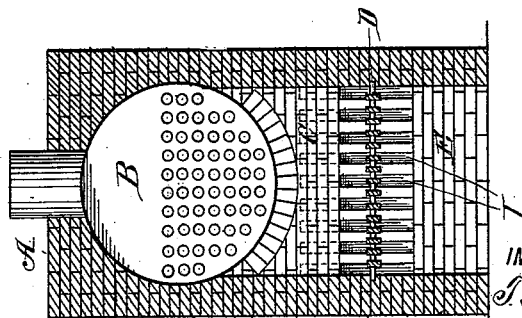
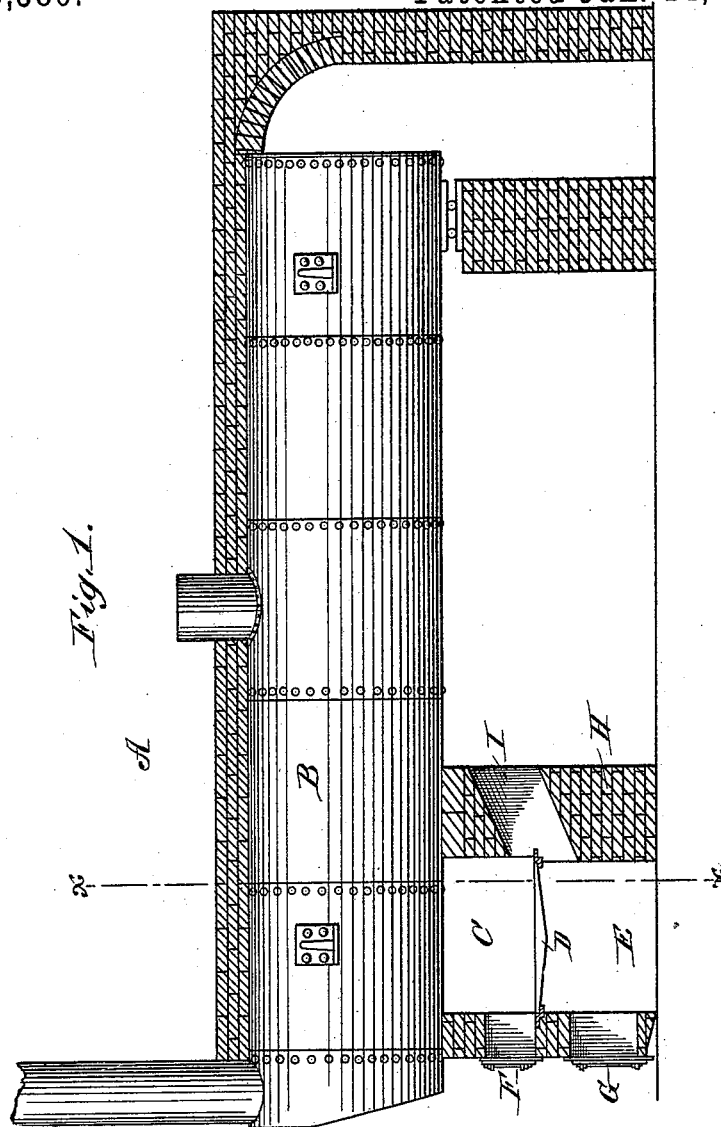


(No Model.)

T. A. TERTELING.
FURNACE.

No. 419,380.

Patented Jan. 14, 1890.



WITNESSES:

W. M. Twitchell.
C. Sedgwick

INVENTOR:

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BY

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

THEODOR A. TERTELING, OF KANSAS CITY, KANSAS, ASSIGNOR TO HIMSELF,
BERNARD H. TERTELING, AND ROBERT L. McALPINE, OF SAME PLACE.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 419,380, dated January 14, 1890.

Application filed April 23, 1889. Serial No. 308,286. (No model.)

To all whom it may concern:

Be it known that I, THEODOR A. TERTELING, of Kansas City, in the county of Wyandotte and State of Kansas, have invented a new and Improved Furnace, of which the following is a full, clear, and exact description.

The invention is an improvement in the class of steam-boiler furnaces in which the bridge-wall is built close up to the boiler and provided with openings that communicate with both the fire-box proper and the ash-pit, (or space below the grate,) so that unconsumed carbon and gases escaping from the fire-box are mingled with air drawn from the ash-pit, thus forming a new combustible compound which ignites and becomes consumed, thereby effecting an economy in fuel.

The improvement consists in the combination and arrangement of parts, as herein described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both figures.

Figure 1 is a sectional side elevation of the improvement, and Fig. 2 is a transverse section of the same on the line *x x* of Fig. 1.

In the walls of the furnace A is supported, in the usual manner, the boiler B, of any approved construction. In the frontend of the furnace A is formed the fire-box C, in which are held the grate-bars D, discharging into the ash-pit E, formed below the said grate-bars. The fire-box C and the ash-pit E are provided with the usual doors F and G, respectively. The bridge-wall H forms a back for the fire-box C and the ash-pit E, and extends close up to and around the boiler B until it meets the side walls of the furnace. In the bridge-wall H are arranged a number of upwardly-slanting and longitudinally-extending openings I, which connect the rear of the furnace with the fire-box C and the ash-pit E. The inner ends of the grate-bars D open about midway of the front ends of the openings I, as is plainly shown in the drawings. The tops of the openings I may be horizontal instead of inclined, as shown in the drawings.

The unconsumed carbon and gases arising from the burning fuel on the grate-bars D in the fire-box C pass into the tops of the openings I, and are there mixed with air from the ash-pit E, passing into the lower parts of the said openings I, the point where they begin to intermingle being at the rear end of the grate, so that there is no appreciable loss of heat, and the most perfect combustion is secured. The mixture of air and gases thus formed in the openings I is combustible, and is ignited by the burning fuel on the grate-bars D. The heat thus generated passes through the openings I into the rear part of the furnace and around the boiler B in the usual manner. At the rear end of the furnace the heat passes into the flues in the boiler, through the same, and into the chimney in the usual manner. Thus it will be seen that by very simple means complete combustion is obtained and the capacity of the boiler is greatly enlarged.

It is to be understood that the part of the bridge-wall H above the openings I in the fire-box C deflects the smoke and gases arising from the fuel, so that the smoke and gases pass into the openings I. As the latter slant upward, the burning gases can escape freely after being ignited by the burning fuel on the grate-bars.

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

As the improvement hereinbefore described, the combination, with the boiler and grate, of the bridge-wall having openings slanting upward, and their inner ends extending both above and below the grate, as shown and described, so that the heated unconsumed carbon and gases from the fire-box and air from the ash-pit mingle freely at the point where the rear end of the grate terminates, as specified.

THEODOR A. TERTELING.

Witnesses:

JOHN B. APPEL,
R. L. McALPINE.