

H. CAMP.
Steam-Boilers.

No. 134,784.

Patented Jan. 14, 1873.

Fig. 1.

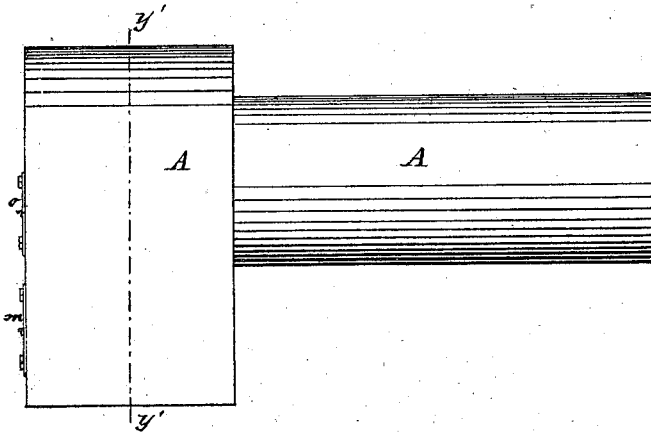


Fig. 2.

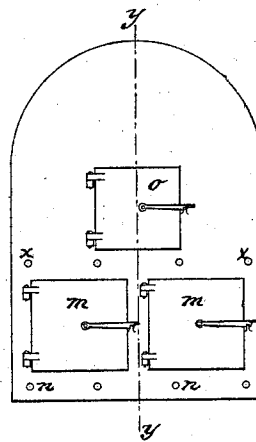


Fig. 3.

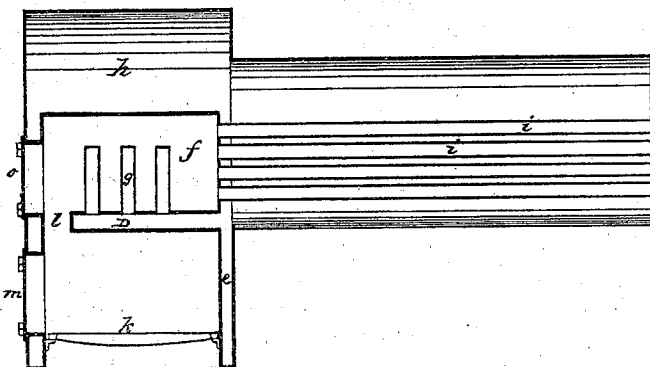
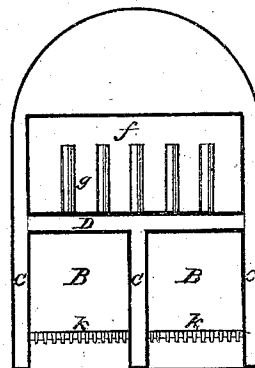


Fig. 4.



Witnesses:
James E. Weaver
Geo. D. Patton

Inventor:
Herman Camp
By J. J. Johnston & Bro.
his attorneys

UNITED STATES PATENT OFFICE.

HERMAN CAMP, OF ROUSEVILLE, PENNSYLVANIA.

IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. 134,784, dated January 14, 1873.

To all whom it may concern:

Be it known that I, HERMAN CAMP, of Rouseville, in the county of Venango and State of Pennsylvania, have invented a new and useful Improvement in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention relates to a steam-boiler; and consists in a combination of a series of water-chambers, flues, tubes, heat and fire chambers arranged with relation to each other, as hereinafter described.

To enable others skilled in the art to make and use my invention, I will proceed to describe more fully its construction and operation.

In the accompanying drawing, which forms part of my specification, Figure 1 is a side elevation of my improvement in steam-boilers; Fig. 2 is a front-end elevation of the same; Fig. 3 is a vertical and longitudinal section at line *y* of Fig. 2; and Fig. 4 is a vertical and transverse section at line *y'* of Fig. 1.

A A represent the shell of the boiler, which is of the usual form and construction. B B represent two fire-chambers, the sides, back ends, and top of which are surrounded with water-chambers C, C, D, and *e*. Above the water-chamber D is a heat-chamber, *f*, which communicates with the fire-chambers B B by means of openings *l*. In the heat-chamber *f* are arranged a series of vertical tubes, *g*, the upper ends of which are closed and the lower ends open and communicating with the water-chamber D. The cylindrical portion of the boiler is provided with a series of tubular flues, *i*, which extend longitudinally through it, connecting the heat-chamber *f* with the ordinary smoke-box usually arranged at the back end of the boiler. *h* represents the ordinary steam-chamber. *k* represents the grate-bars, below the front end of which, in the shell A, are a number of openings, *n*, for the admission of air. *m m* are the fire-doors, above which, in the front end of the shell A, are a series of small apertures, *x*, which communicate with the openings *l* for the admission of air which commingles with the ascending flame

and gases prior to passing into the heat-chamber *f*. The heat-chamber *f* is provided with a door, *o*, which is used for the purpose of cleaning it and the flues *i*.

From the foregoing description, and reference being had to the accompanying drawing, the skillful mechanic will be enabled to construct my improvement in steam-boilers. I will, therefore, proceed to describe its operation.

The boiler being suitably supplied with water a fire is started in the fire-chambers B B, which will heat the water in the chambers C, C, *e*, and D, and the flame and gases ascending from the fires will, in their passage through the openings *l*, have a sufficient amount of air mixed with them to insure perfect combustion, causing a clear and intense heat to pass into the heat-chamber *f* surrounding the tubes *g*, which heat finally passes through the flues *i* into the smoke-box. Wood, coal, oil, or gas may be used as fuel for generating steam in the hereinbefore-described steam-boiler. The manner of using said articles for fuel I leave to the skill and judgment of the operator.

The advantages of my improvement consist in economy of fuel, perfect combustion of it, and rapidity in the generation of steam, all of which are very desirable considerations in steam-boilers.

Having thus described my improvement, what I claim as of my invention is—

1. A steam-boiler provided with water-chambers C C D *e*, heat-chamber *f*, tubes *g*, flues *i*, openings *l x*, and fire-chambers B B, all constructed, combined, and operating with relation to each other, substantially as hereinbefore described, and for the purpose set forth.

2. In a steam-boiler, the combination of one or more fire-chambers with the heat-chamber *f*, tubes *g*, and water-chamber D, constructed and arranged substantially as herein described.

3. In combination with the subject-matter of the second clause of claim, the openings *l* and *x*, arranged substantially as herein described, and for the purpose set forth.

HERMAN CAMP.

Witnesses:

JAMES J. JOHNSTON,
JAMES E. WEAVER.