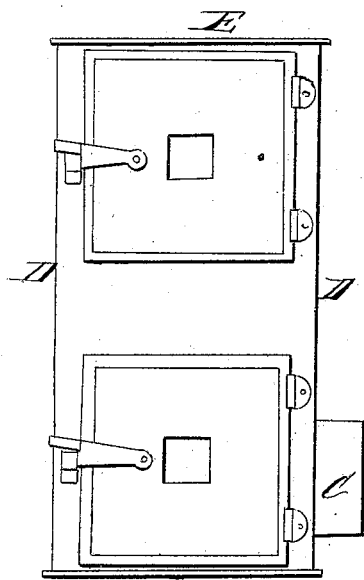
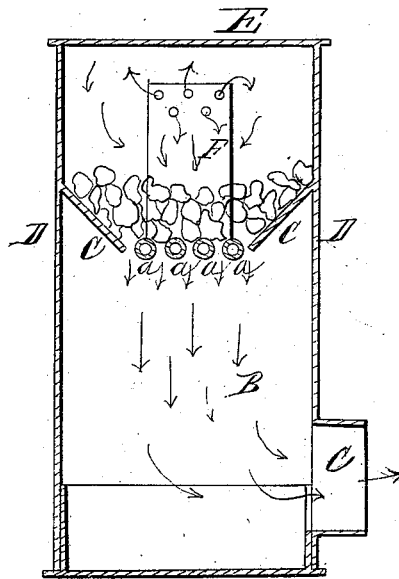


*W. Ennis.*  
*Steam-Boiler Furnace,*  
*Nº 55,079,      Patented May 29, 1866.*

*Fig: 1.*



*Fig: 2*



Witnesses:

*a Leclercq*  
*L. Kolms for*

Inventor:

*William Ennis*

# UNITED STATES PATENT OFFICE.

WILLIAM ENNIS, OF NEW YORK, N. Y.

## IMPROVEMENT IN FURNACES.

Specification forming part of Letters Patent No. 55,079, dated May 29, 1866.

*To all whom it may concern:*

Be it known that I, WILLIAM ENNIS, of the city, county, and State of New York, have invented a new and useful Improvement in Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a front view, showing the exterior of the furnace. Fig. 2 is a vertical elevation, showing the arrangement of the internal parts.

This invention relates to an improvement in that class of furnaces in which steam is brought in contact with the burning fuel in order that its decomposition may increase the combustion of the same; and it consists in causing the steam to pass through the flame through the agency of a downward draft, by which means the steam is more evenly distributed and brought in more intimate contact with the incandescent coal than it is in those furnaces where the steam is passed upward through the grate.

To enable those skilled in the art to understand the construction and operation of my invention, I will proceed to describe it with reference to the drawings.

D represents the sides of the furnace, and E the top. *c c* are inclined plates situated one at each side of the grate, which is formed of hollow bars or tubes *a*, containing water for the generation of steam. The tubular grate *a* terminates at one end in an elevated steam-chamber, F, which is either open at the top or perforated with numerous holes to allow the

steam to escape into the fire-place A. Underneath the grate is the ash-pit B, furnished with a pipe, C, through which, by the use of suitable machinery, an outward draft is produced, which draws the steam downward through the burning fuel, the smoke and unconsumed steam passing into the pipe C. The fire being situated upon the hollow grate *a*, steam is generated by the heat from the water contained in the tubes thereof, and passes into the fire-place A through the chamber F, and is then drawn downward through the burning coal by the draft of the pipe C. Its particles are thus very evenly distributed and brought in contact with the incandescent coal. This decomposes these particles into their elements, the combustion of which increases the heat of the fire.

Having thus described my said invention, I will proceed to state what I claim as new and desire to secure by Letters Patent:

1. In a furnace having a downward draft, the introduction of the steam above the grate in such manner that it may pass downward through the burning fuel and through the grate, substantially as and for the purpose herein set forth.

2. The tubular steam-generating grate and the elevated steam-chamber, in combination with a chimney below the grate, substantially as and for the purpose herein set forth.

WILLIAM ENNIS.

Witnesses:

A. LEClerc,  
J. W. COOMBS.