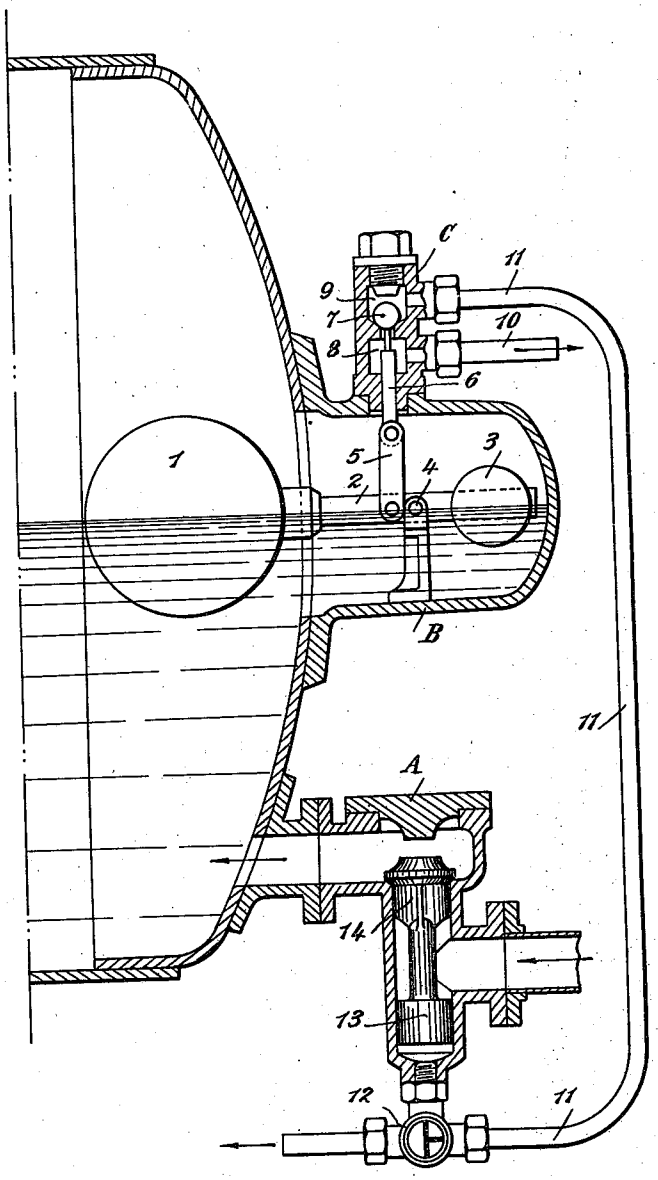
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AUTOMATIC FEED REGULATOR FOR STEAM BOILERS.

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1,296,206.

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AUTOMATIC FEED-REGULATOR FOR STEAM-BOILERS.

1,296,206. Specification of Letters Patent. Patented Mar. 4, 1919.

Application filed July 8, 1918. Serial No. 243,940.

To all whom it may concern:

Be it known that I, RICCIOTTI MORALI, a subject of the King of Italy, and residing at Genoa, Italy, (whose post-office address is Via Almeria, No. 25,) have invented certain new and useful Improvements in or Relating to Automatic Feed-Regulators for Steam-Boilers, of which the following is a specification.

This invention relates to an automatic feed regulator for steam boilers, comprising two parts, the first of which embodies a feeding valve, connected with a piston subjected to the pressure of the boiler and of the feed water, said valve being mounted on the lower part of the boiler, beneath the level of the water, and the second part being characterized by an automatically regulated apparatus arranged to one side and in a position corresponding to the level of the water within the boiler. The automatic regulator communicates freely with the boiler, and with the chamber of the piston, which is integral with the feeding valve.

For a more complete understanding of the invention, reference should be had to the accompanying drawing forming part of the present application.

The drawing shows in section the automatic feed regulator, according to the invention.

Referring to the drawing, the automatic regulator comprises two parts: the feeding valve —A—, arranged below the level of the water within the boiler, and containing a check valve —14—, rigidly connected to a piston —13—. The valve casing is provided with a three way cock —12—. The second part of the apparatus of automatic regulation —B— is mounted to one side of the boiler and communicates freely with the interior of the same.

The apparatus —B— is a device by means of which the equilibrium controlling the operation of the check valve —14— may be automatically controlled by variations of the level of the water within the boiler above and beneath a predetermined line.

The apparatus —B— is constituted by the lever (1, 2 and 3), fulcrumed on the pivot —4— and contained within the apparatus casing —B—, as shown by the accompanying drawing.

The oscillations, to which the float —1— is subjected, by the variations of the level of the water within the boiler, are transmitted to the needle —6— of the link —5— linked to the lever —2—.

The upper part of the casing —B— carries the valve casing —C— within which are arranged the two communicating chambers —8— and —9—. The lower of said chambers, communicates with the outside atmosphere by means of the tube 10; the upper chamber —9— communicating by means of the pipe —11— and of the three way cock —12— with the chamber within which operates the piston —13—. The communication between the chambers —8— and —9— is controlled by the valve —7—.

The needle —6— extends with its upper end, from the casing —B— into the chamber —8—, to nearly touch the valve —7—, reposing on its seat.

A slight space or clearance is provided between the piston 13 and the wall of its chamber in order to permit feed water to leak past the piston and into the lower end of the piston chamber.

Supposing now that the feeding pump is sending water to the boiler, the level of the water within the same will rise above the predetermined level line. The water raises the float —1— and pushing the needle —6— against the valve —7— raises the valve from its seat, establishing communication between the chambers —8— and —9—. This operation will establish, through the cock —12—, the pipe —11— the chambers —8— and —9— and the tube —10—, a communication between the space beneath the piston —13— and the outside atmosphere and the water beneath the piston 13 will be permitted to escape. The check valve —14— connected with the piston —13— will remain closed because of the boiler pressure exerted on the valve 14, and the feed water will be prevented from entering the boiler.

In this condition the feed is prevented, and consequently the level of the water within the boiler will gradually lower until the float —1—, lowers beneath the predetermined line. The needle —6—, following the movement of the float, allows the valve —7— to close on its seat. This operation will shut the communication between the chambers —8— and —9— and consequently close the communication between the chamber of the piston —13— and the atmosphere.

Then the feed water beneath the piston will accumulate and exert pressure on the underside of the piston 13, and this pressure added to the pressure of the feed water on the underside of the valve 14, will be sufficient to open the valve against the boiler pressure and permit feed water to enter the boiler.

These operations will be regulated alternatively, in relation to the variations of the level of the water, such operations being controlled by the opening and closing of the valve —7— which is directly controlled by the float —1—, which rises or lowers with the level of the water within the boiler.

The purpose of the cock —12— is to shut out the automatic regulator —B—, and allow the operation of the feed valve —A— to be controlled independently of the regulator —B— and at the will of the operator.

The principal advantage gained by this construction resides in the placing of the chamber 9 in communication with piston chamber 13, so that the feed water may exert pressure on the valve 7 and tend to keep the same closed. With this construction, should the float get out of order, the feed water pressure will keep the valve 7 closed, and consequently the boiler will be kept supplied with water, and the danger of leaving the boiler without water will be eliminated.

Having now particularly described the invention, and in what manner the same is to be performed, I declare that what I claim is:

1. The combination with a boiler, of a valve chamber mounted above the water level of the boiler and comprising upper and lower communicating compartments, a control valve mounted in the upper one of said compartments, a valve seat in the upper compartment, a float located in the boiler and operatively connected to said valve, a piston and valve chamber arranged below the water level of the boiler and communicating with the interior of said boiler, a feed water pipe connected to the piston and valve chamber for conveying feed water to the boiler, a feed water valve located in the piston and valve chamber and adapted to control the passage of feed water to the boiler, a piston connected to said feed water valve and mounted in said valve and piston chamber, said piston and valve and piston chamber having a clearance space between the same to permit feed water to pass to the underside of the piston, a pipe placing the underside of the piston and valve chamber in communication with the upper compartment of the control valve chamber to permit feed water to exert pressure on the control valve and force the same toward its seat, and a pipe placing the lower compartment of the control valve chamber in communication with the atmosphere.

2. In a feed water regulator the combination of a feed delivery valve, a balancing piston coupled to said valve, a cylinder in which said piston works, an outlet in said cylinder beneath said piston, means for permitting a small proportion of the feed water to pass said balancing piston, a float box mounted on the boiler and in communication with the interior thereof, a balanced float operating in said box, a casing mounted on the float box and provided with upper and lower communicating chambers, a control valve mounted in the upper chamber and normally closing the communication between the chambers, a conduit connecting the upper chamber with the outlet of the cylinder to permit feed water pressure to normally close said control valve, an outlet for the lower chamber, and means operatively connecting the float and control valve.

3. A feed water regulator comprising a feed water control valve, a piston for aperating said valve, a regulator control valve, means for permitting feed water to close the regulator control valve, and a float operatively connected to the regulator control valve.

In testimony whereof I have hereunto signed my name in the presence of two witnesses.

RICCIOTTI MORALI.

Witnesses:
NEOFO REFETTE,
GIOVANNI NATTINO.