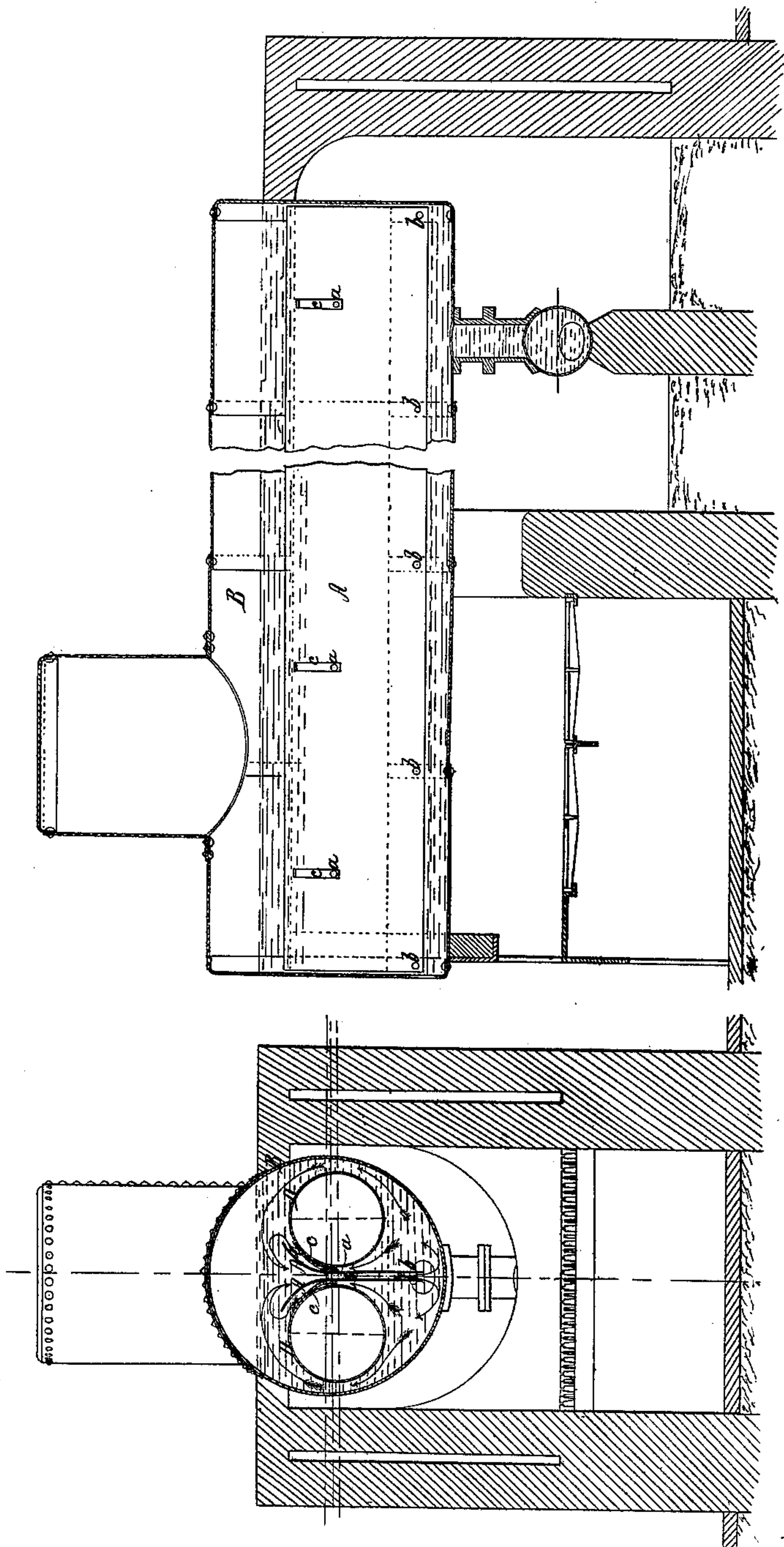


C. Mason.

Steam Generator.

N^o 91247.

Patented Jun. 15, 1869.



Witnesses;
E. A. West
E. B. Sherman

Inventor;
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United States Patent Office.

CARLILE MASON, OF CHICAGO, ILLINOIS.

Letters Patent No. 91,247, dated June 15, 1869.

IMPROVEMENT IN STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CARLILE MASON, of the city of Chicago, in the county of Cook, and State of Illinois, have invented certain new and useful Improvements in Steam-Generators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is an end view of a two-flue boiler, with my device inserted therein.

Figure 2 shows such boiler in section, with such device therein.

The object of my invention is to secure at all times a free circulation of the water in the boiler from top to bottom.

When a high degree of heat is applied to a boiler, the rapid conversion of water into steam frequently prevents the water from coming in close contact with the heated portions, the rising steam interfering with the downward currents, and hence the plates become overheated, and weakened, which is one cause of boiler-explosions. For the same reason, the gauges often indicate a higher stage of water than actually exists in the boiler, thus misleading the engineer.

I have heretofore obtained Letters Patent of the United States for a method of obviating the difficulties mentioned, by the use of a system of circulation-tubes, or pipes, such Letters Patent bearing date, February 2, 1869.

I am able to accomplish the same object, in a somewhat different manner, by placing two metallic plates, a little distance apart, within the boiler, the upper edges of the plates being a little below the water-line, and the lower edges a little above the bottom of the boiler, the plates extending from one end of the boiler to the other.

To enable others skilled in the art to make and use my invention, I proceed to give a particular description of the construction and operation thereof.

A A represent two plates, which may be made of sheet-iron, of such length as to reach from one end to the other of the boiler B, and of such width, that when placed within the boiler, the lower edges may be a little above the bottom, and the upper edges a little below the ordinary water-line.

These two plates, I place about an inch and a half apart, and secure them in position by means of suitable bolts *a b*, placing the upper row of bolts, *a*, some

distance from the upper edges of the plates, so that the plates may be curved over, at the top, from the centre, as seen in fig. 1.

It is not absolutely necessary that these plates A should be curved at the top, as described, but I consider it desirable to give them such form, in order to facilitate the entry of the water between the plates.

Upon the outer sides, and near the top of each plate A, I secure curved arms *c*, sufficient in number to sustain the plates. The bolts *a* may be used for this purpose. These arms have a greater curve than the plates, so as to leave a space between the flues and the plates, for the circulation of the water and rising steam.

When the two plates have been prepared as described, they are placed within the boiler, in the centre thereof, and between the flues, and are suspended therein, as shown, by means of the arms *c*, which rest upon the flues D, though I do not confine myself to this precise method of supporting the plates in the boiler, but I regard it as the most convenient manner.

This improvement can be used with any boiler of ordinary construction, regardless of the number of flues.

I find, from actual use, that when steam is being generated, the steam passes to the surface of the water, outside of, and not between the two plates A, while, at the same time, there is a constant current of water flowing down, between these plates, to the bottom of the boiler, the rapidity of the current depending on the rapidity with which steam is generated. The course of the currents of steam and water is indicated by the arrows in fig. 1.

The plates can be inserted at the man-hole. These plates need not be each made of a single piece of sheet-metal, and the several sections need not be fastened together, and each plate may be made, and inserted in the boiler in sections, both longitudinally and vertically, so constructed as to overlap each other when inserted within the boiler.

What I claim as new, and desire to secure by Letters Patent, is as follows:

The plates A A, located within the boiler, substantially as specified.

CARLILE MASON.

Witnesses:

E. A. WEST,

E. B. SHERMAN.