

(No Model.)

F. H. KANE.

STEAM BOILER FURNACE:

No. 273,099.

Patented Feb. 27, 1883.

Fig. 1.

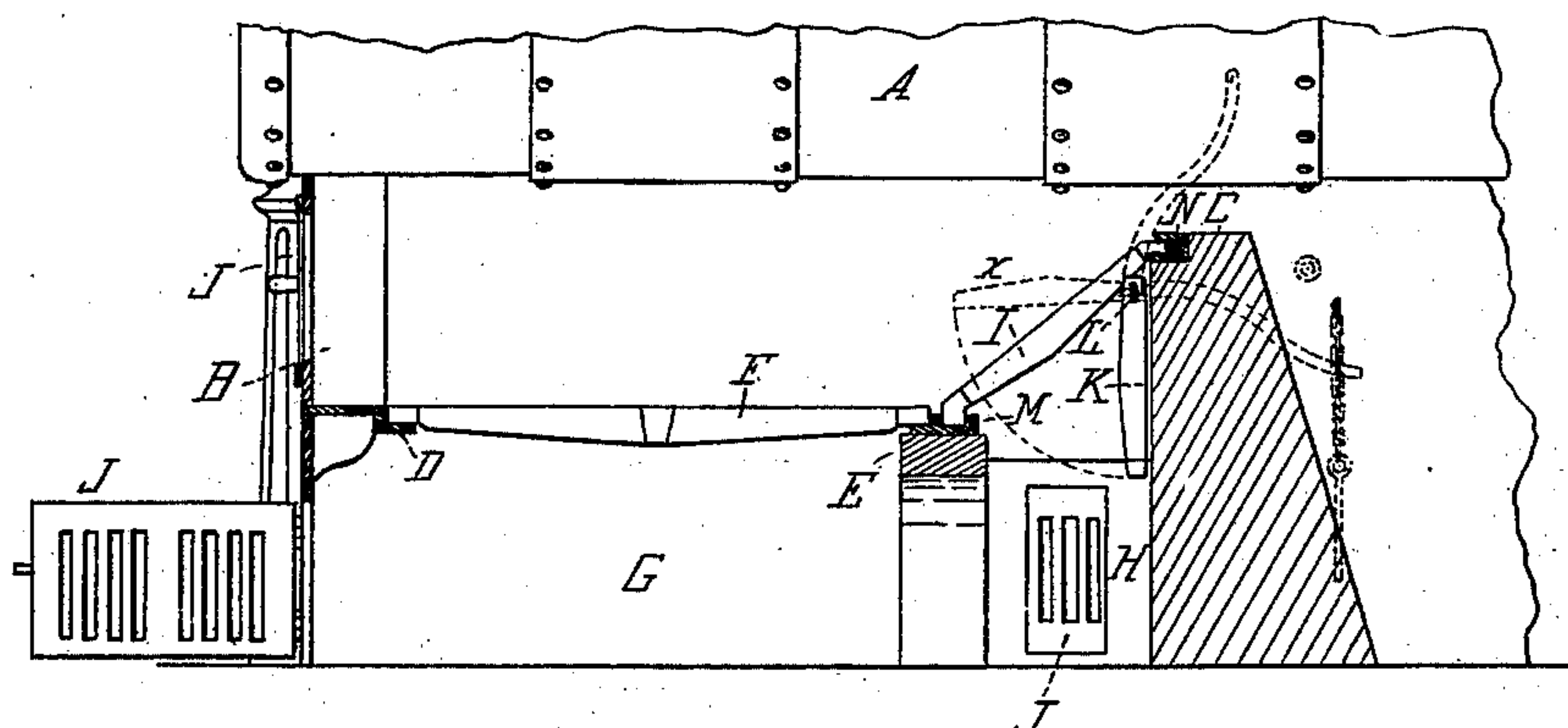


Fig. 2.

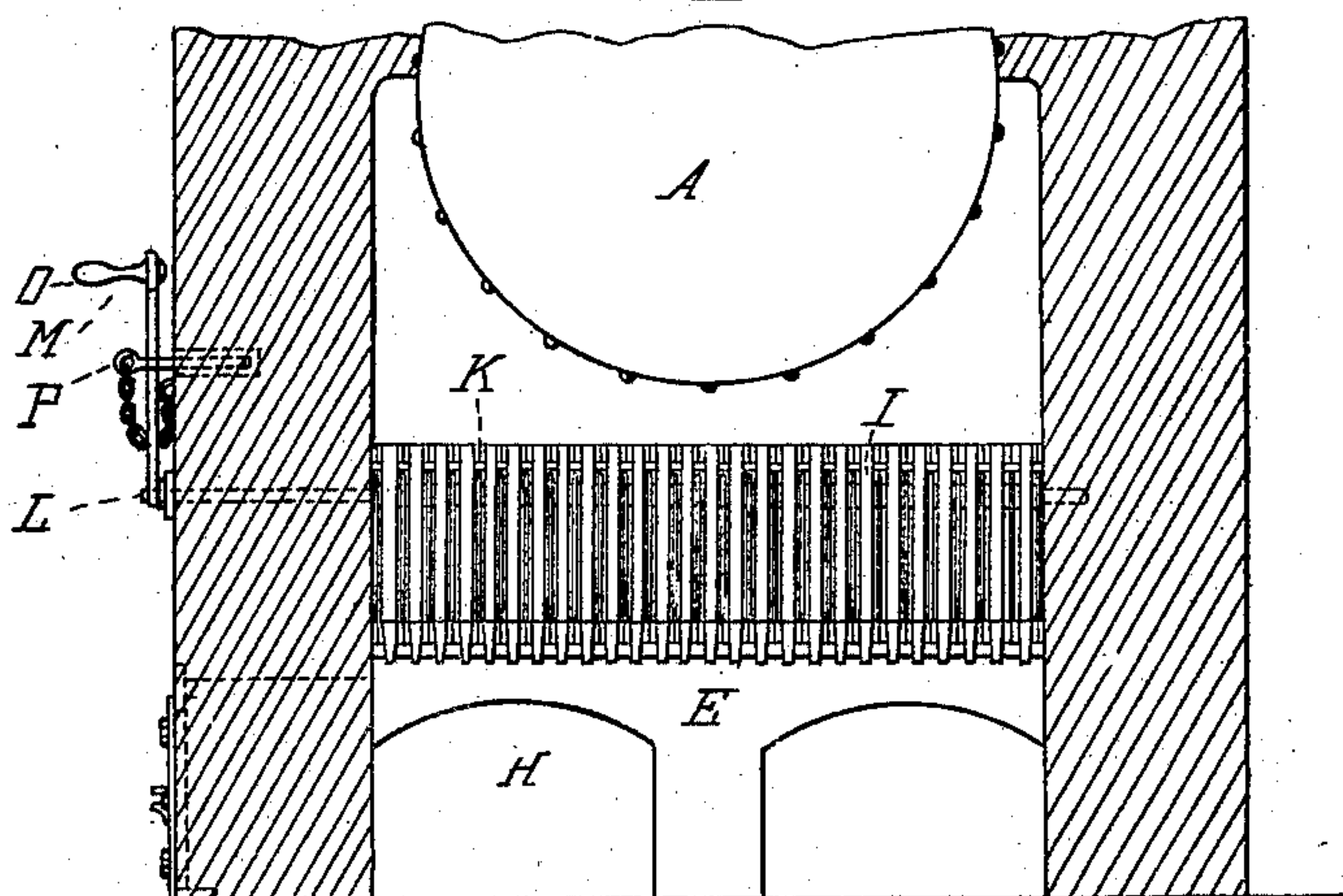


Fig. 5.

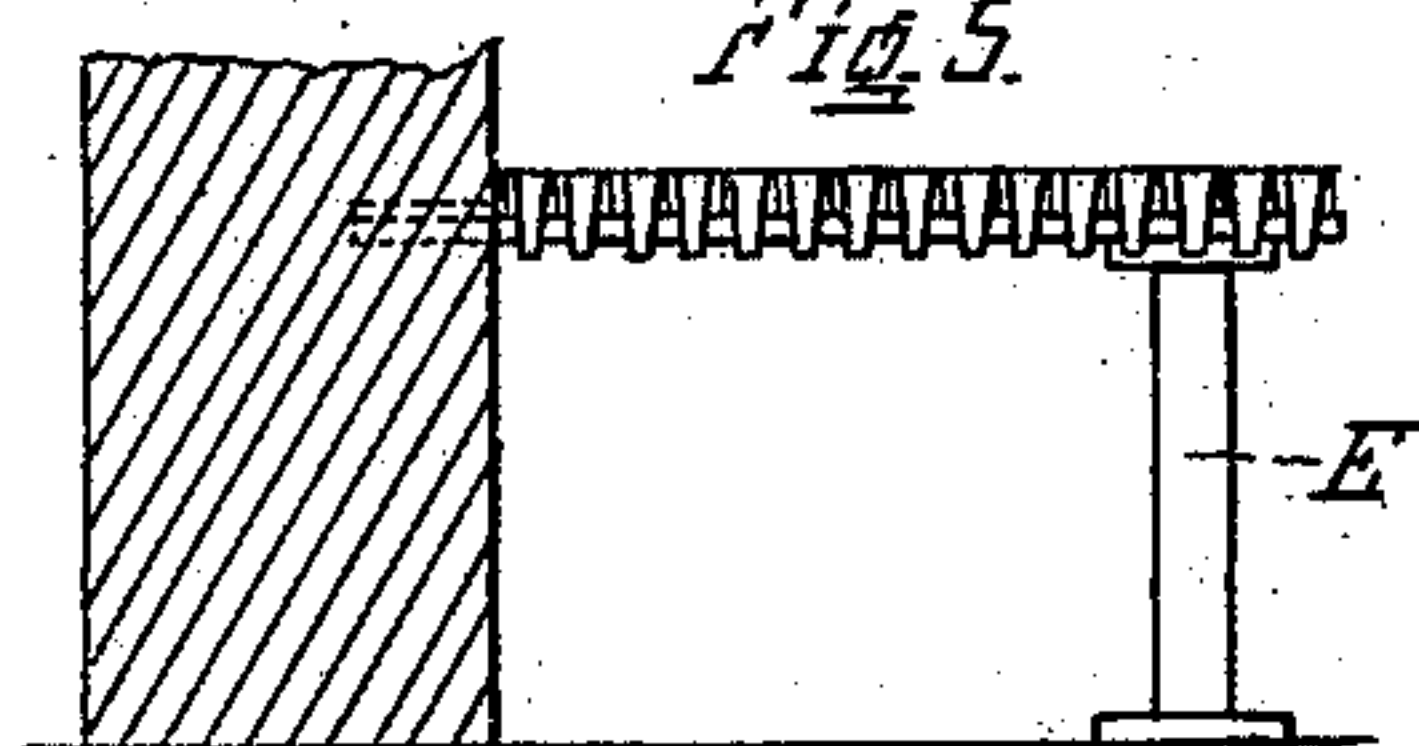


Fig. 3.

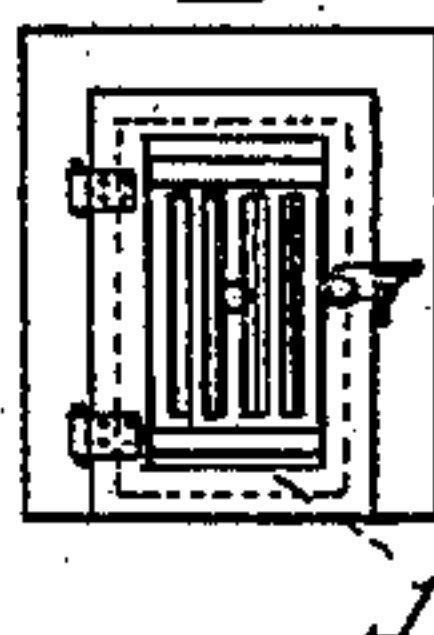
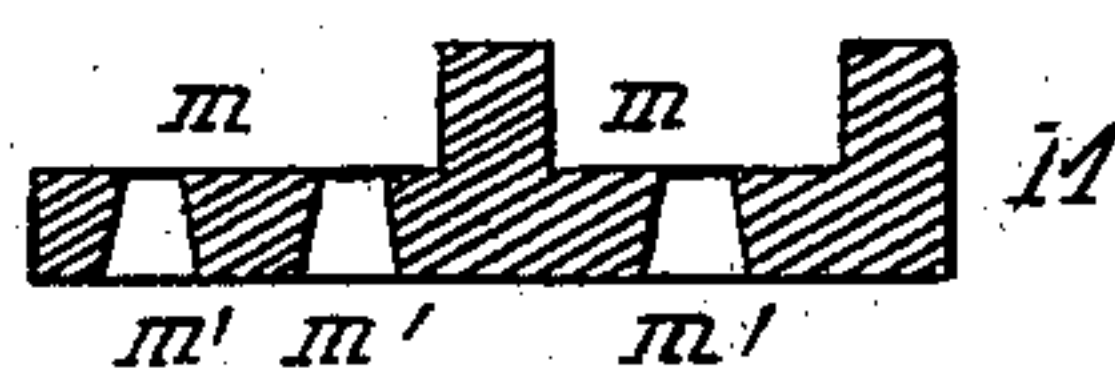


Fig. 4.



Attest
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UNITED STATES PATENT OFFICE.

FRANK H. KANE, OF RIVERSIDE, ASSIGNOR OF ONE-HALF TO WILLIAM KRUSE, OF SEDAMSVILLE, OHIO.

STEAM-BOILER FURNACE.

SPECIFICATION forming part of Letters Patent No. 273,099, dated February 27, 1883.

Application filed August 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. KANE, of Riverside, Hamilton county, Ohio, have invented a new and useful Improvement in Steam-Boiler Furnaces, of which the following is a specification.

The object of my invention is a construction of steam-boiler furnaces adapted to secure thorough combustion at every part, with consequent economy of fuel and avoidance of smoke.

My invention consists in remodeling the ordinary bridge-wall by cutting away the front side down to the bottom of ash-pit and locating a short angle-bar therein, and forming a chamber between the angle grate-bars and front side of bridge-wall, using same grate-bars and bearing-bars, in any furnace I may wish to change, for the purpose of consuming smoke or other deleterious gases before escaping into the atmosphere. The air, in passing through ash-pit and under the ordinary grate-bars, in a partially-heated state, enters the chamber formed between the angle grate-bars and hollow space made by cutting away front side of bridge-wall, and thus becomes thoroughly heated, and passes through the angle grate-bars in bridge-wall to impinge upon the smoke and gases in such a manner as to cause oxygen to be more thoroughly diffused and more perfectly mixed than by any device heretofore constructed for this purpose, thus utilizing the fuel to its greatest extent. By locating a short bar in the bridge-wall I increase the grate-surface and heating-surface, and secure an important increase of steam with same amount of fuel over furnaces with solid bridge-wall of brick or stone.

In the accompanying drawings, Figure 1 is a longitudinal section, and Fig. 2 a transverse section, of a furnace embodying my invention. Fig. 3 may represent either one of the doors which afford communication with the fire-chamber and with the ash-pit. Fig. 4 is a transverse section of the bearing-bar. Fig. 5 shows a modification of my bearing-pier.

A may represent a part of a steam-boiler; B, fire front; C, bridge-wall; D and E, front bearing-bar and arched pier supporting the

grate-bars F, which constitute my grate proper.

G and H are respectively my principal and auxiliary ash-pits.

I is my supplementary grate, set at an angle of about forty-five degrees upward and rearward from the bearing-bar M on top of the arched pier E, and resting-bar N on top of bridge-wall C.

J are registered doors, controlling the air-inlets of the fire and ash chambers.

K is my comb-shaped poker, so hung from shaft L, having a handle, O, outside of the furnace-wall, as to be capable of being passed up through the interstices of the supplementary grate, as shown by dotted lines X in Fig. 1, so as to stir the fire and to dislodge ashes, clinkers, and other spent and clogging accumulations.

The bearing-bar M, which, resting upon the arched pier E or upon iron pillar E', supports the adjacent portions of both grates, has preferably grooves *m* and perforations *m'*, as shown, so as to admit draft-air and be cooled thereby, and at the same time aid combustion.

My poker K is capable of being held to position indicated in Fig. 2, so as to temporarily close up the interstices of the supplementary grate when desired. The poker may be held to this position by any suitable catch, such as a pin, P, inserted in an orifice within the furnace-wall, upon which handle O then rests.

I claim as new and of my invention—

1. In combination with the fire-chamber and ash-chambers G H, and with the grate proper, bridge-wall C, and arched pier E, the up-sloped supplementary grate I, provided with the vibratable comb-formed stirrer K L M, substantially as and for the purpose set forth.

2. The combination, with the supplementary grate I, of the comb-formed stirrer K L O and stop P, substantially as and for the purpose set forth.

In testimony of which invention I hereunto set my hand.

FRANK H. KANE.

Attest:

GEORGE H. KNIGHT,
SAML. S. CARPENTER.