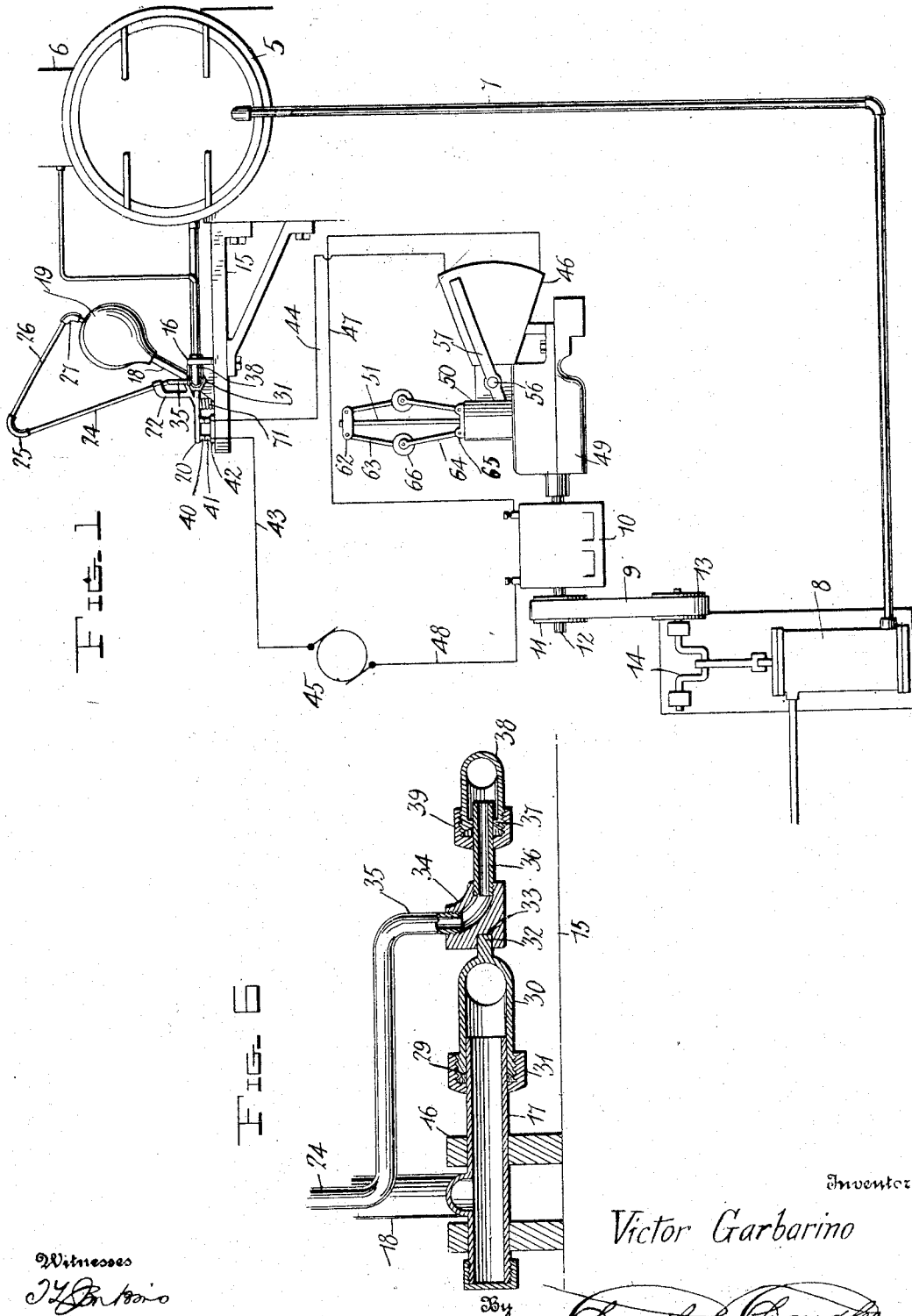


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STEAM BOILER REGULATOR AND FEEDER.
APPLICATION FILED DEC. 31, 1907.

956,635.

Patented May 3, 1910.

3 SHEETS—SHEET 1.



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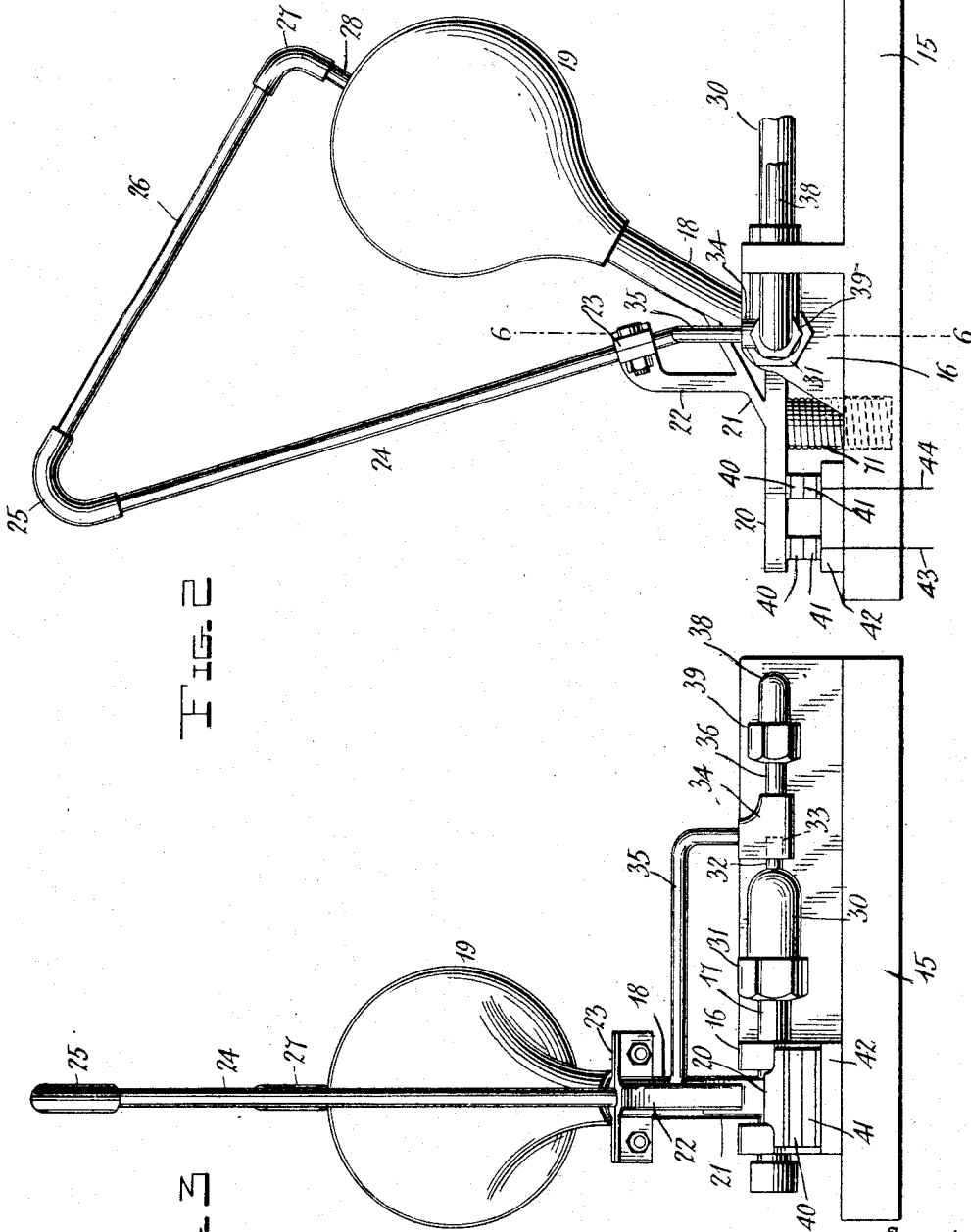


FIG. 2

FIG. 3

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3 SHEETS—SHEET 3.

FIG. 5

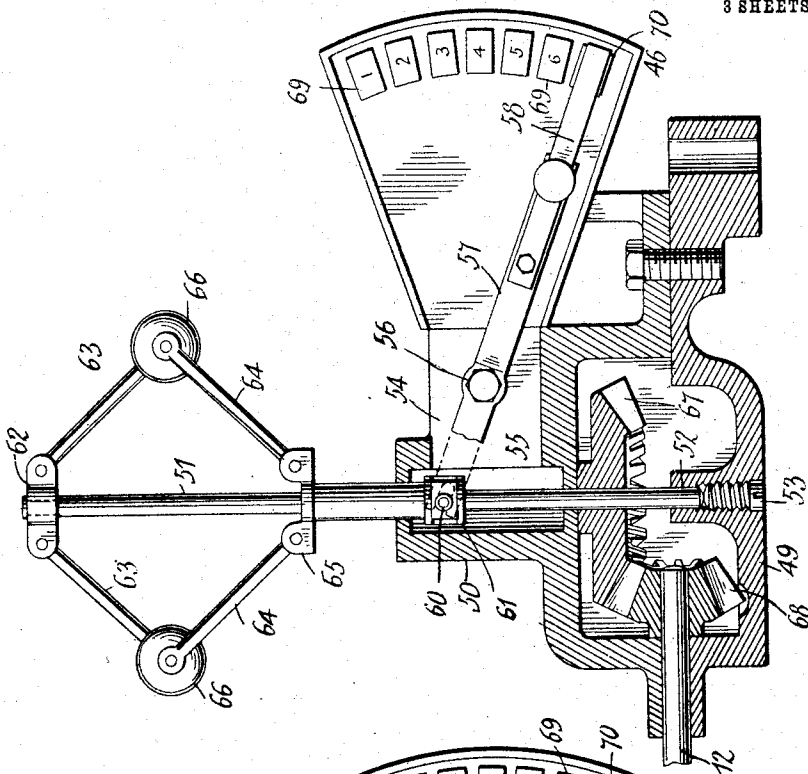
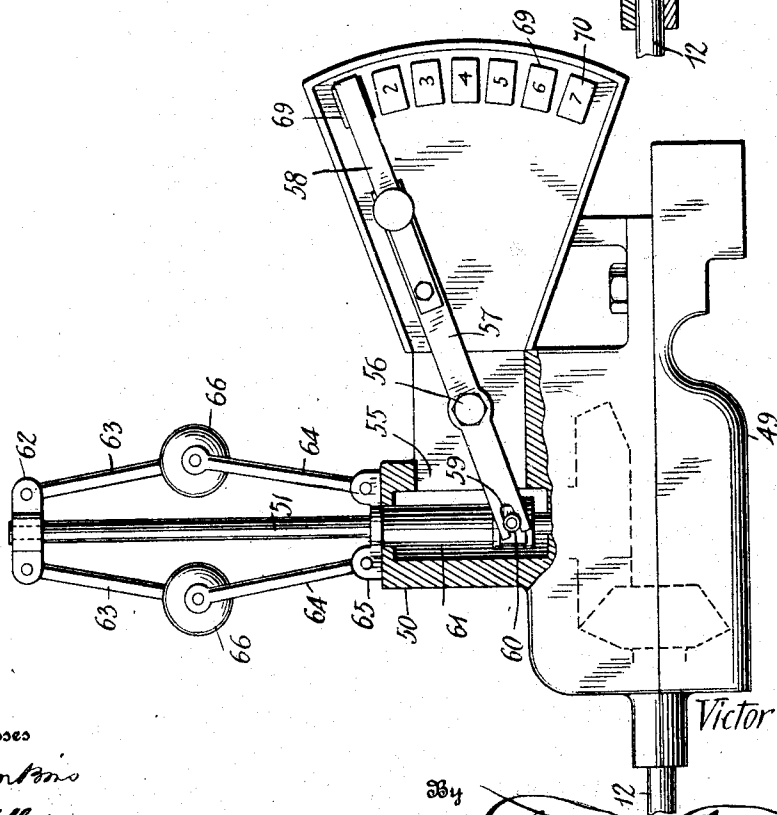


FIG. 4



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UNITED STATES PATENT OFFICE.

VICTOR GARBARINO, OF MALDEN, MASSACHUSETTS.

STEAM-BOILER REGULATOR AND FEEDER.

956,635.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed December 31, 1907. Serial No. 408,718.

To all whom it may concern:

Be it known that I, VICTOR GARBARINO, a citizen of the United States, residing at Malden, in the county of Middlesex, State of Massachusetts, have invented certain new and useful Improvements in Steam-Boiler Regulators and Feeders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in steam boiler regulators and feeders, and it has more particular reference to an apparatus of this character comprising a motor for operating the feed pump, and automatic means controlled by the level of the water in the boiler for closing or opening the motor circuit, in which is included an automatic device for regulating the speed of the motor.

The invention aims as a primary object to provide a novel circuit closing means, comprising more particularly a pivotally mounted steam and water trap provided with boiler connections and a pivoted switch closing arm.

The details of construction will appear in the course of the following description, in which reference is had to the accompanying drawings, forming a part of this specification, like characters of reference designating similar parts, throughout the several views, wherein:—

Figure 1 is a view illustrating diagrammatically the boiler feed and regulating system in which the present invention is embodied. Fig. 2 is a side elevation of the automatic circuit closing means *per se*. Fig. 3 is a front elevation of such means. Fig. 4 is a longitudinal section partly in elevation of the motor regulating device showing the same positioned for high speed. Fig. 5 is a similar view of such device showing the same positioned for low speed. Fig. 6 is a detailed fragmentary sectional view on the line 6—6 of Fig. 2.

In the accompanying drawings, the numeral 5 designates the boiler having the steam dome 6, and connected by means of a pipe 7 with a feed pump 8, the latter being driven by a belt 9 from an electric motor 10, the belt 9 passing over a pulley 11 on the shaft 12 of said motor and over a pulley 13 on the crank shaft 14 of said pump.

At one side of the boiler 5, a supporting

base 15 is provided which is formed with a bracket bearing 16 for a hollow shaft 17 constituting in effect a pipe and having connection between the ears of the bearing 16 with a radially extending pipe 18, which latter carries the float-shaped trap 19. The pipe 18 is constructed with an angularly projecting arm 20, connected with said pipe by a reinforcing web 21, which is formed with a projecting standard 22. Secured to the latter by means of a clamp 23, is a steam pipe 24 which is connected at its upper end by a curved union 25 with a pipe 26, the latter being in turn connected by a union 27 with a short pipe 28, which extends into the upper end of the trap 19. The shaft 17 is formed with a shoulder 29, which seats as a journal in the end of an L-shaped pipe 30, the latter being connected to the boiler 5. The pipe 17 is held from axial movement with relation to the pipe 30 by a nut 31, threaded upon the pipe 30 and formed to engage the shoulder 29. The pipe 30 is formed with a stud 32 which projects in the direction of the axis of the pipe 17 into a recess 33 formed in a union 34, which latter connects the angular elbow 35 of the pipe 24 with a pipe 36. The pipe 36 is formed with a shoulder 37, similar to the shoulder 29, which seats in the end of a steam pipe 38, leading from the dome 6, the pipe 36 being held against movement axially of the pipe 38 by a nut 39 threaded upon the end of said pipe 38 and similar to the nut 31.

The arm 20 carries on its under face electric contacts 40 which are designed to make connection with similar contacts 41 mounted upon a block 42, the latter being in turn mounted upon the base 15. Connected to the respective contacts 41 are wires 43 and 44, the wire 43 leading to a dynamo 45 and the wire 44 leading to a rheostat 46. A wire 47 leads from the rheostat 46 and a wire 48 leads from the dynamo 45, the wires 47 and 48 being connected to the motor 10. The shaft 12 of the motor 10 projects into a sectional casing 49 which is constructed with a bearing 50 for a vertical shaft 51, the lower end of which is journaled in a bearing 52 provided in the lower section of the casing 49, and rests upon a screw 53 threaded into the bearing 52. At one side of the bearing 50, a bracket 54 is provided, adjacent which said bearing is formed with a longitudinal slot 55. Pivoted between its ends to the bracket 54, as at 56, is a lever 57

which has movement in a vertical plane and which on its outer end carries a contact piece for engagement with the contacts of the rheostat, and which at its inner end,
5 is constructed with a recess 59 which engages a pin 60, the latter projecting laterally from a sleeve 61, surrounding in slidable relation the shaft 51. At the upper end of the shaft 51, a yoke 62 is secured, which has
10 connection at opposite points with toggle links 63, the latter being connected with toggle links 64, which are in turn, connected at opposite points to a collar 65 provided at the upper end of the sleeve 61. The toggle
15 links 63 and 64, at their mutual pivotal connections, carry governor weights 66. The shaft 51 carries within the casing 49, a bevel pinion 67 which is in mesh with and is driven from a similar pinion 68, provided
20 on the end of the shaft 12. The contacts of the rheostat 46 are designated by the numerals 69 and 70, the contact 69 being provided to successively increase the speed of the motor and being arbitrarily in a series
25 of six, and the contact 70 being provided to automatically decrease the speed of the motor for the purposes of safety.

For the purpose of overcoming the gravity of the trap 19 and of automatically raising said trap, when the water is low in the
30 boiler, a retractile coil spring 71 is employed which is connected to the under face of the arm 20 and to the base 15.

The manner of use will be readily apparent from the foregoing description. When
35 the water in the boiler rises above the normal water level, or rises to the normal water level, a similar action takes place in the trap 19, which, at such times is held downwardly
40 against the tension of the spring 71 by the weight of the water therein contained, and the switch of which the arm 20 forms a part is open so that the motor circuit is broken and the motor and pump consequently inactive. When the water in the
45 boiler falls below the normal water level, a similar action takes place in the trap 19 and at such times, the spring 71 draws the arm 20 toward the plate 42, so as to close the switch and the motor circuit. When
50 the motor circuit is thus closed, the operation of the motor and the pump to supply water to the boiler commences. As the speed of the motor gradually increases, the centrifugal governing apparatus will raise
55 the sleeve 61 and consequently move the lever 57 so that its contact piece 58 passes successively over the several contacts 69, thus cutting out more resistance, as each
60 contact is engaged. When the piece 58 moves away from the innermost contact 69, it engages the contact 70 which cuts in resistance and thus reduces the speed in the motor to a safe limit. When the boiler has
65 been filled to the normal water level, the

trap 19 drops by gravity against the tension of the spring 71 and opens the switch, thus stopping the action of the motor and the pump as previously set forth.

The invention is simple in its structural
70 details, inexpensive to manufacture and practical and efficient in use.

What is claimed is:

1. The combination with a boiler, of a pipe connected with the interior of said
75 boiler, a bracket supported adjacent the boiler, a pair of spaced uprights carried by said bracket, a pipe section rotatably mounted in said uprights with one end disposed in the bore of said pipe so as to form a con-
80 tinuation thereof and having its other end closed, a pipe arm communicating with the bore of said section and extending laterally therefrom in upward inclination, a trap mounted on the upper end of said pipe arm
85 with its interior in communication with the bore of said arm whereby communication between the trap and boiler is had so that the level of the water in the trap will vary with the level of the water in the boiler, the
90 weight of said trap when the water therein has reached a predetermined level being adapted to rotate said pipe section in one direction, means for rotating said pipe section in the opposite direction against the
95 influence of the weight of the trap when the water therein falls beneath a predetermined level, a water supply pump connected with the boiler means for actuating the pump, and means carried by said pipe section for
100 instituting the operation of the pump actuating means when said pipe section is rotated in one direction under the influence of the weight of the trap and for rendering
105 said pump actuating means inactive when said pipe section is rotated in the opposite direction against the influence of the weight of the trap.

2. The combination with a boiler, of a pipe connected with the interior of said
110 boiler, a bracket supported adjacent the boiler, a pair of spaced uprights carried by said bracket, a pipe section rotatably mounted in said uprights with one end disposed in the bore of said pipe so as to form a continu-
115 ation thereof and having its other end closed, a pipe arm communicating with the bore of said section and extending laterally therefrom in upward inclination, a trap mounted on the upper end of said pipe arm with its
120 interior in communication with the bore of said arm whereby communication between the trap and boiler is had so that the level of the water in the trap will vary with the level of the water in the boiler, the weight
125 of said trap when the water therein has reached a predetermined level being adapted to rotate said pipe section in one direction, means for rotating said pipe section in the opposite direction against the influence of
130

the weight of the trap when the water therein falls beneath a predetermined level, a water supply pump connected with the boiler, an electric circuit, a motor for actuating the pump in said circuit a switch in said circuit operatively connected with said pipe section so that when said pipe section is rotated in one direction under the influence of the weight of the trap the switch will be opened and when said pipe section is rotated in the opposite direction against the influence of the weight of the trap, the switch will be closed.

3. The combination with a boiler and its steam dome, of a pipe connected with the interior of said boiler, a bracket supported adjacent the boiler, a pair of spaced uprights carried by said bracket, a pipe section rotatably mounted in said uprights with one end disposed in the bore of said pipe so as to form a continuation thereof and having its other end closed, a pipe arm communicating with the bore of said section and extending laterally therefrom in upward inclination, a trap mounted on the upper end of said pipe arm with its interior in communication with the bore of said arm whereby communication between the trap and boiler is had so that the level of the water in the trap will vary with the level of the water in the boiler, the weight of said trap when

the water therein has reached a predetermined level being adapted to rotate said pipe section in one direction, means for rotating said pipe section in the opposite direction against the influence of the weight of the trap when the water therein falls beneath a predetermined level, a water supply pump connected with the boiler means for actuating the pump, means carried by said pipe section for instituting the operation of the pump actuating means when said pipe section is rotated in one direction under the influence of the weight of the trap and for rendering said pump actuating means inactive when said pipe section is rotated in the opposite direction against the influence of the weight of the trap, a second pipe connected with the interior of the steam dome, a lug formed on said first named pipe, a union rotatably supported by said lug and the second named pipe and having its bore in communication with the bore of the latter, and a pipe connecting said trap and union.

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

VICTOR GARBARINO.

Witnesses:

VINCENZO FABIANO, Jr.,
PASQUALE FAMIGBILETTI.