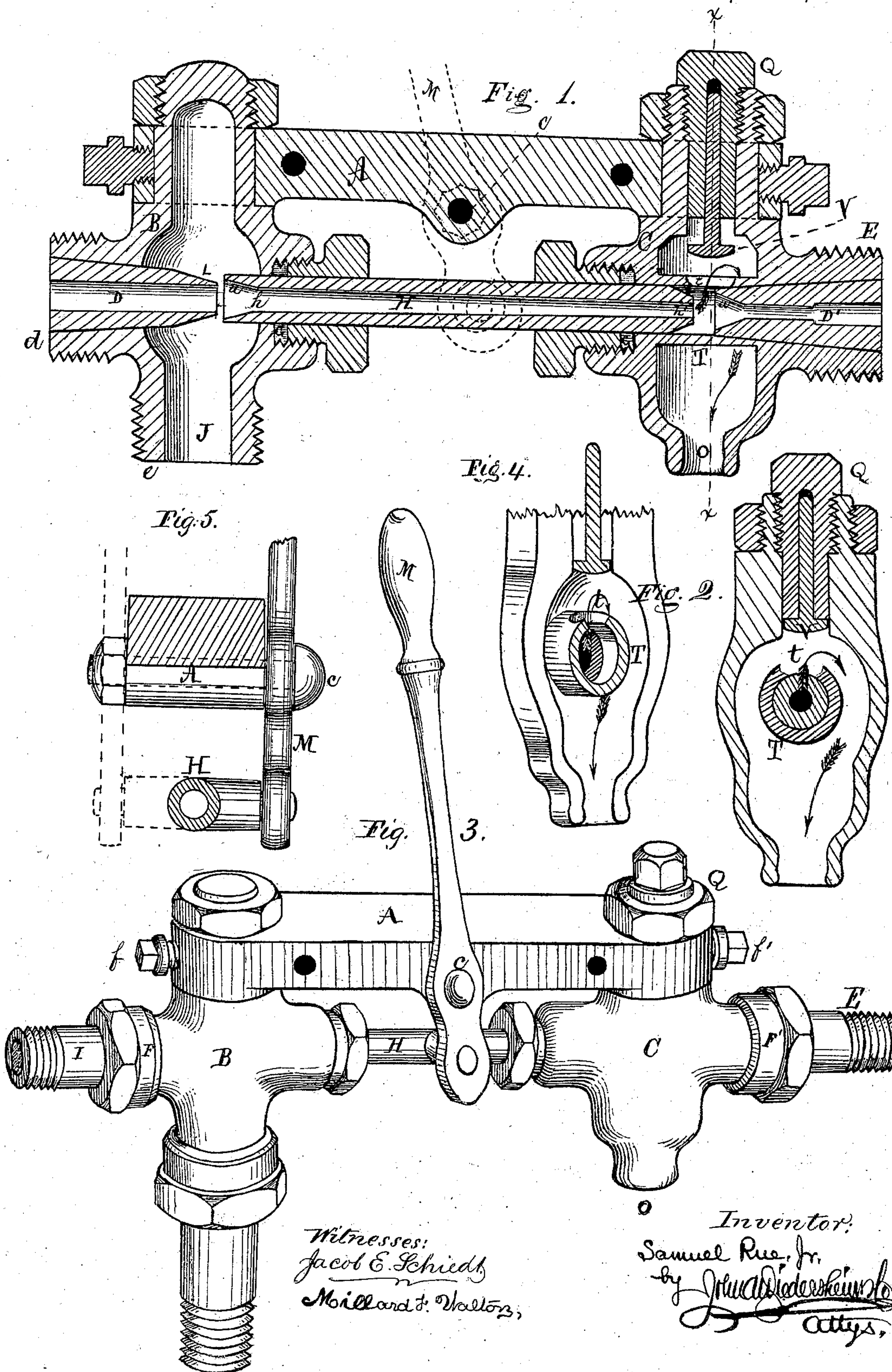


**S. RUE, Jr.**  
**Injectors for Steam Generators.**  
 No. 138,199.      Patented April 22, 1873.





# UNITED STATES PATENT OFFICE.

SAMUEL RUE, JR., OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN INJECTORS FOR STEAM-GENERATORS.

Specification forming part of Letters Patent No. **138,199**, dated April 22, 1873; application filed February 28, 1873.

*To all whom it may concern:*

Be it known that I, SAMUEL RUE, Jr., of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Injectors for Steam-Generators; and I do hereby declare the following to be a clear and exact description of the nature thereof sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a central longitudinal section of the device embodying my invention. Fig. 2 is a vertical section in line *xx*, Fig. 1. Fig. 3 is a perspective view. Fig. 4 is a perspective view of a portion of Fig. 2. Fig. 5 is a view of detached parts.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the bed-plate and operating-lever of the injector so connected or arranged that the lever, being attached to the bed-plate as a fulcrum, may be lengthened or extended to meet the requirements or needs of the apparatus, and the lever adapted for a right or left hand injector. It also consists in means for preventing the in-draft of air when the injector is in operation, and thereby obviate the noise and retardation of action otherwise occurring.

Referring to the drawing, wherein the full apparatus is shown—but certain portions thereof are included in Letters Patent heretofore granted to me—A represents the bed-plate, which is connected to or formed with the heads or castings B and C. M represents a lever, which is attached, at its lower end, to the adjustable tube H, and has its fulcrum at *c* on the bed-plate A; and the extent of leverage may be increased by lengthening the lever or diminishing the distance between the bed-plate A and tube H.

By removing the fulcrum-pin *c*, releasing the lever M, swinging round the tube H, and reapplying the pin and lever, so that the latter engages with the attaching projection on the tube opposite to that from which it was,

(see Fig. 5,) it will be perceived that the lever is readily adapted for a right or left hand injector.

The casting or head B is hollow, and internally of the form of a cross, or of two passages angular to each other in the longitudinal direction of the apparatus. This head is connected, at *d*, to the steam-supply pipe; and, at *e*, with the water-supply pipe. A hollow plug or pipe, D, projects into the casting or head B; and into the same projects the receiving end of the adjustable tube H, which has a tapering bore from *h* to *h'*, and is adjustable relatively to the plug D in the head B, and plug D' in the casting or head C, by means of the lever M. The head C is likewise hollow, and, internally, of the form similar to head B; and has within it a shell or tube, T, which extends horizontally and longitudinally from opposite inner walls of the casting or head C, and is formed therewith. The delivery-pipe leading to the generator is attached, at E, by a union joint, which holds the plug D' in place. In the upper side of the tube or shell or tubular passage T, about the middle thereof, is a hole or overflow, *t*. The head or casting is left hollow vertically around said portion T, and the water, passing through the tube H and out of the hole *t* into the overflow-chamber *o*, escapes by the mouth thereof. A hollow screw-plug, Q, is placed in the upper end of the casting or head C; and, in the hollow thereof, plays the stem of a valve, V, which falls perpendicularly on the hole *t*, thus closing it.

When the water first passes through the tube H, not having sufficient force to open the check-valve in pipe E and enter the generator, it raises the valve V, and escapes by the overflow; but, when it acquires sufficient force to open the check-valve, it ceases to overflow, and causes an in-draft of air, which closes the valve V, and then prevents the subsequent admission of air. The valve may be returned to its position on the hole *t* by a spring arranged on the stem of the valve or elsewhere; or a valve may be placed in the lower part of the overflow, upheld by a spring.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. The rotating tube H and removable lever M, in combination with the heads B C and bed-plate A, substantially as and for the purpose set forth.

2. The tubular passage T, situated in the overflow - passage O, in connection with the

opening *t* and valve V, substantially as and for the purpose set forth.

The above signed by me this 5th day of February, 1873.

SAMUEL RUE, Jr.

Witnesses:

STERLING BONSALL,  
ELLWOOD BONSALL.