

No. 687,040.

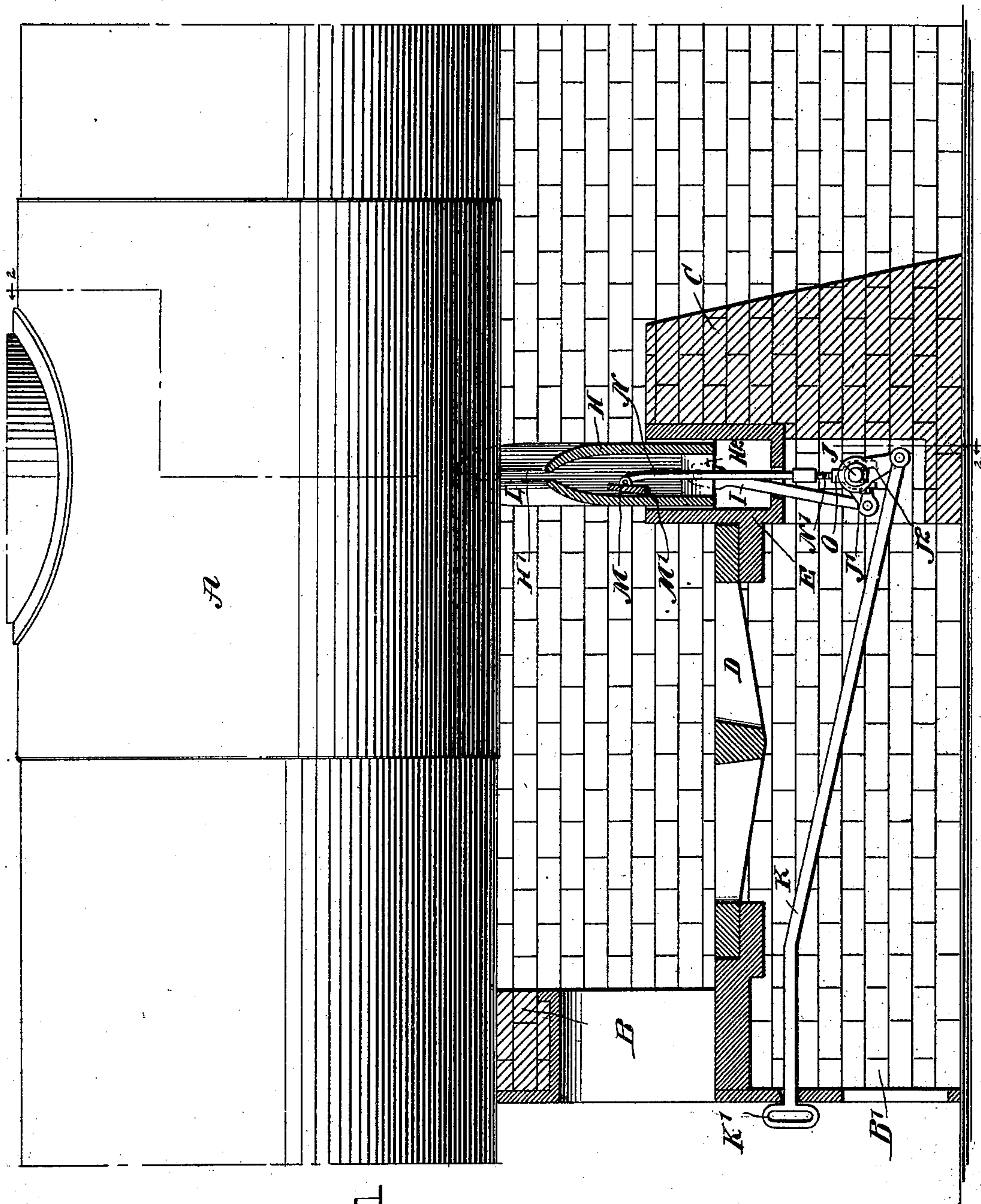
Patented Nov. 19, 1901.

C. R. LITTLER.  
AIR FEEDING DEVICE FOR FURNACES.

(Application filed Mar. 21, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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Fig. 1

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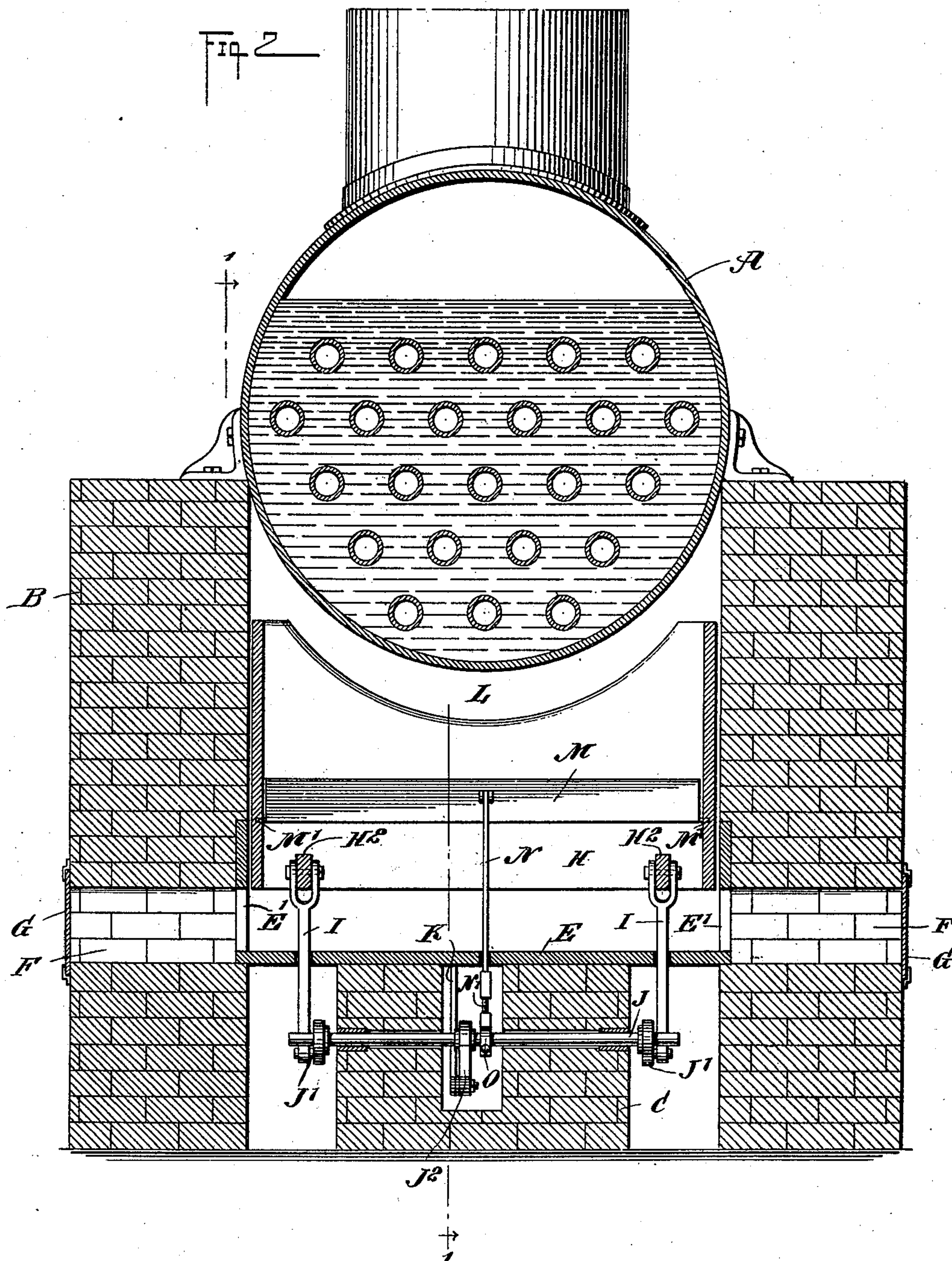
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# UNITED STATES PATENT OFFICE.

CHARLES R. LITTLER, OF SELKIRK, CANADA.

## AIR-FEEDING DEVICE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 687,040, dated November 19, 1901.

Application filed March 21, 1901. Serial No. 52,165. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES R. LITTLER, a subject of the King of Great Britain, and a resident of Selkirk, in the Province of Manitoba and Dominion of Canada, have invented new and useful Improvements in Air-Feeding Devices for Furnaces, of which the following is a full, clear, and exact description.

My invention relates to devices for feeding air to furnaces, and particularly to boiler-furnaces, and has for its object to provide a construction by which the amount of air supplied will be automatically regulated according to the draft, the force of the latter being adjustable through the medium of the air-feeding device. To accomplish these results, I construct the air-feeding device in the manner fully described hereinafter, making use of the novel features defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures.

Figure 1 is a longitudinal sectional elevation on the line 1 1 of Fig. 2 of a boiler-furnace provided with my improvement, and Fig. 2 is a transverse sectional view thereof on the line 2 2 of Fig. 1.

A is the boiler, supported by the setting B, having a bridge-wall C, in front of which is located the grate D. In the front portion of the bridge-wall is embedded a casing E, and the side of the casing which faces the grate may be protected by a covering of fire-brick or equivalent material. This casing is open at the top, closed at the bottom, and has in its sides openings E', connecting with air-supply channels F, which may lead directly outward, as shown, their orifices being controlled by dampers G, or the air on its way to the openings E' may be caused to pass through heating-pipes located in the furnace. This arrangement being well known and forming no part of my present invention is not illustrated in the drawings. In the casing E is fitted rather snugly, so as to have a practically air-tight joint therewith, yet to be capable of a sliding vertical movement, an air-discharge box H, consisting of two plates spaced at their upper edges to form a dis-

charge-slot H' and rigidly connected with each other, so that they will move in unison. The upper edges of the plates are curved correspondingly to the adjacent portion of the boiler A. The box H is open at the bottom, so that it may communicate with the interior of the casing E. At the bottom the two plates are connected by cross-bars H<sup>2</sup>, to which are pivoted connecting-rods I, leading through the bottom of the casing E to crank-arms J' on a horizontal cross-shaft J, journaled in the bridge-wall C or adjacent thereto. This shaft also has a central crank J<sup>2</sup>, connected with an operating-rod K, having a handle K' in front of the ash-pit B'. It will be understood that by moving the rod K the air-discharge box H may be raised or lowered in the casing E, thus regulating the draft by varying the width of the throat L, formed between the boiler A and the upper edge of the air-discharge box H. Within the latter is arranged a damper M, so constructed as to be operated automatically by the movement of the box H, so that when the throat L is reduced the valve or damper will be moved toward the shut position to throttle the supply of air, and vice versa. In the specific construction shown the valve or damper M is pivoted at M' to one of the plates forming the box H and has a pivotal connection with a rod N, the lower end of which is kept stationary—for instance, by being attached to a ring O, surrounding the shaft J loosely. Preferably the rod N is extensible, as by having a screw-section N', so as to enable the normal position of the damper M to be adjusted.

Any approved locking device may be provided for holding the operating-rod K and the parts controlled thereby in whatever position it is desired to keep them; but such locking device may be dispensed with and the weight and friction of the parts relied upon to accomplish this result.

It will be understood that by the use of my improved apparatus an amount of (heated) air properly proportioned to the draft is discharged into the combustion-gases through the slit H', insuring a complete combustion and avoiding the formation of smoke. The draft may be regulated by adjusting the air-discharge box H, and simultaneously and au-



tomatically the position of the damper M will be altered to feed more or less air to the slit H', as required.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a furnace, a combustion-chamber, a casing located at the rear thereof and connected with an air-supply, a box or chamber fitted to slide in said casing and communicating therewith, said box being apertured to discharge air into the furnace, a valve or damper controlling the connection of the box with the casing in which it slides, and means for actuating the damper and for shifting the box to vary the width of the throat formed thereby.

2. In a furnace, a movable apertured box arranged to discharge air into the combustion-chamber, a damper controlling the passage of air through said box, means for shifting the box, and means for actuating the damper by the movement of the box.

3. In a furnace, a combustion-chamber, a casing located at the rear thereof and connected with an air-supply, a box or chamber fitted to slide in said casing and communicating therewith, said box being apertured

to discharge air into the furnace, means for shifting the box to vary the width of the throat formed thereby, and a valve or damper controlling the passage of air through said box and operated by the movement of the box.

4. In a furnace, a stationary casing connected with an air-supply, an air-discharge box normally communicating with said casing and slidable relatively thereto, a damper controlling the passage of air through said box and connected with a stationary part to vary the discharge of air as the box is shifted, and means for moving the box.

5. In a furnace, a stationary casing connected with an air-supply, an air-discharge box normally communicating with said casing and slidable relatively thereto, a damper controlling the passage of air through said box and pivoted to said box, a loose connection from said damper to a stationary part, and means for shifting the air-discharge box.

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

CHARLES R. LITTLER.

Witnesses:

ROBT. W. STEWART,  
JOHN O'REILLY.