

No. 692,161.

Patented Jan. 28, 1902.

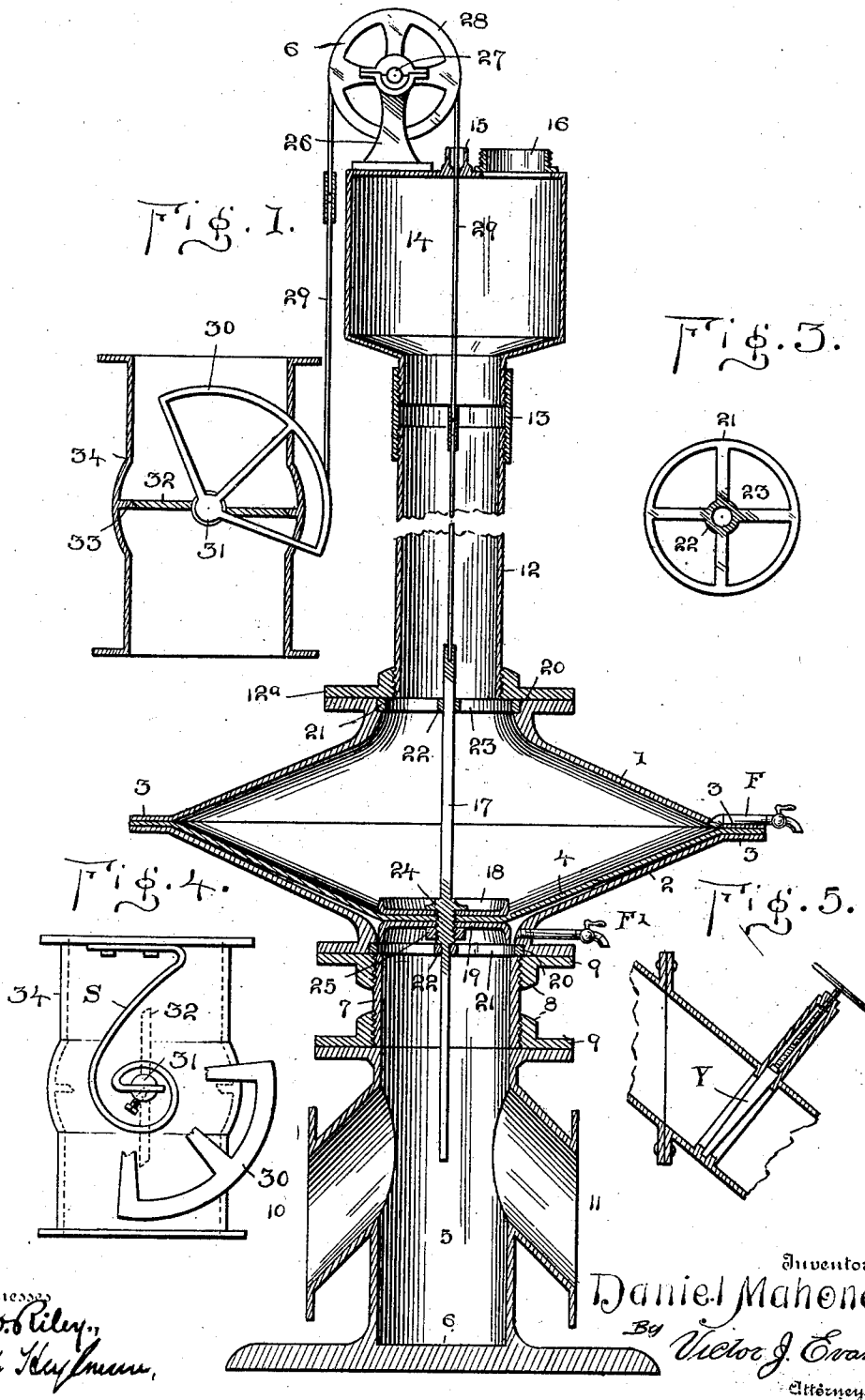
D. MAHONEY.

AUTOMATIC REGULATOR FOR MARINE ENGINES.

(Application filed June 22, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
J. W. Riley,
A. G. Kaufman.

Inventor
Daniel Mahoney
By Victor J. Evans
Attorney.

No. 692,161.

Patented Jan. 28, 1902.

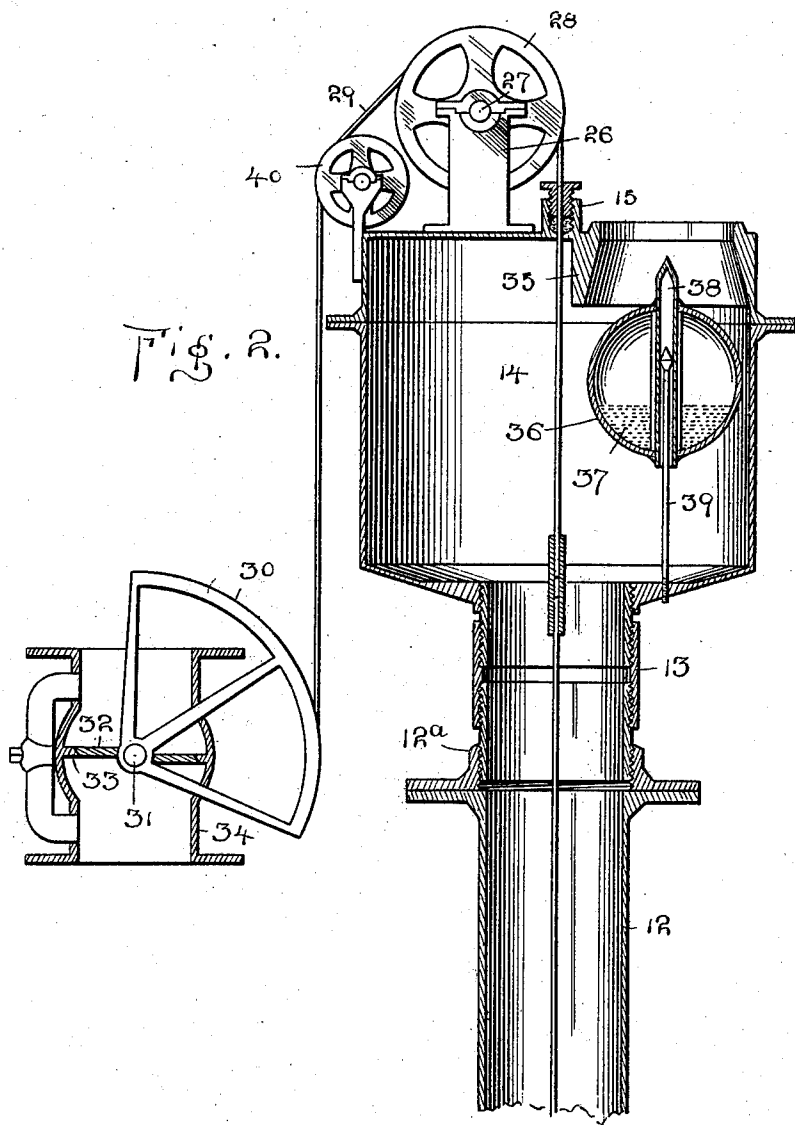
D. MAHONEY.

AUTOMATIC REGULATOR FOR MARINE ENGINES.

(Application filed June 22, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses
J. W. Riley,
A. G. Huffman.

Inventor
Daniel Mahoney.
By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

DANIEL MAHONEY, OF BROOKLYN, NEW YORK.

AUTOMATIC REGULATOR FOR MARINE ENGINES.

SPECIFICATION forming part of Letters Patent No. 692,161, dated January 28, 1902.

Application filed June 22, 1901. Serial No. 65,697. (No model.)

To all whom it may concern:

Be it known that I, DANIEL MAHONEY, a citizen of the United States, residing at 401 Bergen street, Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Automatic Regulators for Marine Engines, of which the following is a specification.

My invention relates to automatic regulators or cut-offs for marine engines, the object being to provide simple and effective mechanism for preventing a marine engine from "racing" when the propeller wheel or wheels leave the water.

The construction and characteristic features of the invention will be fully described hereinafter, and distinctly pointed out in the appended claims, in connection with the accompanying drawings, which form a part of this specification.

In the drawings, Figure 1 is a central vertical section of an apparatus embodying my invention. Fig. 2 is a vertical section of a modified construction of the regulator. Fig. 3 is a top plan view of one of the guide-rings for the diaphragm-rod employed in the apparatus. Fig. 4 is a detail view of a portion of the steam-pipe, showing the spring on the valve-stem, and Fig. 5 is a detail in central section showing valves interposed in the lateral pipes at the base of the lower water-chamber.

Referring to the drawings, 1 and 2 designate two reversely-arranged hollow cones, each having an annular edge flange 3.

4 designates a circular elastic diaphragm, preferably made of pure rubber, secured between the flanges of the cones.

The diaphragm-chamber formed by the cones 1 and 2 is supported upon a hollow casting 5, formed with a base 6 and constituting the lower water-chamber.

Interposed between the top of the chamber 5 and the diaphragm-chamber is an externally-threaded nipple 7, upon which are arranged oppositely-disposed internally-threaded collars 8, having annular flanges 9. These collars of the nipple permit of vertical adjustment of the diaphragm-chamber and the parts arranged above it when necessary. The water-chamber 5 is provided with lateral inlets 10 and 11, oppositely disposed and adapted

to be located one on each side of the keel of the vessel.

12 designates a stand-pipe rising from the upper cone 1 and communicating therewith, and above the stand-pipe, connected therewith by an adjustable coupling 13, is a surplus-water chamber 14, into which water rises from the stand-pipe 12. The water-chamber 14, it will be perceived, is of greater diameter than the stand-pipe 5, so that when the upward movement of the diaphragm lifts the water in the stand-pipe it will be received in a chamber of increased capacity and will not be discharged at the top. The upper side of this chamber 14 is provided with a stuffing-box 15 and a threaded nipple 16, the latter being designed for the attachment of an overflow-pipe and air-vent (not shown) rising to the maximum load-line of the vessel as a safeguard against an overflow in case of a rupture of the diaphragm. The lower end of the stand-pipe is supported upon the upper cone 1 by an internally-threaded collar 12^a, which in connection with the adjustable coupling permits of variation in the area of the stand-pipe to vary the pressure thereon. Extending centrally through the diaphragm is a guide-rod 17, secured in place by oppositely-disposed flanged collars 18 and 19, arranged on opposite sides of the diaphragm and serving the double purpose of binding collars or plates, between which the diaphragm at its central portion is clamped, and as stops which will close the top of the pipe 5 and the lower end of the stand-pipe 12, respectively.

Each of the cones 1 and 2 is formed at its apex with an annular recess 20 to receive a guide-ring 21, having a hub 22 and spokes 23, and the ends of the rod 17 extend through the hubs of these rings and are thus centered and guided in their movement.

The rod 17 is formed with a central flange 24, resting on the collar 18, and below the collar 19 is a nut 25 to clamp the rod in its engagement with the diaphragm and collars 18 and 19.

Upon the top of the chamber 14 is a bracket 26, formed with bearings for a shaft 27, upon which is mounted a pulley 28, over which passes a cable or chain 29, one end of which extends down within the chamber 14 and stand-pipe 12 for attachment to the upper end

of the guide-rod 17. The opposite end of the cable or chain 29 is attached to a grooved quadrant 30, mounted upon a shaft 31, carrying a valve 32, fitting a seat 33, formed within a pipe 34 to control the supply of steam to the engine.

The regulator should be located as low as possible and aft of the vessel.

The stand-pipe 12 contains a sufficient quantity of water to equalize the water below the diaphragm, and any lack of pressure below the diaphragm caused by the side lurch of the vessel will be compensated for by the pressure above the diaphragm, the movement of the diaphragm serving to operate the valve 32 by means of the guide-rod 17, cord 29, and quadrant 30.

In lieu of the overflow-pipe adapted to be attached to the nipple 16 I may provide the surplus-water chamber with a depending valve-seat 35, adapted to receive a float-valve 36, as shown in Fig. 2, said valve being weighted with shot 37 and having a central guide-tube 38 for guiding the valve upon a rod 39, projecting from the bottom of the chamber 14.

In the construction shown in Fig. 2 I also employ a guide-pulley 40 for the cable 29. (Not shown in Fig. 1.)

If desired, the inlets 10 and 11 may be provided with gate-valves Y, as indicated in Fig. 5 of the drawings.

The steam-valve 32 is preferably provided with a flat circular spring S of sufficient tension to bring the valve back to open position after it is closed.

To adjust the device, shut off the gate-valves and draw off all the water from above and below the diaphragm through suitable cocks F F'. As the movement of the rod and diaphragm is only approximately ten inches, it can be nicely adjusted. If after adjustment it is a little stiff, a gallon or two of water placed in the surplus-chamber will remedy the defect. A pint of oil placed in the

surplus-chamber prevents loss by evaporation.

What I claim is—

1. An automatic regulator for marine engines, comprising a base-pipe 5 having inlet-pipes leading therein, a diaphragm-chamber, an elastic diaphragm secured therein, a stand-pipe rising vertically from the upper end of the diaphragm-chamber, a surplus-water chamber of greater diameter than the stand-pipe and mounted on the end thereof, a rod secured to the center of the diaphragm, a valve in the steam-pipe of the engine, and a connection between the valve and the diaphragm.

2. An automatic regulator for marine engines, comprising a water-chamber at the base having inlets leading therein, a diaphragm-chamber mounted on the base-chamber and communicating therewith, consisting of reversely-arranged conical shells, an elastic diaphragm secured between the bases of the said shells, a guide-ring on the top of the base-chamber having a central aperture, a guide-ring on the top of the diaphragm-chamber, having a central aperture, oppositely-arranged disks clamping the diaphragm at the center and constituting stops for the openings in the diaphragm-chamber, a guide and clamping rod through the said disks and diaphragm and slidingly projected through the guide-rings, a stand-pipe on the diaphragm-chamber, a surplus-water chamber on the stand-pipe of larger diameter than the stand-pipe, a valve in the steam-pipe, and connections between the valve and the guide-rod of the diaphragm, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL MAHONEY.

Witnesses:

CHARLES W. DUNN,
WALTER CLEARY.