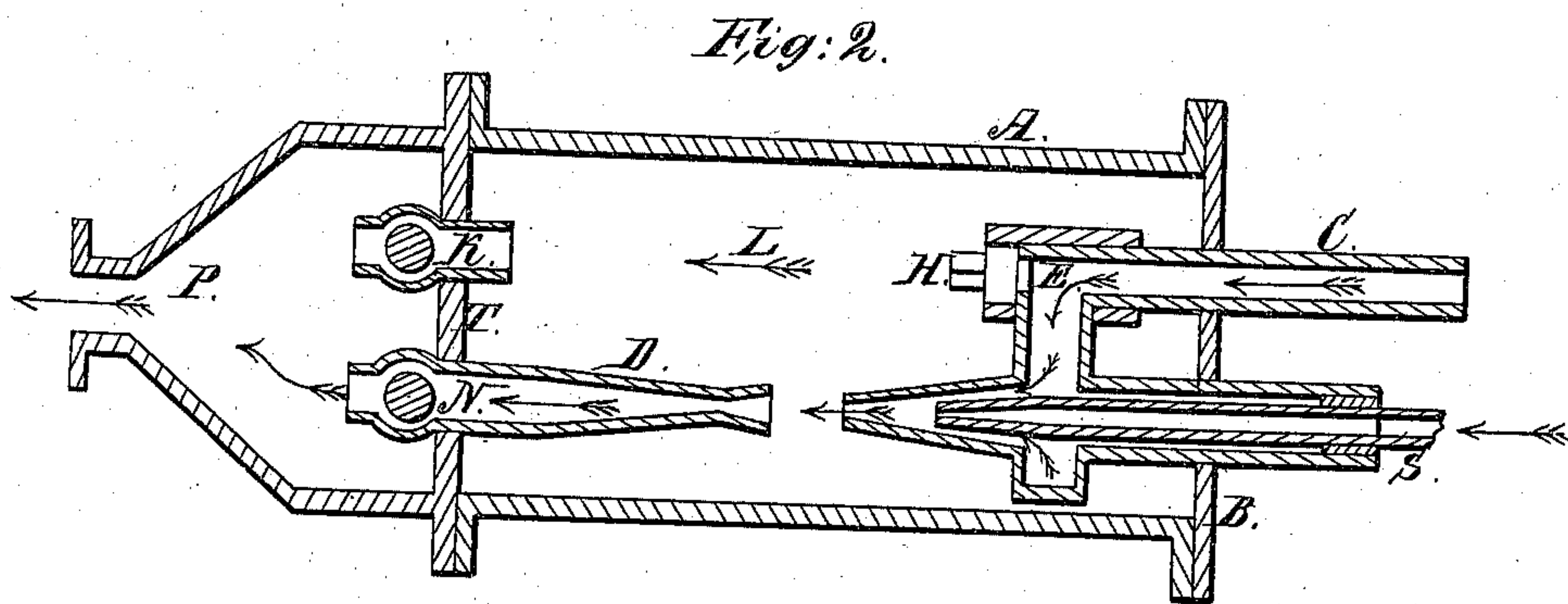
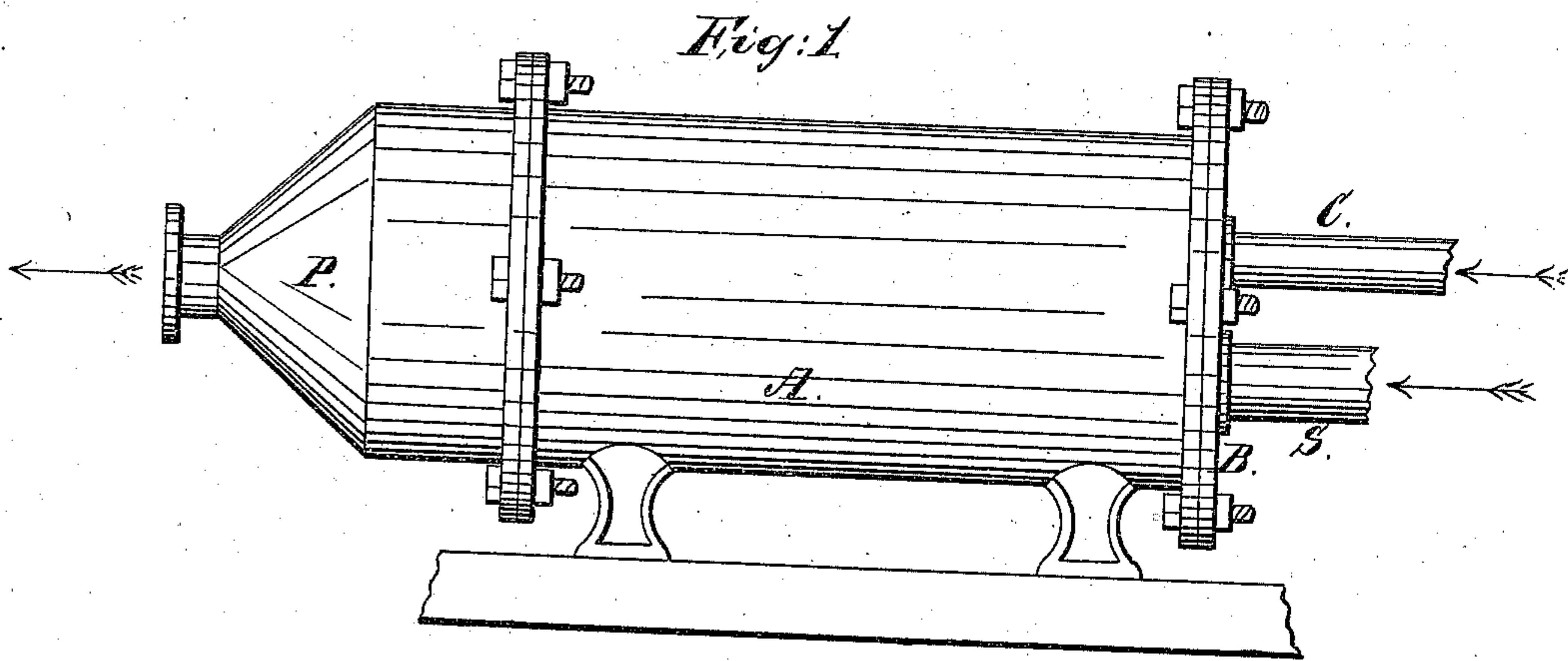


*L. B. Powelson,*

*Ejecting Pump.*

*N<sup>o</sup> 83543.*

*Patented Oct. 27, 1868.*



*Witnesses:*

*Josiah W. Ellis*  
*John C. Carter*

*Inventor:*

*Louis B. Powelson*



LOUIS B. POWELSON, OF PITTSBURG, PENNSYLVANIA.

*Letters Patent No. 83,543, dated October 27, 1868.*

**IMPROVEMENT IN FEED-WATER HEATERS.**

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, LOUIS B. POWELSON, of the city of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Feed-Water Heaters and Injectors; and I hereby declare that the following is a full, clear, and exact description of my invention, reference being had to the accompanying drawings, forming part of this specification, and to the letters of reference marked thereon.

To enable others to understand, make, and put in operation my invention, I will proceed to describe it, by reference to the accompanying drawings, wherein—

Figure 1 represents an outside view of the cylinder and pipes.

Figure 2 represents a longitudinal vertical section of the same, showing the arrangement.

All the drawings are lettered, and similar letters denote corresponding parts in both the views.

To make my improvement, I take an ordinary injector, similar to the Giffard injector, and enclose it in an air-tight metallic cylinder, A, allowing the feed-water pipe C, and steam-pipe S, to project some distance through the head, B, in the rear end of the cylinder, so as to connect with other pipes, the receiving nozzle D of the injector being secured to and passing through a flat interior head, T, in the other end of the cylinder, so as to lead the water into a large conical cap, P, attached thereto, from whence it may be conveyed, by suitable pipes, to the boiler. But in order

to admit of water being forced into the boiler, by means of pumps or otherwise, through the same pipes that are used for the injector, in case it should get out of repair, I form an opening in the elbow E of the supply-pipe, so that when the injector is not in use, water may be forced directly into the cylinder A, and from thence, in the direction of the arrow L, through a valve, K, in the interior head T, and on a line therewith into the conical cap P, as before; steam, at the same time, being admitted, if necessary, through the pipe S into the cylinder, in sufficient quantity to heat the water on its passage.

But where the injector is used exclusively for forcing water, I close up the opening in the elbow E of the supply-pipe C, by a screw-plug, H, so as to compel all the water to pass through the injector into the receiving-nozzle D, and pass the valve N, on a line therewith. By this arrangement I am enabled to make the cylinder A act the part of heater and a continuation of supply-pipe.

Having thus briefly described my invention—

I claim, not any of the specified parts in severalty, but an improved feed-water apparatus, consisting of the several parts specified, all combined, constructed, and arranged as described..

LOUIS B. POWELSON.

Witnesses:

JOSIAH W. ELLS,  
JOHN C. CARTER.