E. BOILEAU.

Fire-Plates for Steam-Boilers.

No. 135,759. Patented Feb. 11, 1873.

Fig. 1.

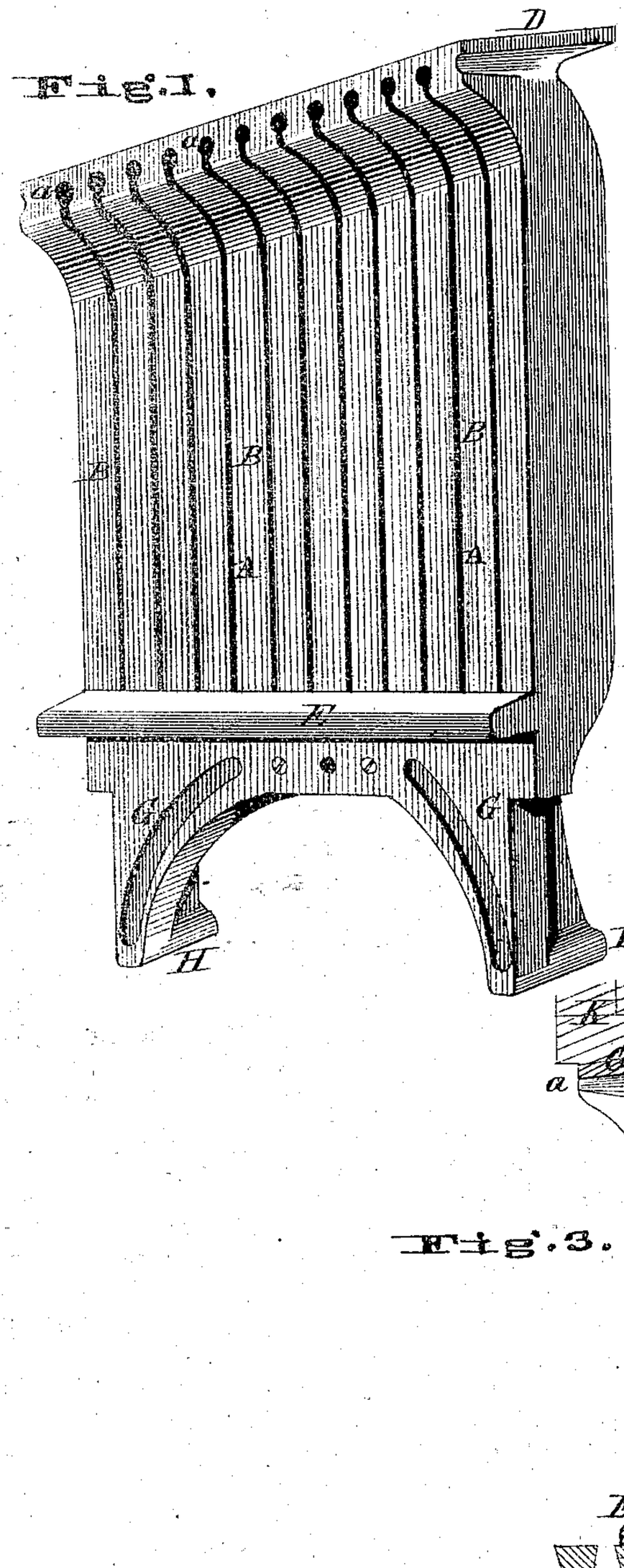


Fig. 2.

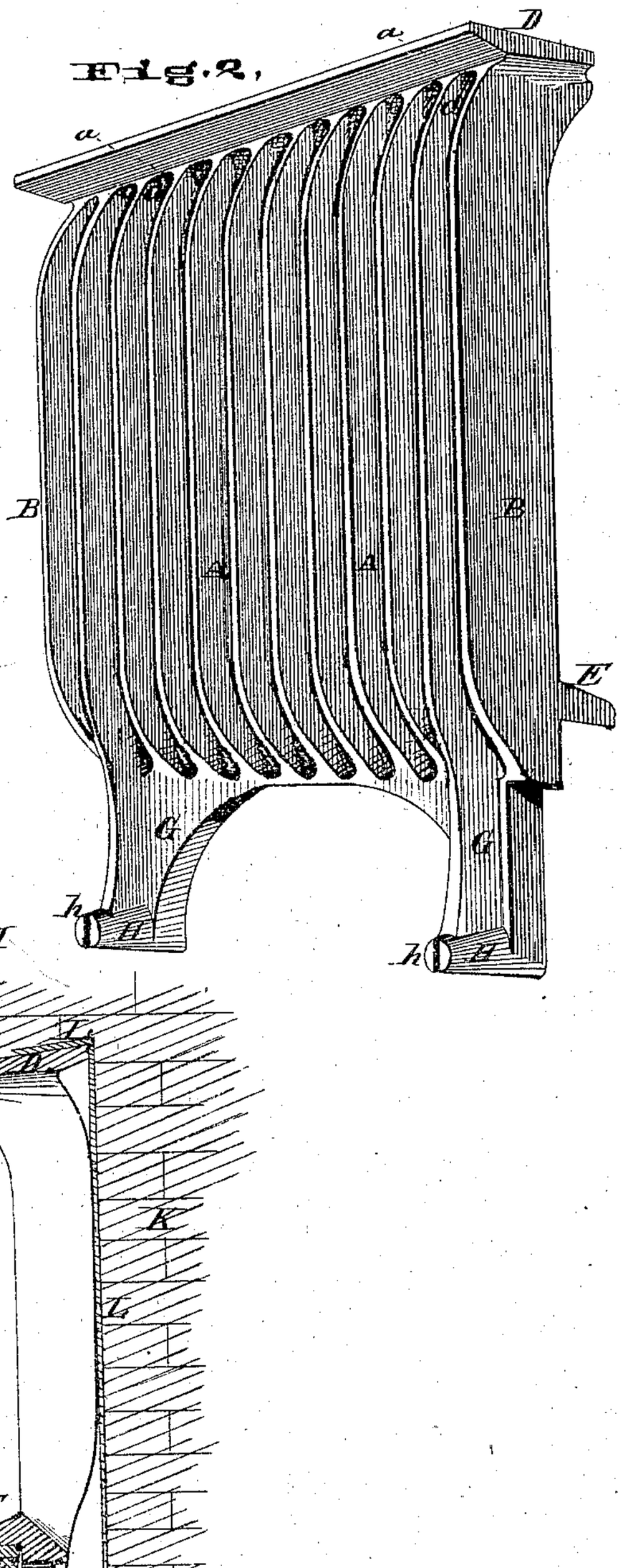
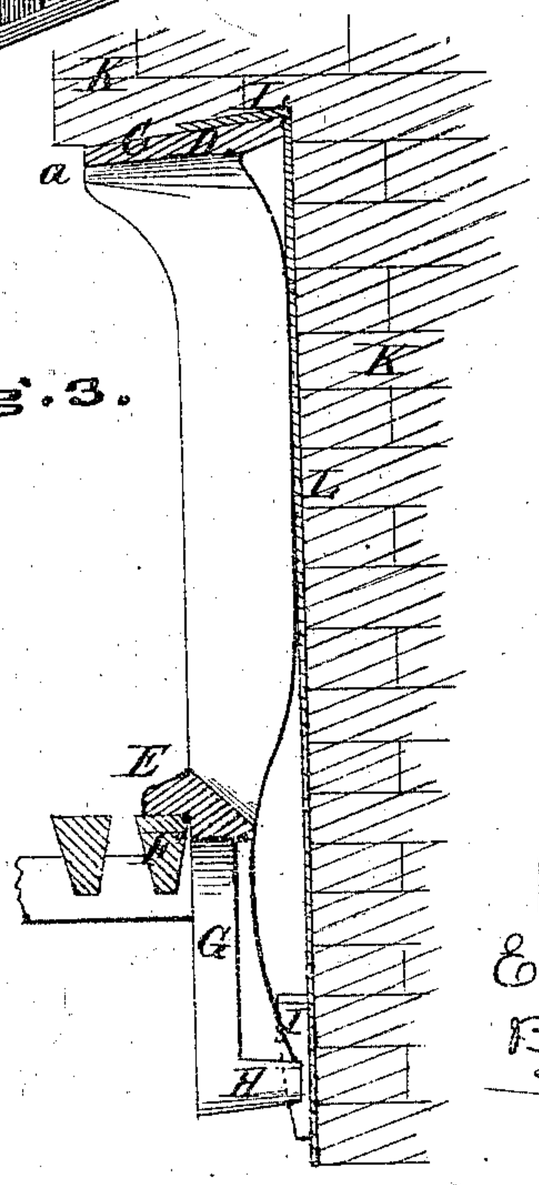


Fig. 3.



ATTEST:
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UNITED STATES PATENT OFFICE.

ETIENNE BOILEAU, OF ST. LOUIS, MISSOURI, ASSIGNOR TO BOILEAU PATENT STOVE AND FURNACE FIRE-PLATE COMPANY, OF SAME PLACE.

IMPROVEMENT IN FIRE-PLATES FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **135,759**, dated February 11, 1873.

To all whom it may concern:

Be it known that I, ETIENNE BOILEAU, of the city and county of St. Louis, and State of Missouri, have invented a certain Improved Fire-Plate, of which the following is a specification:

This invention relates to improvements on my fire-plate for which patents were granted to me August 8, 1871, (reissue,) No. 4,501; and October 3, 1871, No. 119,562. The first part of my improvement consists in forming the plate so that its top overhangs, and so modifying the same that the direction given to the jets of heated air may be more inclined downward than with my former plates, so as to come in contact and mingle with the inflammable gases in nearer proximity to or in direct contact with the fire. The second part of my improvement consists in casting upon the lower edge of the plate legs which extend downward below the level of the grate-bars, and have bearing against the side of the ash-pit. These legs firmly hold the plate in place without attachment to the furnace-wall by bolts or rods running through or anchored to the latter. The third part of my improvement consists in an apron or shield which is interposed between the fire-plate and the furnace-wall. This extends from the top of the plate beneath the level of the legs, so as to prevent any debris from the wall from lodging in the slots of the plate.

Figure 1 is a perspective view, showing the front and one side of my improved fire-plate. Fig. 2 is a perspective view to show the rear of the same. Fig. 3 is a transverse vertical section through the central slot of the plate, showing the plate in its most proper position.

The plate is made with vertical slots A of V-formed section, similar to the plates described in my aforesaid patents, and also similar V-formed bars B. The contracted front part of the slots A (like those of the said patents) end in rounded passages *a* for air jets; but the direction of these jet-passages is somewhat changed in the plate, so as to project the jet in a horizontal or more or less descending direction, so as to mingle with the inflammable gases where they are sufficiently heated (by close proximity to the fire) to cause a thorough combustion.

In my aforesaid patents, the top of the plate is shown as curved backward; but in my present improvement the upper part C of the plate is made to overhang, as shown, so as to cause the current of mingled air and inflammable gases passing up in front of the plate to curve toward the center of the furnace, and the current is still further deflected by the jets of heated air from the orifices *a*, and is directed to the hottest part of the furnace to insure thorough combustion. The top D of the fire-plate may be made so as to be horizontal when set in the wall, or may be somewhat inclined; but the direction of the jet-passages *a* should be horizontal or slightly inclined downward toward the front face of the plate, so that the heated jets will take the proper direction, as described.

E is a horizontal cleat, which rests on the grate or bearing-bar F, and sustains the plate. G are legs, which are cast upon the bottom of the plate, and have at their lower ends lugs H, slotted at *h*, to receive a wedge, I. The object of these legs is to prevent the tilting forward of the plate, and thus do away with the necessity of connecting the said plate to the side wall K by bolts or rods passing through or anchored in the wall; and the wedge I is to accommodate the bearing of the legs to inequalities of the wall.

To prevent crumbling mortar, fire-clay, or brick from becoming lodged in the slots A, I place between the plate and the side wall K a metallic sheet, L, which is sustained by lapping its upper edge over the top of the fire-plate, as shown in Fig. 3. This sheet may be of sheet-iron, or a thin sheet or plate of cast-iron may be used, or even tile. It consists, essentially, of an apron interposed between the wall K and the fire-plate, to prevent débris from the wall from clogging the slots A, which would stop the circulation of air at that point, and result in burning out the bars B. The fire-plates are placed in a recess of the wall K, as shown, the face of the wall K above the plates preferably projecting somewhat further out than the overhanging part C of the plates.

I have shown my fire-plate as applied to a boiler-furnace; but it may be applied to most if not all kinds of furnaces.

The fire-plate may be made of any suitable substance, as I do not confine myself to cast-iron, which alone I have used hitherto. Fire-tile would be suitable in some situations. The position or form of the legs may be varied, as desired; or one of the legs may be dispensed with and a single central leg used.

I claim as new and of my invention—

1. In combination with the slotted fire-plate A B, the overhanging top C, substantially as set forth.

2. The bracing-legs G, employed in connection with the fire-plate, in the manner and for the purpose set forth.

3. The apron L, substantially as and for the purpose set forth.

ETIENNE BOILEAU.

Witnesses:

SAML. KNIGHT,

FIELDING MANSFIELD.