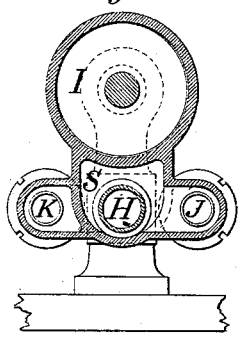
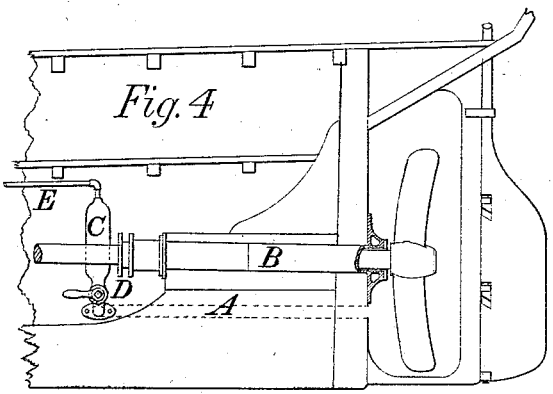


Fig. 4



WITNESSES

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UNITED STATES PATENT OFFICE

JOHN A. SVEDBERG, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN GOVERNORS FOR MARINE ENGINES.

Specification forming part of Letters Patent No. **208,274**, dated September 24, 1878; application filed February 27, 1878.

To all whom it may concern:

Be it known that I, JOHN A. SVEDBERG, of Washington, District of Columbia, have invented certain new and useful Improvements in Governors for Marine Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is to produce a simple and efficient mechanism for the purpose of automatically regulating the speed of a marine engine when the vessel is exposed to rough seas, in which the propeller is often raised partly or wholly out of the water. When this occurs in steam-vessels not provided with proper automatic governors, the speed of the engine is dangerously increased if not checked in time by the engineer in charge, causing serious damage to engine, shaft, and propeller.

The present device is designed to obviate the difficulty, and, unlike most governors for this purpose, it anticipates the movements of the engine. It, in fact, regulates the engine to a uniform speed, as the governor admits and shuts off steam exactly in proportion as the propeller is more or less immersed.

In the drawing, Figure 1 is a vertical section; Fig. 2, a plan; Fig. 3, a cross-section through the cylinder I, and Fig. 4 a vertical section of the stern of the ship.

The device is constructed as follows: A pipe, A, Fig. 4, is fixed outside the vessel, below the shaft-bearing B, having its mouth open for the admission of water, and communicating on the inside of the vessel with an air-chamber, C, by means of a valve or stop-cock, D. E is a small pipe suspended under the deck, fixed to the top of the air-chamber C, and communicating with a diaphragm, F, or its equivalent. (Shown in elevation at Fig. 1 and in plan in Fig. 2.) To this diaphragm is jointed a lever, G, which again is pivoted to the stem of the balanced piston-valve, H, in connection with a small intermediate steam-cylinder, I. This valve is hollow through its axis, and has suitable communications with the exhaust-pipe J. The outside central concavity of the valve communicates with the steam-pipe K, which leads from the main steam-pipe or boiler.

The piston and rod L are fixed to the stanchion M, and remain stationary, while the cylinder moves back and forth on the same. The cylinder has a stuffing-box, N, on one of its heads, and a rod, O, fixed to the other. This rod is guided by means of the stanchion P, and is connected to the throttle-valve Q by the link R. The valve-chest S is placed below the cylinder, so that all condensed steam can easily pass through into the exhaust-pipe whenever the valve opens.

There are chambers, T and T′, on each side of the valve-chest, provided with stuffing-boxes U U′, through which the steam and exhaust pipes pass. A cross-piece, W, bolted to the stanchion P, clamps the steam and exhaust pipes firmly when the chambers T T′ ride thereon.

The operation of the governor is as follows: When the propeller is immersed as the vessel ordinarily floats in smooth water, the air in the chamber C is considerably compressed by water issuing in through pipe A with a head nearly equal to perpendicular distance from said pipe to the water-line at the stern-post, and, as the air communicates with the diaphragm F, the same will be expanded, thereby forcing the lever G and valve H to the left, as shown in Figs. 1 and 2. As live steam surrounds the outside of the valve, it will enter the intermediate cylinder I, through the left-hand steam-port, and move the cylinder with its connections in the same direction, thereby keeping the throttle-valve V open for the admission of steam to the main engine. As soon, however, as the propeller rises upward or its immersion is lessened, the head of water, and consequently the pressure, becomes gradually less, and the diaphragm will be contracted, thereby pressing the valve H in the opposite direction, causing a similar movement in the cylinder and throttle-valve, thus gradually shutting off or admitting steam to the main engine, according to the greater or less immersion of the propeller-blades.

Should the air, in course of time, become less in bulk in the chamber C, through leakage or absorption by water, all that is necessary to do would be to shut the valve D, and by means of a pet-cock or small screw let out all water which has come into the chamber. This being done, the pet-cock is closed, the valve D opened, and the governor is ready for use.

I am aware that compressed air has been heretofore used to operate the throttle-valve of marine engines; but, so far as I know or believe, the connection between the air-chamber and the throttle has always been direct, or at least without the intervention of an intermediate steam-cylinder, necessitating very large and cumbersome apparatus. I do not therefore claim, broadly, the invention of the direct application of compressed air to control the speed of marine engines; but,

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

1. The combination of the air-chamber C, the diaphragm F, or its equivalent, and the valve of the intermediate steam-cylinder, the said valve being opened and closed, and thereby admitting or shutting off steam to the cylinder as the pressure in said air-chamber is increased or lessened by the greater or less immersion of the vessel in the water, arranged substantially as described.

2. In a governor for marine engines, the combination of the throttle-valve of said engines, controlled by an intermediate steam-cylinder, with the valve of said cylinder, operated by the varying pressure of the external water as the stern of the vessel is more or less immersed by rising and falling on the waves, arranged substantially as described and shown.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN A. SVEDBERG.

Witnesses:
GEO. F. GRAHAM,
GEO. A. SAWYER.