

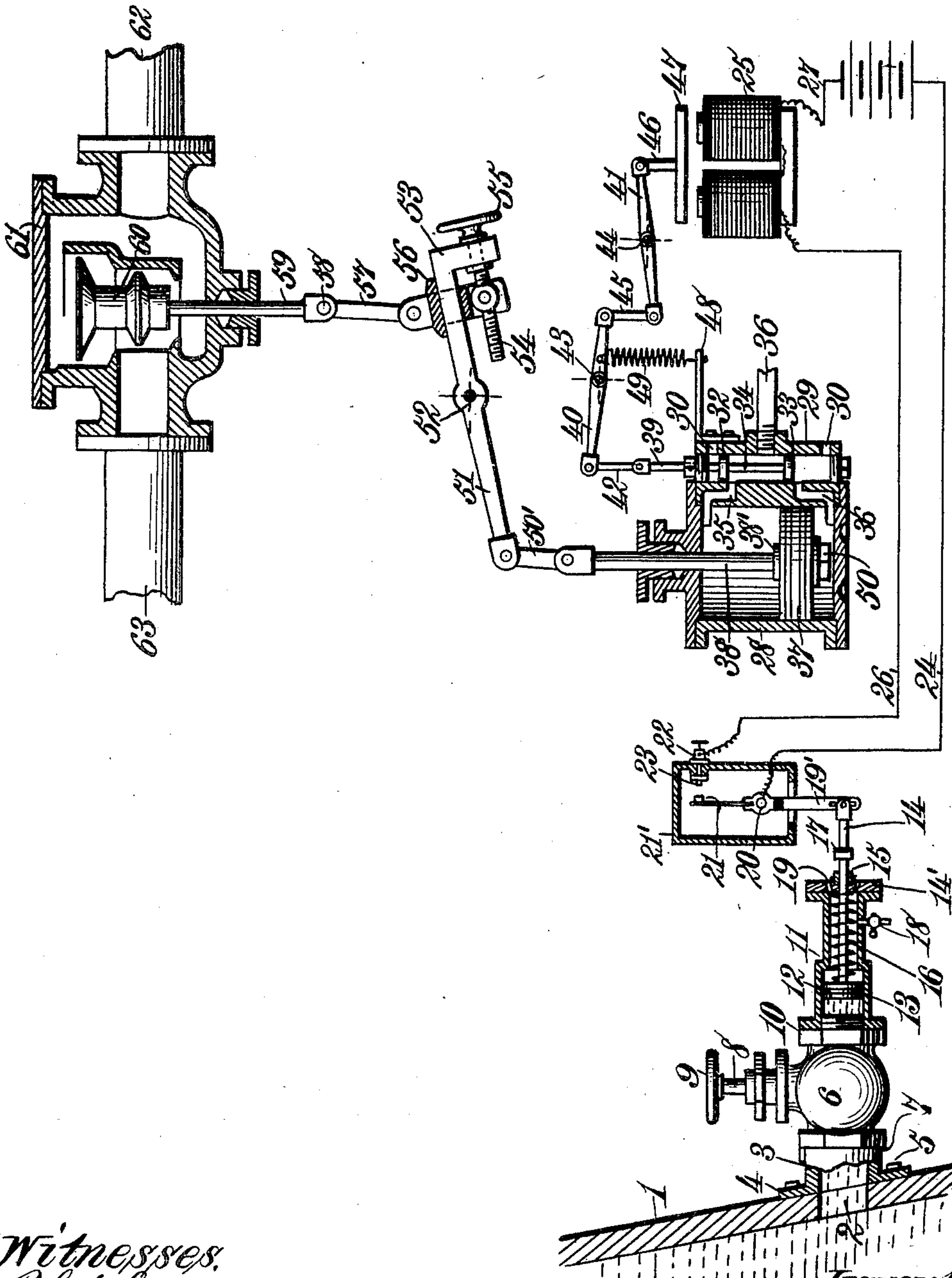
No. 681,640.

Patented Aug. 27, 1901.

T. P. HOUSDEN.
ELECTRIC MARINE GOVERNOR.

(Application filed Dec. 5, 1900.)

(No Model.)



Witnesses.
Robert Everett.
J. B. Keefe

Inventor,
Thomas P. Housden.
By *James L. Norris.*
Atty.

UNITED STATES PATENT OFFICE.

THOMAS P. HOUSDEN, OF SAN ANTONIO, TEXAS.

ELECTRIC MARINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 681,640, dated August 27, 1901.

Application filed December 5, 1900. Serial No. 38,784. (No model.)

To all whom it may concern:

Be it known that I, THOMAS P. HOUSDEN, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented new and useful Improvements in Electric Marine Governors, of which the following is a specification.

This invention relates to certain new and useful improvements in electric marine governors, and is particularly adapted for use in connection with marine engines for the purpose of preventing the "racing" of the latter when by motion of the ship the screw or propeller is lifted from the water when the vessel encounters rough weather or from other sources, regulating thereby the supply of steam to the engines, economizing steam and fuel consumption, and preventing the dangers from injury or breakage to the machinery or vessel from such cause; and its main principle lies in the direct application of water from the outside of the ship through the medium of a suitable valve for operating a piston, closing and breaking an electrical circuit, energizing or deenergizing an electromagnet for supplying and cutting off the supply of pressure to an operating means, and for regulating the supply of steam to the engines through the medium of a throttle-valve.

The invention further aims to construct an electrical marine governor which shall be extremely simple in its construction, strong, durable, and efficient in its use, and comparatively inexpensive to set up; and it consists of the novel combination and arrangement of parts hereinafter more specifically described, illustrated in the accompanying drawing, and particularly pointed out in the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawing, forming a part of this specification, in which is shown a sectional elevation of my improved governor for marine engines.

Referring to the drawing by reference-numerals, 1 denotes a portion of the stern of a vessel provided with the opening 2 to admit water for the operation of the governor, in a manner to be hereinafter described.

Secured to the inner side of the stern 1 at the edge of the opening 2 is a connecting-ring 3, having its inner side formed flat and its

outerside formed substantially wedge-shaped or to conform to the contour of the inner side of the stern. The ring 3 is provided with an integral flange 4 to receive a suitable fastening means 5 for securing the same in position. By constructing the ring in the manner shown it will enable the valve-casing 6, which is secured at its inlet to the flat side thereof, as at 7, to be positioned in the desired manner. The valve-casing 6 is provided with a suitable gate-valve having the stem 8, operated by means of the hand-wheel 9.

Secured, as at 10, to the outlet of the valve-casing 6 is a cylinder 11, in which operates the piston 12, provided with a suitable packing 13 and connected to the piston-rod 14, extending through the outer end 14' of the casing 11 and the stuffing-box 15. The piston-rod 14 has mounted thereon a suitable coiled compression-spring 16 and a stop-nut 17. The cylinder has connected thereto exhaust-cock 18 and has a series of vent-openings 19 in the end 14'. The spring 16 is interposed between the inner face of the outer end 14' of the cylinder and the piston 14, and the stop-nut 17 engages the outer face of the end 14', as shown.

Connected to the outer end of the piston-rod 14 is the circuit breaking and closing lever 19, fulcrumed to the pin 20 and carrying on its upper end the contact 21. The lower portion of the lever 19 below the pin 20 is insulated and the lever 19 is preferably constructed of spring-steel.

The reference-numeral 21' denotes a suitable support for the pin 20 and has also secured thereto the binding-post 22, to which is connected the adjustable contact-pin 23. The pin 20 is in communication with a source of electrical supply by means of the wire connection 24 and the binding-post 22, and adjustable contact-pin 23 is in communication with the electromagnet 25 by means of the wire connection 25. The former is connected to a source of electrical supply by the wire connection 27. The circuit is formed as follows: from the source of electrical supply to the pin 20 by means of the wire 24, through the upper end of the lever 19, contact 21, contact-pin 23, wire connection 26, magnet 25, and to source of electrical supply by wire 27.

Arranged in suitable relation to the magnet 25 is a pressure-regulator for regulating the supply of steam to the engine by the operation of the throttle-valve, to be hereinafter described, and which consists of a casing 28, having an auxiliary casing 29, connected to one side thereof. The auxiliary casing 29 is provided with a pair of exhaust-ports 30 and is in communication with a source of pressure-supply by means of the pipe 36.

Operating within the casing 29 is a pair of piston-valves 32 33, connected together by the rod 34, and are adapted to open and close the ports 35 36 for establishing communication between the interior of the casing 28 and auxiliary casing 29 for admitting and exhausting pressure to operate the piston 37, connected to the piston-rod 38, which extends upwardly through the top of the casing 28. The valves 32 33 are provided with the stem 39, which is attached to the actuating-levers 40 41 therefor by means of the link 42, connected to one end of the lever 40. The lever 40 is fulcrumed at 43 and the lever 41 at 44. These levers are connected together at one end by means of the link 45. Depending from the opposite end of the lever 41 is a hanger 46, to which the armature 47 is connected. Secured to the casing 29 is a bracket 48, to which is attached one end of the spring 49, while the opposite end thereof is connected to the lever 40. Secured to the lower face of the piston 37 is a stop-nut 50. The shoulder 38' also acts as a stop.

The piston-rod 38 is pivotally connected, by means of the link 50', to one end of the actuating-lever 51 for the throttle-valve, to be hereinafter described. The lever 51 is fulcrumed at 52 and has its free end provided with an arm 53, through which extends an adjusting-screw 54, operated by the hand-wheel 55. Mounted upon the lever 51 is a slide 56, pivotally connected at its upper end to the rod 57, attached, as at 58, to the stem 59 of the throttle-valve 60. The adjusting-screw 54 also extends through the lower part of the slide 56. The throttle-valve 60 is mounted in the casing 61 and is connected to the steam-pipes 62 63.

The operation of the device is as follows: Water passing through the opening 2 into the gate-valve casing and against the piston 12 when the vessel is in a normal position will force the piston-rod 14 outwardly, operating the circuit forming and breaking lever, so that the contact 21 thereof will be out of engagement with the contact-pin 23 and no interruption will be given to the passage of steam to the engines, owing to the fact that the throttle-valve 60 will be in its normal position; but when the screw or propeller is raised out of the water the pressure of the spring 16 will overcome the pressure against the face of the piston, forcing the same toward the gate-valve casing and bringing the contact 21 of the circuit forming and

breaking lever 19 into contact with the pin 23, forming the circuit, energizing the magnet 25, drawing the armature 47 thereto, actuating the levers 40 41, lowering the piston-valves 32 33, permitting a supply of pressure against the face of the piston 37, elevating the same, actuating the lever 51, and closing the throttle-valve 60, preventing a further supply of steam to the engines. When the movement of the vessel causes the screw or propeller to enter the water again, the pressure of the water exerted against the piston 12 will overcome the spring 16, force the piston-rod 14 outwardly, causing the disengaging of the contacts 21 23, breaking the circuit, and the action of the spring 49 will lower the lever 40, elevate lever 41, and the valves 32 33, cutting off the supply of pressure against the lower face of the piston 37, but admitting a supply of pressure against the upper face of the piston 37, lowering the same, imparting a corresponding movement to the lever 51, and opening the throttle-valve 60, permitting a supply of steam to the engines. When pressure is exerted against the lower face of the piston 37, the pressure in the upper part of the casing 28 is exhausted through the upper port 30, and when pressure is exerted against the upper face of the piston the pressure in the lower part of the casing 28 is exhausted through the lower port 30. When the circuit is broken, the normal position of the valves 32 33 is to allow a supply of pressure to the upper part of casing 28. When not required to be working, the supply can be shut off from the pipe 36.

The contact-pin 23 can be adjusted to contact with the lever 19 at different points of its travel, according to the position of the screw or propeller in the water when it is desired that steam should be shut off from the engine. The slide 56 is adjusted at various positions, so that more or less lift to the throttle-valve 60 can be given when desired, and the short end of the lever 51 is curved to conform to the radius of the rod 57 when the throttle-valve is at its highest position.

It is thought the many advantages of my improved electrical governor for overcoming the racing of the marine engines when the screw or propeller is lifted out of the water can be readily understood from the foregoing description, taken in connection with the accompanying drawing, and it will be noted that various changes may be made in the details of construction without departing from the general spirit of my invention.

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

1. In an engine-governor, an actuating-lever, a rod connected to the throttle-valve of the engine for operating the same and adjustably connected to said actuating-lever, a pressure-regulator connected to said lever for operating the same, a spring return lever

mechanism when operated adapted to permit of a supply of pressure to said regulator, and a circuit closing and breaking mechanism for operating said spring return lever mechanism.

2. In an engine-governor, an actuating-lever, an adjustable connection between the same and the throttle-valve of the engine for operating the same, a pressure-regulator connected to said lever for actuating the same, a spring return lever mechanism to permit of supplying pressure to said regulator, an armature connected to said spring return lever mechanism, an electromagnet in communication with a source of electrical supply and mounted in suitable relation to said armature, and means for forming an electrical circuit for energizing said magnet.

3. In an engine-governor, means operated by the movement of the vessel for closing and opening an electrical circuit, a spring return mechanism operated by the closing of said circuit, a pressure-regulator having a pair of inlet-valves operated by said lever mechanism to permit of a supply of pressure to the regulator, an actuating-lever connected to said regulator and operated thereby, connections between said actuating-lever and the throttle-valve of the engine for operating the same, and means carried by said actuating-lever for adjusting said connections.

4. In an engine-governor, a circuit closing and opening lever, connection between the same and a source of electrical supply, a contact-point arranged in suitable relation to said lever, an electromagnet in communication with a source of electrical supply, connections between said magnet and said contact-point, means connected to said lever and operated by the movement of the vessel for operating said lever causing thereby the opening and closing of an electrical circuit, a spring return lever mechanism operated by the forming of said electrical circuit and automatically returned to its normal position when the circuit is open, a pressure-regulator connected to said spring return lever mechanism and adapted to receive a supply of pressure when the spring return mechanism is operated, and an actuating-lever connected to said pressure-regulator, operated thereby, and adjustably connected to the throttle-valve of the engine.

5. In a marine-engine governor, a circuit closing and opening lever in communication with a source of electrical supply, a magnet in suitable communication with said lever and electrical supply, means connected to said lever and operated by the movement of the vessel for operating said lever, opening and closing an electrical circuit and energizing and deenergizing said magnet, a pressure-regulator, a spring return lever mechanism to permit of the supply of pressure thereto, actuated by said magnet when energized and automatically returned to its normal position when the circuit is open, and an actuating-

lever adjustably connected to the throttle-valve of the engine and operated by said pressure-regulator.

6. In a marine-engine governor, a circuit closing and opening lever, means connected thereto and operated by the movement of the vessel for operating said lever, a pressure-regulator, a spring return lever mechanism connected to said regulator and adapted when operated to permit of a supply of pressure thereto, connections between said circuit closing and opening lever and said mechanism for operating the latter, and an actuating-lever adjustably connected to the throttle-valve of the engine and operated by said regulator.

7. In a marine-engine governor, a circuit closing and opening lever, means connected thereto and operated by the movement of the vessel for operating said lever, a pressure-regulator, a spring return lever mechanism connected to said regulator to permit of a supply of pressure to said regulator, connections between said circuit closing and opening lever and said mechanism for operating the latter, an actuating-lever operated by said regulator, a connection between said actuating-lever and the throttle-valve of the engine, and means carried by said actuating-lever for adjusting said connection.

8. In a marine-engine governor, means operated by the movement of the vessel for opening and closing an electrical circuit, a pressure-regulator, a series of spring return-levers connected thereto, means for operating said levers when the circuit is closed and adapted to permit of the supply of pressure to said regulator, an actuating-lever operated by said regulator, and means adjustably connected to said actuating-lever and to the throttle-valve for operating the same.

9. In a marine-engine governor, a lever operated by the movement of the vessel for opening and closing an electrical circuit, a pressure-regulator, means connected thereto and adapted when operated to permit of a supply of pressure to said regulator, electrical connection between said lever and said means for operating the latter, an actuating-lever connected to said regulator and operated thereby, a connection between said actuating-lever and the throttle-valve of the engine for operating the former, and means carried by said actuating-lever for adjusting said throttle-valve connection.

10. In a marine-engine governor, an actuating-lever adjustably connected to the throttle-valve of the engine, a pressure-regulator connected to said lever, a series of spring return-levers adapted when operated to permit of a supply of pressure to said regulator causing thereby the operation of the actuating-lever, and electrical connections for operating said series of spring return-levers.

11. In a marine-engine governor, an actuating-lever adjustably connected to the throttle-valve of the engine, a pressure-regulator connected to said lever, a series of spring re-

turn-levers adapted when operated to permit
of a supply of pressure to the regulator for
operating said actuating - lever, electrical
means for operating said spring return-levers,
5 and means operated by the movement of the
vessel for opening and closing an electrical
circuit.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

THOMAS P. HOUSDEN.

Witnesses:

HENRY ELLIOTT,
DAVID E. KOPPAL.