

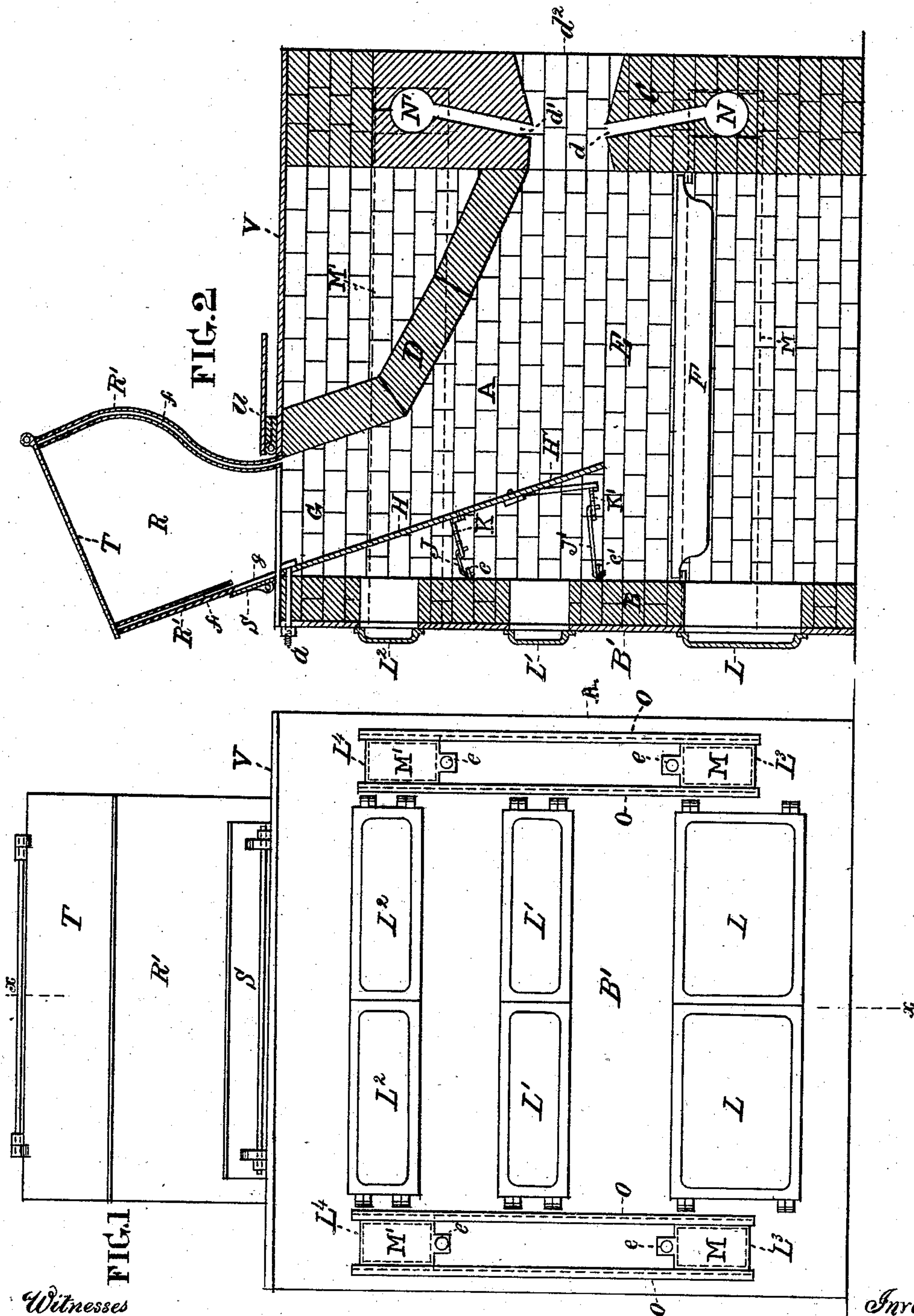
(No Model.)

2 Sheets—Sheet 1.

H. McELROY.
Furnace for Steam Boilers.

No. 241,392.

Patented May 10, 1881.



Witnesses
Thomas J. Dewley.
Ben. H. Horigley.

Inventor.
Herbert McElroy.
per Stephen W. Ustick, attorney

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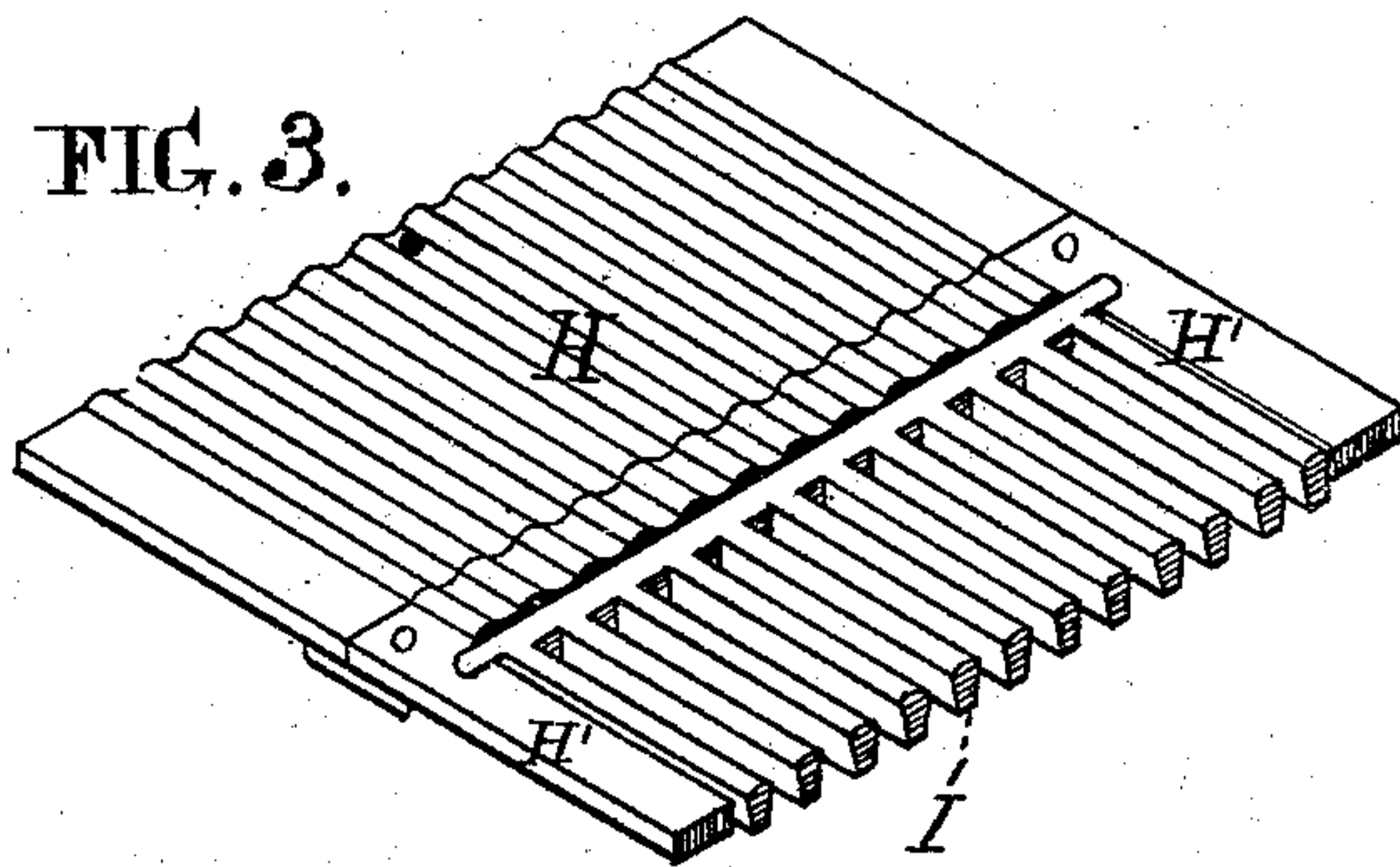
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FIG. 3.



Witnesses

Thomas J. Bentley.

Bent. Purigley.

Inventor

Herbert McElroy.

Stephen Wstick, attorney

UNITED STATES PATENT OFFICE.

HERBERT McELROY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF
ONE-HALF TO FRANKLIN LAWRENCE, OF SAME PLACE.

FURNACE FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 241,392, dated May 10, 1881.

Application filed January 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, HERBERT McELROY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Furnaces for Steam-Boilers, of which the following is a specification.

My invention relates to that class of furnaces in which the fuel is automatically fed from a hopper through an inclined chute, and mainly consists in the combination of an inclined plate which forms the front of the chute, and is bolted at its upper edge to the front plate of the furnace in such a manner as to hold it in connection therewith and admit of the adjustment of its lower edge to give any desired inclination to the plate as may be found appropriate to the feeding operation, the plate being provided with an adjustable inclined grate at its lower edge, and the adjustment of the plate and grate being separately effected by means hereinafter described.

In the accompanying drawings, which make a part of this specification, Figure 1 is a front elevation of my improved furnace. Fig. 2 is a vertical section at the broken line *xx* of Fig. 1. Fig. 3, Sheet No. 2, is a perspective view of the adjustable plate H when provided with a drop-grate, I.

Like letters of reference in all the figures indicate the same parts.

A A represent the side walls of my improved furnace, and B the front of the furnace, having a front plate, B'. C is the bridge-wall, and D the arch. E is the combustion-chamber, and F the grate which forms its bottom. The arch D has an upward inclination from its rear to the mouth of the inclined chute G, as seen in Fig. 2, and at its upper part forms the rear side of said chute. The front of the chute is formed by the inclined plate H, which is hung at its upper edge by means of the bolt *a*, which is passed through the front wall of the furnace and has a nut on its outer end. The plate is corrugated, with the corrugations running up and down to facilitate the automatic feeding of the fuel, as seen in Fig. 3. It is adjustable at its lower end to bring it to any desirable angle that may be necessary to the proper auto-

matic feeding of the fuel to the combustion-chamber by means of the rod J having bent ends, one of which is connected with the eye *c* on the inside of the plate B', and the other with the perforated arm K, having the perforations close enough to each other for bringing the plate into any desired position. The plate has a frame, H', connected by means of bolts at its lower end, in which is hung the inclined grate seen in detail in Fig. 3. The grate is adjustable by means of the rod J', the eye *c'* connected with the front plate, B', and the arm K' connected with the grate, the said arm having perforations for changing the connection of the rod K', whereby to vary the angular position of the grate as may be found necessary to regulate the feeding of the fuel.

L L are the ash-pit doors, and L' L' and L² L² doors of the upper part of the furnace. L³ L³ are doors for opening and closing the air-flues M M at the lower part of the side walls, A A, and connecting with the air-chamber N of the bridge-wall C, having an outlet-passage, *d*. L⁴ L⁴ are doors for opening and closing the air-flues M' M' at the upper part of said walls, and connected at their rear ends with the air-chamber N' at the rear part of the arch D, having an outlet-passage, *d'*. The air in its passage through said flues and chambers becomes highly heated, and in passing out of the passages *d* and *d'* commingles with the products of combustion as they pass through the outlet *d*² of the combustion-chamber, whereby to complete the combustion. The doors L³ L³ and L⁴ L⁴ are connected with the front plate, B, by means of the rabbeted ways O O and O O, and are adapted to slide up and down, having a spring which bears against the front plate, B', the force of the spring being regulated by means of the screw *e*.

R is a hopper, connected at the top of the furnace with the mouth of the inclined chute G. It is provided with a case, R', to form the space *f*, to prevent the outward radiation of heat. There is an opening, *g*, through the front of the hopper and the case to admit of the passage and use of a slice-bar for loosening the fuel in the chute G when it becomes too much packed to admit of its automatic feeding into the combustion-chamber.

S is a door for closing the opening when the slice-bar is not used. The hopper is also provided with a hinged cover, T, to prevent the upward escape of heat from the combustion-chamber through the chute G. The hopper would be used especially when shavings or like fuel are burned, and may be omitted, if desired, when coal is burned. In this latter case I employ the hinged plate U for covering the mouth of the chute to prevent the upward escape of heat, the plate being folded down, when not so used, upon the top plate, V, to which it is hinged, as seen in Fig. 2.

If desired, the case R' of the hopper may be omitted.

I claim as my invention—

1. The combination, with a furnace having a feeding-hopper and an inclined chute, of the swinging grate I and the adjustable plate H, substantially as described. 20
2. A furnace having an inclined flue, G, hopper R, adjustable inclined plate H, provided with an adjustable inclined grate, I, and having air-flues M M and M' M', substantially as and for the purpose set forth.

HERBERT McELROY.

Witnesses:

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WM. LANGDON.