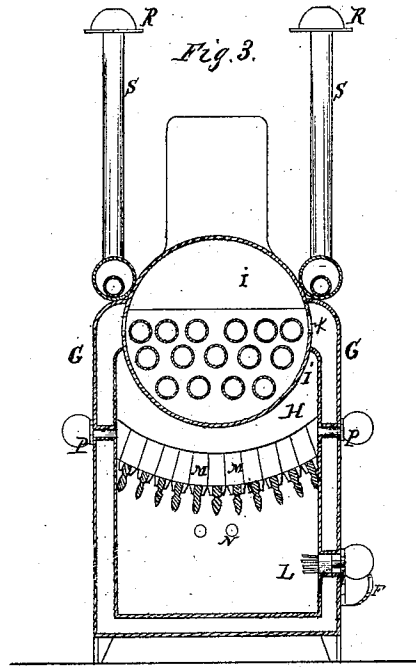
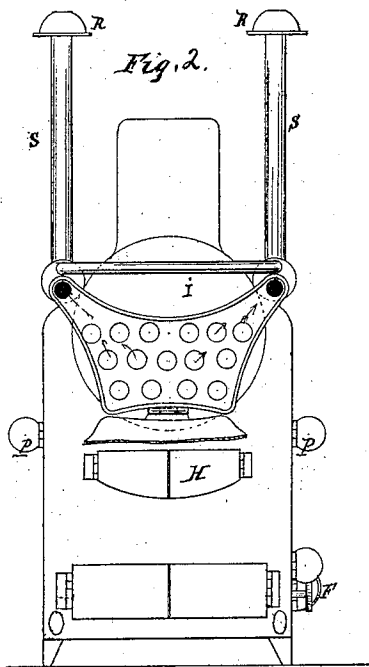
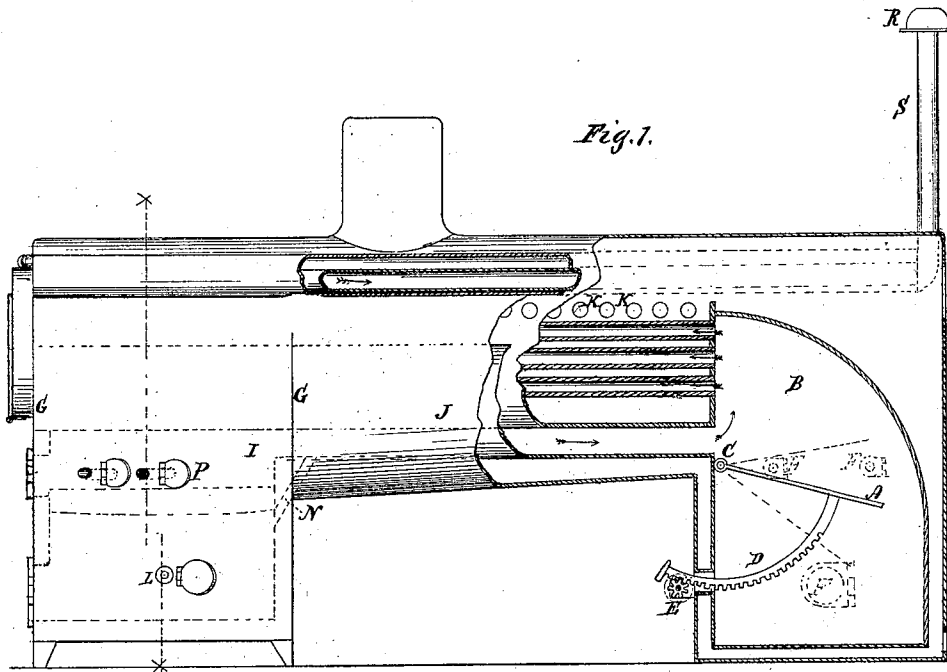


F. Sutter,
Steam Boiler.

No. 110,604.

Patented Dec. 27, 1870.



Witnesses.

J. C. Wildman
Edw. F. Brown

Inventor.

Frederick Sutter
By his Atty -
S. F. Raigart

United States Patent Office.

FREDERICK SULTER, OF CLEVELAND, OHIO.

Letters Patent No. 110,604, dated December 27, 1870.

IMPROVEMENT IN STEAM-BOILERS.

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, FREDERICK SULTER, of Cleveland, Cuyahoga county, State of Ohio, have invented new and useful Improvements in Steam-Boilers, that I style "sheet-metal water-chambers for boilers," and I do hereby declare the following to be an exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 represents a side elevation of the boiler.

Figure 2 exhibits the front and fire-place of the same.

Figure 3 shows the rear end and smoke-pipes.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation, as follows:

The nature of my invention consists in the arrangement and construction of a sheet-metal chamber extending from the front to the rear of the boiler, to contain water, and smoke-pipes extending also the whole length of the boiler on each side at top of the boiler, and apertures along each side of the boiler.

A represents a plate at the inner side of the air-chamber B, suspended upon a hinge, C, at the top of the plate, so that it can be raised and lowered by means of the rack D and pinion E, by which the plate is raised at any angle in the air-chamber, as shown by the dotted lines, so as to catch and drop the cinders or sparks when required, and to diminish the size of the air-chamber by the adjustment of the plate A.

F F are vents or closed apertures of the air-chamber, to regulate the draught when required.

G is a water-chamber, made of sheet-metal, extending the whole length of the boiler, and surrounding the fire-hearth H, the draught-chamber I, the lower half of the boiler-cylinder J, and the air-chamber B, so as to regulate the heat from the fire-place

and prevent a sudden cooling or collapsing of the boiler.

K K are apertures in the steam-boiler J, along the whole length of the boiler.

L is an aperture through the side, in which a nozzle, L, is inserted, and through which a spray of steam can be thrown upon the fire when necessary, the nozzle having small tubes on the end to spread the steam to create a greater heat when required. This nozzle is permanently attached to the side of the frame below the fire-hearth, on the inside, at the ash-pan, and I intend to use a pipe, connected with the top of the steam-boiler or the escape-tube to the nozzle L.

N are air-tubes leading from the ash-pan to the frame above.

P is an oblique aperture to carry cold air into the fire-chamber.

R R are hemispherical caps upon the smoke-pipes S S.

The smoke-pipes extend horizontally on each side of the boiler J, from the front to the rear, where they project upward, and are protected by the hemispherical caps R R, that prevent the wind from affecting the draught or regular escape of the smoke.

The flame passes from the fire-hearth in front to the air-chamber B in the rear, and then returns to the front and escapes at the chimney T. The arrows show the course of the flame.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement of the water-chamber G, smoke-pipes S S, and apertures K K, when constructed and combined with the boiler-cylinder as herein described, and for the purposes set forth.

Witnesses: FREDERICK SULTER.

J. FRANKLIN REIGART.

EDM. F. BROWN.