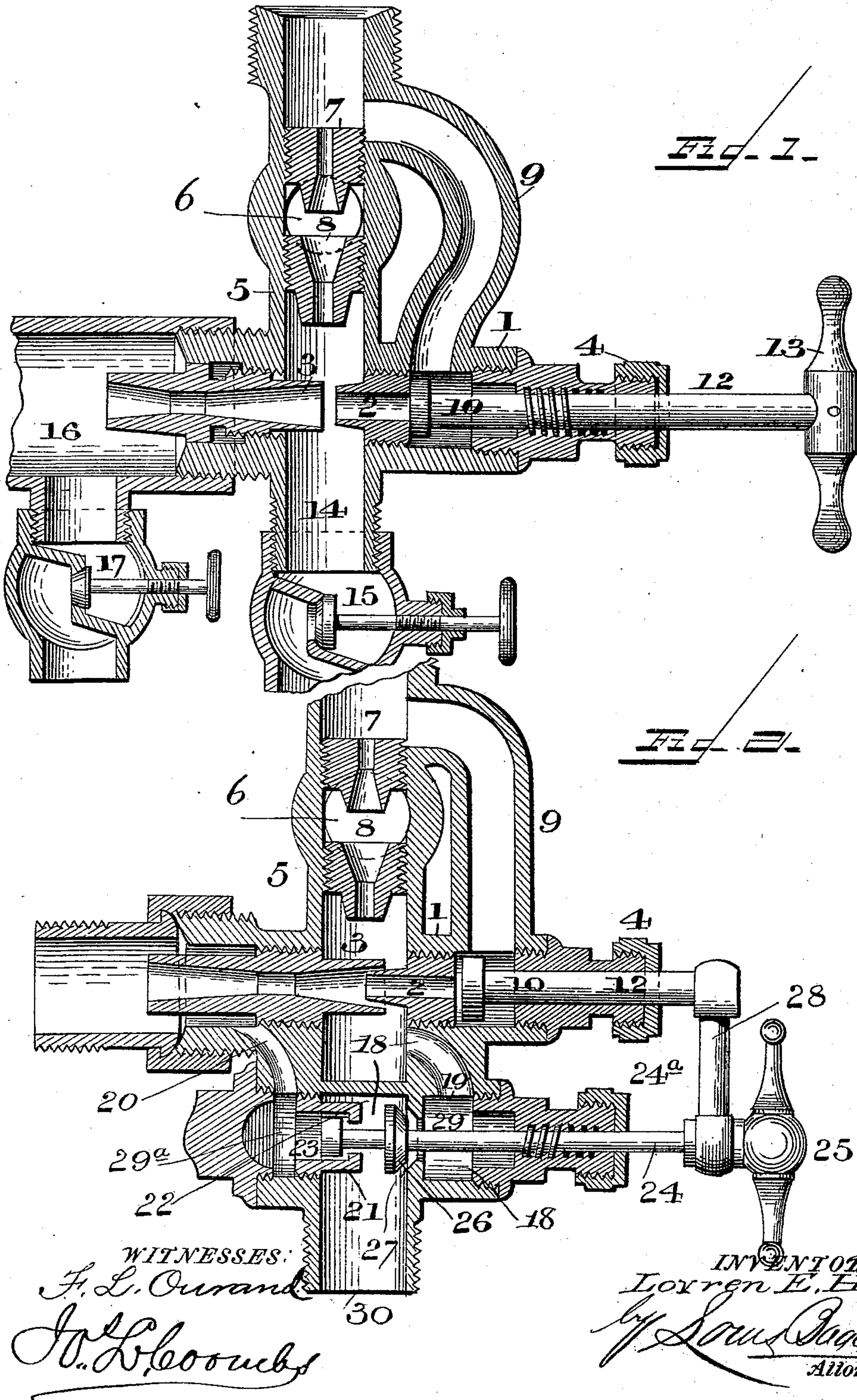


(Model.)

L. E. HOGUE.
INJECTOR.

No. 495,336.

Patented Apr. 11, 1893.



UNITED STATES PATENT OFFICE.

LOVREN E. HOGUE, OF GREENVILLE, PENNSYLVANIA.

INJECTOR.

SPECIFICATION forming part of Letters Patent No. 495,336, dated April 11, 1893.

Application filed December 17, 1892. Serial No. 455,437. (Model.)

To all whom it may concern:

Be it known that I, LOVREN E. HOGUE, a citizen of the United States, and a resident of Greenville, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Injectors; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to injectors for supplying feed-water to steam boilers, the object being to provide an improved device of this character which shall possess superior advantages with respect to simplicity and efficiency in operation.

The invention consists in the novel construction and combination of parts herein-after fully described and claimed.

In the accompanying drawings: Figure 1 is a central longitudinal section of an injector constructed in accordance with my invention. Fig. 2 is a similar view of a modified construction of the same.

In the said drawings the reference numeral 1 designates a shell or casing containing the forcing tubes 2 and 3 of any ordinary or suitable construction, closed at its rear end by a screw cap 4, while its other end is adapted to be connected with a steam boiler. Connected or formed with this shell is a vertical barrel 5, adapted to be connected with the boiler and communicate with the steam space therein. Near the upper end this barrel is provided with a union coupling 6, to communicate with a well or other source of water supply, and is also provided with lifting tubes 7 and 8, common to all standard injectors.

The numeral 9 denotes a steam tube communicating with the barrel 5, above the lifting tubes and with the shell or casing in rear of the forcing tube 2, in the latter. This tube is located outside of and a short distance from the barrel 5, so that the barrel will not be heated thereby. The forcing tube 2 is provided with a valve 10, mounted upon a valve-stem 12, passing through the screw-cap 4, and having an operating handle 13. Aligned with

the barrel 5, and directly below the adjoining ends of the forcing tubes 2 and 3, is the cold water overflow 14, provided with a globe-valve 15, and in front of the tube 3, is the hot water overflow 16, also provided with a globe-valve 17.

In the modification illustrated in Fig. 2, the valves of the hot and cold water overflows, and the valve for the forcing tube 2, are so constructed and connected together as to be operated simultaneously. In this figure the numeral 18, denotes a tube or pipe formed or connected with the shell or casing with which the cold water overflow communicates at 19, while the hot water overflow connects therewith at 20. Located in this tube is a small barrel 21, having a valve-seat 22, at one end upon which seats a valve 23, mounted on a stem 24 passing through a screw-cap 24^a on the tube, and provided with an operating or hand-wheel 25. This stem is also provided with a valve 26, which engages with a seat 27, formed in the tube. This valve-stem 24 and the valve-stem 12 are connected by means of a bar 28, so as to move in unison therewith. It will be seen that the cold water overflow communicates with a chamber 29 intermediate of the valve 26 and the screw-cap 24^a, while the hot water overflow communicates with a chamber 29^a at the opposite end of the tube. The numeral 30 denotes an outlet for the overflow.

The operation is as follows: The valve 10 of the forcing tube and the valve in the hot water overflow are closed, and the valve in the cold water overflow opened. Steam is then admitted to the lifting tubes 7 and 8, and passes to the cold water overflow drawing the water into the vertical barrel through the tube 8. As soon as the water appears at the cold water overflow, the valve therein is closed and the valve of the forcing tube opened, admitting steam from tube 9 to said forcing tube, in which it is condensed and forced through tube 3, to the hot overflow and from thence to the boiler, as will be well understood by those skilled in the art.

In the modification shown in Fig. 2, the principle is identically the same as that above described. In this case, when the water from the lifting tubes appears at the overflow, the

valves 23 and 26 are closed by operating the hand-wheel of the valve-stem 24, which through the connecting bar 28, opens the steam valve 10.

5 From the above it will be seen that the cold water overflow is in line with the lifting tubes, forming a direct passage for the water from said tubes. Also by locating the steam tube 9, outside of and away from the barrel 5 the
10 water in the latter is not heated thereby. These will be found in practice to be very valuable and important features.

Having thus described my invention, what I claim is—

15 In an injector, the combination with the shell or casing, the forcing tubes, the vertical

barrel and lifting tubes, and the steam tube 9 connected with said shell and barrel, of the tube 18 connected or formed with said shell, the hot and cold water overflows connected 20 therewith, the valves located therein, the valve-stem, the connecting bar, the steam valve and its stem connected with said bar, substantially as described.

In testimony that I claim the foregoing as 25 my own I have hereunto affixed my signature in presence of two witnesses.

LOVREN E. HOGUE.

Witnesses:

DANIEL C. MOYER,
LYMAN B. SPEIR.