

(No Model.)

A. PILLATT.
FURNACE.

No. 605,206.

Patented June 7, 1898.

Fig. 1,

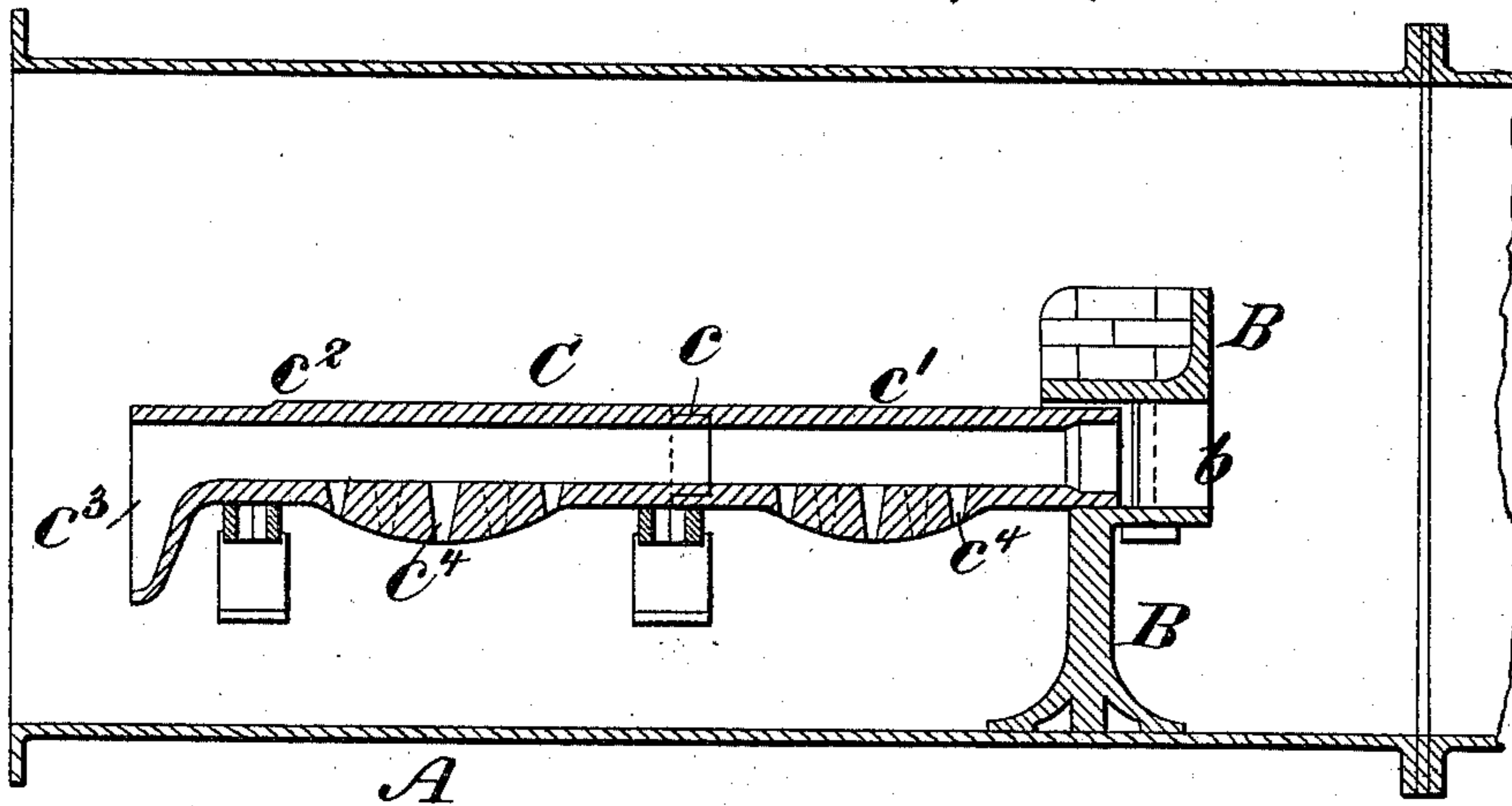


Fig. 2,

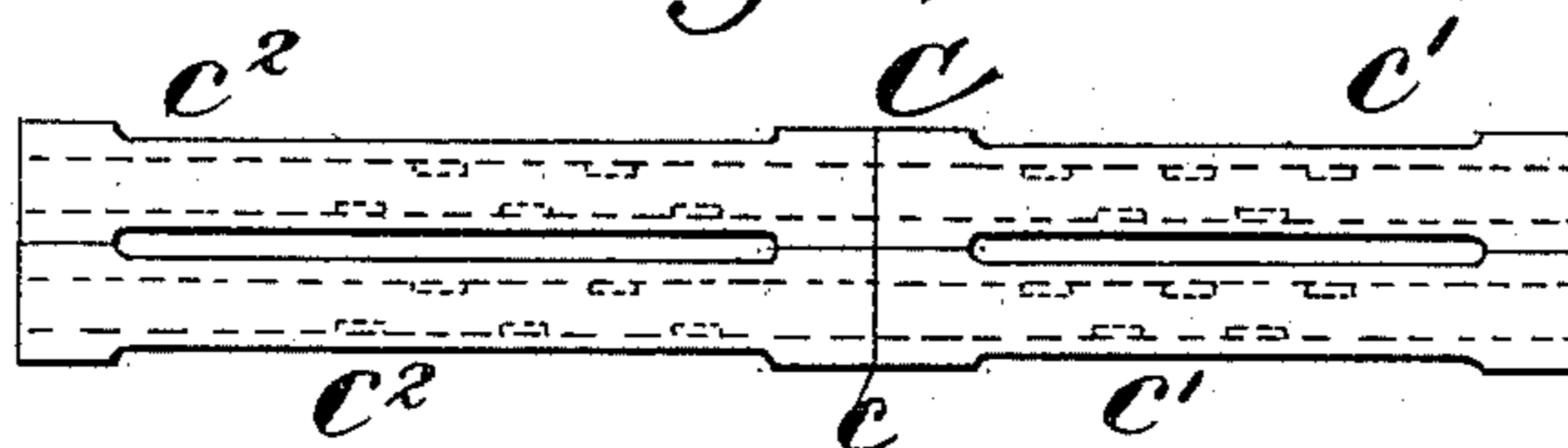


Fig. 3,

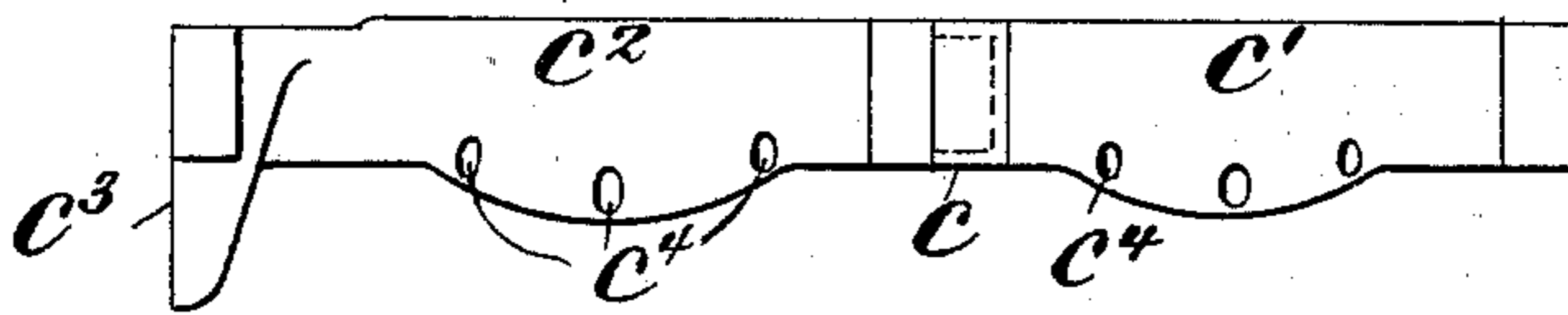
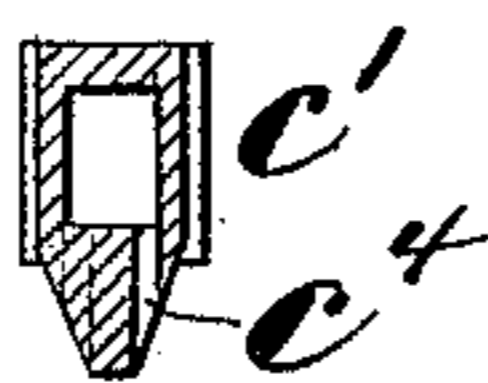


Fig. 4,



WITNESSES:

A. H. Kayser.
Ernest Hopkinson

INVENTOR

Andrew Pillatt

BY *Edwin H. Brown*
HIS ATTORNEY

UNITED STATES PATENT OFFICE.

ANDREW PILLATT, OF NOTTINGHAM, ENGLAND.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 605,206, dated June 7, 1898.

Application filed August 6, 1896. Serial No. 601,912. (No model.) Patented in England July 18, 1895, No. 13,371; in Germany August 20, 1895, No. 87,546; in France September 14, 1895, No. 250,290; in Belgium November 11, 1895, No. 118,308; in Italy November 16, 1895, No. 40,171; in Austria January 11, 1896, No. 46,108, and in Canada February 14, 1896, No. 57,337.

To all whom it may concern:

Be it known that I, ANDREW PILLATT, of Nottingham, in the county of Nottingham, England, have invented a certain new and useful Improvement in Furnaces, of which the following is a specification, and for which I have already obtained Letters Patent as follows: British, No. 13,371, of July 18, 1895; German, No. 87,546, of August 20, 1895; French, No. 250,290, of September 14, 1895; Belgian, No. 118,308, of November 11, 1895; Italian, No. 40,171, of November 16, 1895; Austrian, No. 46,108, of January 11, 1896, and Canadian, No. 57,337, of February 14, 1896.

My improvement consists in the combination, with the bridge-wall, of a furnace provided with an opening or openings, of a grate composed of bars having continuous passages from one end to the other, and openings along their lower portions, communicating with said continuous passages, the said continuous passages being in communication with the opening or openings of the bridge-wall of the furnace.

In the accompanying drawings, Figure 1 is a vertical section of portions of a furnace embodying my improvement, the section being taken lengthwise of the grate-bars. Fig. 2 is a top view of grate-bars comprised in said furnace. Fig. 3 is a side view of such grate-bars. Fig. 4 is a transverse section of one of the grate-bars.

Similar letters of reference designate corresponding parts in all the figures.

A designates the chamber of a furnace embodying my improvement. I have not attempted to show this in detail, as it may be of any suitable construction comprising an ash-pit and a combustion-chamber, and additionally a bridge-wall B, which may be of any suitable construction, but is to have an opening or openings *b* extending horizontally through it.

C designates a grate composed of grate-bars, here shown as made of longitudinal sections *c'* *c*², fitted together. The sections *c'* are open from end to end and communicate with the opening or openings *b* of the bridge-wall B between the ash-pit and combustion-

chamber. The sections *c*² are also open from end to end and communicate with the interior of the sections *c'*. As here shown, the sections *c'* *c*² are rabbeted, so as to make a close joint *c* where they communicate. In the present example of my improvement I have shown the sections *c*² as having enlarged end bearings adapted to the inner bearing-faces of the openings *b* and somewhat depressed inlet portions or mouths *c*³. The grate-bars are provided with a number of openings *c*⁴, and these I have shown in both the sections *c'* *c*². These openings are in the lower portion of the bars and preferably on opposite sides of the center line. They extend upwardly and communicate with the openings with which the grate-bars are provided longitudinally from end to end.

It will be seen that by my invention air may enter the grate-bars at the end which is the farthest from the bridge-wall. In the present instance such air will enter from the ash-pit; but this is not essential to my improvement. Air will also enter the grate-bars through their openings *c*⁴. This air will of course be highly heated by radiation before entering the openings *c*⁴. A large body of highly-heated air is by my improvement caused to flow continually through the grate-bars, thus keeping the bars sufficiently cool to preserve their integrity and supplying oxygen in a condition well fitted for combustion just beyond the bridge-wall, where it may combine with carbon, which will mainly be in the form of soot or smoke that has been carried over the bridge-wall with the products of combustion. The heated air and carbon will enter into combustion in the combustion-chamber, adding to the heat which would be produced by the furnace without my improvement, and also consuming the soot and smoke, so that it will not defile the atmosphere outside of the furnace.

The details of construction which are illustrated in the drawings may be varied considerably without departing from the principle of my invention.

I am aware that hollow grate-bars have been used; but it has been found that unless cur-

rents of air are admitted thereto regularly throughout the lengths of the bars they will inevitably clog up, become inoperative, and burn out. I am also aware that bars have
5 been made with longitudinal channels and with openings at intervals, but merely to prevent rapid burning out, and never with end bearings adapted to permit their use with perforated bridge-walls and never arranged
10 to supply heated air to combustion-chambers beyond the bridge-walls.

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

15 1. A grate-bar adapted to be fitted in a furnace with one end communicating with an opening through the bridge-wall leading to the combustion-chamber, and having a longitudinal passage extending to said end and

constructed to receive air below the top substantially uniformly throughout its length 20 and deliver it for combustion beyond the fuel-chamber, substantially as specified.

2. The combination of a furnace and a hollow grate-bar with an end bearing adapted to a hollow bearing formed through a bridge- 25 wall and open to receive air from the ash-pit substantially uniformly throughout its length, substantially as specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing 30 witnesses.

ANDREW PILLATT.

Witnesses:

J. T. PERRY,
T. J. TAPON.