R. G. ORWIG.

Improvement in Air Conducting Grate Bars.

No. 125,404. Patented April 9, 1872.

Fig. 1.

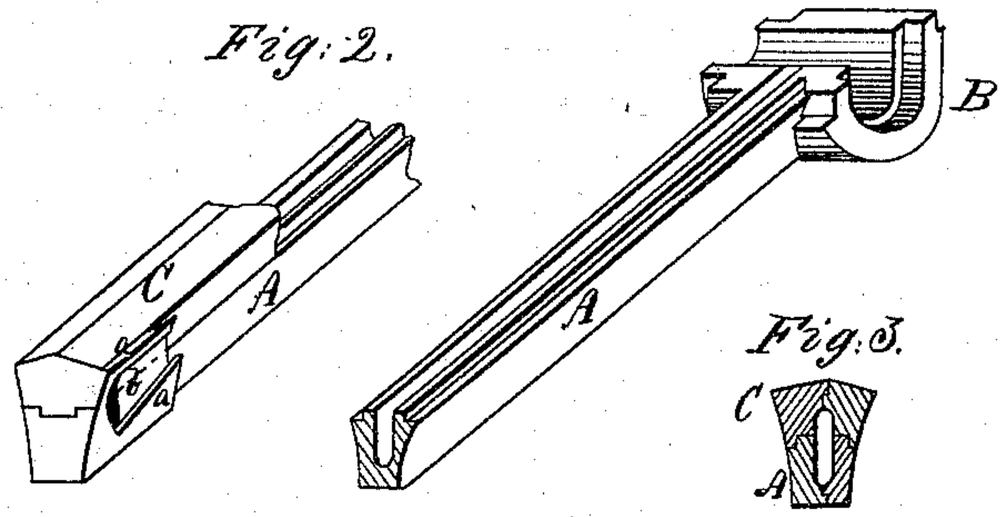


Fig. 4.

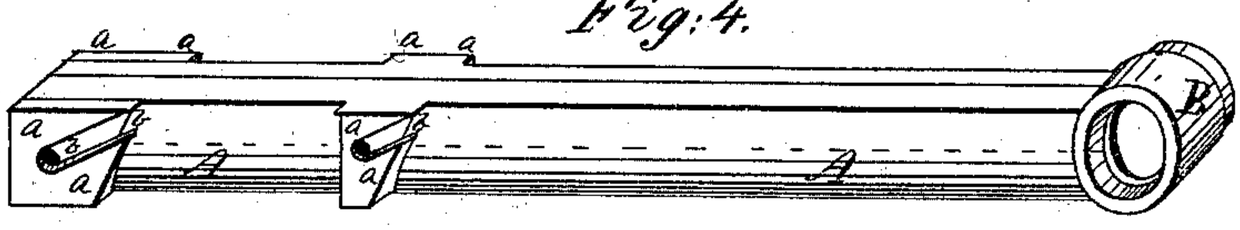
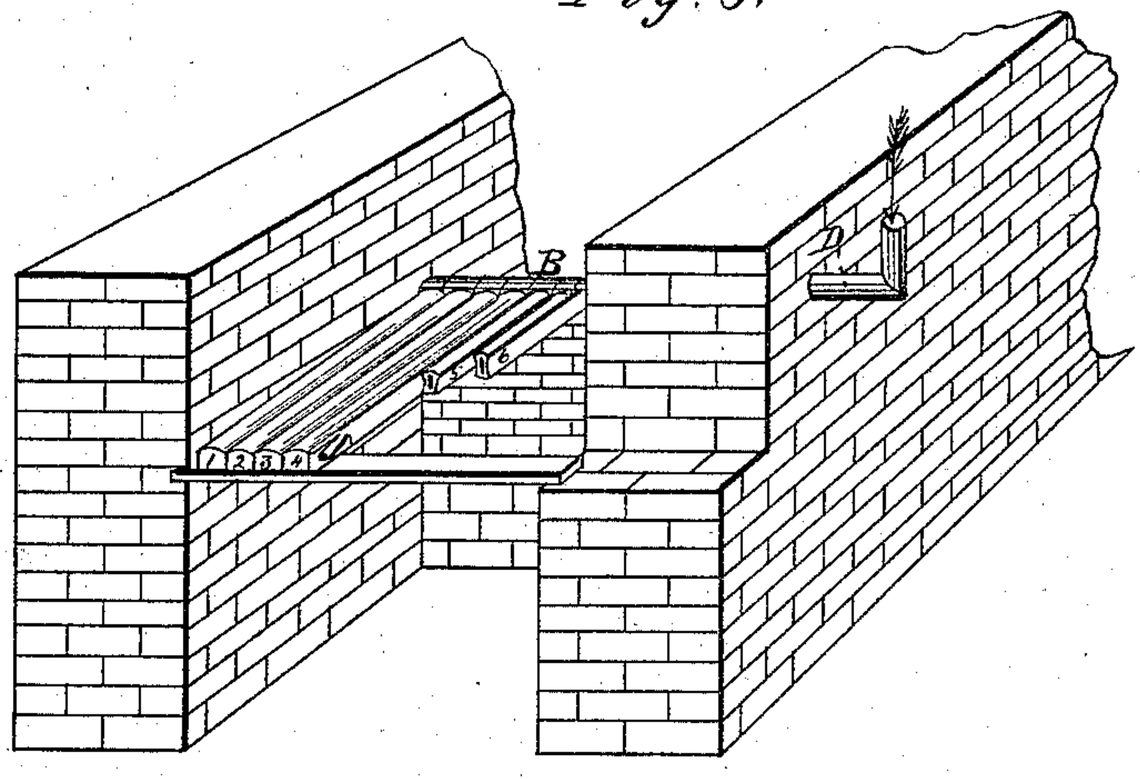


Fig. 5.



Witnesses:
Geo. W. Ball
J. K. Marsh

Inventor:
Ruben G. Orwig

UNITED STATES PATENT OFFICE.

RUBEN G. ORWIG, OF DES MOINES, IOWA.

IMPROVEMENT IN AIR-CONDUCTING GRATE-BARS.

Specification forming part of Letters Patent No. 125,404, dated April 9, 1872.

SPECIFICATION.

Specification describing certain Improvements in Grates for Furnaces, invented by RUBEN G. ORWIG, of Des Moines, Iowa.

The object of my invention is to provide a grate for furnaces that will not warp and burn, and that can be used as a means for conducting and distributing an artificial current of air to the fire. It consists, first, in forming the grate-bars in such a manner that when they are placed together side by side they will form a complete grate with a continuous air-passage through the entire grate; second, in forming escape-passages in the sides of the bars for directing and distributing air, all as hereinafter fully set forth.

Figure 1 of my drawing represents a half section of a single grate-bar.

A is the under half of a hollow bar. It may vary in form and size as desired. B is the rear end, in the form of a T, and also hollow. Any common form of joint may be used to connect the under half of the bar with the upper half, and also to connect the T-ends of the several bars. The bars may also be divided vertically in place of horizontally. The single bars with T-ends can also be cast complete in one piece, and that part formed by the T-ends may be cast separately and joined to the bars by any common joint.

Fig. 2 is the front end of a bar, showing the upper half C in position, and one of the directing and distributing escape-passages. Fig. 3 is a cross-section view of a bar, and illustrates the manner in which it may be formed and joined in sections, with a hollow passage in its center. Fig. 4 represents one of my bars cast complete in one piece, with two escape-passages on each side.

A A is the body of the bar. B is the T-end. *a a* are lateral enlargements of the bar, used as a means to keep the bars apart and to stay them when in position, and also for the purpose of forming the directing and distributing escape-passages *b b*. These lateral enlargements correspond in width with the length of the lateral projecting T-ends. They may vary from one-half inch to several inches, as desired. The length of the enlargements *a a* may also vary, but they must be longest at the top. The cavity *b* connects with the hollow of the bar, and is formed to incline upward at any angle desired. The outside bars of the grate have cavities on their inner sides only. None of the cavities *b* are complete until two bars are joined. The upper or roof side of these cavities are longer than their under sides, and thereby prevent dirt and ashes from falling in. I show only two of these cavities *b*, but claim the use of one or more, and at any point of the bar, and directed at any angle backward or forward.

Fig. 5 is a miniature perspective view, illustrating the manner of combining and operating my sectional grate in a furnace.

1 2 3 4 5 6 represent separate bars placed side by side to form a complete grate. B B is a reservoir, formed by the combination of the T-ends of the single bars. D is a common pipe, conducting an artificial current of air from a common fan. The air, forced through this pipe into the reservoir B B, circulates through every bar and keeps them cool, and prevents burning and warping. The escape-passages *b b* direct and distribute the air to the fire. By changing their angles and increasing them in number a blast can be blown upon and through every portion of the fuel and fire, to aid combustion and to prevent soot and smoke, and the loss and annoyance occasioned thereby.

I am aware that tubular grate-bars are in use; also that fans and pipes are used for making and conducting artificial currents of air to furnace-fires. I claim, however, that my mode of forming bars or sections to produce a complete grate, with a continuous air-passage, and with directing and distributing escape-passages, as described, is a new, simple, practical, and economical means of keeping a grate cool and blowing the fire, without putting on outside attachments and obstructions.

Claims.

1. A grate for furnaces, formed by joining the series of bars 1 2 3 4 5 6 in the manner described to produce a grate, having an air-reservoir, B B, and a continuous air-passage, and also a series of escape-passages, *b*, substantially as set forth, and for the purposes specified.

2. The lateral enlargements *a a*, with cavities *b*, on the sides of a grate-bar, substantially as described, and for the purposes specified.

RUBEN G. ORWIG.

Witnesses:

J. K. MARSH,

H. LEWIS.