

United States Patent Office.

THOMAS H. CLARK, OF INDIANAPOLIS, INDIANA.

Letters Patent No. 62,007, dated February 12, 1867.

STEAM-BOILER FURNACE.

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, THOMAS H. CLARK, of Indianapolis, in the county of Marion, and State of Indiana, have invented a new and improved Boiler Furnace; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which the nature of this invention consists in causing the products of combustion to be equally distributed under the boilers set in a furnace for the purpose of generating steam, and in preventing them, when several boilers are set in an arch, from passing away diagonally from the boilers most remote from the chimneys. It also consists in supplying, by novel means, oxygen to the furnace to facilitate combustion, by which all the gases are consumed and equally distributed over the fire surface of the boilers.

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

Figure 1 is a front elevation, represented with three boilers.

Figure 2 is a plan view of the same.

Figure 3 is a perspective view of the same, showing one of the sides of the furnace and back part, with a portion broken out.

Figure 4 is a sectional elevation from the line A B.

Figure 5 is a sectional elevation, the section taken from the line C D.

Letters of like name and kind refer to like parts in each of the figures.

A represents three boilers set side by side in a furnace or brick-work, B. These boilers are of common construction, and provided with flues C C, and man-holes D, for the purpose of cleaning the boilers. These boilers are set in such a manner as to leave flues E about six inches under the forward part of the boiler and about eight inches more or less under the rear of the boiler. The reason for this is that the air and gases are more expanded and require more room; the form of the said flues E being that of a semicircle, whose sides are concentric with the sides of the boiler, and communicate with each other by reason of the intersection of their sides at a line about midway of the length of the boilers, their lines of intersection forming respectively the top portion which is made between the lower part of the adjacent boiler. F represents air passages or flues made in the side walls of the furnace, opening out in front for the purpose of admitting air. These flues F extend in the wall back horizontally alongside the boiler and beyond where it enters the outer space or flue E. The object and purpose of these air flues are to admit cold air, in order to keep the walls cool, and to supply oxygen to the fire to facilitate and perfect a more complete combustion. H represents air-tight tubes built in the brick-work underneath the boilers, and opening on each side thereof, as shown in dotted lines in fig. 2. Branch tubes H', more or less under each boiler, communicate with the tube H and flue E. These branch tubes extend in an inclined direction, as shown in figs. 4 and 5, and open into the flue space E upon the inside of the transverse channel I, which intersects the flue E just in rear of the grates. The object of these branch tubes is to supply air to aid in consuming the gases from the burning fuel. The slides E², at the side of the opening I², are for the purpose of regulating the supply of air. The flue E extends beyond the channels I, until they end at the space C', which serves as a general flue chamber to receive the remaining products of combustion which are then distributed to the return flues C, which pass longitudinally through the boilers in the usual way until they are discharged from the upper return flue into the smoke-stack. The channels I are provided with doors at each end in the wall of the furnace, so that access may be had therein for the purpose of removing the ashes that may collect in the said channels. A great advantage is realized from the construction of this furnace from the fact that the heat arising from the products of combustion is caused to move in a straight line with the several boilers by the dividing ridges S which separate the flues E from each other and prevents the heat from moving in a transverse direction with the boilers. When the draught sets toward one side, or toward any particular part of the furnace which may be nearest the chimney, or most directly under the influence where such a division of the smoke and gases takes place in a furnace where several boilers are set side by side, it is evident that the boiler nearest the stack, or which lies in the path or current of draught, receives a more intense and constant heat, and of course generates more steam than the other boilers, and is burnt out and destroyed much sooner than the rest. The ridges S, which separate the flues E from each other, are made of fire-brick, iron, or other suitable material.

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

The combination of a boiler furnace, where one or more boilers are arranged in the same longitudinal plane of the flues E, made concentric in the transverse section with the bottom of the boilers, and which extend beneath the boilers in the direction of their length, and are separated from each other by ridges S, with the transverse channels I, and air channels F and H', and the continuation of the partition between the boilers over the chambers C', leaving a space under the boilers, substantially and for the purposes as herein shown and described.

THOMAS H. CLARK.

Witnesses:

CHAS. E. SWEINHART,

CHARLES WYLIE.