No. 637,304. Patented Nov. 21, 1899.

F. R. TIBBITTS.

GRATE BAR FOR FURNACES.

(Application filed Aug. 28, 1899.)

(No Model.)

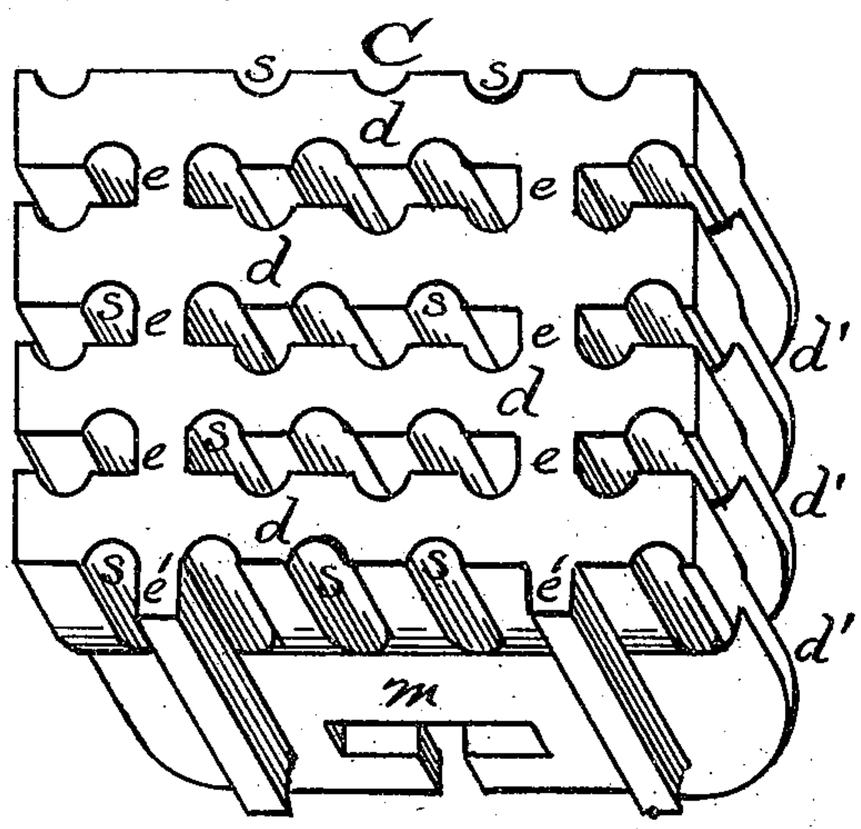


Fig. 2.

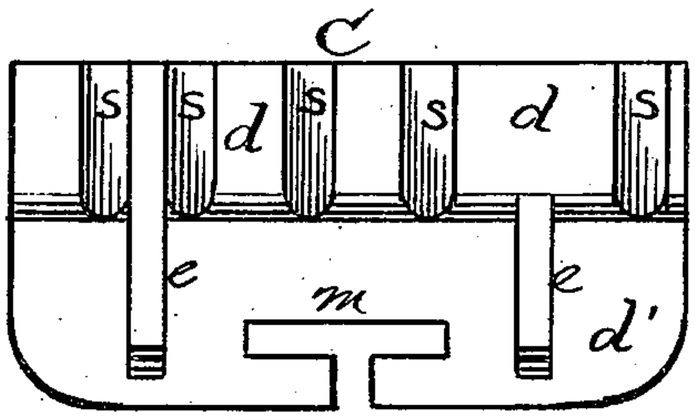


Fig. 4.

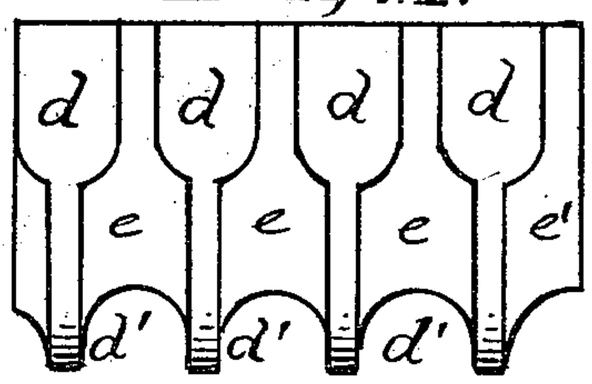
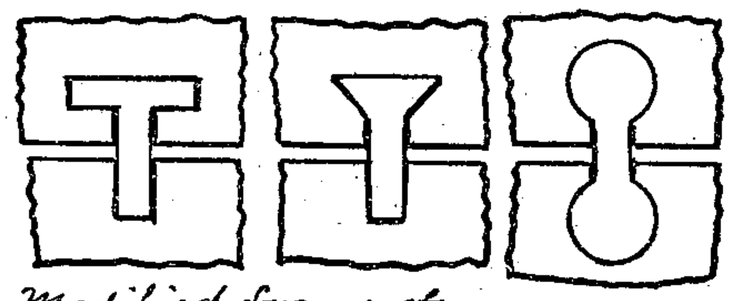


Fig. 5.



Modified forms of Matrices and supporting bars.

Fig. 1.

Fig 3.

Witnesses.

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GRATE-BAR FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 637,304, dated November 21, 1899.

Application filed August 28, 1899. Serial No. 728,810. (No model.)

To all whom it may concern:

Be it known that I, FRANK R. TIBBITTS, a citizen of the United States of America, and a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Furnace Grate-Bars, of which the following is a specification.

This invention relates to grate-bars for furnaces; and it consists in the new construction and adaptation of the grate-surface sections to the supporting-bar, substantially as hereinafter described, and pointed out in the claims.

The object of this invention is the production of grate-surfaces in sections, easily and readily assembled on their supporting-bars, and having vertical air-spaces capable of supplying ample draft through them and at the same time adapted to support fine slack or pulverized fuel without loss or diminution of perfect combustion.

In the accompanying drawings, Figure 1 is a perspective view of a portion of a grate-bar, showing some of the new grate-surface sections assembled upon their supporting-bar. Fig. 2 is a perspective view of one of the grate-surface sections, showing the top or fire surface. Fig. 3 is also a perspective view of one of the grate-surface sections, showing the under side construction. Fig. 4 is a side elevation, and Fig. 5 is an end elevation, of a grate-section of the new construction.

A represents one of the links of an endless chain of a traveling grate. B is one of the I-beam-section-supporting bars supported by the said links.

C C are the grate-surface sections which comprise the essential feature of this invention. They consist of four or any suitable number of cross-bars *d d*, six inches in length and three inches in depth. Two-thirds of the lower portion of said bars are reduced in thickness to one-third that of the upper portion, thus forming depending webs *d' d'*, as seen in the several figures. These cross-bars *d d* are united or joined by cross-webs *e e*, extending down from the top surface three-fourths the distance, and are arched at their bottom, as seen in Figs. 3 and 5. At one side the said cross-webs project the distance of a space between the bars *d d*, as seen at *e' e'*, Fig. 2. This is to provide an equal space between the sections when assembled on their supporting-bars. The full surface of each section is six by five inches. In the sides of the thick upper portions of the said cross-bars *d d* are made half-round vertical slots *s s* in alternate order. These, together with spaces between the bars, form the draft-spaces through the sections. In the middle of the lower part of the webs *d'* are made T-shaped mortises *m m*, by means of which the sections are slipped onto the upper side of the I-beams. The under sides of the I-beams are supported in like T-mortises in the upper parts of the links A, and both the links and grate-sections are secured in place by a flat cotter-pin *b* put through a hole in the projecting end of the beam B.

I do not confine myself to any particular form of mortise or supporting-bars, as it is obvious that a variety of forms may be employed for the purpose. Form does not contribute to the purpose, as all forms possess the same function.

Grate-bars constructed on this plan are found to possess superior qualities, are much more durable, less liable to be warped or burned, because of the sufficient air-space, and without liability of clogging.

Having described my invention, what I claim is—

1. In furnace-grates, the grate-sections C C, consisting of cross-bars *d d*, having webs *d' d'* and joined by the cross-webs *e e*, the bars *d* having the vertical slots *s s* in their sides, and the mortises in the webs *d'* substantially as described.

2. In furnace-grates, the grate-sections C C consisting of the cross-bars *d d* having webs *d'* and joined by the cross-webs *e e*, the bars *d* having the vertical slots *s s* in their sides, and the mortises in the webs *d'*, in combination with supporting-beams for assemblage thereon, substantially as described.

Signed by me at Cleveland, Ohio, this 25th day of August, 1899.

FRANK R. TIBBITTS.

Witnesses:

GEO. W. TIBBITTS,

CHARLES L. STOCKER.