(No Model.)

T. McDONOUGH.

STEAM BOILER.

No. 252,788. Patented Jan. 24, 1882.

Fig. 3.

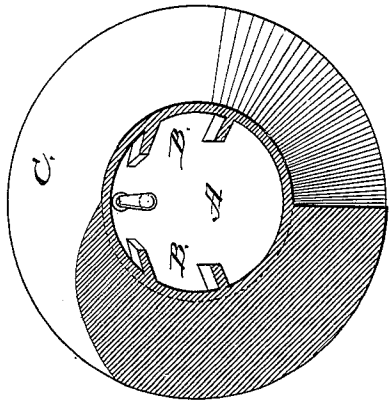


Fig. 2.

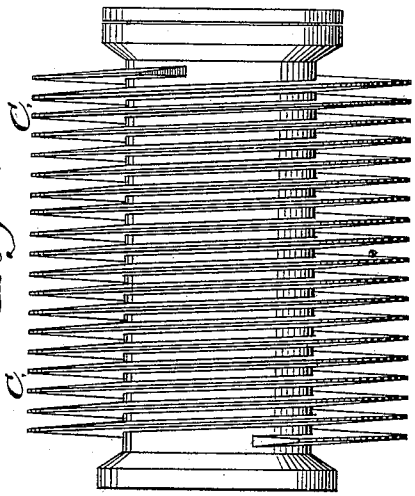
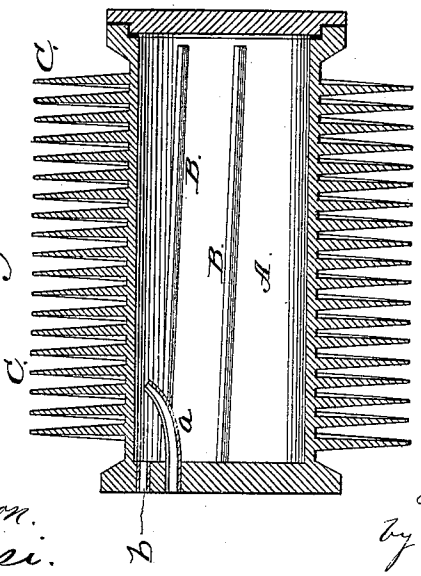


Fig. 1.



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS McDONOUGH, OF MONTCLAIR, NEW JERSEY.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 252,768, dated January 24, 1882.

Application filed October 10, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS McDONOUGH, a citizen of the United States, resident at Montclair, in the county of Essex and State of New Jersey, have invented a new and valuable Improvement in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal section of my invention. Fig. 2 is a side elevation thereof, and Fig. 3 is a cross-section of the same.

This invention has relation to steam-boilers in which water is injected to the boiler, commonly known as "flash-boilers;" and it consists in the novel construction and arrangement of a boiler provided with interior sloping gutters extending longitudinally of the same, and external screw-flanges or disks extending from end to end of the boiler, as will be hereinafter fully described, and particularly pointed out in the claims.

In the ordinary small power or flash boilers the injected water is not equally distributed, and consequently some parts of the boiler are unduly heated and thereby strained. To obviate these difficulties I provide the inner sides of a plain cylindrical or rectangular boiler, A, with sloping channels or gutters B, as shown, so that the water pumped or injected against the roof of the boiler will part run down the gutters B. In practice the force of the jet against the iron scatters the water sufficiently to cause part of it to run down the gutters to the bottom and part to drop at once to the bottom, so that the water is very equally distributed. The water falling upon the gutters flows through them successively at the sides until it reaches the bottom of the boiler.

The exterior of the boiler is provided with integral spiral flanges C, although metal disks may be employed in lieu thereof, in order to produce uninterrupted conductivity. The flanges of the spiral C are three-eighths inch thick at the boiler, and extend five inches therefrom, and terminate in points one-eighth inch thick. I adopt this length—five inches—because I have found from practice that if made longer their edges will be melted away, thus demonstrating that the heat is furnished faster at a distance greater than five inches from the boiler than it can be conducted away and imparted to the water. The object of these flanges is to absorb as much on their two sides of five inches as the water will take up on the three-eighths or internal boiler-edge. The heat is very evenly distributed by this form of construction, so that no part of the shell becomes unduly heated. A greater or lesser quantity of water in the boiler is unimportant, the supply of steam regular, and when the boiler is emptied and water injected it dose not take the spheroidal form, the internal construction keeping the iron at the same temperature throughout its inner surface.

I am aware that external projections have been used for various purposes, such as for directing the currents of air or as radiators to diffuse heated currents externally, and these I do not claim.

The injection-tube *a* extends a short distance within the boiler, as shown, and the escape *b* for the steam may be located above it; but this arrangement may be varied without departing from my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described method of absorbing furnace-heat, consisting in injecting water against the roof of a boiler and conducting the portions that do not fall directly to the bottom of the same by sloping gutters at the sides thereof, as set forth.

2. In a steam-boiler, the boiler A, provided with the interior sloping gutters, B, and the external spiral flanges, C, combined and operating substantially as and for the purposes specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

THOMAS McDONOUGH.

Witnesses:

E. C. FULLER,

EDWIN J. HUESTIS.