

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

No. 173,488.

Patented Feb. 15, 1876.

Fig. 1.

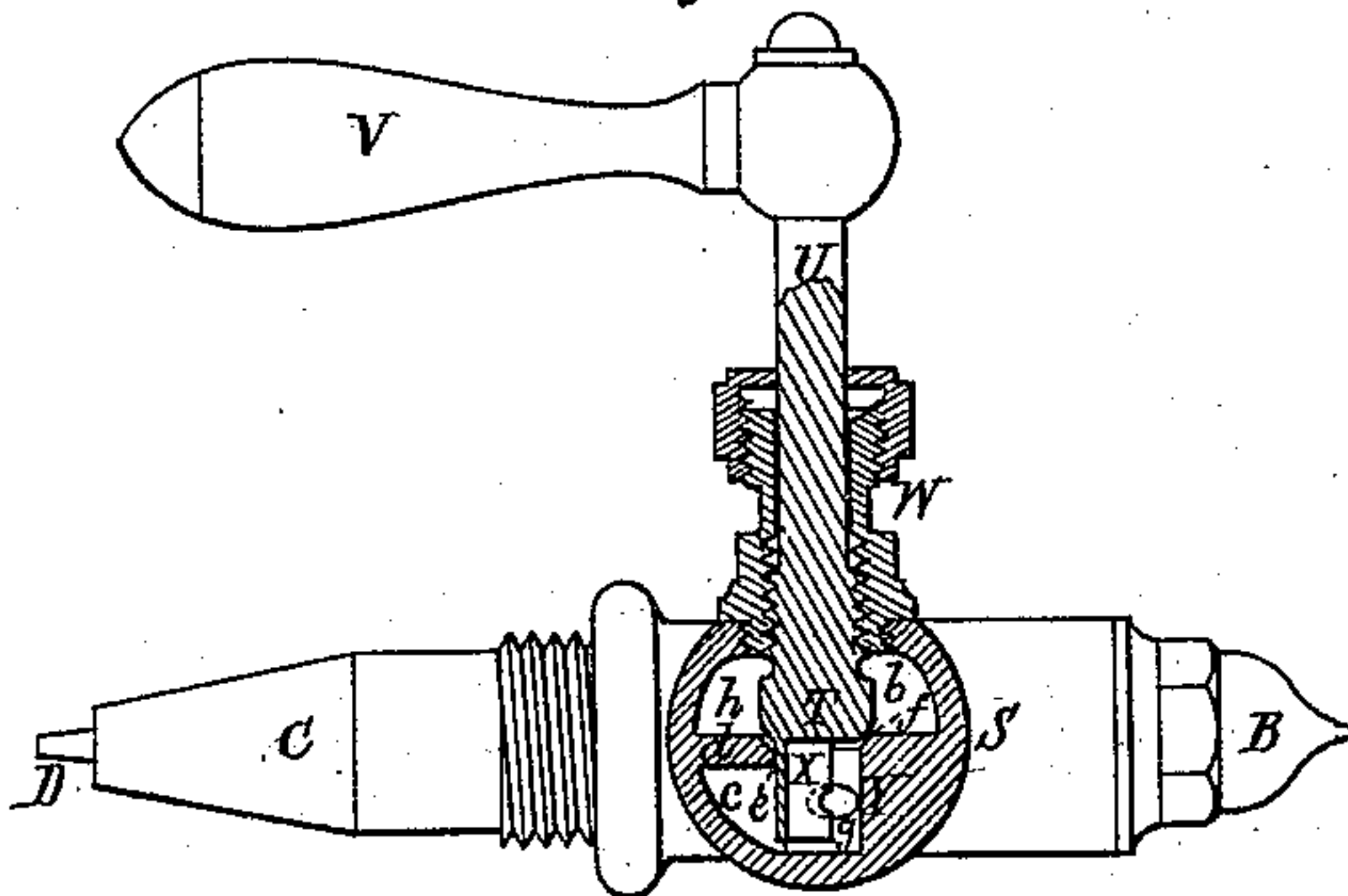


Fig. 2.

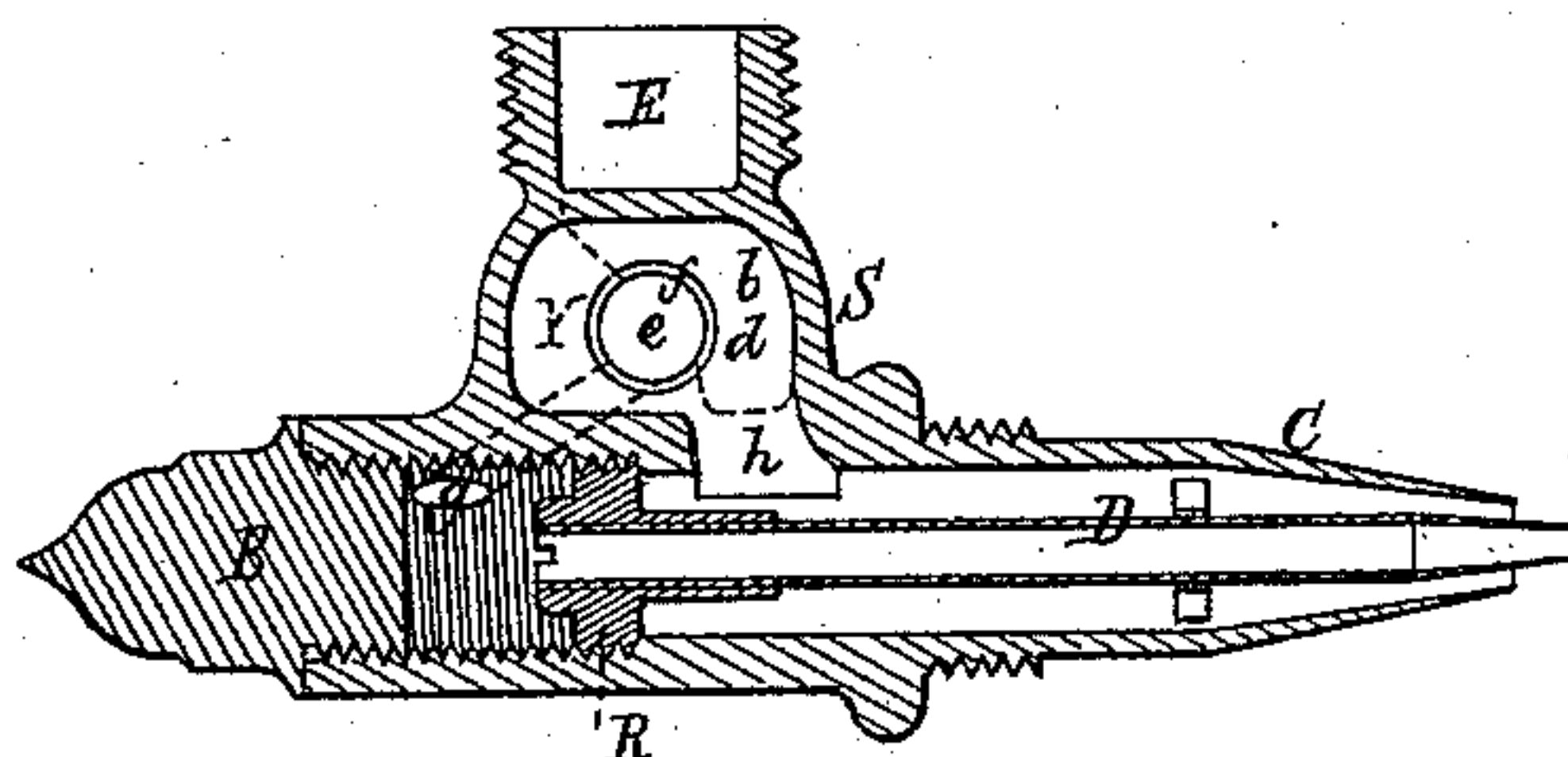
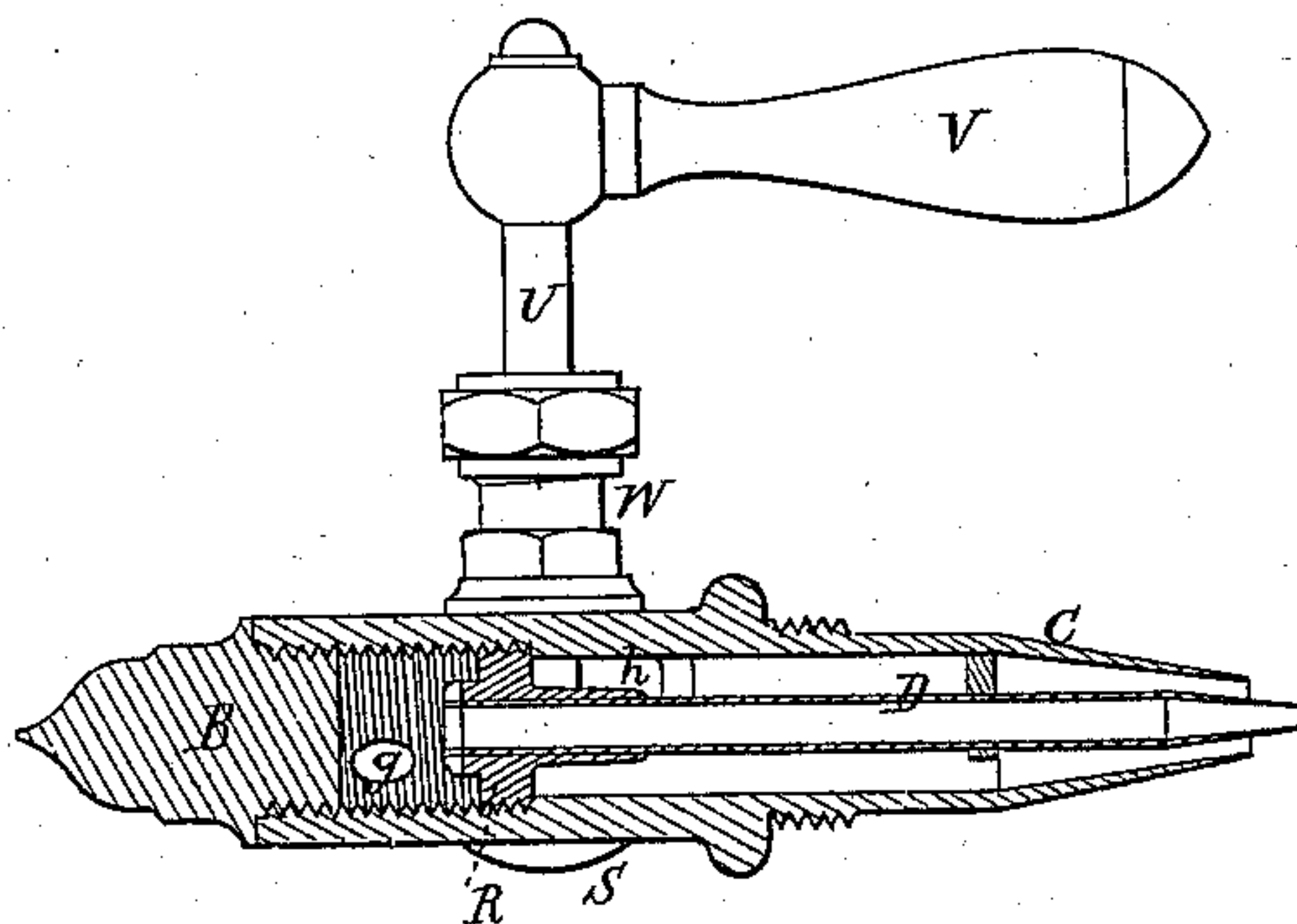


Fig. 3.



Witnesses

S. W. Piper.  
L. M. Miller.

Wm. T. Messinger

by his attorney.

R. M. Eddy.

# UNITED STATES PATENT OFFICE.

WILLIAM T. MESSINGER, OF SOMERVILLE, MASSACHUSETTS.

## IMPROVEMENT IN INJECTORS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. 173,488, dated February 15, 1876; application filed January 28, 1876.

*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 invented 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, Fig. 2 a horizontal section, and Fig. 3 a longitudinal section, of my improvement and the parts of the injector to which it is applied.

The invention especially relates to the injector for which I have recently—to wit, on December 1, 1875—applied for a patent, which was allowed me on or about December 27, 1875.

The invention described in my said application had no means of regulating the admission of the steam to the internal nozzle, though its admission to the external nozzle could be regulated by the cock or valve thereof.

In carrying out my present invention I extend from the valve a circularly-curved gate, and provide the educt of the lower chamber of the valve-case with a circularly-curved seat for such gate to work against. On revolving the valve to open it or raise it off its seat the gate will be turned with such valve, and may be made to more or less close the eduction of its seat.

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, or 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.

The semicircular gate is shown at X as extending down from the valve concentrically therewith, the seat for such gate being shown at Y, the passage *g* leading from such seat.

I do not herein claim the internal and external nozzles provided with inducts, and combined with a cock, all as represented in the United States Patent No. 157,105; nor do I claim the injector described and claimed in my aforesaid application for a patent, as in making my present invention I have combined with the lifting-valve of such a semicircular gate and its seat to regulate the flowage of steam into the internal nozzle; therefore,

What I claim is—

The injector, substantially as described, provided not only with the internal and external nozzles C D, the lifting-valve T, the double-chambered valve-case, and passages *g h*, leading from the chambers of such case to, or connecting with, the said nozzles, as set forth, but with the gate X and its seat Y, arranged with the valve T and the passage *g*, all substantially as described.

WM. T. MESSINGER.

Witnesses:

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