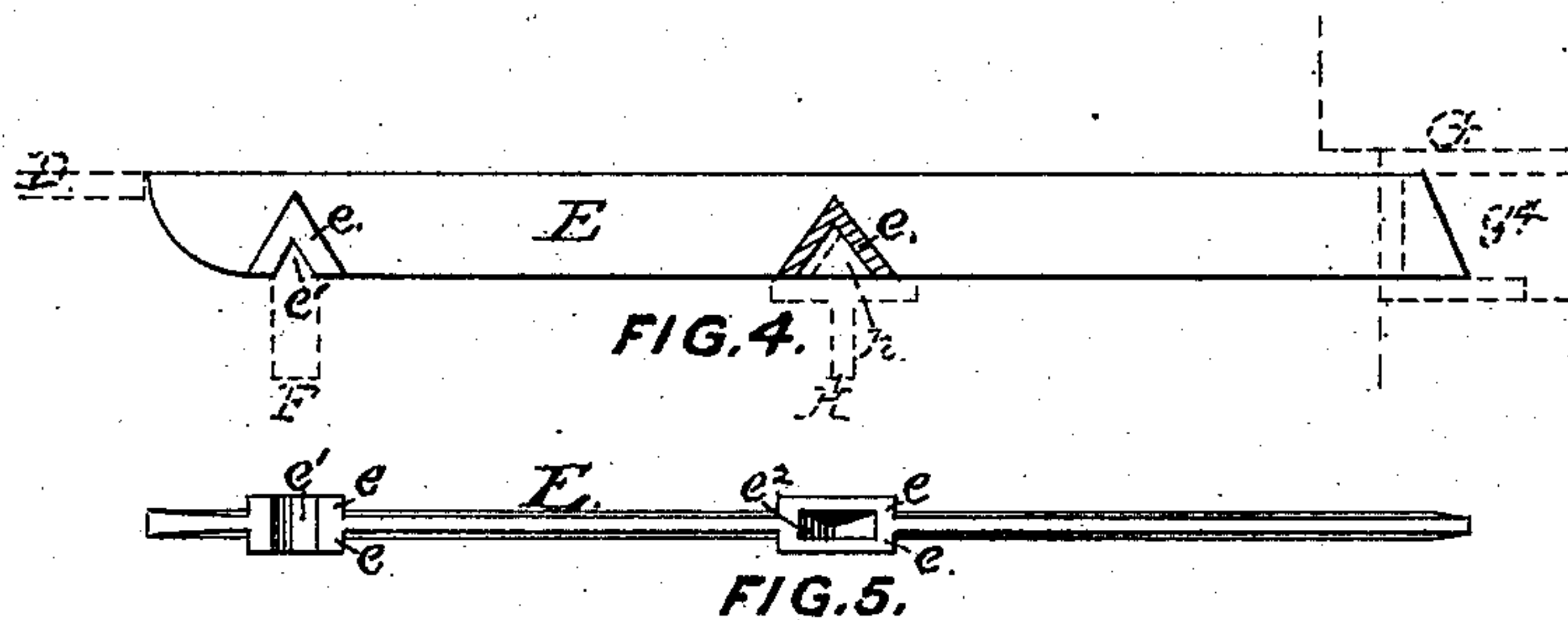
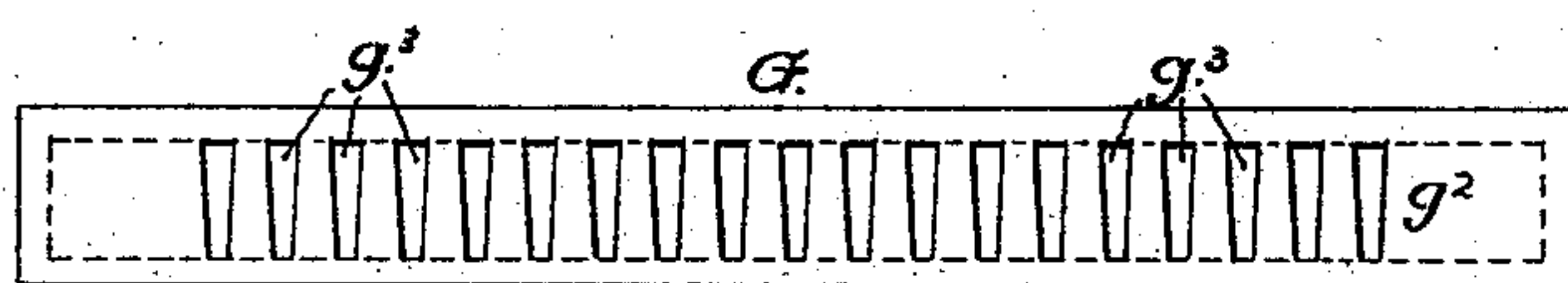
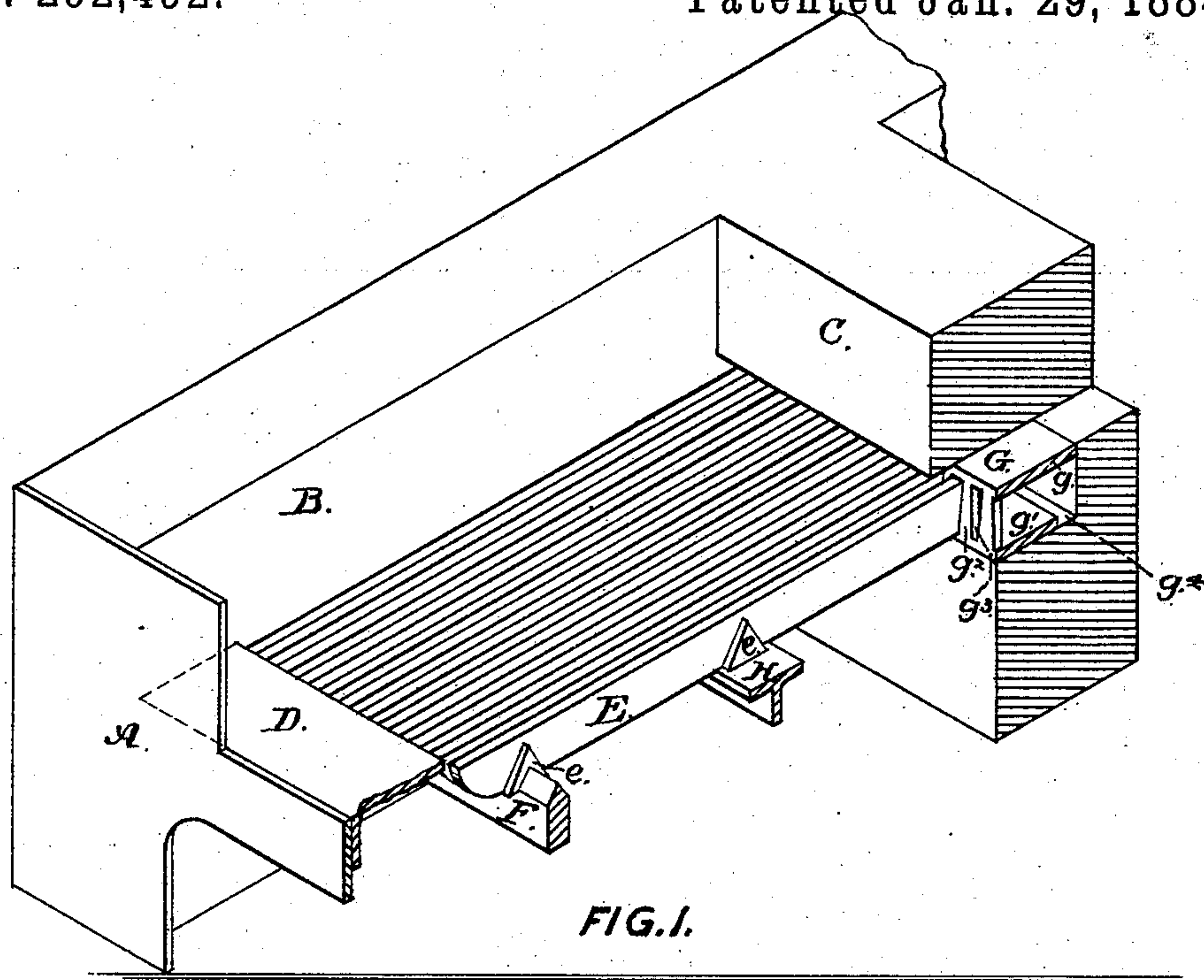


(No Model.)

M. C. JONES.  
FURNACE GRATE.

No. 292,492.

Patented Jan. 29, 1884.



Witnesses:

L. P. Prescott

H. V. Scattergood.

Inventor:

M. C. JONES,

by William H. Low,

Attorney.



# UNITED STATES PATENT OFFICE.

MILTON C. JONES, OF GREEN ISLAND, NEW YORK.

## FURNACE-GRATE.

SPECIFICATION forming part of Letters Patent No. 292,492, dated January 29, 1884.

Application filed October 23, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, MILTON C. JONES, of Green Island, in the county of Albany and State of New York, have invented certain new and useful Improvements in Furnace-Grate Bars, of which the following is a specification.

My invention relates to improvements in bars for the grates or fire-beds of boiler and other furnaces; and the object of my improvements is to provide furnace-bars that will not become warped and bent out of shape by the heat generated from a superimposed mass of burning fuel; and to this end my invention consists in securing the forward end of each grate-bar in a fixed position, so that it cannot be moved by the expansion and contraction of it, the rear end of each of said bars being fitted to rest in a chambered bearing-bar provided with a series of openings for receiving the grate-bars and maintaining them in position to resist any tendency to warp and twist, the said chambered bearing-bar being specially adapted to permit the grate-bars to expand freely in a lengthwise direction without encountering any obstruction at their rearmost end, and by so doing I avoid the most frequent cause of warping and bending in grate-bars.

In the accompanying drawings, which form part of this specification, and to which reference is made herein, Figure 1 is a perspective longitudinal section of a boiler-furnace containing my improvements; Fig. 2, a front elevation of the chambered bearing-bar; and Figs. 3, 4, and 5 are detached details of an intermediate bearing-bar and a grate-bar adapted to engage over standing-ears formed on the said bearing-bar.

As represented in the drawings, A is the front plate of a furnace; B, the brick-work at sides of furnace; C, the "bridge-wall;" D, the "dead-plate" at the forward end of the furnace; E, grate-bars; F, the front bearing-bar; G, the rear or chambered bearing-bar, and H an intermediate bearing-bar.

The front plate, A, brick-work B, and dead-plate D may all be constructed in any of the usual and well-known forms for such parts.

The grate-bars E are made of a uniform depth and of a uniform cross-sectional form.

At their forward end they have either a curved or angular termination, so that their upper

ends may fit snugly against the inner edge of the dead-plate D. Each of said bars has a series of triangular spacing-snugs, *e*, which are formed at each side and, as shown in Fig. 1, near its lower edge. A notch, *e'*, cut in the under edge of the bar at the base of the foremost snug *e*, is adapted to engage on the sharpened upper edge of the front bearing-bar, F, in such manner that the forward end of each grate-bar will be retained thereby and prevented from being moved by the expansion and contraction of the bars, which will only affect the bars at the parts lying at the rear of the front bearing-bar, F. While I have shown and described only one mode of locking the forward end of said grate-bars to the front bearing-bar, it will be obvious to any one conversant with such constructions that many devices for effecting the same purpose in substantially the same manner may be substituted therefor.

The rear bearing-bar, G, is made in the form of an open-sided box, having its open side at the rear. It has an upper flange, *g*, a lower flange, *g'*, and a vertical face, *g''*, the latter being provided with a series of openings, *g'''*, that are made to conform to the cross-section of the grate-bars E, and into which the rearmost ends of the grate-bars will slide freely and be maintained in their proper erect position. An open-sided chamber, *g''''*, is formed in the bearing-bar G at the rear ends of the grate-bars E, so that the latter will be left free to expand endwise in a rearward direction without meeting any obstruction that would cause said grate-bars to become bent and contorted.

The intermediate bearing-bar, H, may be made of the usual form, (shown in Fig. 1,) whereon the grate-bars will simply rest; or—as I preferably make it—the said bar may be provided on its upper face with a series of triangular ears, *h*, as shown in Figs. 3 and 4. Said ears must correspond in number and position to the grate-bars, so that each ear will engage in a recess, *e''*, formed in the lower edge of each grate-bar. The said recesses are elongated so as to permit the grate-bar to expand lengthwise; but they are fitted to bear sidewise on the ears *h*, so as to aid in retaining the grate-bars in shape and position.

The bridge-wall C is built on the top of the



bearing-bar G in such manner that the front face of said wall will project about two inches over the front of said bearing-bar. By this means a protection from the heat is formed for the bearing-bar G, and ashes are thereby prevented from passing through the openings  $g^3$  into the chamber  $g^4$ , wherein an accumulation of such ashes might prove harmful.

I claim as my invention—

10 1. The chambered bearing-bar G, consisting of an open-sided box, composed of the upper flange,  $g$ , lower flange,  $g'$ , and vertical front plate,  $g^2$ , the latter containing a series of openings,  $g^3$ , which conform to the shape and number of the grate-bars E, and which will permit said grate-bars to expand endwise therein, but will prevent the ashes from entering the chamber  $g^4$ , as herein specified.

20 2. The combination, with the grate-bars E, having their forward ends locked in a fixed position, as herein described, of the chambered bearing-bar G, consisting of an open-sided box, constructed as herein described,

and having its vertical front plate,  $g^2$ , provided with a series of openings,  $g^3$ , for containing the movable ends of said grate-bars, and adapted to exclude the ashes from the chamber  $g^4$ , as herein specified.

3. The combination, with a grate-bar, E, adapted to be locked in a fixed position at one end, and provided in its under edge with a slotted recess,  $e^2$ , as herein described, of a bearing-bar, H, having on its upper face a series of ears,  $h$ , adapted to engage in the recesses  $e^2$  of said grate-bars, in the manner and for the purpose herein specified.

4. The combination, with the chambered bearing-bar G, as herein described, of the bridge-wall C, erected directly upon the upper flange,  $g$ , so as to overhang the forward face,  $g^2$ , of said bearing-bar, as and for the purpose specified.

MILTON C. JONES.

Witnesses:

WILLIAM H. LOW,

A. F. LOW.