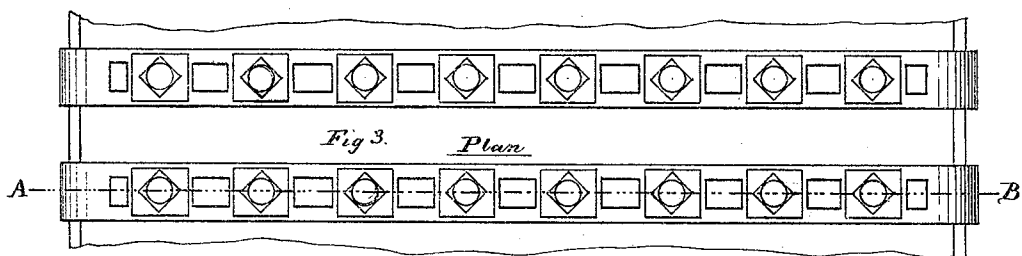
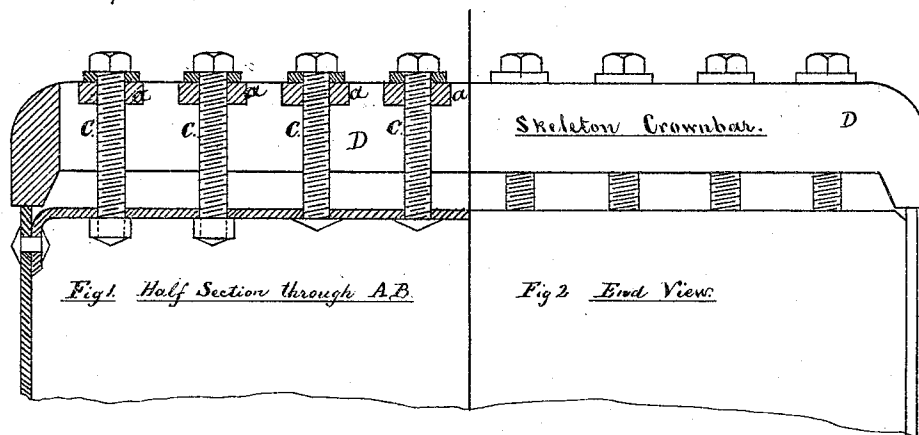


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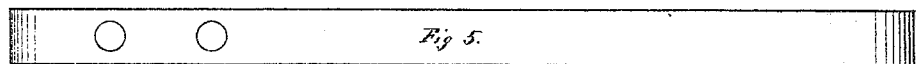
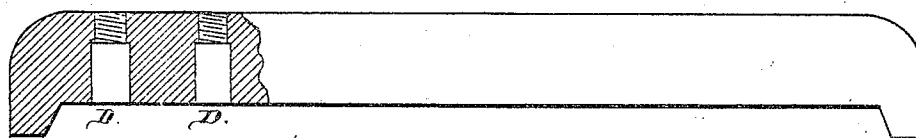
Improvement in Steam-Boiler Furnace-Crowns.

No. 129,634.

Patented July 16, 1872.



Scale 2 in. to 1. Foot.



Witnesses:

John R. Hale
A. B. Bartlett

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John A. Hanglin
John Graham

UNITED STATES PATENT OFFICE.

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KANSAS.

IMPROVEMENT IN STEAM-BOILER-FURNACE CROWNS.

Specification forming part of Letters Patent No. 129,634, dated July 16, 1872.

SPECIFICATION.

We, LEE H. WAUGH, JOHN A. HANGLIN, and JOHN GRAHAM, of the city of Wyandotte, in the county of Wyandotte and State of Kansas, have invented certain Improvements in the Manner of Attaching Crown-Plates to the Fire-Boxes of Locomotive and other Steam Boilers, and of which the following is a specification:

The main feature of our invention consists in a new method of attaching the crown-bars of the fire-box to the crown-plate, so as to supersede the necessity of washers around the bolts connecting the bars and plates, and which washers, in the present mode, rest upon the upper surface of the crown-plate, and around which accumulates the scales from the upper surface of the fire-box and other substances, so as, in connection with the washers, materially to affect the radiation of heat through the crown-plate to the water in the boiler.

The object of the invention is to prevent this accumulation, and, in case this should occur, that, in consequence of the smooth surface of the plate, the same can be easily removed by washing or otherwise.

Description of the Accompanying Drawing.

Figure 1 is a half-sectional end view of the crown-bars as attached to the crown-plate of the fire-box. Fig. 2 is an end view of the fire-box with the crown-bars and the connecting bolts in proper position, without washers on the crown-plate. Fig. 3 is a plan, showing the hollow crown-bars with the heads of the connecting screw-bolts. Fig. 4 is a solid crown-bar, the shaded section of which shows the perforations as counterbored and the position of the connecting screw-bolt. Fig. 5 is an upper section of the solid crown-bar, showing the perforations for the bolts.

General Description.

When the ordinary skeleton or double crown-bar D D is used in connection with our improvement, the sides are connected by pieces of iron or steel, *a a*, about two inches

square and seven-eighths of an inch in thickness—this size, however, to be varied as circumstances may require. These pieces of iron or steel are located between the inner sides of the crown-bar, about one and a half inch apart, and firmly attached to the inner sides of the crown-bars by welding or otherwise, and extending through the length of the bars. In the center of these iron or steel connections are vertical screw-threaded perforations about seven-eighths of an inch in diameter, and like corresponding perforations through the crown-plate, screw-threaded. These perforations are for the purpose of receiving a headed screw-bolt, threaded its entire length, passing through the crown-bar into the crown-plate, by which they are firmly connected together, as represented in Fig. 1 of the drawing, C C C C. These connecting-bolts, at their upper ends, are properly headed, and rest upon square pieces of iron, through which they pass, as seen in Fig. 1, C C C C. The lower ends of these bolts are screwed through the crown-plate and extend into the fire-box sufficiently to receive nuts on their lower ends, which are to be firmly screwed up to the crown-plate; or the bolts may be riveted in the ordinary way to the plate.

When the crown-bars are not constructed as above described, but of one solid piece of iron, the perforations are counterbored from the bottom of the crown-bar upward to seven-eighths of an inch from the upper side. The space in the perforations, from the upper side of the crown-bar to the counterboring, has the spiral groove, as above described, in relation to the hollow crown-bars, and for the same purpose, as seen in the shaded section of Fig. 4 of the drawing, D D. The proper adjusting of the screw-bolts and their positions in the crown-bars and through the crown-plate, and their mode of fastening to the crown-plate in the fire-box, are substantially as above described.

Claims.

We claim as our invention—

1. The bolts C C, screwed both into the

crown-bars and the crown-plate, for the purpose of avoiding the use of washers on the top of the crown-plate, substantially as set forth.

2. The double crown-bars D D, connected by the parts *a a*, provided with screw-threaded perforations, in combination with the bolts

C C and crown-plate, as and for the purposes described.

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JOHN GRAHAM.

Witnesses:

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JOHN R. HALE.