

No. 816,738.

PATENTED APR. 3, 1906.

T. REES.
SMOKE CONSUMER.
APPLICATION FILED JUNE 3, 1905.

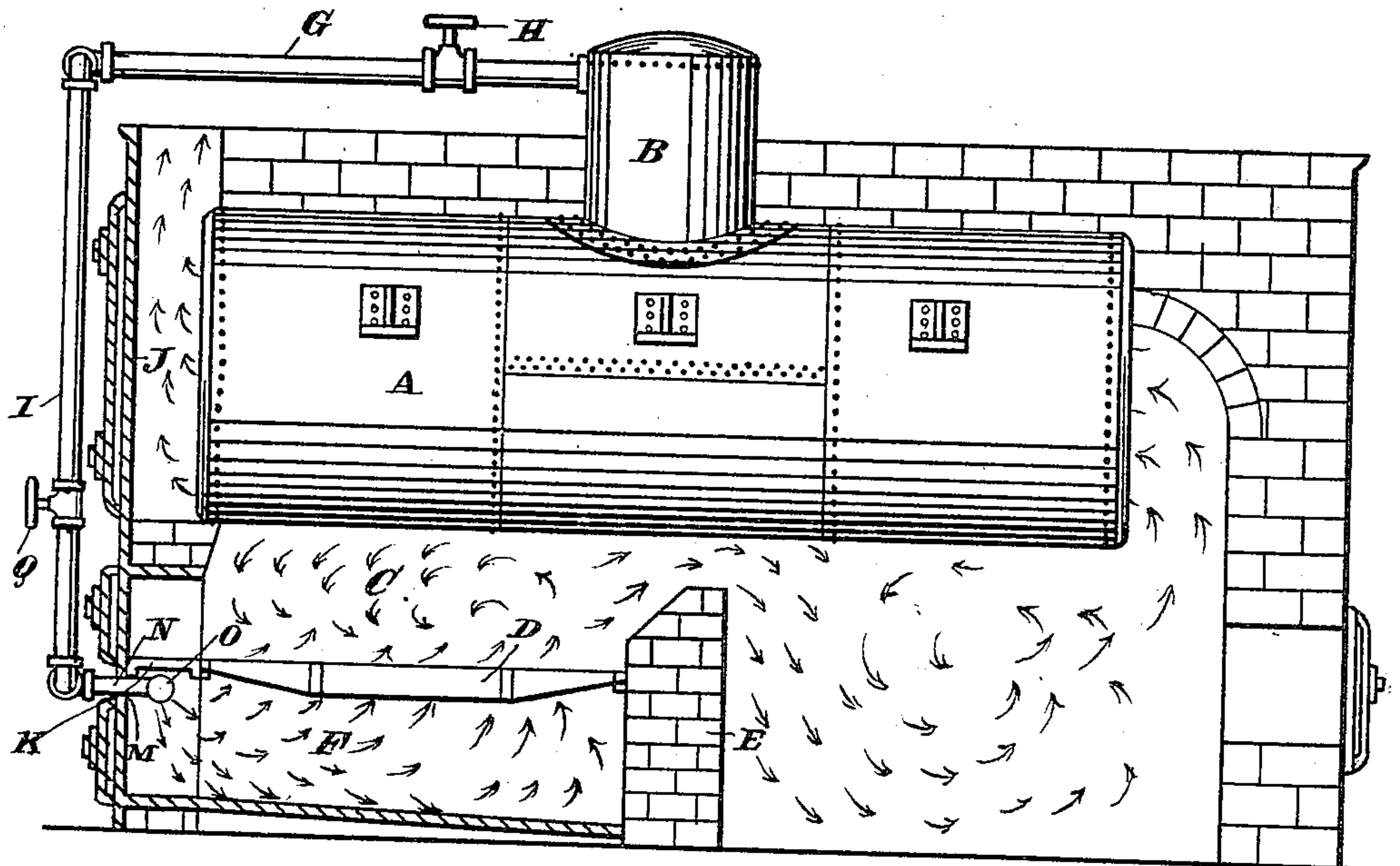


Fig. 1

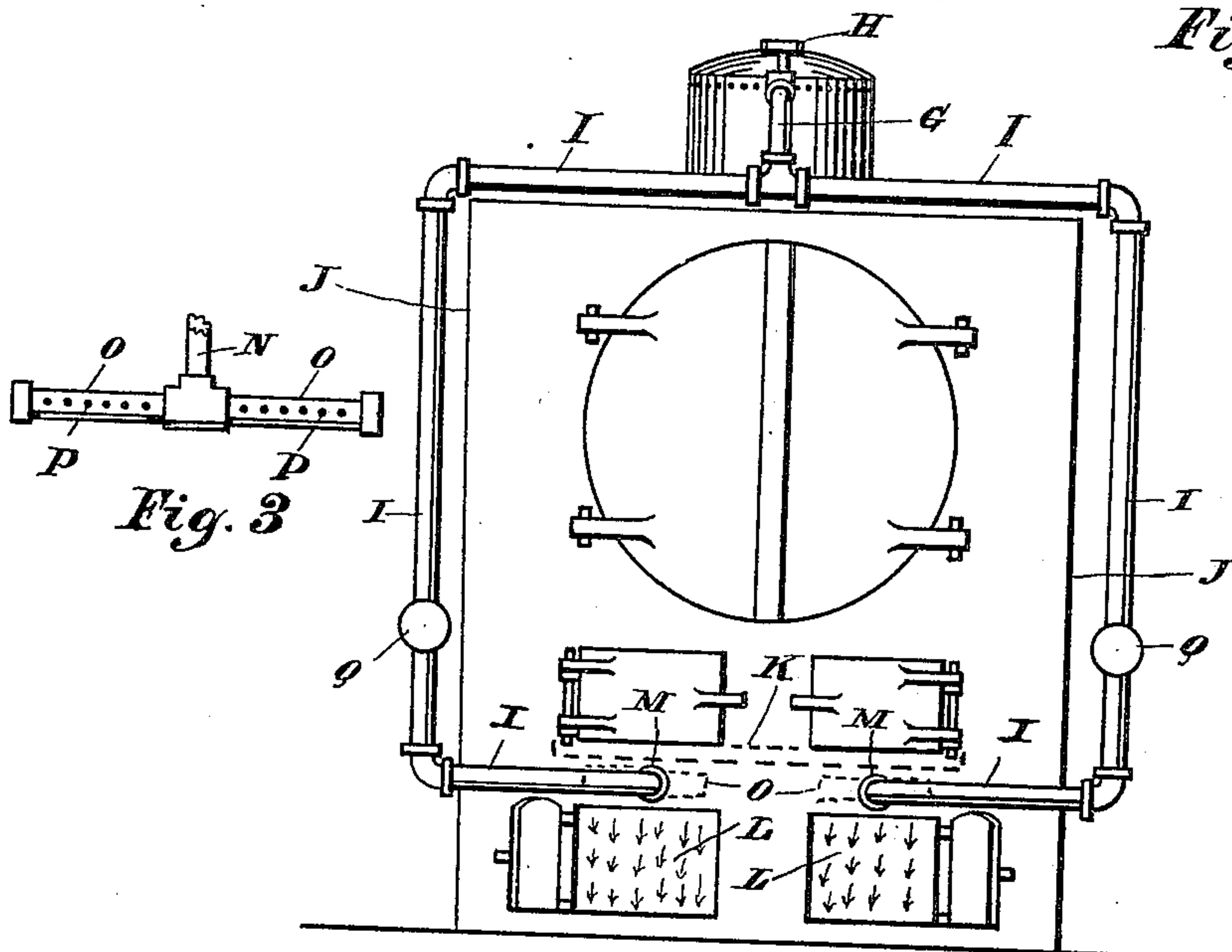


Fig. 2

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THOMAS REES, OF CHICAGO, ILLINOIS.

SMOKE-CONSUMER.

No. 816,738.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed June 3, 1905. Serial No. 263,588.

To all whom it may concern:

Be it known that I, THOMAS REES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Smoke-Consumers, of which the following is a specification.

My invention relates to a smoke-consumer and fuel-economizer for furnaces; and it consists in the construction and arrangements herein described and claimed.

In the accompanying drawings, Figure 1 is a side sectional elevation view illustrating the invention applied to the furnace of a stationary boiler. Fig. 2 is a front elevation view of Fig. 1 or the face-plate of the furnace. Fig. 3 is an enlarged plan view of discharge-pipes.

A denotes a return tubular boiler; B, the dome; C, the furnace; D, the grate-bars; E, the bridge-wall; F, the ash-pit. A conduit G receives steam from any appropriate source, but preferably from the dome B, as shown in this instance, or from a drum connecting with the dryest steam from the boiler that can be obtained. This steam is controlled by a stop-valve H. Two pipes I I branch to the right and left hand from a junction with the conduit G to the vertical edge of the face-plate J, thence downward to the face of the dead-plate K, and then, following the horizontal plane of the dead-plate, branch inward toward each other until they reach the center above the openings L L of the ash-pit F. The pipes are then carried through holes M M in the face-plate J and under the dead-plate K for about one-half the width of said plate, at which point they have delivery-tubes N N, carrying cross-tubes O O, having jet-openings P P, through which the steam is forcibly discharged into the front portion of the ash-pit, mingling with the open air-draft, creating a force draft to all parts of the grate-bars. A regulation-valve Q controls the volume of steam that enters the ash-pit.

The cross-tubes O O are so arranged and connected with the delivery-tubes N N that they can be turned in any direction, so that

the steam from the jet-holes P P may be turned directly downward, or they can be turned to throw the steam backward toward the rear of the grate-bars; but preferably the use is that shown, in that a better combustion takes place when the steam is delivered into the ash-pit at about a forty-five-degree angle.

When the furnace is to be operated, the valve Q is opened gradually, so as to force the steam into the ash-pit and, mingling with the full draft of air at the ash-pit, is carried rearward and upward between the grate-bars in the direction shown by the arrows. The force of the steam is slowly augmented until the fuel is fully ignited, when the pressure is turned on full, which, increasing the draft from the ash-pit, changes the natural direction of the products of combustion, diverting and forcing them upward against the crown-sheet of the boiler and returning them again and again upon the fire, causing a circular motion, as shown by the arrows, entirely consuming all smoke and gases arising from the fuel.

I am aware that there are other devices that introduce air and steam into the furnace ash-pit, but know of none that employ the steam to mingle with the air-draft from the ash-pit in the way I do to produce a strong suction of air from the outside and cause a forced draft.

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

In combination with a boiler and its furnace, a steam connection leading from the boiler to the upper forward end of the ash-pit, means extending transversely of the ash-pit in communication with the steam connection for directing steam toward the base of the ash-pit at a point in advance of the rear of the ash-pit.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS REES.

Witnesses:

HENRY J. BRACK,
ALICE B. IGOU.