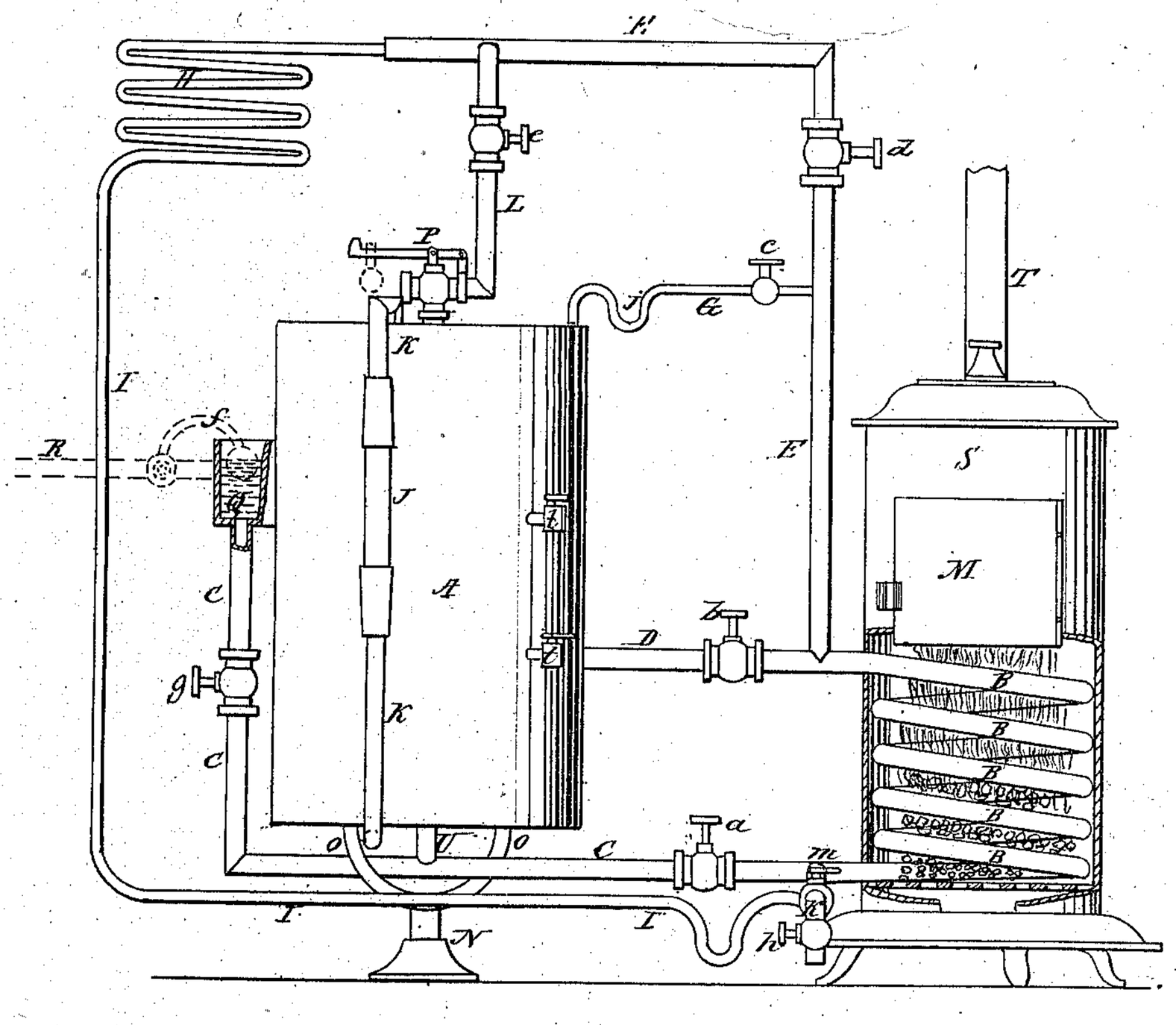
J. C. Ryan.

Water Heater.

No. 83,552. Patented Oct. 27, 1868.



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UNITED STATES PATENT OFFICE.

JOHN C. RYAN, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN WATER-HEATING APPARATUS.

Specification forming part of Letters Patent No. **83,552**, dated October 27, 1868.

To all whom it may concern:

Be it known that I, JOHN C. RYAN, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Water-Heating Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The object of this invention is to provide an apparatus for heating water and circulating the same, to obtain the greatest amount of steam heat or hot water from the fire of an ordinary stove.

It is designed more particularly for shop and household use, though it is equally applicable in situations where it is desirable to economize fuel and utilize the heat of one stove for warming other parts of the building.

It consists of a boiler containing water, and being provided with a coil of pipe, one end of which communicates with a tank or reservoir, and also with the bottom of the boiler, while the other end communicates with the boiler at some point below the general water-level of the same. The coil is thus in communication with the boiler and with the source of supply, so that the level of water in the boiler can be maintained. The body of the coil is located within an ordinary upright cylindrical stove. The turns of the coil pass around and against the wall of the stove, and at that part usually occupied by the earthen lining of the same. In this position the coil serves as a lining, and is in immediate contact with the fire where the heat thereof is utilized in heating the water in the coil, which, being heated, passes upward into the boiler, while the water from the tank enters the coil from below, thus instituting a rapid circulation of the water, and keeping the main body of it hot.

It consists also of other pipes and apparatus for passing the heat and water, and reconveying it back to the coil, and which, with other devices, perfecting the whole, is duly set forth in the following.

S is the stove, and T and M the pipe and door of the same. The coil B is shown by removing a portion of the stove below the door.

C is the supply-pipe leading from the tank Q, and is provided with cocks, a cock or globe-valve, *g*, for regulating the supply from the tank, and a cock or valve, *a*, for regulating the rapidity of the circulation, so that the water in the boiler can be maintained at any desired temperature within ordinary limits.

The short pipe U connects the pipe C with the bottom of the boiler, and allows the water to circulate from the boiler through the coil.

The boiler is supported by the base N and branched rods *o o*, or by other suitable means, and is provided with gage-cocks *l l* and a glass gage, J, connected with the top and bottom by pipes K K, all of the usual construction.

The pipe E leads from the pipe D between the coil and boiler to the heater H, which may be placed in any room or equivalent position as a warming apparatus. The pipe E is also connected with the top of the boiler by two pipes, L and G.

The pipe L is provided with a cock or globe-valve, *e*, and the pipe G is similarly provided with a cock or valve, *c*, both of which are between the pipe E and the steam-space of the boiler. The pipe E is likewise provided with a cock or valve, *d*, which is between its junction of the pipes L and G.

A pipe, I, connects the heater H with the pipe C near the coil B, at which point is a cock, *m*. The cock *h* is for the purpose of drawing off the water from the coil and boiler when not required.

The tank is supplied from the general water-source by a pipe, R, and the supply is regulated with the well-known float-ball and cock, as shown at *f*.

P is a safety-valve, weighted to any desired pressure.

The operation of the apparatus is as follows: The water in the boiler, being duly heated, supplies steam to the heater H, which is taken from the pipe D through the pipe E, the valve *d* being set to regulate the quantity at will. The condensed steam from the heater is returned to the coil by the pipe I, and discharged therefrom by means of the cock *h*. If desired, this cock may be closed and the blow-off cock *m* opened, which will open communication from the pipe I to the coil. The pipe L also admits steam to the heater H when less degree of heat is required, in which case the safety-

valve weight will be adjusted to exert lighter pressure on its valve.

The pipe G relieves the water in the coil from any back-pressure, and obviates the spluttering and snapping noise in the boiler which would otherwise occur.

I claim as new and desire to secure by Letters Patent—

The combination of the pipes E D L C with the boiler A, stove S, and coil B, whereby the circulation of water is effected, as above described, and at the same time the steam is taken from the pipe D or vessel A and conveyed to the heater H, as herein set forth, for the purpose specified.

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Witnesses:
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