

C. K. HEATH.

DROP-TUBE STEAM BOILER

No. 189,216.

Patented April 3, 1877.

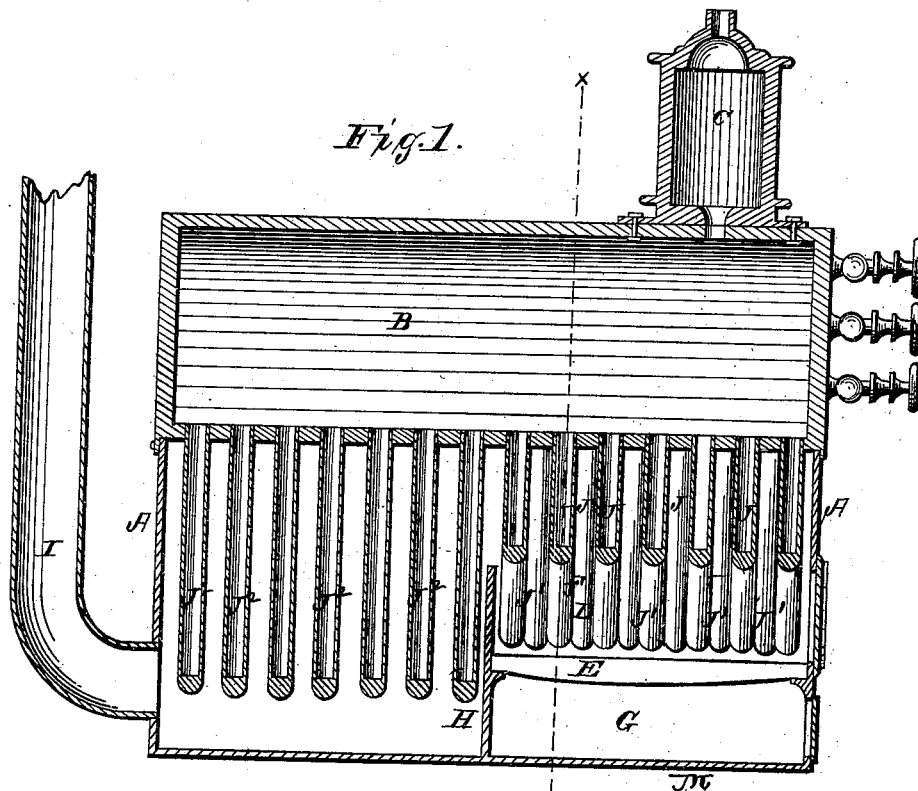
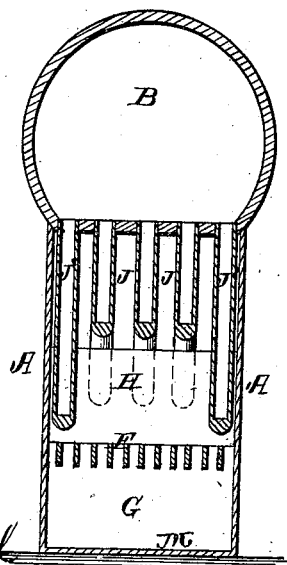


Fig. 1.

Fig. 2.



WITNESSES
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UNITED STATES PATENT OFFICE

COURTNEY K. HEATH, OF TOLEDO, OHIO.

IMPROVEMENT IN DROP-TUBE STEAM-BOILERS.

Specification forming part of Letters Patent No. **189,216**, dated April 3, 1877; application filed August 12, 1876.

To all whom it may concern:

Be it known that I, COURTNEY K. HEATH, of Toledo, in the county of Lucas, and in the State of Ohio, have invented certain new and useful Improvements in Steam-Boilers; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The object of my invention is to make a small, compact, and cheap portable steam-boiler on the drop-tube or safety plan; and the nature of my invention consists in the construction and arrangement of a steam and water chamber with short water-tubes over the fire, protecting water-tubes at the sides of the fire-chamber, and long water-tubes in rear thereof, in combination with the grate, bridge-wall, and exterior casing, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a longitudinal section of my improved steam-boiler. Fig. 2 is a transverse vertical section of the same through the line *xx* of Fig. 1.

B represents a horizontal chamber, rounded on the upper side and flattened on the bottom, into which flattened bottom are screwed a number of small water-tubes, J J¹ J², to hang vertically over, behind, and on each side of the fire-space D.

Close around the hanging tubes J J¹ J², the fire-space D, and ash-pit G is placed a sheet-iron jacket or casing, A, in such a manner that the heating-surface is entirely below the

water-line. The whole is placed upon a cast base-plate, M, making a compact portable boiler.

The tubes J directly over the fire are made short to give room for the fuel.

On each side of the fire is placed a row of longer tubes, J¹, reaching nearly to the grate E, and placed close together, thereby making a protecting water-sheet to prevent overheating of the casing A.

The tubes J² behind the fire and bridge-wall H are made still longer to give sufficient heating-surface.

All the tubes are closed at the bottom by welding or other convenient means, and are connected with the chamber B at one end of the tube only.

The tubes should also be provided with interior tubes or other suitable devices for maintaining a circulation of water.

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

The combination, in a horizontal steam-boiler having casing A, with bridge-wall H, of the steam and water chamber B, having rounded top and flat bottom, from which depend the short drop water-tubes J, protecting drop water-tubes J¹ on each side of the fire-box adjacent to the casing, and the long water-tubes J² in the rear of the bridge-wall, all constructed substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 31st day of July, 1876.

COURTNEY K. HEATH.

Witnesses:

J. L. WOLCOTT,
A. T. BARNES.