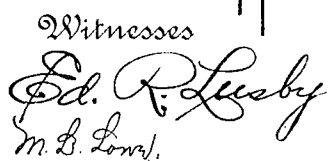


950,538.

2 SHEETS—SHEET 1.



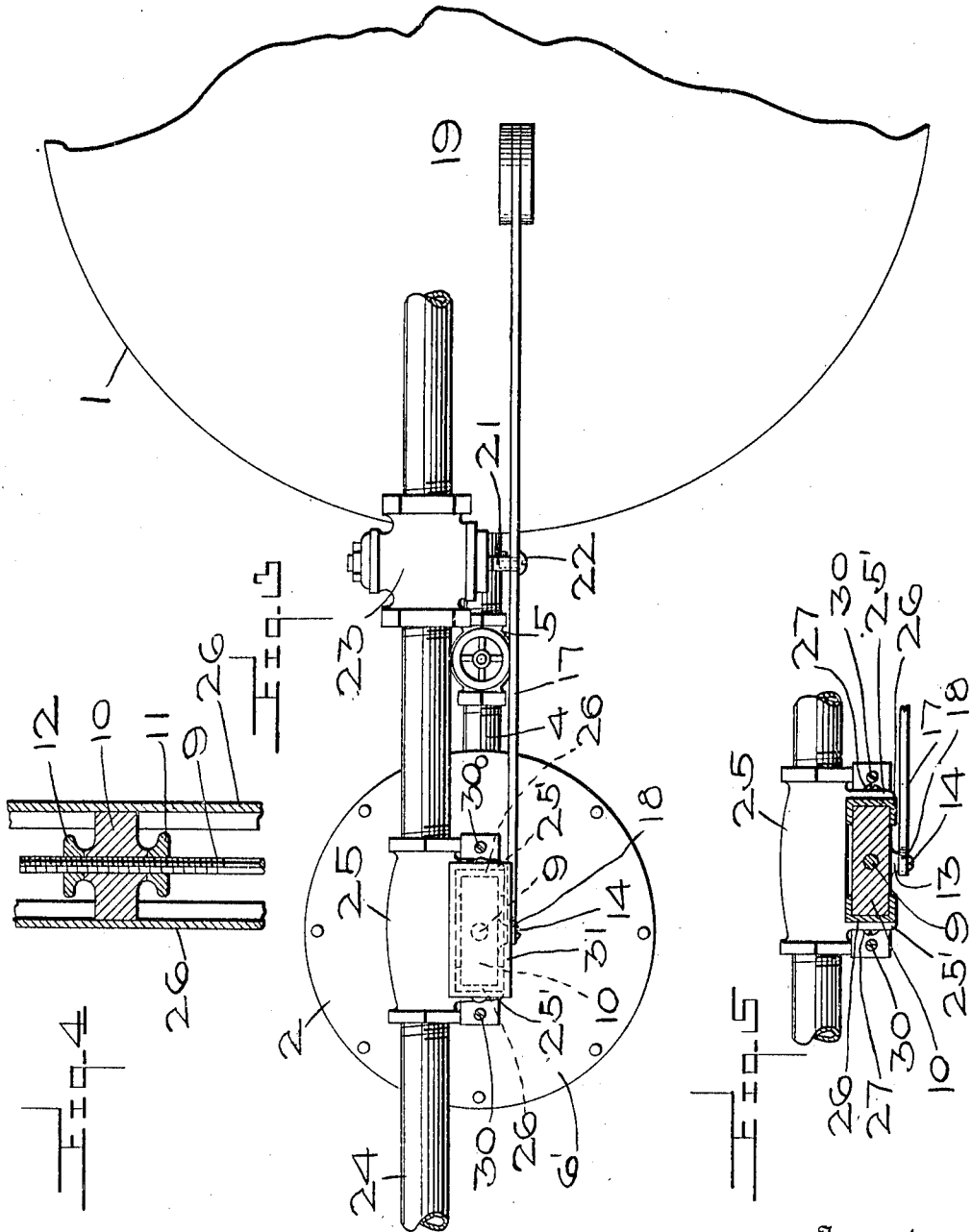
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C. J. LINDBERG.
 AUTOMATIC BOILER FEEDER.
 APPLICATION FILED AUG. 31, 1909.

950,538.

Patented Mar. 1, 1910.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CHARLES J. LINDBERG, OF MALMO, MINNESOTA, ASSIGNOR OF ONE-HALF TO
SWAN NYQUIST, OF MALMO, MINNESOTA.

AUTOMATIC BOILER-FEEDER.

950,538.

Specification of Letters Patent.

Patented Mar. 1, 1910.

Application filed August 31, 1909. Serial No. 515,414.

To all whom it may concern:

Be it known that I, CHARLES J. LINDBERG, a citizen of the United States, residing at Malmo, in the county of Aitkin and State of Minnesota, have invented certain new and useful Improvements in Automatic Boiler-Feeders, of which the following is a specification.

This invention has relation to certain new and useful improvements in water supply regulators.

The object of my invention is to provide a steam boiler with a simply constructed apparatus for automatically regulating the supply of water for steam boilers, which at the same time serves as a visible indicator to disclose the height of water within the boiler.

Another object is to provide a valve, with a slidably carried operating lever, permitting an independent movement within certain limits, of the lever.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the appended claims, it being understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a part of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 shows an elevational view with the float housing in section, of a feed water regulator embodying my invention, showing the float in its lowermost position. Fig. 2 shows the float in its uppermost position. Fig. 3 shows a top view of the regulator. Fig. 4 shows an enlarged detail of the means for adjusting the valve head. Fig. 5 shows an enlarged detail of the lever and its stem connection.

In the operation of steam boilers it is quite essential that the water should be replenished at proper time. In my invention I provide a device insuring the automatic maintenance of a certain level of water in the steam boiler.

In the drawings the numeral 1 designates a fragmentary part of a steam boiler equipped with my feed water regulator, and 2 the float housing. The float housing is secured to the boiler by means of the lower pipe 3 and the upper connecting pipe 4, the

lower pipe being provided with the valve 6 and the upper pipe with the valve 5. The float housing is provided with the top 6' having a central aperture within which is adjustably held the packing gland 7 through which extends the float rod 9 carried by the float 8 which has its peripheral edge curved as shown so as to present but a small surface contacting with the float housing.

As shown the float rod 9 has its upper end threaded and carries the head 10 which is freely adjustable upon this stem being held between the set nuts 11 and 12 threading upon the upper end of the float rod as disclosed.

Extending from the top 6' of the float housing, are the two similar channel iron members 26 which form guide rails between which the float rod head 10 is slidably held. These rails 26 at their lower ends are secured by means of the bolts 30 to the cylinder cap 6'. At their upper ends these two rails are connected by means of the cap 31 held by means of suitable screws. These rails 26 are arranged to be secured to the steam pipe 24 extending from the boiler to the pump. This connection I effect in providing the union 25 having the extending ribs 25' against which the rails 26 are secured by means of the screws 27 in the manner disclosed. A suitable throttle valve 23 is situated proximal to the union 25 this throttle valve being provided with the extending stem 21, the projecting end of this stem being square and carrying the screw 22.

As shown the float rod head 10 is provided with the extending boss 13 carrying the screw stem 14 and pivotally held upon this screw stem 14 is the lower terminal eye 18 of the operating lever 17 having the upper weighted head 19 and being provided intermediate of its ends with the slot 20 within which is held the square stem 21 of the throttle valve 23.

In a device of this character, owing to the fact that the float rod must be held steam tight within the cylinder gland, it is essential that the float be of a size to promptly respond to the changes in the water level. The float further has two forces to overcome, the friction between the stem 9 and the gland 7, and the friction of the throttle valve 23. In order that the float at its initial movement is not required to work against both of these forces, and in order

that the float may get properly started before having to operate the throttle valve, I employ the slotted weighted operating lever 17, carried upon the squared projecting end 21 of the throttle valve.

The operation of my device is very simple. The water within the boiler having fallen below a predetermined point, causes the float in its downward operation to tilt the weighted operating lever causing the opening of the throttle valve. The water is then permitted to enter the steam boiler finally causing the float 8 to rise. In its upward movement, the pin 14 which carries the lower end of the weighted operating lever 17 forces this lever 17 upward. However, owing to the slot 20 this lever is permitted a sliding movement within certain limits without actuating the throttle valve at the initial movement and only after the valve has started in its upward movement is the operating lever tilted to actuate the throttle valve, resulting in the water supply being finally cut off. By means of the adjustably held float rod head 10 the lever adjustment may be properly regulated and so also by virtue of the guide rails 26 being adjustably held to the members 25' can the rails be given proper position.

The attachment of the regulator to the steam pipe from the boiler to the pump and the throttle valve may be effected in any suitable workmanlike manner.

The device is further simple and inexpensive in construction and both durable and efficient in operation and the adjustments may be made with ease and accuracy.

Having thus described my said invention, what I claim as new and desire to secure by United States Letters Patent is:

1. In a device of the character described, the combination with a float, of a stem extending from said float, an operating lever, one end carried by said stem, the other end free, a slot being centrally formed on said operating lever, a valve having a stem passing through said slot, and adapted to be turned by rocking of said lever.

2. In a device of the character described, the combination with a cylinder, of a float, a stem extending from said float and projecting beyond one end of said cylinder, an operating lever, one end carried pivotally by said stem, the other end free, a slot being centrally formed on said operating lever, a throttle valve, the stem of which passes through said slot, and adapted to be turned by rocking of said lever.

3. In combination a float, a float rod, a head secured to said float rod, means for guiding said float head, an operating lever pivoted at one end to said stem, the other end free a slot being centrally formed on said operating lever, and a valve having an angular stem slidably engaged in said slot and adapted to be turned by rocking of said lever.

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

CHARLES J. LINDBERG.

Witnesses:

LOUIS HALLUM,
C. H. WARNER.