(No Model.)

W. S. CLARK.

RANGE BOILER ATTACHMENT.

No. 478,688. Patented July 12, 1892.

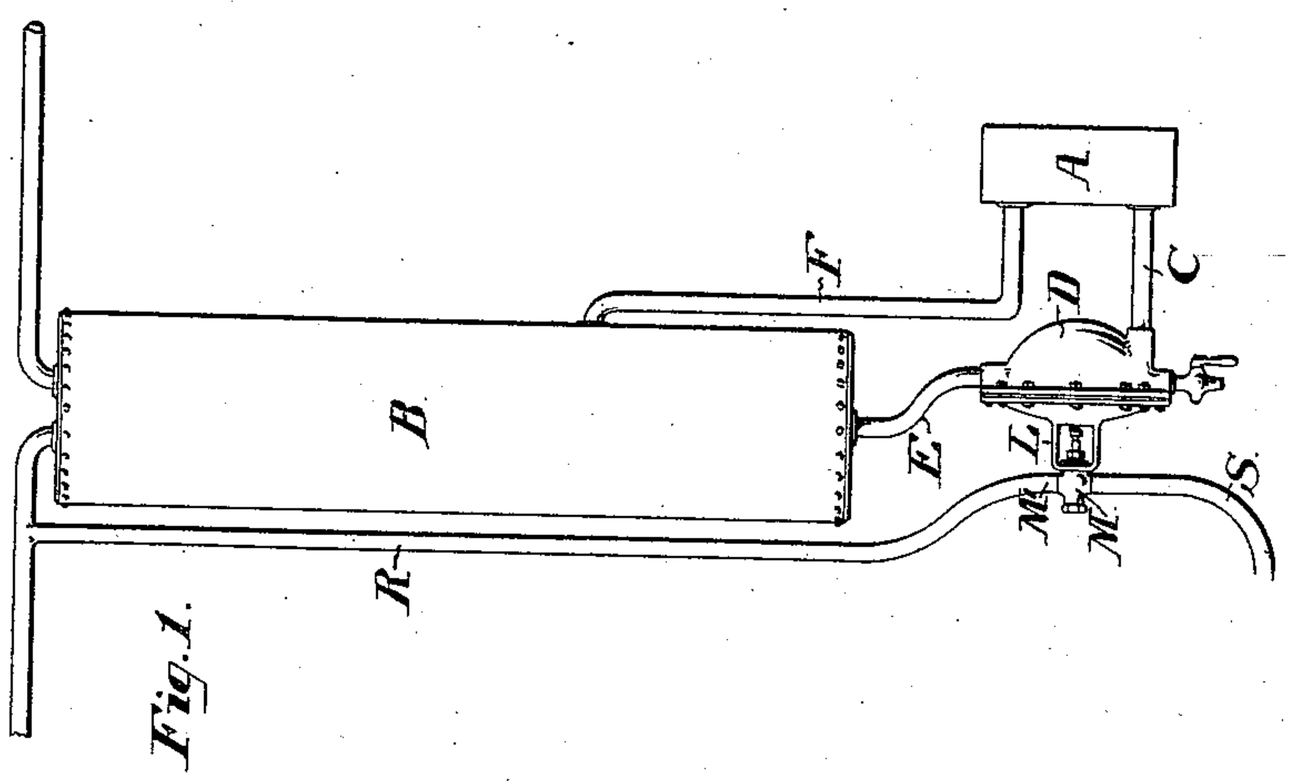

Fig. 1.

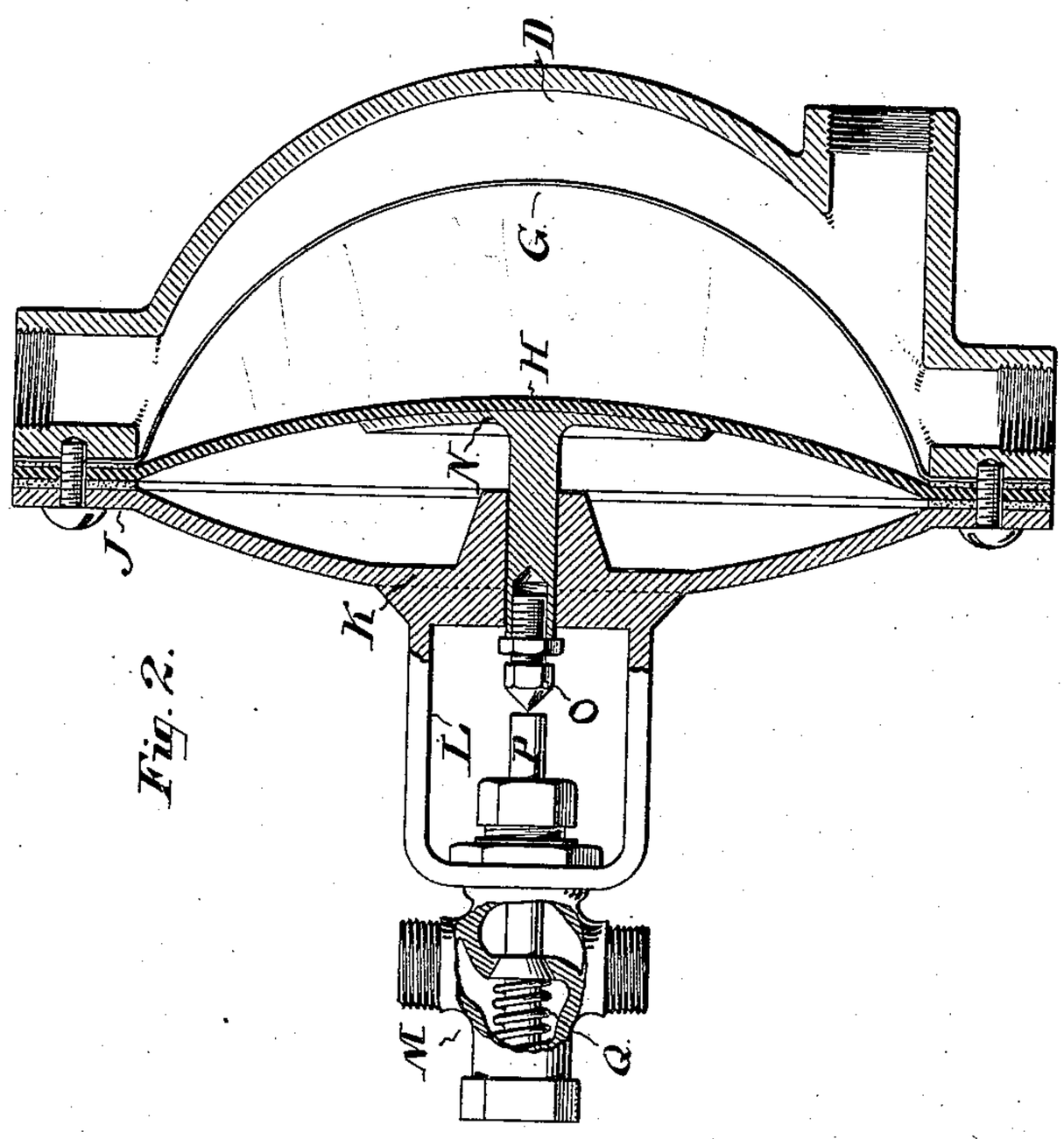

Fig. 2.

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WILLIAM S. CLARK, OF PHILADELPHIA, PENNSYLVANIA.

RANGE-BOILER ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 478,688, dated July 12, 1892.

Application filed April 18, 1890. Serial No. 348,476. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. CLARK, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Range-Boiler Attachments; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof as to enable others skilled in the art to make and use the said invention.

This invention relates to the hot-water appliances connected with culinary stoves and ranges, and has for its object the avoidance of annoyance of excessive temperature and steam generation in the boilers attached to ranges.

It consists in a chamber, through which the hot water circulates from the water-back of a range or stove in its passage to the reservoir or boiler, and in this chamber an inclosed vessel containing air and provided with an expansible diaphragm which is inflated when the air inclosed rises in temperature and again collapses when the temperature is reduced. Connected to this diaphragm and operated by it is a valve arranged to open a discharge aperture or tube from the upper part of the boiler and permit hot water to escape when the temperature rises to an undesirable degree.

The invention is shown in the accompanying drawings, in which Figure 1 represents a range-boiler with this applian e connected thereto, and Fig. 2 a sectional view of the apparatus for working the valve.

A is the water-back of the stove; B, the boiler; C, a tube leading from the bottom of the water-back to the bottom of the chamber D; E, a tube leading from the top of the chamber D to the bottom of the boiler B; F, a tube leading from the side of the boiler B to the upper part of the water-back A.

G is a copper bowl fitted and secured fluid-tight in the chamber D; H, a diaphragm secured fluid-tight to the mouth of said bowl by means of the flange J, having centrally attached thereto a guide K and a yoke L, by means of which a valve-body M is secured to the vessel D.

N is a plunger resting against a diaphragm H and having a stem with a regulating-screw bearing against the stem of the valve P in the valve-body M. A spiral spring Q in the valve-body M serves to close the valve P upon its seat. A pipe R leads from the top of the boiler B to the upper branch M′ of the valve-body M, and the waste-pipe S leads from the lower branch of the valve-body M. When the temperature of the air rises in the bowl G in consequence of the high temperature of the water in the vessel D, the air expands, acting on the diaphragm H and forcing it outwardly and pressing the screw O against the valve-stem P and opening the valve, permitting an escape of hot water from the upper part of the boiler B through the pipe R, downwardly through the valve-body M, and out through the waste-pipe S. The water so escaping is replaced by colder water from the pipe F, and the temperature then becoming reduced cools the air in the bowl G, and the contraction of the air therein inclosed permits the diaphragm H to collapse, and the reaction of the spring Q and the pressure of the water on the valve P closes said valve until the temperature again rises sufficiently to again expand the air in the bowl G and reopen it, thus venting or emptying the hot water from the boiler B and avoiding the formation of steam therein with the usual annoyance of the crackling sounds in the connected pipes, due to the consequent condensation of steam therein, and protecting the connected pipes from the hammering effect of water columns moved by the steam-pressure and the reaction from condensation thereof.

Having described my invention, what I claim is—

The combination, with the boiler B and its connecting-tubes E, F, and R, of the water-back A, the vessel D, the bowl G, the diaphragm H, the plunger N, and the connected valve P, all arranged substantially as shown and described, and for the purpose set forth.

WILLIAM S. CLARK.

Witnesses:

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