(No Model.)

E. P. LYNN.

FEED WATER REGULATOR AND LOW WATER ALARM.

No. 598,712. Patented Feb. 8, 1898.

Fig. 1.

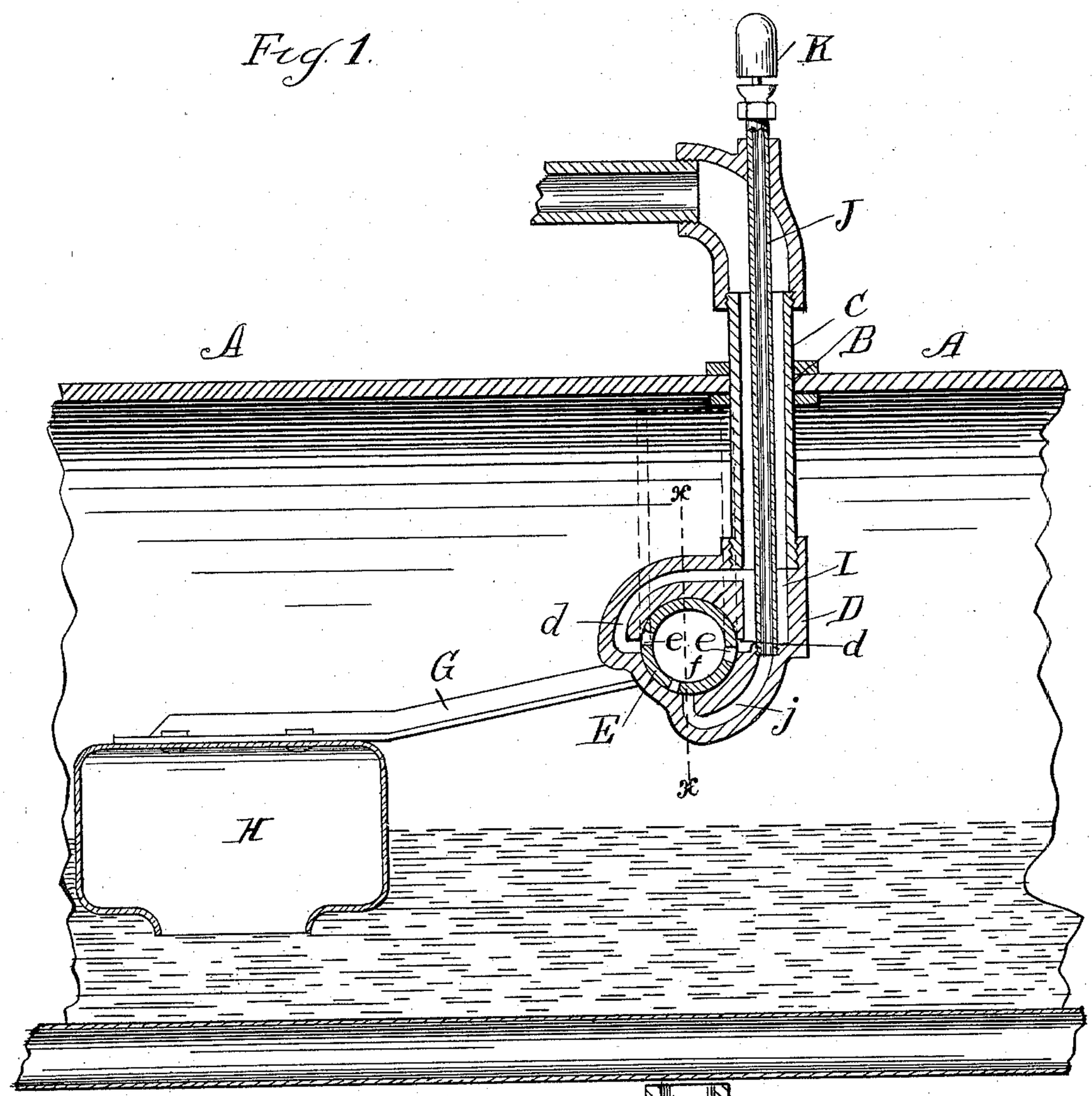
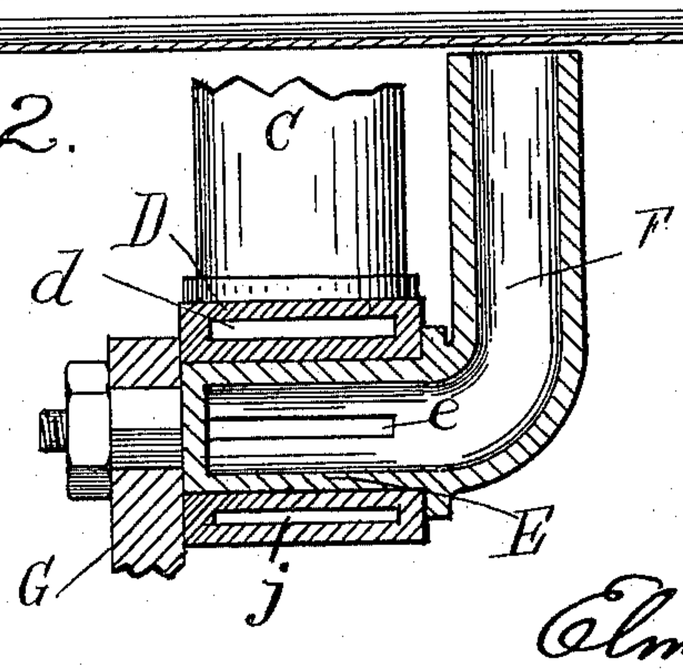


Fig. 2.



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FEED-WATER REGULATOR AND LOW-WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 598,712, dated February 8, 1898.

Application filed April 26, 1897. Serial No. 633,868. (No model.)

To all whom it may concern:

Be it known that I, ELMORE P. LYNN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Feed-Water Regulators and Low-Water Alarms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to feed-water regulators for use in boilers in which when the water in the boiler is at the normal water-line just sufficient steam is admitted to the feed-pump to keep the water at such line; but when more water is needed in the boiler or when the water therein is lowered more steam is admitted to the feed-pump to raise the water in the boiler to the normal water-line. If, however, the pump does not work properly and the water continues to fall, an alarm is sounded to call the attention of the fireman or other attendant to the fact. When the water in the boiler rises above the normal water-line, the pump is automatically cut off.

The object of my invention is to provide novel and simple means for accomplishing the above-stated results.

The novelty of my invention will be hereinafter set forth, and specifically pointed out in the claims.

In the drawings, Figure 1 is a sectional side elevation of my improved feed-water regulator and alarm. Fig. 2 is an enlarged cross-section of the valve on the dotted line *x x* of Fig. 1.

A is a boiler, through a hole B in the top of which is fitted a pipe C, having at its lower end a casting D, in which is seated a valve E, extending through a horizontal bore in the casting and having an upwardly-extending pipe F, Fig. 2, with its upper end open on one end of the valve, and secured upon the opposite end an arm G, to which is attached a hollow open-bottomed float H.

The valve E is tubular, and its interior communicates with the pipe F, whose open end is in the steam-space of the boiler at all times. There are three ports in the valve E, of which the two *e* are diametrically set, and when the water in the boiler is at the normal stage they partially register with ports *d* in the casting D, which ports communicate with a chamber I, into which the lower end of the pipe C, which leads to the feed-pump, enters. Extending vertically through the pipe C is a pipe J, carrying upon its upper end a whistle K and having its lower end extended through the chamber I in the casting D and communicating with a port *j* in said casting leading to the valve E. The third port *f* in the valve E is intended to register with the port *j* when the water in the boiler gets below the normal water-line, as will be presently explained. Should the water in the boiler get below the normal water-line, thereby permitting the float to fall and the valve E to be turned on its axis to open the ports *e* to their fullest extent, under ordinary circumstances the speed of the feed-pump would be so increased as to feed sufficient water to the boiler to at once restore the normal water-line; but if for any reason the feed of the water to the boiler should not be increased sufficiently the further falling of the float and turning of the valve E would open the port *f* and permit steam to pass therethrough up the pipe J to sound the whistle K and give the alarm. In this latter event the fire under the boiler would have to be drawn or some measures be taken to prevent further evaporation of the water; but with the parts constructed as I have illustrated and described them this contingency would not be likely to arise, as the feed-water is being continuously fed in under normal conditions and its rate of feed is automatically regulated by the float.

Should the water in the boiler get above the normal water-line, the float in rising would so turn the valve E as to shut off the ports *e* entirely and thereby stop the feed-pump until the evaporation had brought the water down again to the normal line, whereupon the ports *e* would again be opened to start the feed-pump.

By the above-described construction I produce a practically-balanced valve, and by having the float hollow and open at its bottom the same is rendered always reliable, for the boiling of the water will continually carry

steam into it, so that by no possibility can it become water-logged, as might be the case where an entirely-closed float was used.

While I prefer the use of an alarm-whistle, yet in some cases this may be dispensed with.

Having thus fully described my invention, I claim—

1. In feed-water mechanism of the character described, the combination of a boiler, the feed-pump steam-supply pipe entering therein in the steam-space, valve mechanism consisting of a cylindrical oscillating valve with a plurality of ports arranged to balance the same and secured at the lower end of said pipe within the steam-space of the boiler, steam communication with the interior of said oscillating cylindrical valve, and a float resting upon the water within the boiler and connected to said oscillating valve, whereby the latter is automatically actuated, substantially as described.

2. In feed-water mechanism of the character described, the combination of a boiler, the feed-pump steam-supply pipe entering therein in the steam-space, valve mechanism consisting of a cylindrical oscillating valve with a plurality of ports arranged to balance the same and secured at the end of said pipe within the steam-space of the boiler, steam communication with the interior of said oscillating cylindrical valve, a whistle put in action by one of the ports of said valve, and a float resting upon the water within the boiler and connected to said oscillating valve, whereby the latter is automatically actuated, substantially as described.

3. The combination of the pipe C leading to the feed-pump and extending into the boiler, the valve-casing D on the lower end of the pipe C, the tubular oscillating valve E with ports *e e f* seated in the casing D, ports *d* in the casing communicating with the lower end of the pipe C, the pipe J having a whistle on its upper end and extending through the pipe C and communicating by the port *j* with the port *f*, the pipe F forming an extension of the tubular valve E, the arm G secured to the valve E, and a float upon the end of the arm G substantially as described.

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Witnesses:
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