(No Model.)

C. LOETSCHER.

BOILER FURNACE.

No. 314,537. Patented Mar. 24, 1885.

Fig. 1.

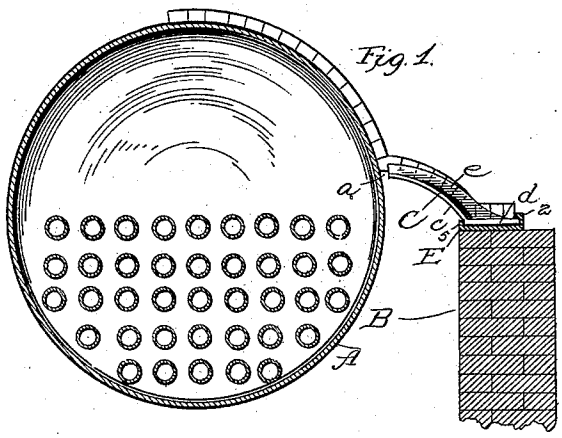


Fig. 5.

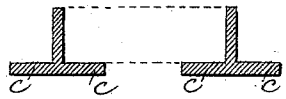


Fig. 2.

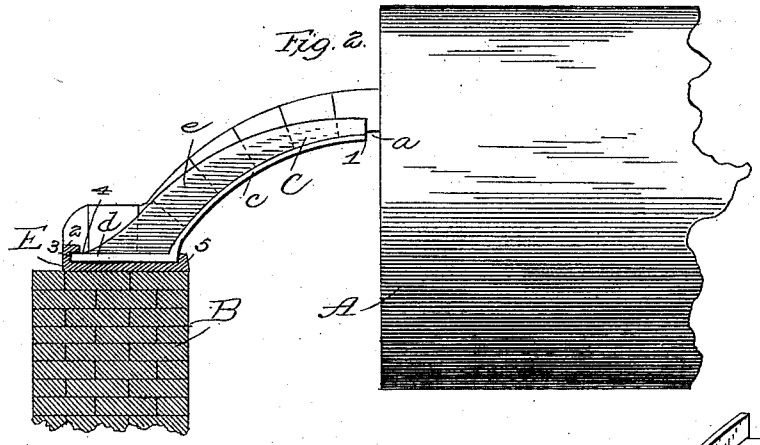


Fig. 4.

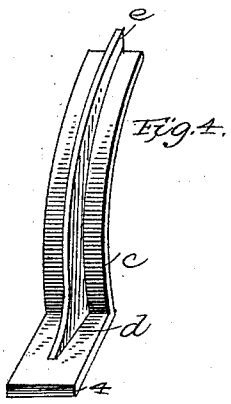
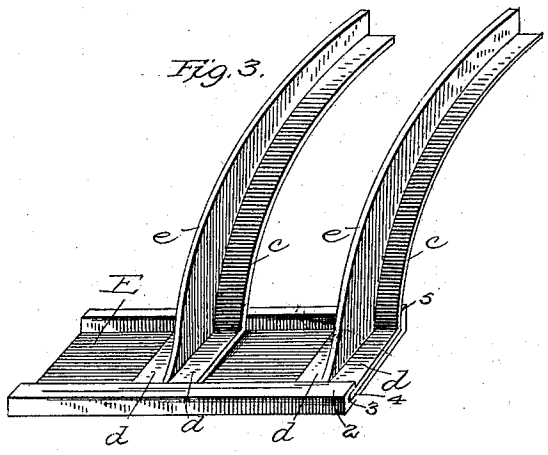


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHRISTIAN LOETSCHER, OF DUBUQUE, IOWA.

BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 314,537, dated March 24, 1885.

Application filed August 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN LOETSCHER, of Dubuque, in the county of Dubuque and State of Iowa, 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 of the same.

My invention relates to steam-boiler furnaces, and is an improvement in the manner of supporting the arch of fire-brick which spans the space between the boiler and the surrounding wall.

Although especially adapted to boiler-furnaces, my invention may be applied to other positions where an arch-support is necessary.

In inventions of this class, as far as I am aware, the prevailing method of construction has been to give the inner end of the supporting-iron a bearing against the surface of the boiler, and fixing it in position by angle-irons or other suitable ways. This arrangement subjects the parts to every variation of expansion or contraction in the boiler, and thus when the boiler is excessively heated the arch-supporting irons will be pushed outward, and the fire-brick displaced and disarranged.

The object of my invention is to provide such an arrangement of the supporting or securing devices as will render the bearing of the arch-irons against the surface of the boiler unnecessary, thus preventing the expansion or contraction of the boiler from affecting either the arch-supporting irons or the fire-brick.

To accomplish this result, my invention consists in supporting or securing the arch-irons in such a manner as will permit of spaces being left between their inner ends and the surfaces of the boiler to allow for the expansion of the same; and, further, my invention consists in the details of construction and arrangement of the holding devices, whereby the invention is embodied in the simplest possible form.

In the accompanying drawings, Figure 1 represents a transverse vertical section through the boiler and the surrounding wall of the fire-chamber, the span in this case being short. Fig. 2 represents a portion of the boiler in side elevation, the wall at the end of the same being in section. Fig. 3 shows in perspective the arch-supporting irons and the holding-plate, and Figs. 4 and 5 represent detail views of the supporting-iron.

In these drawings, A represents the boiler, and B the wall of the fire-chamber surrounding the same.

C represents the iron which supports the arch between the wall and the boiler, and, as shown in the drawings, this iron is T-shaped in cross-section, and is curved to make the desired form of arch. It is of such length or placed in such a position that its inner end, 1, will not bear upon the surface of the boiler, but a space, *a*, will be left between these points of sufficient size to provide for the expansion of the boiler when under a high degree of heat.

The flanges *c c* of the T-iron are bent at an obtuse angle, and continued to form a base-plate, *d*, for the iron, the flange or rib *e* being also formed on this plate in order to strengthen the same.

Upon the top of the wall B is secured in any suitable manner the holding device for the arch-supporting iron *c*. This is represented at E in the several figures of the drawings; and it consists of a special form of plate or tray which, as shown, is adapted to receive and securely retain the supporting-iron. This plate E is formed with an upwardly and inwardly projecting flange, 2, on its outer edge, forming a groove or recess, 3, into which the end, 4, of the base-plate *d* fits. This holds the iron against outward lateral movement and the pressure due to the weight of the bricks. Another flange, 5, is formed on the inner edge of the holding-plate, which also holds the supporting-iron against lateral movement.

The supporting-irons are placed around the boiler at suitable distances apart to hold the fire-brick, the brick being placed upon the flanges *c c* between the ribs *e*.

From this construction of the holding devices for the supporting-iron it will be seen that the bearing of the iron against the boiler is unnecessary, the arrangement of the holding-plate E and the base-plate *d* affording sufficient strength and stability to the structure.

No bolts, nuts, or screws are employed in the construction or putting together of the parts, and, as will readily be seen, access to the interior of the furnace for repairs or other purposes may be easily had by simply removing two sections of the fire-brick and lifting

the supporting-iron from the holding-plate E, and the iron and brick may be as readily replaced without disturbing the adjoining section of brick or irons.

Having thus described my invention, what I claim is—

1. In combination with a boiler, the supporting-iron for the fire-brick arch, secured at its base to the surrounding wall, and having its inner end free of support by the boiler, substantially as described, and for the purpose set forth.

2. In a boiler-furnace, and in combination with the boiler A and wall B, the supporting-iron C, for the fire-brick, formed with a base-plate, *d*, and the holding-plate F, formed with flanges 2 and 5, the said iron C being unsupported at its inner end by the boiler, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHRISTIAN LOETSCHER.

Witnesses:

ALEX. SIMPLOT,

P. I. EARLE.