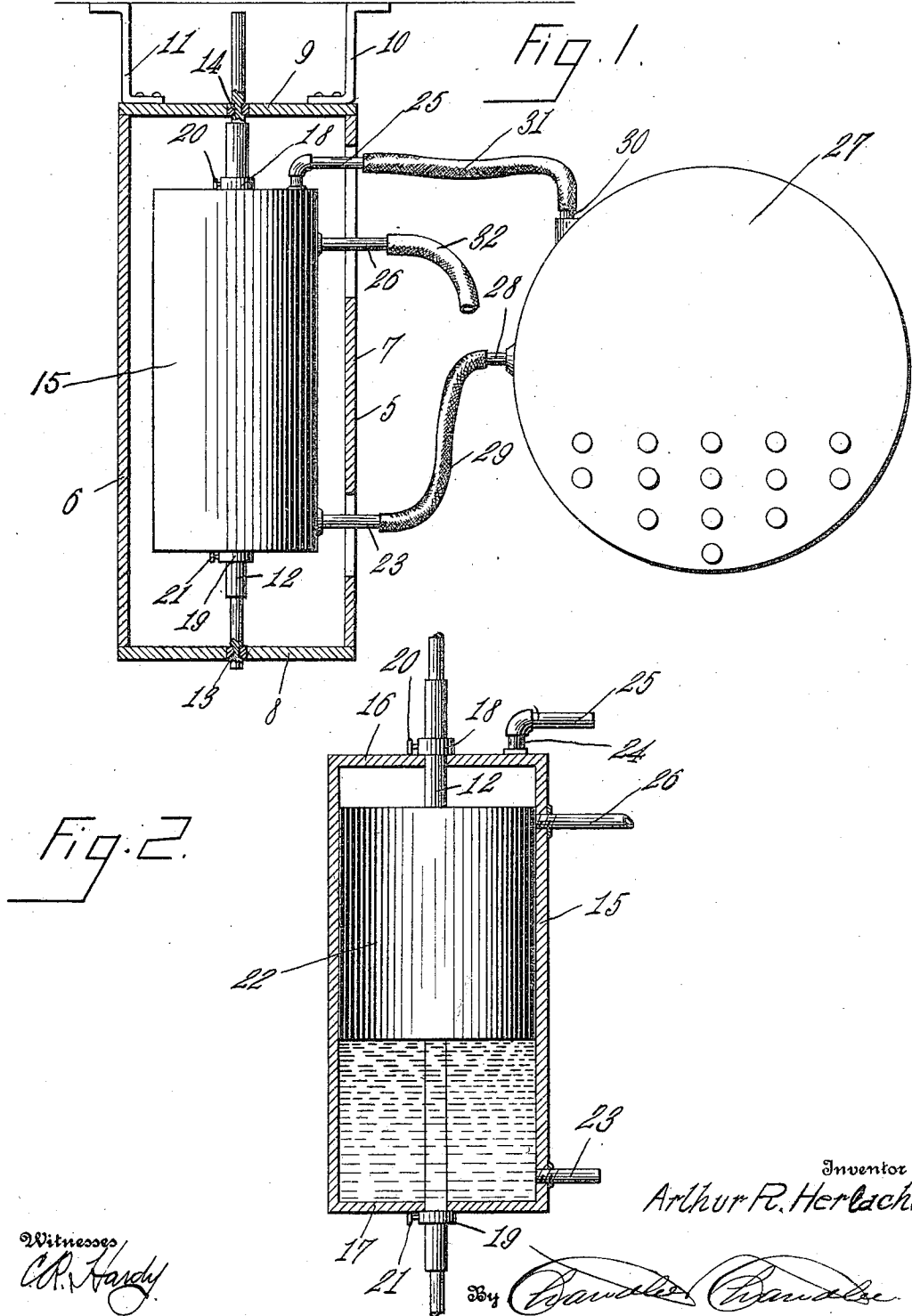


A. R. HERLACHE.
 FEED WATER REGULATOR.
 APPLICATION FILED JULY 16, 1909.

949,896.

Patented Feb. 22, 1910.



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ARTHUR R. HERLACHE, OF BRUSSELS, WISCONSIN.

FEED-WATER REGULATOR.

949,896.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ARTHUR R. HERLACHE, a citizen of the United States, residing at Brussels, in the county of Door, State of Wisconsin, have invented certain new and useful Improvements in Feed-Water Regulators; 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 improvements in feed water regulators for steam boilers, and has for its object the provision of a device of that kind, governed by the water level of the boiler, to start the injector when the water level in the boiler has fallen to a certain point and to cut out the injector after the water level has reached a certain point.

Another object is the provision of a regulator which can be adjusted to various heights relative to the water level of the boiler so the engineer may have the water in the boiler to any height he desires.

With these and other objects in view as will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings and more particularly pointed out in the appended claim; it being understood that various changes in the form, proportion, size and minor details of the device may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming part of the specification:—Figure 1 is a side elevation of the device showing its connection with a boiler and also showing the supporting frame in longitudinal section. Fig. 2 is a vertical sectional view of the valve cylinder.

Similar numerals of reference are employed to designate corresponding parts throughout.

The supporting frame is designated in general by the numeral 5 and is shown to consist of the side walls 6 and 7, the opposite ends of which are connected by the end walls 8 and 9. The supporting frame is held suspended from a ceiling or the like by means of a pair of bracket arms 10 and 11, the lower ends of which are secured to the upper

ends 9 of the frame and the upper ends to the ceiling.

What will subsequently be termed the support is designated in general by the numeral 12. This member is provided adjacent its opposite end portions with annular grooves 13 and 14 which receive the sides of a pair of openings formed in the central portion of the top and bottom ends 8 and 9. With this construction it is obvious that the shaft or support is fixedly secured within the frame.

By referring now to Figs. 1 and 2, it will be seen that adjustably secured to the support or shaft 12, is a cylinder designated in general by the numeral 15. This member is preferably formed of metal and is provided at its opposite ends with heads 16 and 17. The cylinder is considerably less in length than the length of the frame and its heads 16 and 17 are centrally provided with orifices for the reception of the shaft or support 12, upon which the cylinder is slidably fitted. In order that the cylinder may be fixedly secured to any portion of the shaft or support within the frame, a pair of collars 18 and 19 are provided. These members receive the shaft or support 12 and are arranged on the outer faces of the opposite heads 16 and 17. The collars are provided with radial openings which are screw threaded and receive the binding screws 20 and 21, by means of which the cylinder is secured to the shaft. The cylinder is interiorly provided with a piston 22. This member is of a size to nicely fit into the cylinder and is centrally provided with an opening for the loose reception of the shaft or support 12.

By referring now to Figs. 1 and 2, it will be seen that threaded into the lower end of the cylinder is one end of a nipple 23 while threaded into the upper head 16 to one side of the shaft or support 12 is a vertical nipple 24, the outer end of which is provided with an elbow which receives a laterally extending tubular section 25. Threaded into the upper end portion of the cylinder and beneath the nipple 24 is a nipple 26, which is spaced from the head 16 and disposed substantially intermediate the upper end of the cylinder and its horizontal center. The boiler is designated in general by the numeral 27 and leading outwardly from the shell of the boiler with its inner end communicating with the water space of the

latter is a nipple 28 and connection between the nipple 28 and nipple 23 at the lower end of the cylinder is established by means of a flexible tube 29. Leading outwardly from the steam space of the boiler is a nipple 30, and connection between the nipple 30 and nipple 25 leading from the top head 16 of the boiler is established by means of a flexible tube 31. The injector (not shown) is connected with the nipple 26 leading from the upper end portion of the cylinder by a flexible tube 32. It might here be stated that the nipples 23, 25 and 26 lie approximately in a vertical plane and are arranged at right-angles to the cylinder and extend through longitudinal slots formed in the side plate 7 of the frame 5.

Having now described the construction of the device its operation will be given. It might here be stated that the length of the cylinder 15 corresponds approximately to the height of the water and steam spaces of the boiler and in its normal position will be in a horizontal plane with the water and steam space so that when the boiler is half filled with water, the cylinder 15 will likewise be half filled. The piston corresponds in length to approximately one-half the length of the cylinder so that when the cylinder is half filled with water the wall of the piston will completely seal the inner end of the nipple 26 leading into the injector. After the water in the boiler has fallen a distance corresponding to the distance between the nipple 26 and upper head 16 of the cylinder, the steam from the boiler passing through the flexible tube 31 and nipple 25 will pass into the upper end of the cylinder and exit through the nipple 26 leading to the injector, whereby the latter will be operated to supply water to the boiler in a well known manner. As the water in the boiler rises the water in the cylinder will likewise rise and carry with it the piston and the latter will move upwardly until the inner end of the nipple 26 is sealed, as before described, whereby the steam to the injector will be cut

off and likewise the supply of water to the boiler. When it is desired by the engineer, to carry a comparatively low head of water in the boiler the cylinder is lowered on the shaft or support 12 to a point adjacent the bottom or lower side 8 of the frame, this will permit the water in the boiler to reach a lower level than when the cylinder is intermediate of the ends 8 and 9 of the frame and when the water has fallen to a certain point sufficiently far to permit the piston to clear the inner side of the nipple 26 leading to the injector the latter will operate as before stated. It is obvious when it is desired to have a comparatively high head of water in the boiler that the cylinder will be adjusted to a point adjacent the upper end 9 of the frame. Thus it will be seen that I have provided a device which is comparatively simple in structure and inexpensive to manufacture, embodying few parts and these so arranged that the danger of derangement will be reduced to a minimum.

What is claimed as new, is:

In a feed water regulator, the combination with a boiler; of a supporting frame arranged exteriorly of the boiler, a vertically disposed shaft having its opposite ends secured in the opposite ends of said frame, a cylinder adjustably secured to said shaft, said cylinder having a water inlet at one end, a steam inlet at the other end and flexible connections between the boiler and said steam and water inlets, said cylinder being further provided with a steam outlet arranged adjacent the said steam inlet, and a piston within the cylinder and slidingly fitted on said shaft and operable by the pressure of water and steam in the boiler to open and close communication between said steam inlet and outlet.

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

ARTHUR R. HERLACHE.

Witnesses:

EUGENE SIMON,
HENRY DELSART.