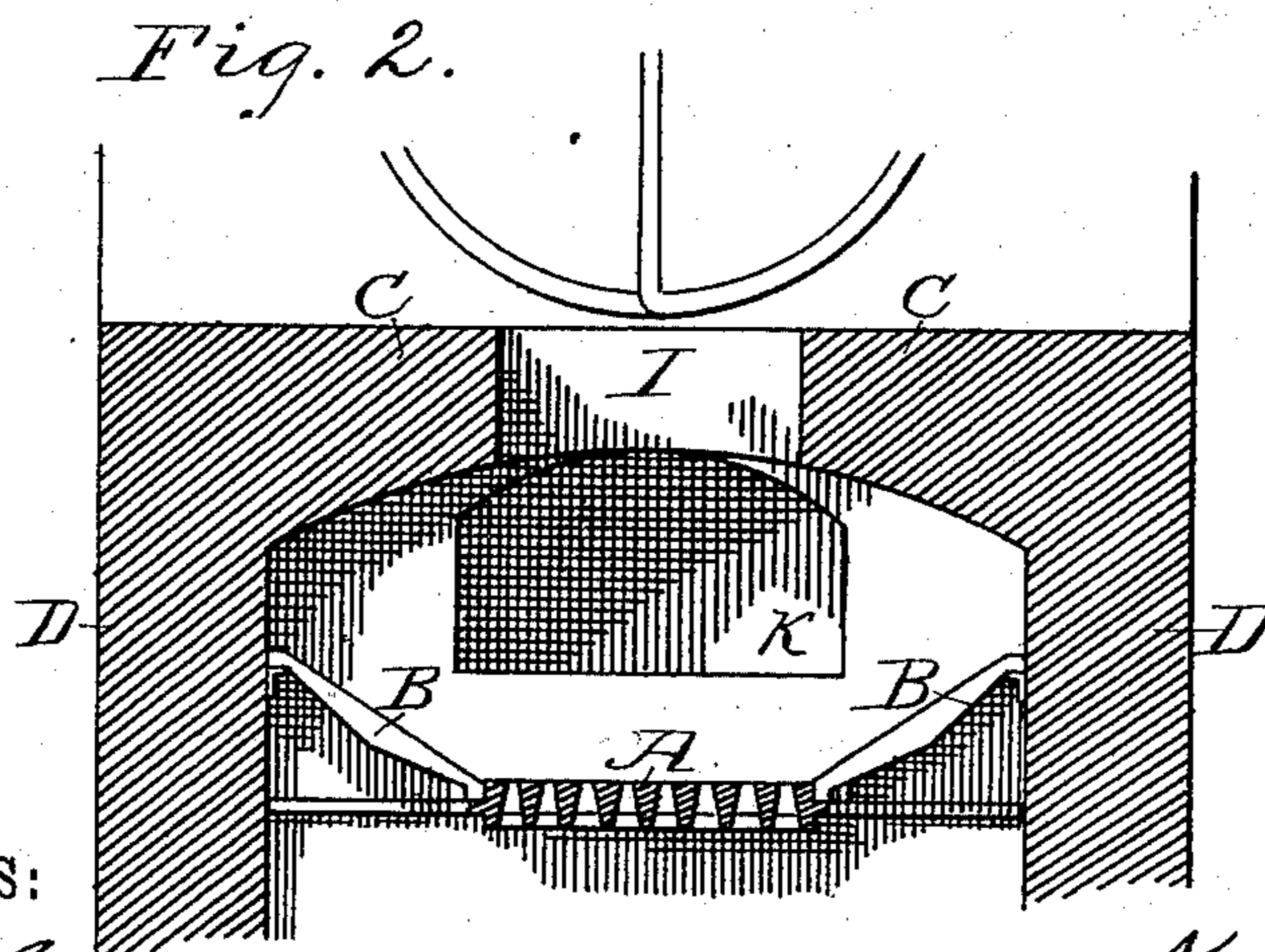
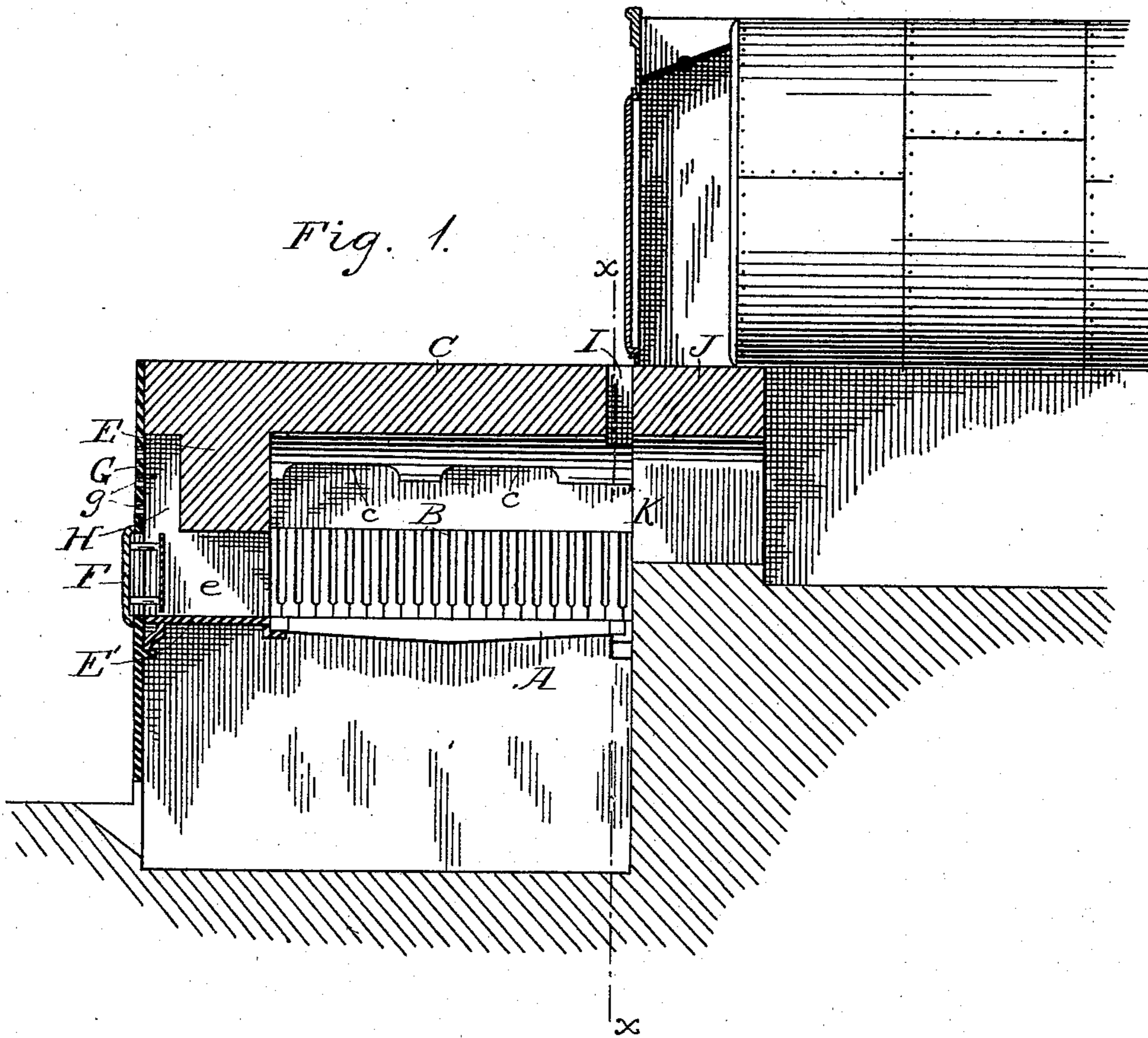


(No Model.)

K. SCHROLL.
FURNACE.

No. 305,405.

Patented Sept. 16, 1884.



WITNESSES:

A. S. Schoff
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UNITED STATES PATENT OFFICE.

KARL SCHROLL, OF CHICAGO, ILLINOIS.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 305,405, dated September 16, 1884.

Application filed January 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, KARL SCHROLL, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Steam-Boiler Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a furnace which is simple and cheap in construction, and which has such an arrangement of fuel-feeding chambers above the grates in the springings and abutments of the arch, of air-chambers in front of the furnace, and of air-passages in the crown of the arch immediately next and contiguous to the bridge-wall supporting one end of the boiler and through which the outlet from the furnace to the chamber under the boiler is made, that a perfect combustion of the fuel and gases generated therefrom takes place in so far as it is possible.

In the drawings, Figure 1 represents a vertical longitudinal central section of my improved furnace; and Fig. 2 is a transverse vertical section of my invention, taken on the line *x x*, Fig. 1.

Reference being had to the drawings, A and B represent the bottom and inclined side grates, respectively, of the usual construction, forming what is known as a "basket-grate." Beneath these grates is the usual ash-pit, and above them is an arch, C, springing from the side walls, D D. In these side walls, just above where the inclined grates strike the side walls, D, and between said side walls and the arch C, are fuel-openings *c c*. These openings *c c* lead from the upper surface of the arch and bridge-walls, and are adapted to receive coal from above and deliver the same automatically on the side grates as needed. They may be, if desired, covered with suitable hinged covers.

The front of the furnace is closed by a suitable wall, E, resting on the cross-plate E', the ends of which are secured in the side walls, D. The wall E is provided with a suitable passage, *e*, leading from the door F to the fire-chamber. The front of the furnace is faced

with a cast-iron plate, G, to which the door F is hinged. That portion of the wall E above the door is cut away next the iron plate G to form an air-chamber, H, to which air is supplied through the openings *g* in the adjacent portion of the plate G. This chamber, besides being serviceable to supply additional oxygen to the retort of said fire-chamber, keeps the contiguous wall E free from destructive heat.

In the arch C, contiguous to the bridge or rear wall, J, of the furnace, is an air vent or passage, I, preferably perpendicular, which supplies oxygen to the fire-chamber just about where the volatile and unconsumed gases generated by the burning and coking fuel in the fire-bed and fuel-openings concentrate previous to entering the chamber under the boiler through the outlet K, made in said bridge-wall.

In the operation of my furnace, after the fire is started on the grates the fuel-openings are filled with coal, which gravitates onto the inclined grates B as the fuel thereon is consumed. The gases that are generated in these fuel-openings by the coking coal is, together with a sufficient supply of air, drawn into the retort of the fire-chamber, and there partially or wholly consumed by the intense heat of the fire below. Those gases that are not consumed and which seek the outlet K are at about the mouth of the same admixed with a fresh quantity of oxygen from the vent I, which, it will be observed, is placed just at that point where it is most needed to aid in the combustion of the gases in the chamber under the boiler.

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

The combination, in a steam-boiler furnace, of the grates, the arch, the air-inlet I, made in the crown thereof immediately next the rear or bridge wall of said furnace, the air-chamber H, made in the front wall thereof and between the same and the plate G, said chamber being supplied with air through the perforations *g* in said plate G, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I hereunto affix my signature in presence of two witnesses.

KARL SCHROLL.

Witnesses:

JAMES H. COYNE,
FRANK D. THOMASON.