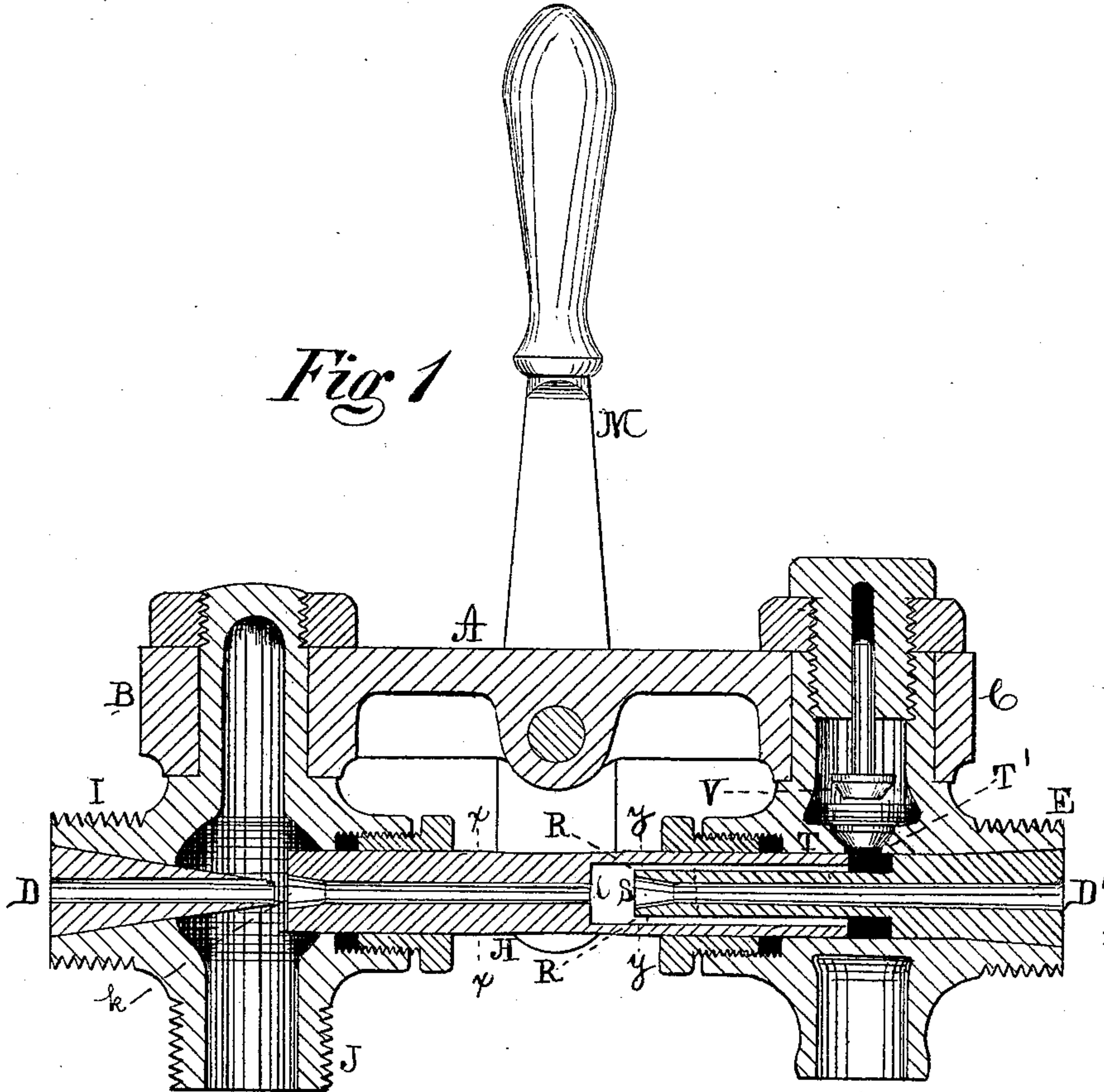


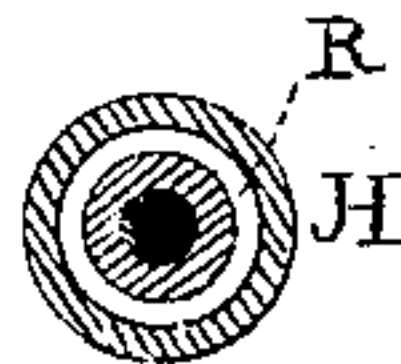
**S. RUE.**  
**Injectors.**

No. 145,969.

Patented Dec. 30, 1873.



*Fig 2*



*Fig 3*

*Witnesses:*

L. P. Grant.

J. Melherington.

*Inventor:*

Samuel Rues

by Jacob Wiedersheim  
attys.



# UNITED STATES PATENT OFFICE.

SAMUEL RUE, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN INJECTORS.

Specification forming part of Letters Patent No. **145,969**, dated December 30, 1873; application filed December 9, 1873.

*To all whom it may concern:*

Be it known that I, SAMUEL RUE, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Injectors; 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 drawings making part of this specification, in which—

Figure 1 is a central longitudinal section of the device embodying my invention. Fig. 2 is a transverse section in line *x x*, Fig. 1. Fig. 3 is a transverse section in line *y y*, Fig. 1.

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

This invention consists in a mode of connecting the combining and delivery tubes, whereby the effectiveness of the injector is greatly increased, and its size materially shortened.

Referring to the drawings, A represents the bed-plate or casting, and B and C represent hollow heads, constituting chambers at or near opposite ends of the casting. Extending from one chamber to the other is the combining-tube H, which has a longitudinal sliding motion, so as to be adjustable relatively to the steam-plug, and controlling the proportionate amounts of water and steam. One end of said tube projects into the chamber B, and the other end projects into the chamber C, or into a tubular passage, T, consisting of a shell or tube, which extends horizontally and longitudinally from opposite inner walls of the head C, said passage having an opening, T', which is adapted to be covered and uncovered by a valve, V, whose stem plays in a screw-plug placed in the upper end of the head C. D represents the steam pipe or plug at one end of the injector, and projecting into the chamber B. D' represents a pipe or plug, called the "delivery-tube," which projects into the injector opposite to pipe or plug D, and leads to the steam boiler or generator. The said pipe or plug D' has formed with it a prolongation, S, which is passed through the chamber C, or the tubular passage T, and projects into, or is

"telescoped" with, the adjacent portion of the tube H, whose bore is sufficiently enlarged to receive the said prolongation, and leave a space, R, between the two parts. The part of the tube H from its mouth *k* to the commencement *l* of the enlarged part forms the combining-tube. The connection of the injector with the steam-pipe is at I, that with the water-supply at J, and that with the generator at E. The water is admitted at J, and, passing through the tube H and the space R, between the tube H and the prolongation S of the plug D', escapes into the overflow. If the tubular passage T exists, the water raises the valve V before it reaches the overflow. As soon as water appears at the mouth of the overflow, steam is turned on at I, slowly until it catches the water, and then at full head, the lever M being pushed either forward or backward until neither steam nor water shows at the overflow. The generator is then being supplied or fed.

It will be seen that by telescoping the prolongation S of the tube D' and tube H, the length of the injector is materially shortened. In addition to this, the effectiveness of the injector is increased, as the combining and delivery tubes can be made relatively longer or shorter without changing the size of the other parts.

The greater the distance the prolongation S of the plug or tube D' projects into the tube H, the shorter is the combining-tube, and longer the delivery-tube.

If the combining-tube is shortened, and the delivery-tube is lengthened, the power of the injector is decreased.

If the combining-tube is lengthened, and the delivery-tube is shortened, the power of the injector is increased.

These provisions are important, as in some cases a boiler is required to furnish a large amount of steam at a low pressure, and it, therefore, needs a rapid supply of water. In other cases, only a small amount of steam at a high pressure is required, and consequently less water. A change in the proportionate lengths of the combining and delivery tubes, as above, will allow of the same-sized injector being used in various conditions.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an injector, the delivery-tube and the combining-tube, having a telescopic connection, substantially as and for the purpose set forth.

2. The combining-tube H, with the delivery-tube D' projecting thereinto, and the space

R between the tubes, in combination with the overflow and the water and steam supply, substantially as and for the purpose set forth.

SAMUEL RUE.

Witnesses:

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G. S. HETHERINGTON.