

(No Model.)

G. MOFFATT & S. STUTTAFORD.
APPARATUS FOR CONSUMING SMOKE AND SAVING FUEL IN FURNACES.

No. 448,156.

Patented Mar. 10, 1891.

FIG. 2.

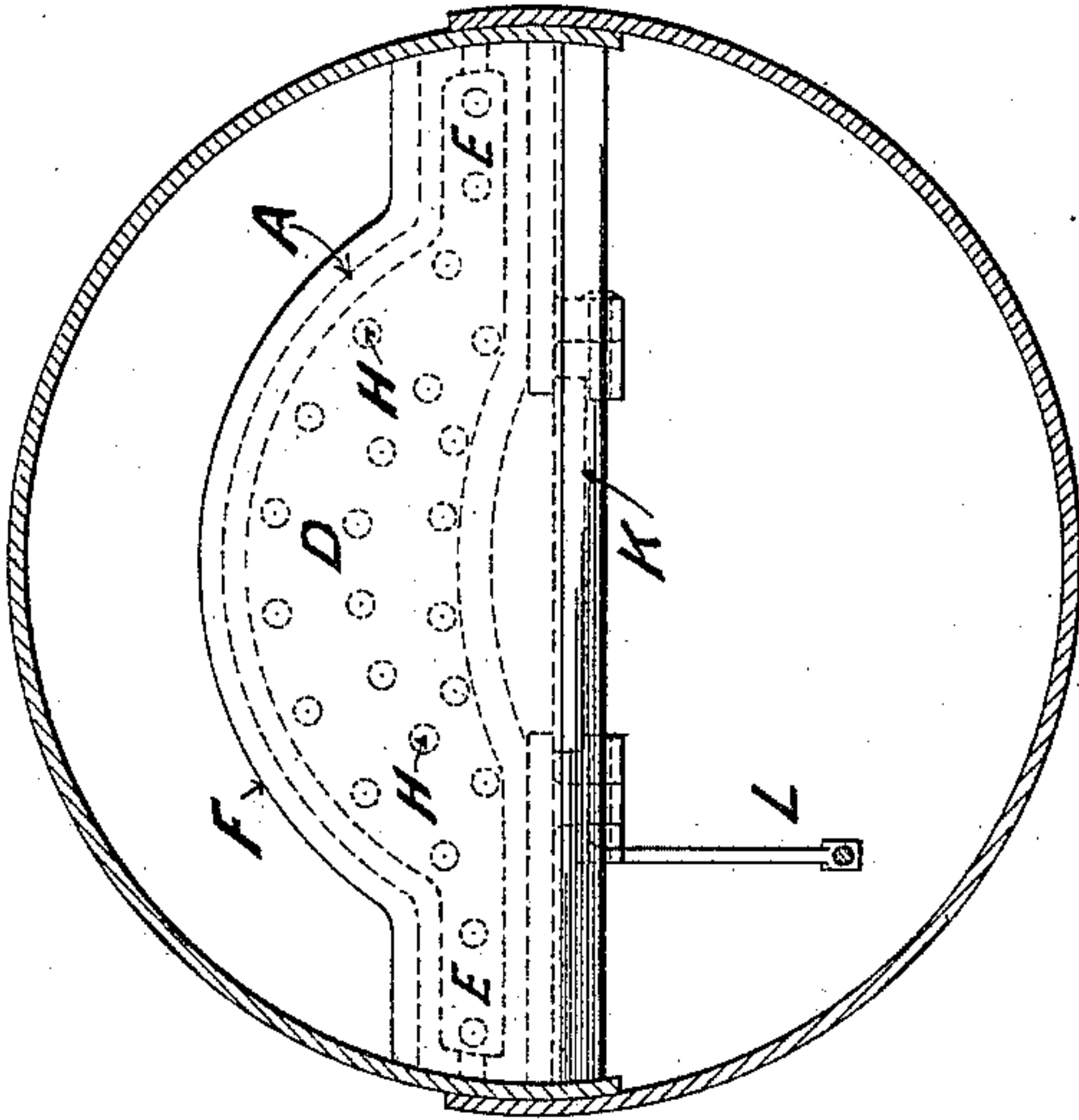
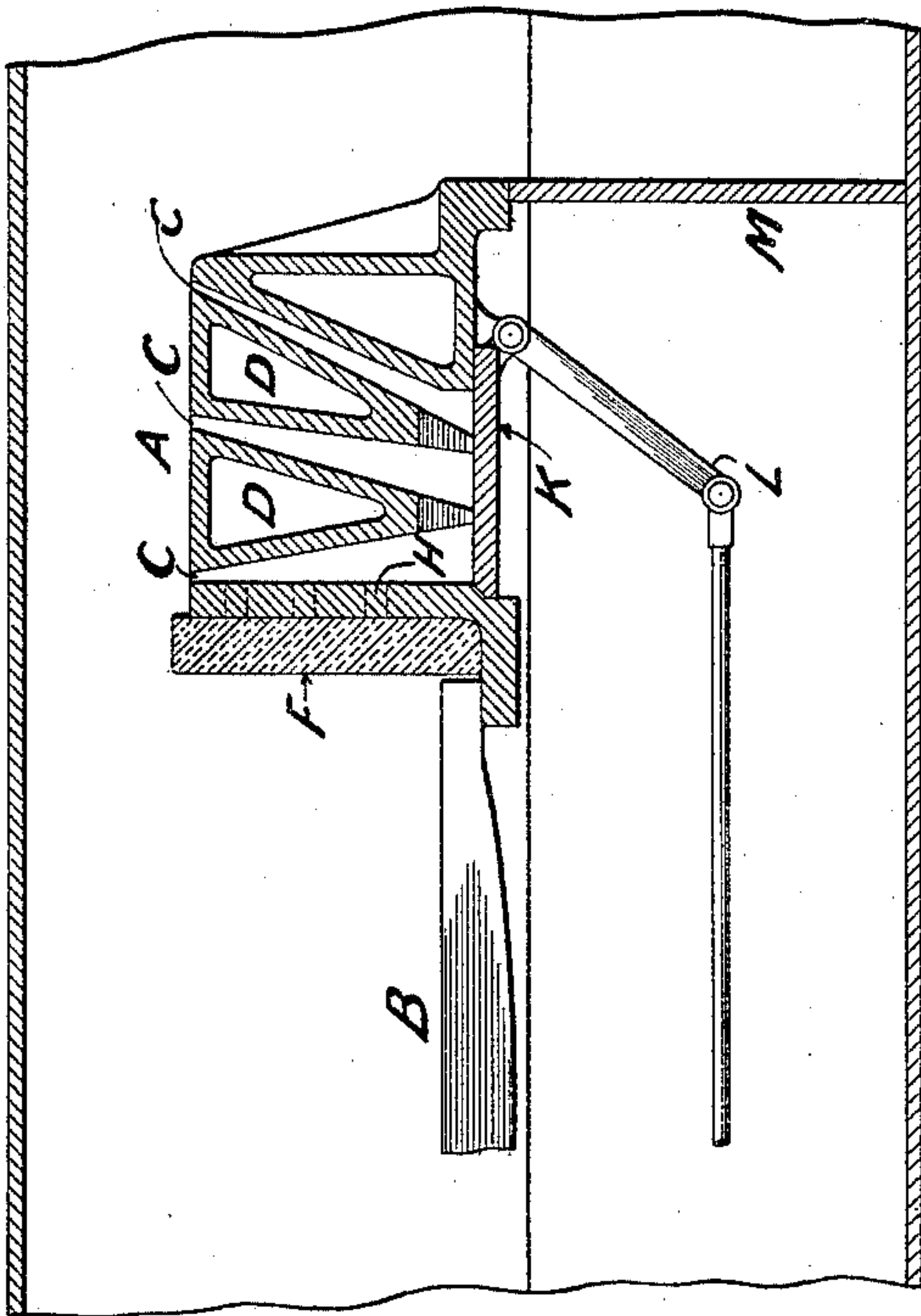


FIG. 1.



Witnesses.

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By their Attys.

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UNITED STATES PATENT OFFICE.

GEORGE MOFFATT AND SAMUEL STUTTAFORD, OF LONDON, ENGLAND,
ASSIGNORS TO THE VULCAN PATENT SMOKE CONSUMER AND FUEL
ECONOMIZER CORPORATION, (LIMITED,) OF SAME PLACE.

APPARATUS FOR CONSUMING SMOKE AND SAVING FUEL IN FURNACES.

SPECIFICATION forming part of Letters Patent No. 448,156, dated March 10, 1891.

Application filed July 9, 1890. Serial No. 358,136. (No model.)

To all whom it may concern:

Be it known that we, GEORGE MOFFATT and SAMUEL STUTTAFORD, both subjects of the Queen of Great Britain and Ireland, and residents of London, in England, have invented a certain Improved Apparatus for Consuming Smoke and Saving Fuel in Furnaces, of which the following is a specification.

The object of our invention is to provide an apparatus for consuming smoke and saving fuel in furnaces by admitting air to the chamber in rear of the furnace, whereby a more perfect combustion of the fuel and of the gases proceeding therefrom will be insured, which will not only economize the fuel either in quantity or in quality, or in both quantity and quality, but will effect the consumption of the smoke; and this our apparatus will be applicable in and with nearly all furnaces, and especially those in Cornish and Lancashire and similar or other boilers, where-soever the furnace is contained in a horizontal chamber. We carry out this object by placing transversely in the horizontal chamber in rear of the furnace a bridge, wherethrough we form two or more narrow transverse passages, and the air that enters the furnace-chamber below the fire-bars can obtain access to these passages, and on passing therethrough is directed across the path of the unconsumed gases and smoke proceeding from the furnace to effect the more perfect combustion, and we construct and fit this bridge in its position, as will now be described.

In the accompanying drawings, Figure 1 is the longitudinal section of part of a horizontal flue or furnace-chamber, showing a vertical section of our apparatus; and Fig. 2 is the transverse section of the flue or furnace-chamber, showing a front elevation of our apparatus.

The bridge consists of a preferably metal block or casting A, which can be fitted in the horizontal furnace-chamber in the proper position horizontally therein and transversely thereto, and this block A can be so formed as to support the inner ends of the fire-bars B, and the upper surface of the block A is made transversely of a semicircular or other form, corresponding with the transverse shape

of the upper part of the horizontal furnace-chamber, in such wise as to leave an equal or a nearly equal distance between such upper part of the chamber and the upper surface of the block A all round the same, from the base of the block on the one side to the base of the block on the other side, which base extends right across the furnace-chamber, as is shown in Fig. 2. Through this block A we can make and form two or more narrow transverse passages C, the lower ends whereof are preferably close together, and these passages C may either be parallel with each other or be inclined from each other, as shown in Fig. 1, or be inclined toward each other; but in all cases these passages C are open all round the upper semicircular or other surface of the block A, or nearly so. In this block A, also between the passages C therethrough, we can make and form chambers D, which may communicate with each other through a chamber E common to all in the base of the block A on each side, which two chambers E in the base may communicate with the boiler, whereby the water in the boiler can circulate through this bridge to its manifest advantage in the way of heating. Immediately in front of this block A we can fit a face F of fire-clay or fire-brick or other suitable material, to prevent the block A being burned or damaged by the heat of the furnace, and the upper edge of this face F is of a shape similar to that of the upper surface of the block A, but is a little higher, or projects a little beyond the same all round, to prevent as far as may be the direct impact of the flames from the furnace on the block; and in the front web of the block A, or in that part thereof that is between the face F and the first passage C, we can conveniently make a number of holes H to allow the heat of the face readily to enter the passage. This block so constructed and fitted constitutes the bridge of the furnace, and below the transverse passages C therein we can fit a rearwardly-hinged plate K, which can be actuated by a suitable rod and lever L. The lower part of the horizontal furnace-chamber below and behind the bridge can be closed by the plate M or otherwise. When therefore the plate K is opened,

it guides and leads the air that enters the horizontal furnace-chamber below the fire-bars B to the passages C, and also governs the amount of such air as it is desired to admit
5 to these passages C, and when this air passes out of the passages C it is directed across the path of the unconsumed gases and smoke proceeding from the furnace, and thereby is effected the desired more perfect combustion.

10 We claim as our invention and desire to secure by Letters Patent—

In an apparatus for consuming smoke and saving fuel, consisting of a bridge in the rear

of the furnace, the combination, in and with a block A, of the transverse passages C, the chambers D, and the face F, with the holes
15 II, substantially as described, for the purpose specified.

In testimony whereof we have signed our names to this specification in the presence of
20 two subscribing witnesses.

GEORGE MOFFATT.
SAMUEL STUTTAFORD.

Witnesses:

JAS. HART,
THOMAS WM. MATHEWS.