T. H. Clark,

Steam-Boiler Furnace,

No. 47,619, Patented May 9, 1865.

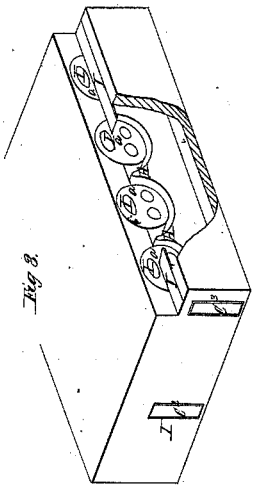

Fig 3.

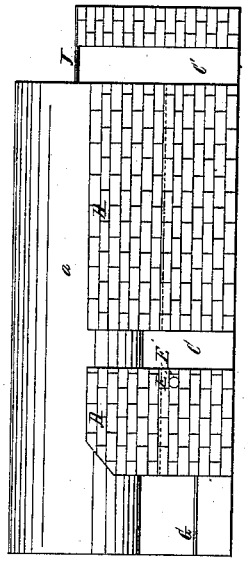

Fig 4.

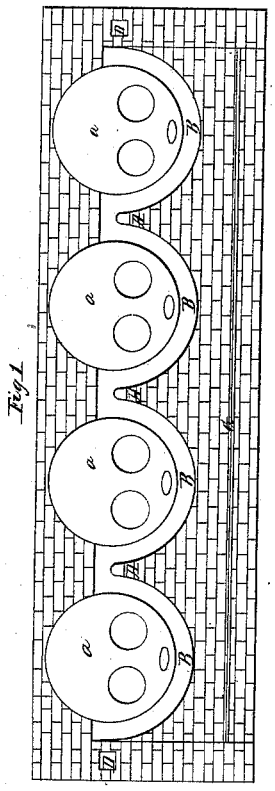

Fig 1.

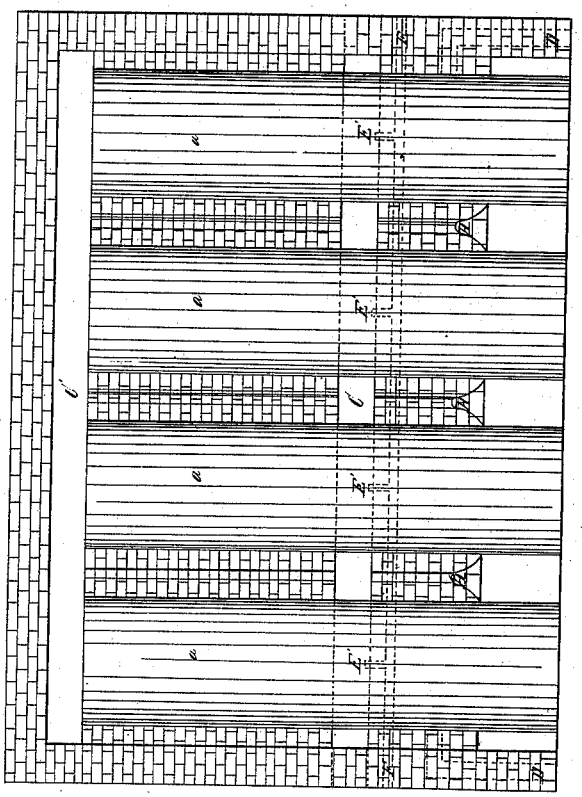

Fig 2.

Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS H. CLARK, OF ST. LOUIS, MISSOURI.

BOILER-FURNACE.

Specification forming part of Letters Patent No. **47,619**, dated May 9, 1865.

To all whom it may concern:

Be it known that I, THOMAS H. CLARK, of St. Louis, in the county of St. Louis and State of Missouri, have invented a new and useful Improvement in Boiler-Furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of a furnace with four boilers. Fig. 2 is a plan view thereof. Fig. 3 is a perspective view showing one of the sides of furnace and its back part, a portion of the back wall being broken away. Fig. 4 is a sectional elevation, the section being taken midway between two adjacent boilers.

Similar letters of reference indicate corresponding parts.

This invention consists, among other things, in causing the products of combustion to be equally distributed under the boilers of furnaces, and in preventing them, where several boilers are set in the same bench or block, from passing diagonally away from the boilers most remote from the chimney and escaping to the chimney without heating such distant boilers.

The drawings show the walls of a furnace whose grate is designated by the letter G, above which the front parts of the boilers *a* project, as shown in Fig. 4. The boilers are set so as leave flues B about five inches deep beneath them, the shape of said flues being that of a semicircle, whose sides are concentric with the sides of the boiler. The said flues communicate with each other by reason of the intersection of their sides at a line about midway of the height of the boilers, their lines of intersection forming, respectively, the top of partitions A, which is thereby made between the lower parts of adjacent boilers.

D are air-passages made in the side walls of the furnace, opening out in front to communicate with the atmosphere, and extending horizontally alongside of the furnace and beyond it, and then entering the outer flue-spaces, B, alongside the outer boilers, *a*. The office of these air-flues is to keep the walls cool and to supply air to the hot gases of the fire.

E is also an air-tube, built in the brick wall underneath the boilers, and opening on each side thereof, as shown in dotted outline in Fig. 2. Branch tubes E′, communicating with the tube E beneath the boilers, extend upward in an inclined direction, as seen in Fig. 4, and open into the flue-spaces B in the midst of the transverse channel C, which intersects the flues B not far behind the grate. The object of the pipes E E′ is also to supply air to aid in consuming the gases from the burning fuel. The flues B extend beyond the channel C until they end at the space C′, which serves as a general flue-chamber to receive the products of combustion, which are thence distributed to the return-flues, which pass through the boiler in the usual way to and fro, until they are discharged from the upper return-flues, I, of the boilers, above the top J of the flue-chamber C, whence they pass to the chimney, having been deprived in great measure of their heat. The channel C has doors c^2 at each end in the walls of the furnace, to enable the firemen to clean the flues and remove ashes and soot therefrom, and the flue-chamber C′ has at each end doors c^3 for the same purpose.

One of the benefits arising from this construction is that the products of combustion are caused to move in a straight curve beneath the several boilers in the bench by reason of the dividing-ridges A, which separate the flues B from each other, and prevent the said products from moving crosswise beneath the boilers when the draft sets toward one side or toward any particular part of the furnace which may be nearest to the chimney-stack or most directly under its influence. When such a diversion of the smoke and gases takes place in a furnace where several boilers are laid beside each other, it is plain that the boilers nearest the stack, or, in other words, those which lie in the path of the smoke and gas currents so diverted, receive more of the heat of the fire, and of course make more stream than the other boilers, and are burned out sooner than the others.

The ridges A, which separate the flues B

from each other, are to be made of fire-brick, iron, or any other suitable material which can endure great heat.

I claim as new and desire to secure by Letters Patent—

The combination, in a boiler-furnace where several boilers are arranged in the same horizontal plane, of flues B, made concentric in their cross-section, with the bottoms of the boilers, and which extend beneath the boilers in the direction of their length, and are separated from each other by ridges A, with the transverse channels C C′ and air-channels D D E E′, substantially as above described.

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Witnesses:

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