No. 817,262. PATENTED APR. 10, 1906.

J. W. MOWBRAY.

GOVERNOR FOR MARINE ENGINES.

APPLICATION FILED NOV. 9, 1905.

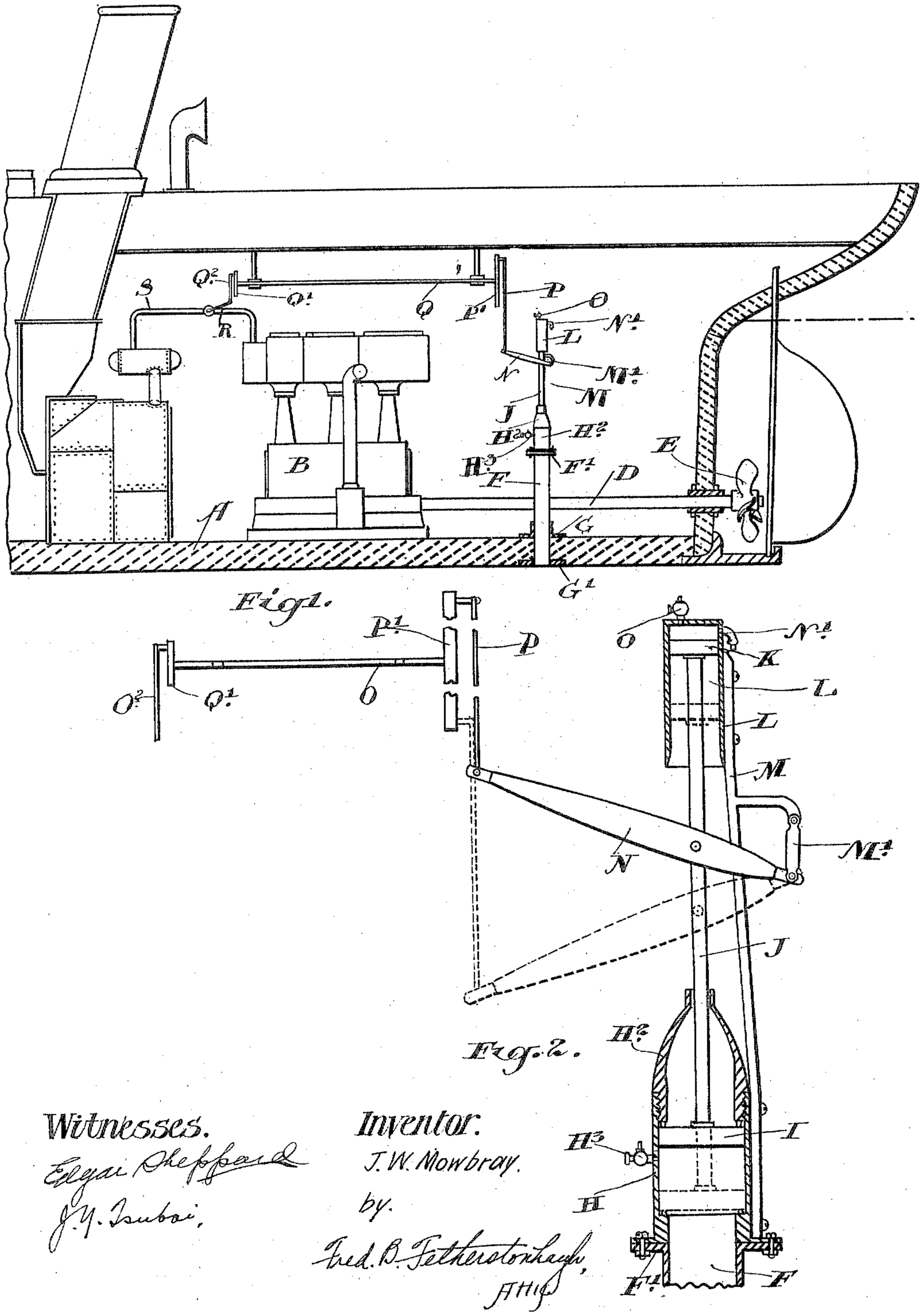

Fig. 1.

Fig. 2.

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GOVERNOR FOR MARINE ENGINES.

No. 817,262. Specification of Letters Patent. Patented April 10, 1906.

Application filed November 9, 1905. Serial No. 286,540.

To all whom it may concern:

Be it known that I, JAMES WILLIAM MOWBRAY, of the village of Walton, in the county of Huron, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Governors for Marine Engines, of which the following is a specification.

My invention relates to improvements in governors for marine engines; and the object of the invention is to devise a simple, cheap, positive, and effectual governor to prevent the engine racing due to the lifting of the propelling-wheel out of the water in high seas; and it consists, essentially, of a stand-pipe extending through the bottom of the boat in proximity to the stern, a cylindrical casing secured to the upper end thereof, a piston located in such casing and having a piston-rod connected thereto and extending through the upper end of the casing, a supplemental piston connected to the upper end of the piston-rod, a supplemental cylinder suitably supported above the main cylinder and in which the supplemental piston works, and a lever suitably pivoted at one end and connected to the piston-rod, and means connecting the free end of the lever with the butterfly throttle-valve on the steam-pipe of the engine, the parts being otherwise constructed and arranged in detail as hereinafter more particularly explained.

Figure 1 is a sectional view showing the location of my improved governor and one means of connecting it to the throttle-valve. Fig. 2 is an enlarged detail, mostly in section, of the governor and connections.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the hull of the steamship; B, the engine; C, the boiler; D, the main propelling-shaft, and E the propelling-wheel.

F is a stand-pipe which extends through the bottom of the boat, being held in position by suitable plates G and G′. The bottom of the stand-pipe is preferably provided with a sieve to prevent foreign matter from passing upwardly thereinto. The top of the stand-pipe is provided with a flange F′, to which is secured the cylinder H by means of flanges and bolts extending through the same and the flanges F′. The top of the cylinder has a suitable head H^2.

H^3 is a petcock which is designed to be opened so as to allow the water to rise in the stand-pipe to the piston I for a purpose which will hereinafter appear. The piston I is provided with a rod J, which extends through the head H^2 and is provided at the upper end with a supplemental piston K.

L is a supplemental cylinder which is supported in suitable framework M, such as indicated.

N is a lever pivotally connected to the piston-rod J and having its fulcrum on a link-arm M′, attached to the frame M.

N′ is a check-valve which is arranged to allow of the passage of air into the upper end of the supplemental cylinder L.

O is a petcock at the top of the supplemental cylinder L and designed to regulate the pressure of air on the piston K as it moves upwardly.

The lever N is connected by a rod P to a crank-wheel P′, which is secured on the end of the shaft Q, journaled in suitable bearings and having a crank-wheel Q′ at the opposite end, which is suitably connected by a rod Q^2 to the operating-arm of the butterfly-valve R on the steam-pipe S leading from the boiler to the engine.

The operation of my device is as follows: The water is admitted into the stand-pipe up to the piston I, the petcock H^3 being opened to allow of the water to ascend. The position in which the governor is shown is the normal position when the steamship or vessel is riding on an even keel. Should, however, the weather become rough and the seas become high, the pitching of the ship, as is well known, frequently causes the propelling-wheel E to rise out of the water, and the racing of the engine is the result. Before the wheel rises out of the water, however, the water in the stand-pipe necessarily falls and causes a vacuum, which draws down the piston I, and consequently the lever N, thereby through the connections hereinbefore described operating the butterfly-valve on the steam-pipe, and thus controlling the admission of the steam to the engine. It will be quite readily seen that the amount of rise in the stand-pipe will regulate the rise and fall of the piston, and consequently the position of the butterfly-valve and the steam to the engine. The supplemental piston as it ascends causes the air to pass into the upper end of the piston through the check-valve N′, and such air acts as a cushion to prevent a too rapid movement of the piston-rod, and consequently of the valve R. The degree of rapidity of action of the piston-rod J can be

regulated to a nicety by means of the pet-cock Q at the top of the supplemental cylinder L.

Although I describe the piston-rod as operating a lever N and connections to the butterfly-valve, it will of course be understood that various means may be adopted and connected to the piston to operate the valve R. For instance, any suitable electric device may be employed where it is not convenient to employ such a connection as I have described from the governor to the valve in the steam-pipe. Any such devices, however, must necessarily fall within the scope of my invention.

What I claim as my invention is—

1. The combination with the stand-pipe, main cylinder, supplemental cylinder, air-cock at the upper end thereof, piston-rod having the main piston at one end and the supplemental piston at the opposite end, and the lever pivotally connected to the piston and suitably pivoted in the frame and operating means connecting such lever to the valve in the steam-pipe leading to the engine as specified.

2. A governor for steam-engines comprising a stand-pipe extending through the bottom of the vessel, a cylinder secured to the top of the same, a piston having longitudinal movement in such cylinder, a piston-rod extending through the head of the cylinder, a supplemental cylinder supported above the main cylinder, a supplemental piston secured at the upper end of the piston-rod and means connected to the piston-rod for operating the valve in the steam-pipe leading from the engine as and for the purpose specified.

3. A governor for steam-engines comprising a stand-pipe extending through the bottom of the vessel, a cylinder secured to the top of the same, a piston having longitudinal movement in such cylinder, a piston-rod extending through the head of the cylinder, and a supplemental cylinder supported above the main cylinder, a supplemental piston secured at the upper end of the piston-rod and a check-valve communicating with the upper end of the supplemental cylinder as and for the purpose specified.

4. The combination with the stand-pipe, main cylinder, supplemental cylinder, piston-rod having the main piston at one end and the supplemental piston at the opposite end and the lever pivotally connected to the piston and suitably pivoted in the frame and operating means connecting such lever to the valve in the steam-pipe leading to the engine as and for the purpose specified.

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