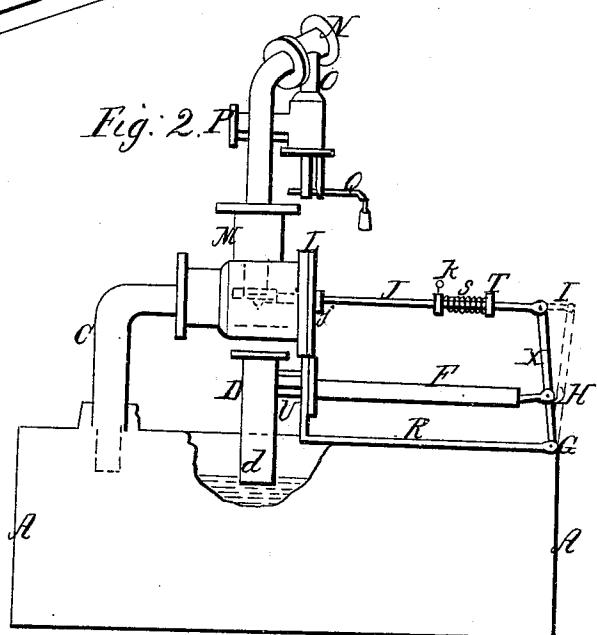
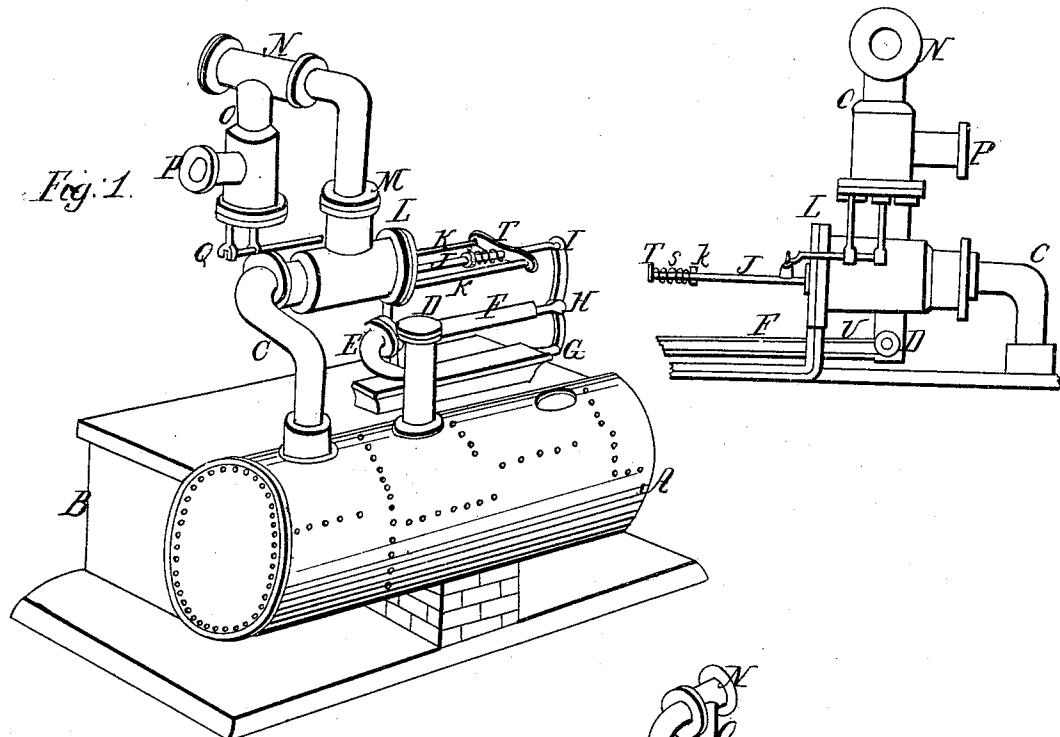


*J. Rodell*

## Boiler Feeder.

N<sup>o</sup> 88,005.

Patented May 23, 1869.



*Witnesses;*

Aaron B. Lutz  
C. Becker Library

Inventor;

Julius Boden



JULIUS BODEN, OF COLUMBIA, PENNSYLVANIA.

Letters Patent No. 88,005, dated March 23, 1869.

IMPROVED AUTOMATIC BOILER-FEEDER.

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, JULIUS BODEN, of Columbia, in the county of Lancaster, and State of Pennsylvania, have invented a new and improved Mode of a Self-Feeding Device for Steam-Boilers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of its application.

Figure 2 and Figure 3, vertical or descriptive views, to further illustrate the parts in combination.

The nature of my invention consists in making available, in the manner herein described, the expansibility of copper by heat, for the purpose of operating a valve to admit or shut off water to steam-boilers.

The cylinders and pipe, shown in fig. 1, in themselves, have no special novelty, which rather consists in the arrangement of the parts to adapt them to the device for operating the valve, to admit water to the boiler.

This device consists of a heating-pipe, D, which dips any desired depth into the boiler. This has a branch-pipe, U, that opens into a copper tube, F, say seven feet long, and two inches or more in diameter. This copper tube is closed at the other end, by an iron rod and slotted eye, H, for a lever, X. This lever is fixed to a similar slotted eye, G, below, and connected by a pivot.

The upper end of the lever is connected in like manner to the end of a valve-rod, J, at I. This valve-rod has the ordinary stuffing-box j, guides K, and cross-head T, and enters the cylinder L, in which it operates the valve that admits water from M, through the pipe C, to the boiler A.

N shows a pipe-connection from a tank, pump, or source of the water.

P shows the connection through which the excess of water passes off, together with a weighted lever, Q, to regulate the pressure and action of the valve.

The operation is such that when the water within the boiler comes below the level of the open pipe D, the heated steam or vapor enters it, and consequently heats the copper tube, which thereby increases at least one inch in length, thereby acting with sufficient power to move the connecting-arm, or compound lever X, enough to open the valve, by its connection with the rod J, and allow the water above to descend into the boiler, through the pipe C, until the water rises, so as to close the opening of pipe D. Thus the heat is shut off, and the valve will close by the joint action of cooling, aided by a coiled spring, s, around the valve-rod, between the cross-head T and slip-nut K, held by a thumb-screw.

I am aware that the expansible property of metals has been variously utilized in mechanics, but I am not aware that it has ever been applied as a means to feed steam-boilers substantially in the manner herein set forth.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement, in reference to the boiler, of the pipe D and branch U, the tube F, and the other devices for operating the valve in the cylinder L, with the pipes M and O, and safety-valve and lever Q, all as herein described.

JULIUS BODEN.

Witnesses:

AARON R. LUTZ,  
C. LADENBURGER.