

C. LEVEY.
Furnace.

No. 227,906.

Patented May 25, 1880.

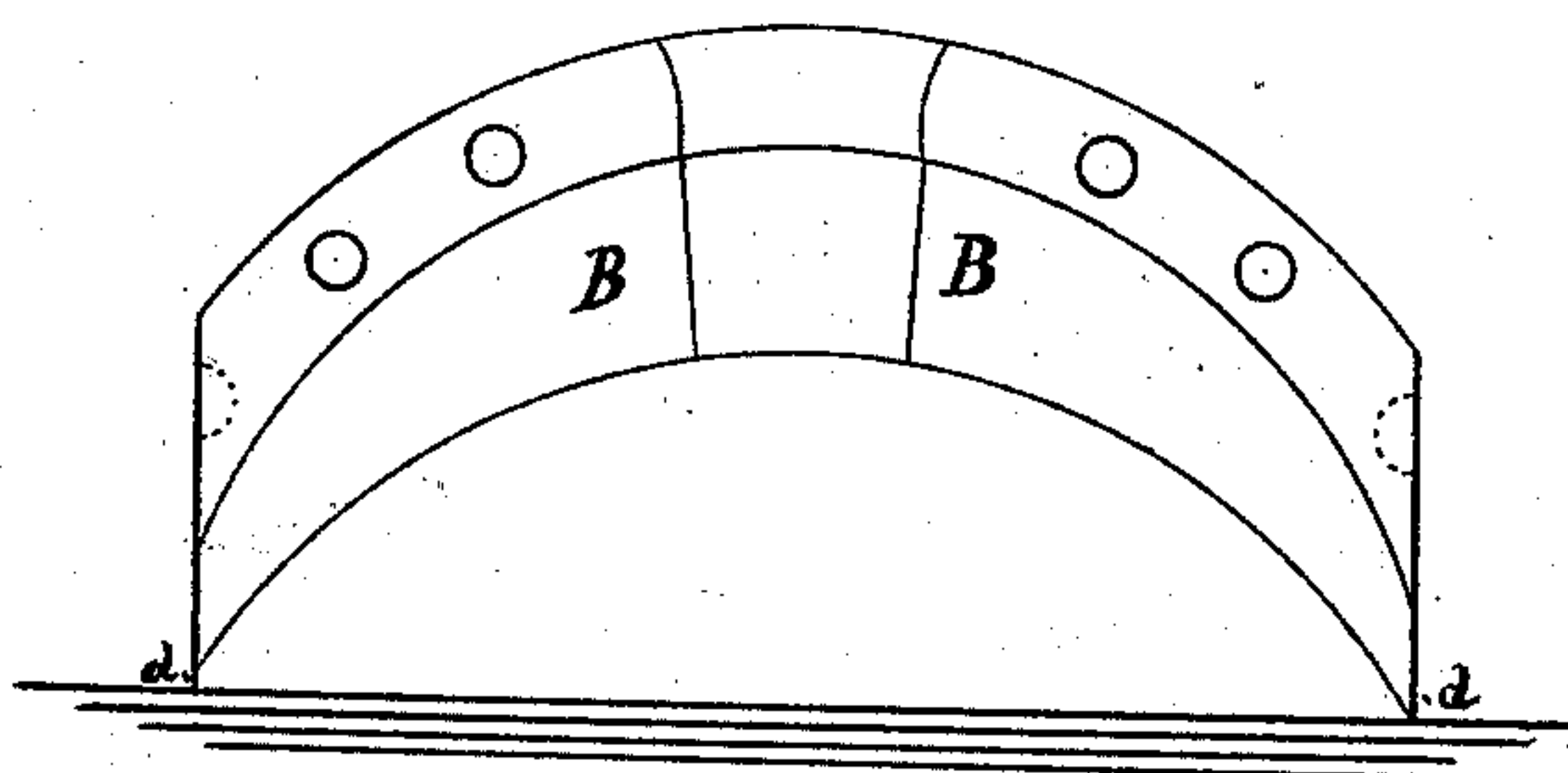
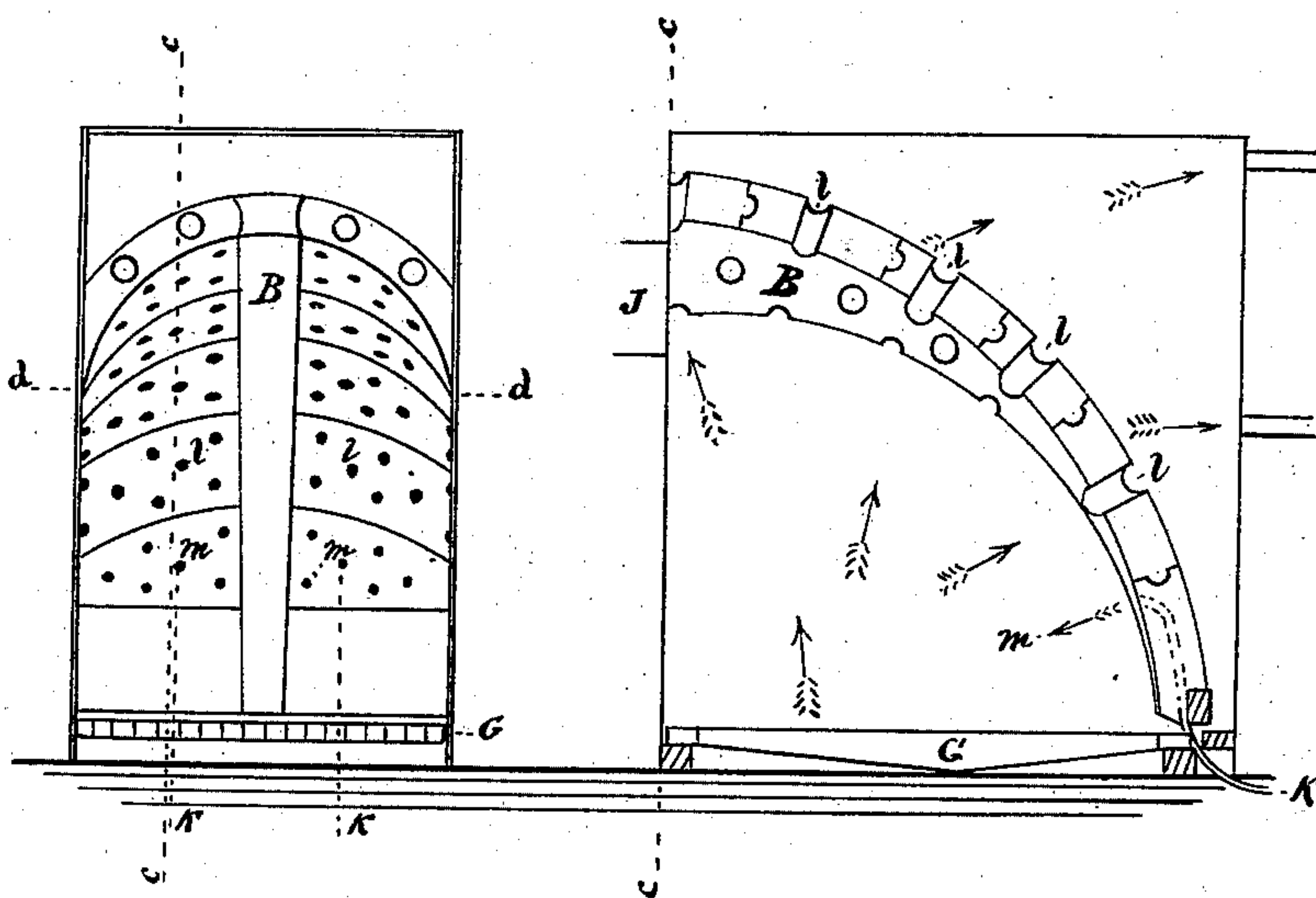


Fig. 3.



Witnesses;

Fred King

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UNITED STATES PATENT OFFICE.

CHARLES LEVEY, OF TORONTO, ONTARIO, CANADA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 227,906, dated May 25, 1880.

Application filed June 10, 1879.

To all whom it may concern:

Be it known that I, CHAS. LEVEY, of the city of Toronto, in the county of York and Province of Ontario, Canada, engineer, have
5 invented Improvements in Furnaces, of which the following is a specification.

The object of my invention is the consumption of smoke and economy of fuel by the combination of muffle B, hydro-oxygen apparatus M
10 K, mixing-chamber C, and combustion-chamber D.

Figure 1 is a cross-section of the muffle B, grates G, flues *l* and *m*, showing also the general arrangement of the brick-work, boiler,
15 and furnace. Fig. 2 is a longitudinal section, showing flues *m* and *l*, mixing-chamber C, and bridge-wall I. Fig. 3 is a longitudinal section, showing, on a smaller scale, the general arrangement in that direction and other details
20 of construction.

My invention relates to that class of furnaces designed for the perfect combustion of fuel, the prevention of smoke, and the consequent economy of fuel; and it consists in arranging under the boiler a muffle or arch made
25 of fire-brick or other refractory material. Said arch entirely surrounds the furnace or fire-chamber, and is provided with apertures enlarging in diameter from the inside. In rear
30 of the arched fire-chamber is located a mixing-chamber, in which steam, air, and the products of combustion are made to commingle and become thoroughly mixed, and in this state pass to the combustion-chamber through
35 perforations or flues, where any unconsumed gases escaping from the other chamber are entirely consumed, thus insuring nearly perfect combustion and utilizing all the fuel.

In order that the fuel and gases above men-

tioned may be thoroughly consumed the brick
40 arches must be kept intensely heated, so that when the gases impinge against their sides said gases are immediately ignited and consumed.

The operation is as follows: Fire being kindled on the grate G, the products of combustion pass through the perforations in the muffle B to the mixing-chamber C and combustion-chamber D. These parts soon become
45 intensely hot, and steam is introduced by the pipe *k*, which, in its passage through the flues *m*, meets and continues with the carbonaceous gases from the fuel, and these combined are consumed and generate heat.
50

I claim as my invention—

1. In a furnace, the combination of the
55 arched chamber or muffle B, provided with tapering perforations or flues, as described, the mixing-chamber C, also provided with exit flues or perforations, and combustion-chamber
60 D, whereby the gases arising from the fuel are entirely consumed, as herein set forth and described.

2. The arched chamber B, perforated, as described, chamber C, having its arch provided
65 with tapering flues or perforations, steam-pipes *k*, and combustion-chamber D, all constructed and arranged for the purposes herein set forth.

3. The combination of the grates G, muffle B, flues *l m*, mixing-chamber C, bridge-wall I,
70 combustion-chamber D, and steam-pipe *k*, substantially as and for the purpose hereinbefore set forth.

CHAS. LEVEY.

Witnesses:

FRED KING,
A. O. BEARDMORE.