W. RANDALL.

INJECTOR.

No. 186,619. Patented Jan. 23, 1877.

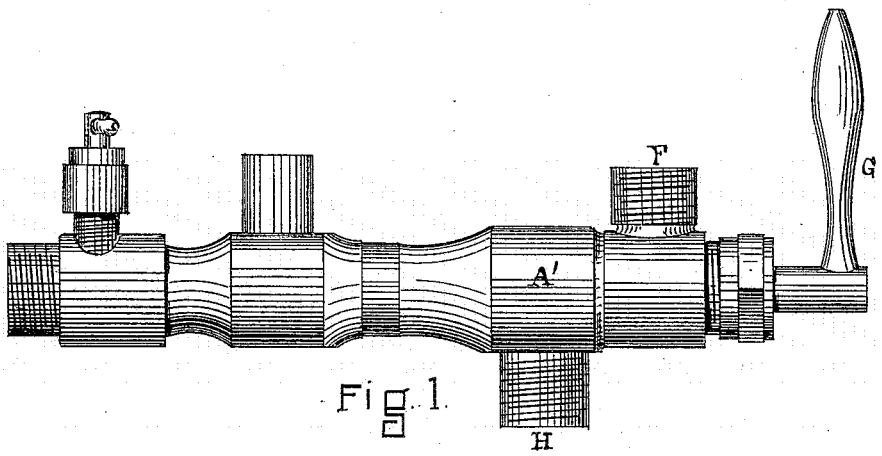

Fig. 1.

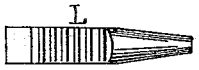

Fig. 5.

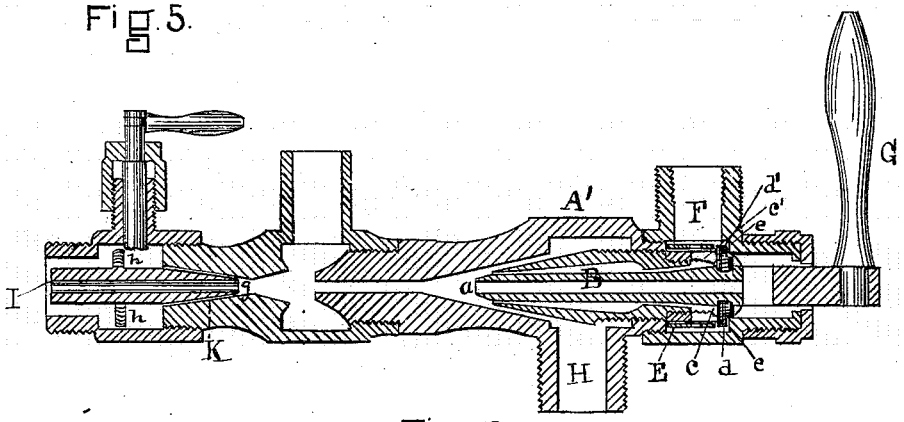

Fig. 2.

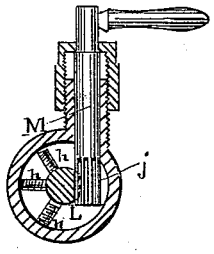

Fig. 4

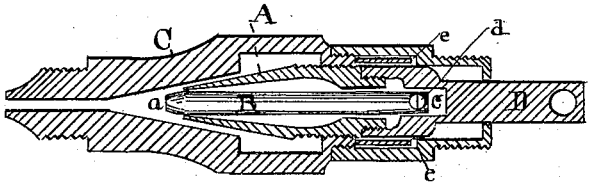

Fig. 3.

WITNESSES

Frank L. Parker

Fred. P. Raymond.

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UNITED STATES PATENT OFFICE.

WILLIAM RANDALL, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN INJECTORS.

Specification forming part of Letters Patent No. **186,619**, dated January 23, 1877; application filed June 19, 1876.

To all whom it may concern:

Be it known that I, WILLIAM RANDALL, of Salem, in the county of Essex and State of Massachusetts, have invented an Improvement in Injectors, of which the following is a specification:

This invention has for its object the following-described methods of regulating the feeding of the steam-jet, and the delivery of the feed-water to the boiler.

Reference is had to the accompanying drawing, forming a part of this specification, in explaining the same, in which—

Figure 1 is an elevation of the casing, showing the outlets and inlets. Fig. 2 is a longitudinal section of the same. Figs. 3, 4, and 5 are details.

The method of regulating the supply of steam will be first described, and consists in providing the nozzle A, arranged concentrically inside the casing C, and surrounding the tubular stem B, with a movement to and from the exit-orifice *a* of tubular stem B, and protruding slightly beyond the same, when completely opening the nozzle-orifice. This I accomplish by forming the end of the nozzle A with a screw-thread, playing in a screw-thread on the interior of the casing, and, also, the additional screw-thread, upon which is screwed the spindle D, which carries and operates the nozzle A, and fits loosely over the tubular stem B, to which it is secured by the pins *d d'*, which pass through slots *c c'* in the spindle-cap D, and have a bearing on the collar E, which surrounds the end of the spindle. The shoulder *e* on the interior of the case holds the pins securely in place on the collar. The collar is perforated, as shown, to supply a passage for the steam which enters through inlet F. The tubular stem A' has a cone-shaped or beveled nozzle, and the spindle D is provided with the handle G.

Of course, the least amount of steam that can be used is that which passes through the tubular stem A', and that amount can be increased by opening the passage *f* between the tubular stem and the nozzle B. This is accomplished by causing the nozzle A to recede from the nozzle-orifice by revolving the spindle, causing the stem B to ride on the collar as the spindle operates the nozzle A, causing the same to recede from the stem B.

The method of regulating the feeding of the water which enters through water-inlet H to the boiler is by causing the tubular stem I, provided with the cone-shaped end *g*, with a movement in and out of the flaring tube K. This I effect by making a rack, L, on the face of stem I, mounting the same on legs *h*, and arranging the cog *j* on the end of spindle M to mesh with the rack L.

It will readily be seen that the minimum supply of water is that given from the tubular stem I when in contact with the edges of the flaring tube K, and that by withdrawing the same from the flaring mouth a larger quantity is permitted to flow.

Having thus fully described my invention, I claim and desire to secure by Letters Patent—

1. The combination of the flaring mouth K with the cone-shaped tube I, having a movement to and from the same, substantially as and for the purpose described.

2. The combination of the flaring mouth K with the cone-ended tubular stem I, mounted on legs *h*, rack L, and cog *j* on the end of spindle M, substantially as described.

WILLIAM RANDALL.

Witnesses:
FRED. F. RAYMOND,
ADOLPH J. OETTINGER.