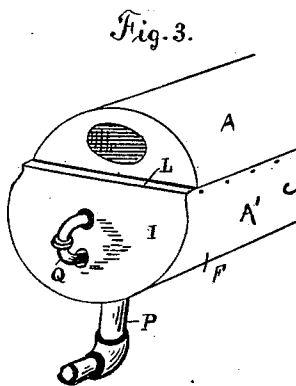
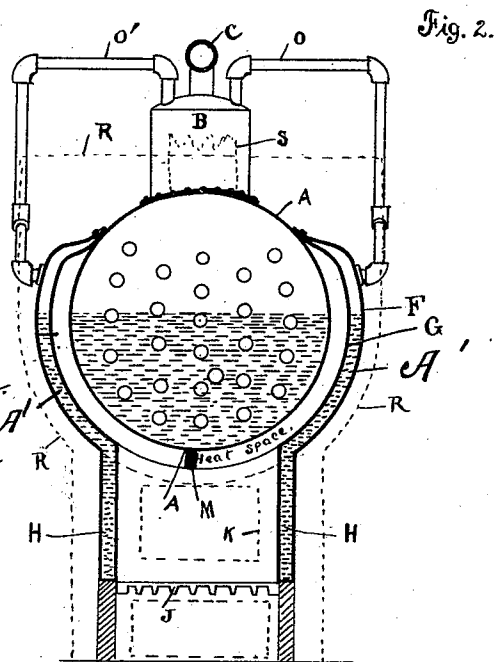
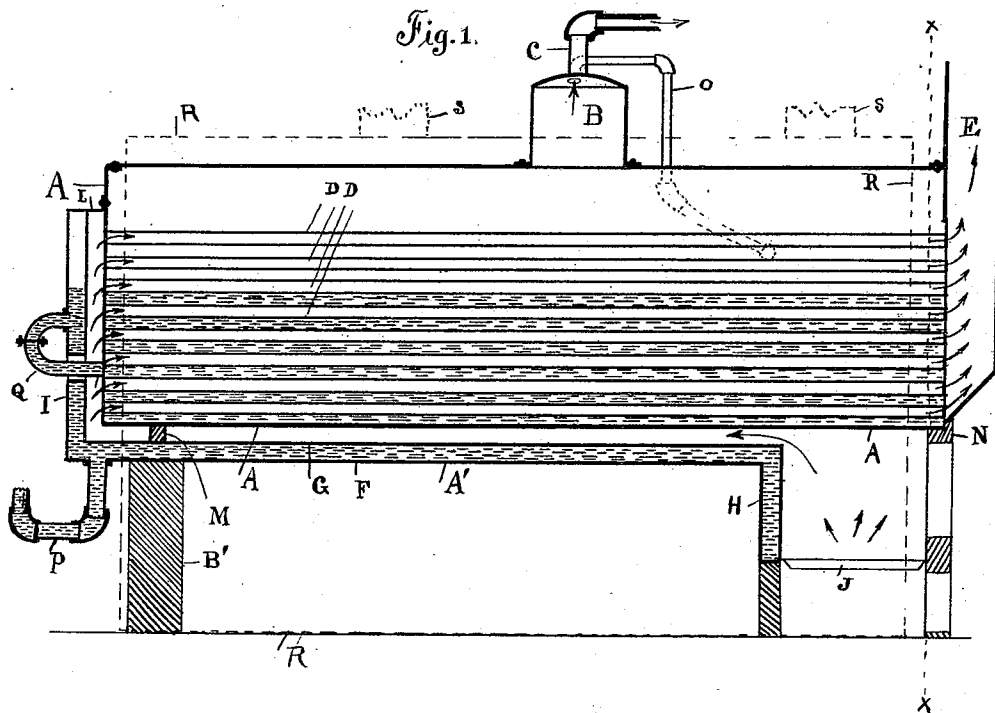


(No Model.)

R. M. COX & R. CLARK.
STEAM HEATER.

No. 473,251.

Patented Apr. 19, 1892.



Witnesses
O. J. Clough
A. Keithley

Inventors.
Robert M. Cox.
Robert Clark.
By L. M. Thurston
Att.

UNITED STATES PATENT OFFICE.

ROBERT M. COX AND ROBERT CLARK, OF PEORIA, ILLINOIS.

STEAM-HEATER.

SPECIFICATION forming part of Letters Patent No. 473,251, dated April 19, 1892.

Application filed April 22, 1891. Serial No. 389,921. (No model.)

To all whom it may concern:

Be it known that we, ROBERT M. COX and ROBERT CLARK, citizens of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Steam-Heaters; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in steam-heaters.

The object of the invention is to provide a boiler of peculiar construction which will generate more steam with the same or less amount of heat than other boilers by placing a water-shell partly around the main boiler and letting the heat which is used to generate steam in the boiler proper also generate steam in said water-shell; and, furthermore, the object of the invention is that the steam generated in the water-shell may be carried by pipes to the boiler proper, and also the water from the steam-radiators may be returned to the water-shell and boiler alike through suitable pipes, and also the heat which is generated around the exterior of the boiler and shell may be utilized for heating purposes by conducting it by pipes to the room or rooms to be heated.

In the drawings hereto annexed, Figure 1 represents a vertical longitudinal section of the boiler, shell, &c. Fig. 2 represents a vertical end section through dotted line *xx*, Fig. 1. Fig. 3 is a rear view of the boiler and a water-shell used in connection therewith.

A represents the boiler, and B represents a steam-dome ordinarily used on apparatus of this nature. An ordinary steam-pipe C is screwed into the said dome for supplying the radiators.

D D represent the flues of the boiler, and E the smoke-conduit.

The new features and construction in this heater may be understood from the following: Extending part way around the circumference of the boiler A is a water-shell A', made of boiler-iron and consisting of the semicircular

curved plate F, which is placed, as shown, over a second smaller curved plate of boiler-iron G. These two plates are so placed as to leave a space of about four or five inches between them all around, except at the upper edges, which are bent together and riveted steam-tight. The riveted edges are then bent toward each other, so that when the boiler is placed in position the said edges press firmly against said boiler, thus keeping the smoke, &c., from escaping. A water-leg H is formed at the forward end of the water-shell and which is simply a part of said shell, and which leg drops below the lowest extremity of the said water-shell and surrounds the grate J on three sides only—*i. e.*, the back and both sides, the front being left free for the door K, Fig. 2. The rear end of the water-shell rises at the back of the boiler to a point above the flues D D, as shown, and the flange L of the said water-shell rests against the end of the boiler A, as shown in Fig. 3, so that the said flange L keeps the smoke from escaping before passing through the flues D D. In placing the boiler within the water-shell the said boiler is raised up and slid along in the water-shell until the rear end of said boiler strikes against the flange L. The rear end of the boiler is held up above the water-shell A' by a standard M, which rests upon the plate G of the said water-shell A'. This supports the boiler above the said water-shell about five or six inches. The forward end of the boiler is held on a level with the rear end of the boiler by the "boiler front" N. By the construction just described it may be seen that the boiler has a heat-space between it and the water-shell, so that the smoke and heat rises from the grate and impinges on the bottom of said boiler and heats it and also the water-leg H and the shell A', said heat passing along between the boiler and water-shell, and rises between the rear end of said boiler and the rear upper extremity I of water-shell and passes through flues D D into chimney or smoke-conduit. It will be thus seen that the water-shell takes the place of the brick-work generally used in boilers of this character and that the heat wasted in the useless and unavoidable heating of the said brick-work is used instead to heat an extra boiler, as it were.

In Figs. 1 and 2 may be seen two steam-pipes O and O', which connect the water-shell with the dome of the boiler. These pipes are of course connected to the said water-shell above the water-line, and the object of said pipes is to convey the steam from the steam-space of the water-shell A' to the boiler. As the water returns from the radiators it descends through the return-pipe P and rises into the water-shell, and it must as a necessity enter also into the boiler, which it does through a pipe Q for the purposes, which is shown at the rear of the boiler and which connects the water-shell with the said boiler, as may be seen, and through this pipe the water flows in, finding its level.

This apparatus may also be used as a furnace at the same time by placing an iron casing R entirely over and around the device and bringing the said iron up to the boiler front, and a conduit or conduits S S convey the heat to the room or rooms to be heated, all of which may be seen in Figs. 1 and 2. The heat for said purpose is of course generated by the exterior surface of the boiler, &c. The rear end of the boiler and shell is supported by a brick or other standard B', while

the front of same is supported by the ordinary boiler front.

This apparatus has been thoroughly tested and gives entire satisfaction in every-day use, and the peculiar construction of the said apparatus enables the boiler to do more work and at the same time with a much less amount of fuel than any boiler known.

We claim—

The herein-described steam-boiler, consisting of a flanged water-shell and steam-dome, of a concentric hot-air space between the boiler and shell, the return-pipe connected to said shell, the equalizing-pipe Q, passed through the shell, the steam-pipes connecting the water-shell with said dome, said water-shell being entirely disconnected from said boiler, except at the point of connection formed by the equalizing-pipe and dome, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ROBERT M. COX.
ROBT. CLARK.

Witnesses:

L. J. LIEBENSTEIN,
WALTER HOPKINS.