

May 5, 1931.

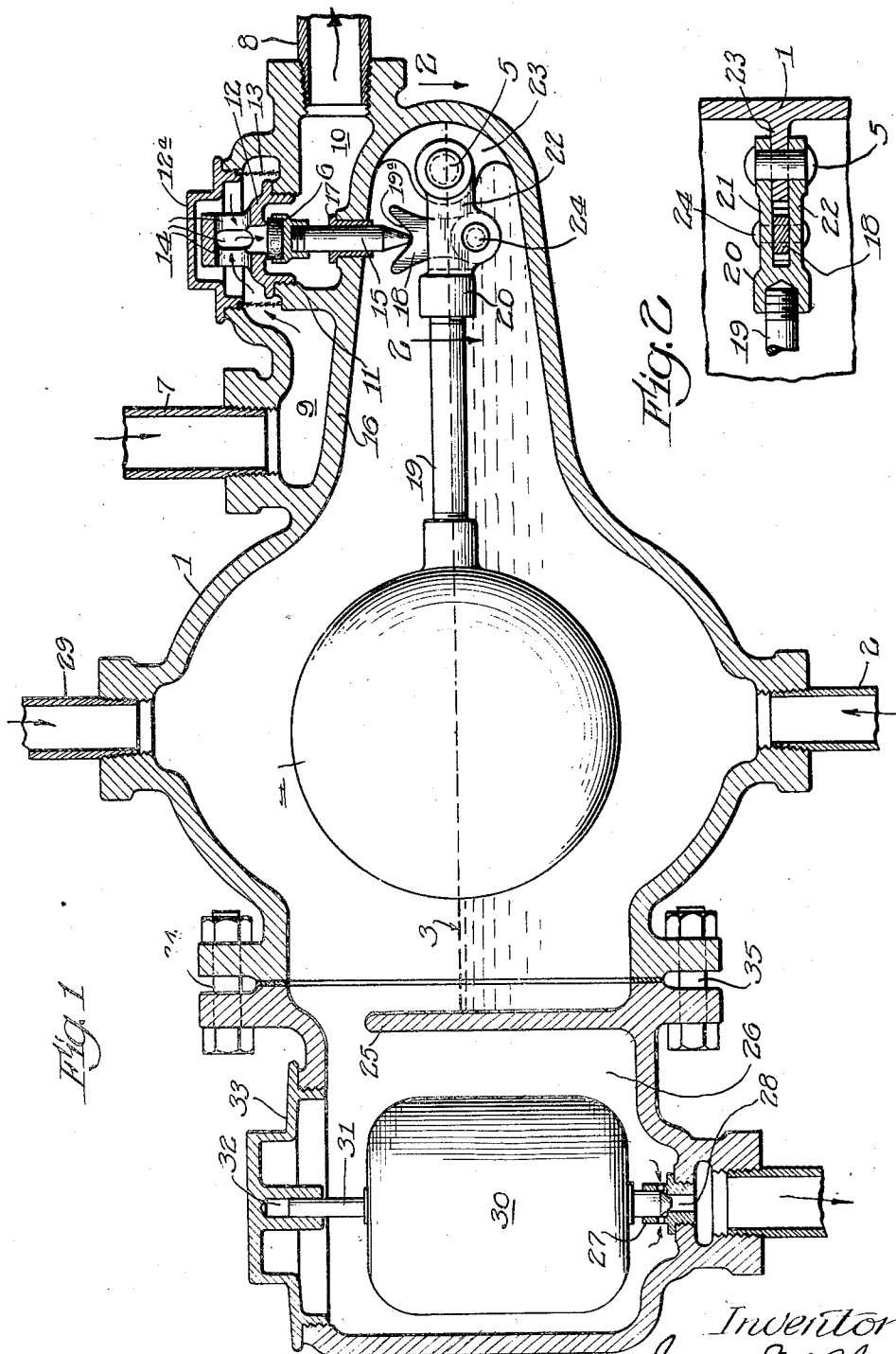
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WATER REGULATOR FOR BOILERS

Filed Aug. 8, 1925

2 Sheets-Sheet 1



Inventors:
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By Parker & Carter (attys.)

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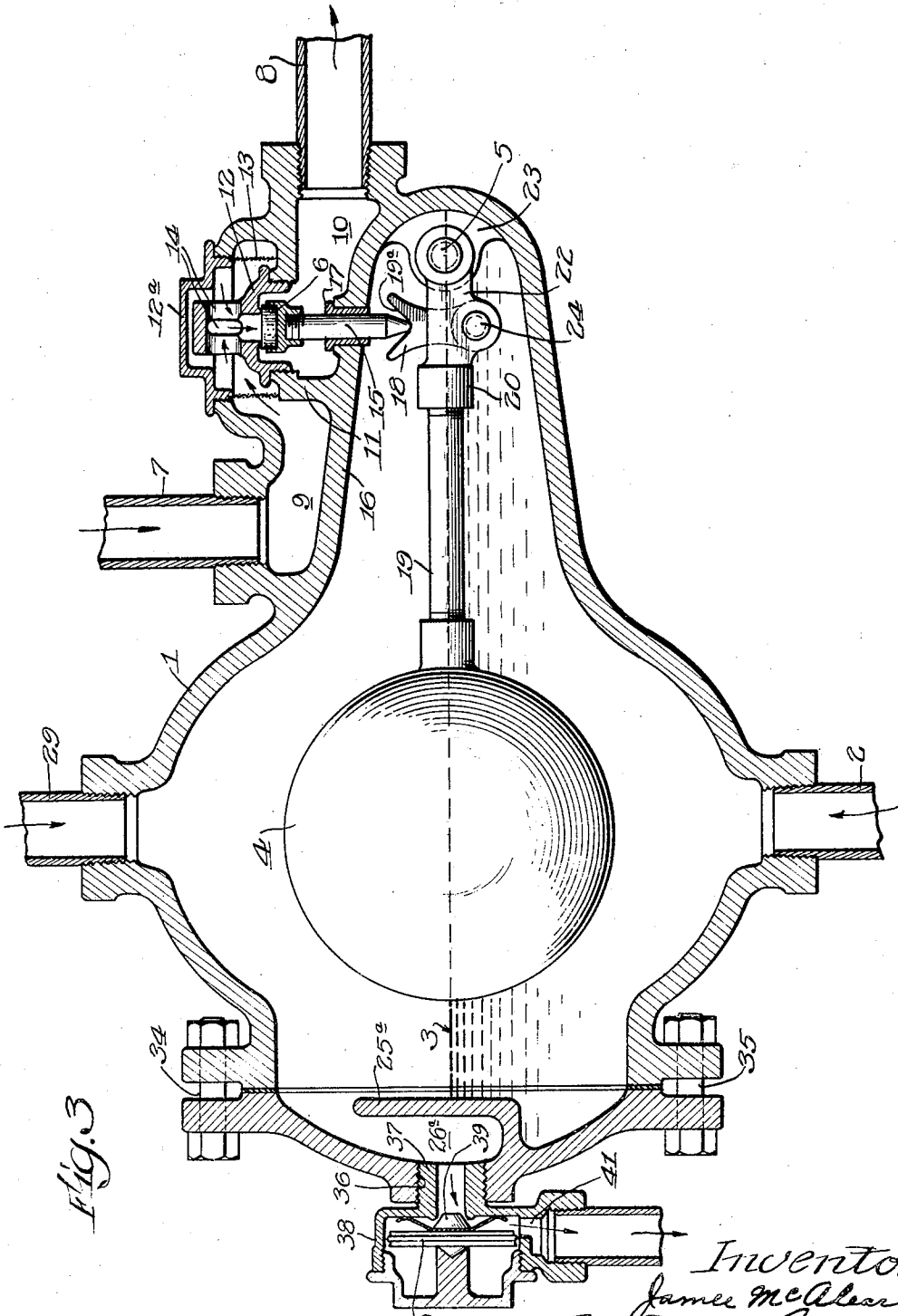
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UNITED STATES PATENT OFFICE

JAMES McALEAR, OF CHICAGO, ILLINOIS

WATER REGULATOR FOR BOILERS

Application filed August 8, 1925. Serial No. 49,149.

This invention relates to improvements in water regulators for boilers and has for its object to provide a new and improved device of this description.

5 The invention has as a further object to provide for the control of the water supply for steam operated boilers.

The invention has as a further object to provide a water regulator particularly adapted 10 for boilers for heating systems which will take care of any surplus water which may enter the boiler from any source, and automatically discharge it, thereby insuring a constant water line and preventing the boiler 15 or heating apparatus from becoming flooded.

The invention has as a further object to provide a particular construction or device of this description.

20 The invention has other objects which are more particularly pointed out in the accompanying description.

Referring now to the drawings:

Fig. 1 is a longitudinal and vertical sectional view through one form of water regulator embodying the invention.

Fig. 2 is a view taken on line 2—2 of Fig. 1.

Fig. 3 is a view showing a modified construction.

30 Like numerals refer to like parts throughout the several figures.

In carrying out my invention I provide a receptacle 1 which is connected by the water equalizing pipe 2 with the boiler so that the water level in the receptacle and the boiler 35 will be the same. The receptacle 1 is preferably located so that the normal water level will be about the middle thereof, as indicated at 3. Within the receptacle 1 is a float 4 pivotally connected to the receptacle 1 at the 40 point 5, and arranged to control the valve that admits water from the source of water supply, into the boiler. When the water level is normal this float is in the position illustrated in the drawing and the water admission 45 valve 6 is closed. The water is admitted through the water inlet 7 and is discharged into the boiler through the water outlet 8, the water passing from the chamber 9 into the chamber 10 when the valve 6 is open. The 50 chambers 9 and 10 are separate from the

chamber of the receptacle 1. There is a partition 11 between the chambers 9 and 10 which has an opening into which fits the member 12 which acts as the valve seat for the valve 6 and which is screw threaded into the opening 55 in the partition 11.

I prefer to provide a strainer 13 which strains the water passing into the boiler. When the valve 6 is moved from its seat the water passes through the openings 14 in the 60 member 12 and thence through the partition 11 into chamber 10 and out through the outlet 8 to the boiler. The valve 6 has a stem 15 which passes through an opening in the wall 16 of the receptacle 1 which separates the 65 chambers 9 and 10 from the interior of said receptacle. A suitable packing piece 17 is provided for the valve stem. The valve stem 15 engages a controlling member 18 connected with the float 4. In the construction shown, 70 the float 4 has a connecting arm made up of two sections 19 and 20. Section 19 has threaded ends and makes a screw threaded engagement with the float and with the member 20. The member 20 is provided with the 75 separated side pieces 21 and 22, and the pivot 5 passes through these and through a part 23 attached to the casing of the receptacle 1.

The controlling member 18 is recessed at 19^a for the end of the valve stem 15, and is located 80 between the side pieces 21 and 22 and pivoted thereto by means of pivot 24. When the water in the receptacle 1, and hence in the boiler, is lower than the normal water level, the float 4 lowers, this causes the valve 6 to 85 lower and open the connection between the water inlet 7 and the water outlet 8 so that the water may flow into the boiler.

When the proper water level is established in the boiler, it is also established in the receptacle 1 through the connection 2 and the float 4 rises and closes the valve 6 to shut off further admission of the water into the boiler. The receptacle 1 is provided with a suitable 90 overflow for the water when it rises above the normal water level, and is also provided with means for discharging this water. 95

In the construction shown in Fig. 1 the receptacle 1 is provided with the overflow member 25 which extends thereacross and 100

which projects above the normal water level 3. If now, for any reason, the water in the boiler, and hence in the receptacle 1, rises a sufficient amount above the normal water level, water flows over the overflow member 25 into the overflow chamber 26. This water automatically actuates a valve which permits it to discharge. In the construction shown the valve 27 closes the discharge 28 from the overflow chamber 26. It is necessary to have this valve to prevent the steam from escaping, as the receptacle 1 is connected to the upper part or steam chamber of the boiler by the steam equalizing connection 29. The valve 27 in this construction is provided with a float 30 and the water which overflows into the overflow chamber lifts this float and hence the valve 27 to permit the escape of the water through the discharge. This water may be led to the sewer or any other point desired.

The float 30 is provided with a guide member 31 which works in the guide 32 in the removable piece 33 which forms a part of the enclosing walls of the overflow chamber. The overflow chamber is preferably separate from the receptacle 1 and has attached thereto the overflow member 25. This overflow chamber is fastened to the receptacle 1 in any desired manner, as by means of the bolts 34 and 35. By means of this construction the overflow chamber may be added to the receptacle 1 or removed therefrom and a plate attached to the receptacle 1 covering the opening produced by the removal of the overflow chamber 26.

In Fig. 3 I have shown a modified construction wherein the overflow chamber 26^a has the overflow member 25^a but is comparatively small. The valve for permitting the discharge of the water is attached to the exterior of this overflow chamber, the overflow chamber having a threaded opening 36 into which fits the threaded stem 37 of the valve casing 38. This valve casing has a valve piece attached to an expanding device 40 which contains material expanded by heat. The valve casing is provided with a discharge 41.

In this construction when the water is at the normal level the steam has access to the expansible member 40 and the material therein is expanded so as to keep the valve piece 39 on its seat and close the discharge. When the water overflows the overflow member 25 it closes off the admission of the steam to the valve casing 38 and the material in the member 40 cools so as to withdraw the valve piece 39 and open the discharge and permit the water in the overflow chamber to be discharged. When this water is discharged the steam again enters the valve casing and the material in the member 40 expands and moves the valve piece 39 to close the discharge.

The valve or automatic means for discharging the water from the overflow chamber may

be located at any point desired, and for purposes of illustration I have simply shown two different automatic means for this purpose.

It will further be noted that in this construction the supply water for the boiler does not pass into the receptacle 1, although controlled from said receptacle, but passes directly from the source of water supply into the boiler. This insures the proper water level in the receptacle 1. It will further be noted that the valve 6 and associated parts are easily accessible without disconnecting any pipes, it only being necessary to remove the cap 12^a.

I claim:

1. A water regulator for boilers comprising a receptacle adapted to be connected with the boiler below the water level and above the water level, a float in said receptacle, a valve controlled by said float which when open admits water to the boiler, an overflow member associated with said receptacle which projects above the normal water level, an overflow chamber into which the water from said receptacle flows when it passes the overflow member, and means for automatically discharging the water from the overflow chamber.

2. A water regulator for boilers comprising a receptacle adapted to be connected with the boiler so as to have the same water level as the boiler, a float in said receptacle, a two-part connecting device for pivotally connecting the float with the receptacle, one of said parts having separated side pieces, a valve controlling member located between said side pieces and pivotally connected thereto, a valve stem loosely engaging said valve controlling member and projecting through the wall of the receptacle into an outer chamber, a partition which extends across said outer chamber, there being a water inlet and a water outlet on opposite sides of said partition, an opening through said partition, and a valve connected with said valve stem adapted to control said opening.

3. A water regulator for boilers comprising a receptacle adapted to be connected with the boiler so as to have the same water level as said boiler, an overflow chamber connected with said receptacle into which water from the receptacle is received, an overflow member forming a part of said overflow chamber and projecting above the normal water level in the receptacle, and an automatic valve for discharging the water from said overflow chamber.

4. A water regulator for boilers comprising a receptacle adapted to be connected with the boiler so as to have the same water level as said boiler, said receptacle open at one end, an overflow chamber separate from said receptacle and provided with an upstanding overflow member, said overflow chamber adapted to be removably attached to the open

end of said receptacle, and adapted to receive the water from the receptacle when said water rises above a predetermined point, and means for automatically discharging the water from said overflow chamber.

5 5. A water regulator for boilers comprising a receptacle adapted to be connected with the boiler so as to have the same water level as said boiler, a water supply passageway leading from a source of water supply directly to the boiler, a part of said passageway being formed by a hollow in the exterior wall of said receptacle, a valve exterior to said receptacle and located in said hollow in the wall thereof for controlling said passageway, a stem for said valve which projects into said receptacle, a float in said receptacle, an arm connected with said float and having a pivotal connection with a fixed part, said valve stem located intermediate said float and said pivotal connection and adapted to be moved by said arm responsive to the movement of said float located within said receptacle for automatically controlling said valve so as to admit water directly from the source of water supply into the boiler.

6. A water regulator for boilers comprising a receptacle adapted to be connected with the boiler so as to have the same water level as said boiler, a water supply passageway leading from a source of water supply directly to the boiler without connecting with said receptacle, a valve for controlling said passageway, means located within said receptacle for automatically controlling said valve so as to admit water directly from the source of water supply into the boiler, and automatically acting means associated with said receptacle independent of said valve and float for preventing the water level in the boiler from rising above a predetermined point.

7. A water regulator for boilers comprising a receptacle adapted to be connected with the boiler so as to have the same water level as said boiler, a float in said receptacle, a passageway exterior to said receptacle leading from the source of water supply to the boiler, a valve for controlling said passageway, a stem for said valve projecting into said receptacle, said valve moved in one direction by the pressure of the water in said passageway when the water in the receptacle lowers, an arm connected with said float adapted to engage said valve stem and move it in the opposite direction when the water rises to a predetermined level in the receptacle.

8. A water regulator for boilers comprising a receptacle adapted to be connected with the boiler so as to have the same water level as said boiler, a float in said receptacle, a passageway exterior to said receptacle leading from the source of water supply to the boiler, a valve, and an upstanding overflow member associated with said receptacle which permits water to flow thereover from said re-

ceptacle to a discharge, when the water in the boiler reaches a predetermined level.

9. A water regulator for boilers comprising a receptacle adapted to be connected with the boiler so as to have the same water level as said boiler, a float in said receptacle, an arm connected with said float and movably connected with a part of said receptacle said arm being normally in a substantially horizontal position, said receptacle having a passageway exterior thereto leading from the source of water supply to the boiler, the main walls of said passageway being integral with the wall of the receptacle, a valve in said passageway for controlling it and an operative connection between said valve and the arm connected with said float.

10. A water regulator for a boiler comprising a casing having two receptacles therein, one short and one long, the long receptacle being connected with the boiler so as to have the same water level as the boiler, a float in the long receptacle, an arm connected with said float and pivotally connected at the end of said receptacle, an outlet and an inlet for the short receptacle, and a valve intermediate the outlet and the inlet, said valve having a valve stem which projects into the long receptacle, and an engaging part on said arm between the float and its pivotal point for engaging said valve stem, the two receptacles in the casing having no communication with each other.

Signed at Chicago, county of Cook and State of Illinois, this 1st day of August, 1925.
JAMES McALEAR.

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