

W. T. MESSINGER.  
INJECTORS FOR STEAM-BOILERS.

No. 171,946.

Patented Jan. 11, 1876.

Fig. 2.

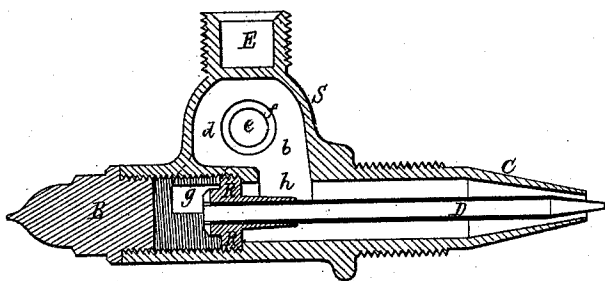


Fig. 3.

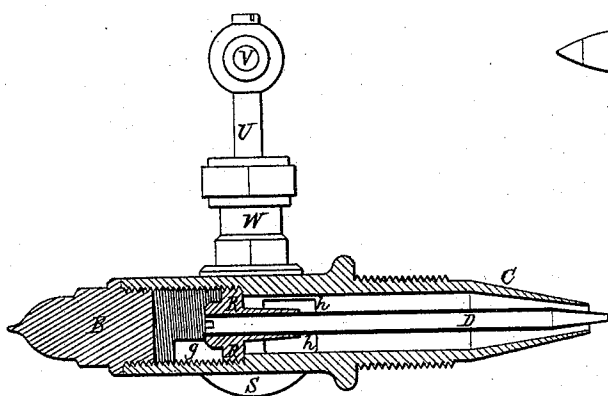
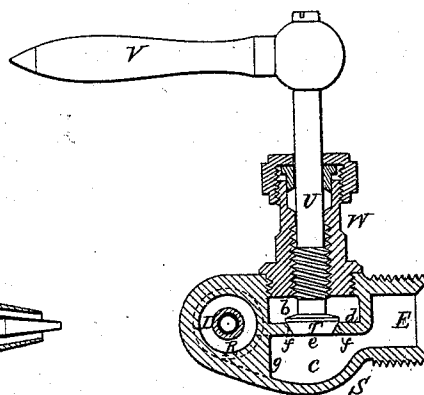


Fig. 1.



Witnesses  
S. M. Piper  
L. H. Miller

Wm. T. Messinger  
by his attorney,  
R. C. Gledhill

# UNITED STATES PATENT OFFICE

WILLIAM T. MESSINGER, OF SOMERVILLE, MASSACHUSETTS.

## IMPROVEMENT IN INJECTORS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **171,946**, dated January 11, 1876; application filed December 1, 1875.

*To all whom it may concern:*

Be it known that I, WILLIAM T. MESSINGER, of Somerville, of the county of Middlesex and State of Massachusetts, have made a new and useful Improvement in Injectors for Steam-Boilers; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a vertical and transverse section, and Fig. 2 a horizontal section, and Fig. 3 a longitudinal section, of my improvement and the parts of an injector to which it is applied.

The invention specially relates to the injector described in the United States Letters Patent No. 157,105, dated November 24, 1874, and granted to William Randall.

In practice it has been found that the cock of the induct of the patented injector, owing to unequal expansion of it and its seat is very liable to leak, and to become set, so as to render it difficult at times to turn it.

The object of my invention, therefore, is to overcome this difficulty, which I do by a cock of different construction, and by other means, as hereinafter described.

In the drawings the internal and external nozzles are represented at C and D, the inner one D being arranged concentrically within the outer one C, and to extend from and open through a partition, R, going transversely across the bore of the said outer nozzle, such bore at its rear end being closed by a screw-plug, B. Connected with the nozzle C is the valve-case S, provided with an induct, E. Within the said case are two chambers, *b* *c*, that are separated by a partition, *d*, through which is an opening, *e*, and a valve-seat, *f*, surrounding it. The induct leads into the lower chamber *c* only, from which there is a passage, *g*, which opens into that part of the bore of the outer nozzle which is between the partition R and the screw-plug B. From the

upper chamber *b* another passage, *h*, leads directly into that part of the bore of the nozzle C which is in advance of the partition R. Furthermore, within the chamber *b*, and to fit to the valve-seat thereof, there is a valve, T, on the end of a spindle, U, such spindle being provided with a handle, V. The spindle screws into a neck, W, which projects upward from the valve-case. On turning the handle one way the valve will be raised or lifted off its seat, and by revolving the spindle the opposite way the valve may be forced down upon its seat.

From the above it will be seen that while the valve is closed upon its seat no steam can pass from the induct into that part of the nozzle C which is in advance of the partition R, though the steam may be flowing from the chamber *c* into that part of the bore of the nozzle C which is in rear of the said partition, and thence into and through the inner nozzle.

By means of the partition R, the lifting-valve, the double-chambered valve-case, and the passages leading therefrom into the outer nozzle on opposite sides of the said partition, the difficulties incident to the patented injector are overcome.

I do not claim in a steam-boiler injector a cock and internal and external nozzles constructed and connected as represented in the said patent of the said Randall.

What I claim as my invention is—

The combination of the partition R, the lifting-valve T, and the double-chambered valve-case S, and the passages *g* *h* leading therefrom, with the internal and external nozzle C D, all being constructed, arranged, and to operate substantially as specified.

WM. T. MESSINGER.

Witnesses:

R. H. EDDY,  
J. R. SNOW.