C. K. MARSHALL.

Grate.

No. 79,845. Patented July 14, 1868.

Fig: 1.

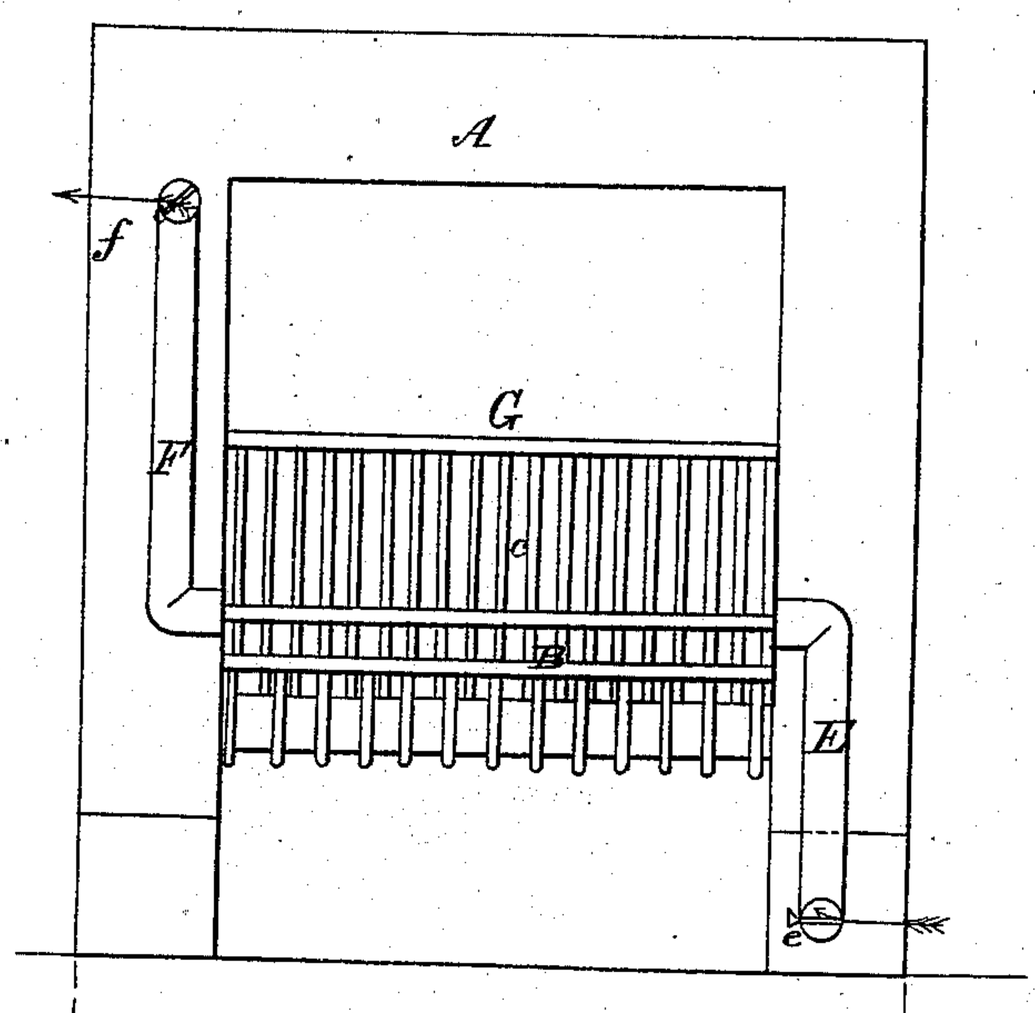


Fig: 2.

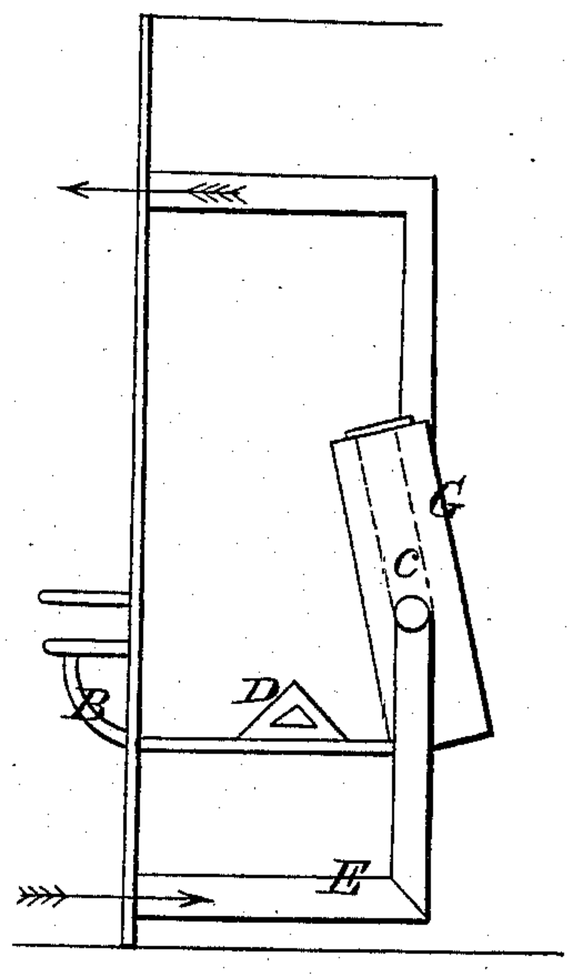


Fig: 3.

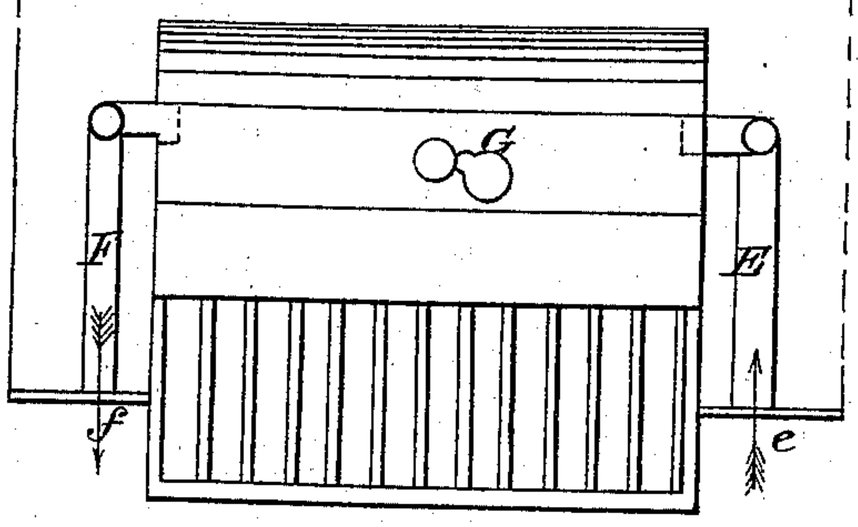
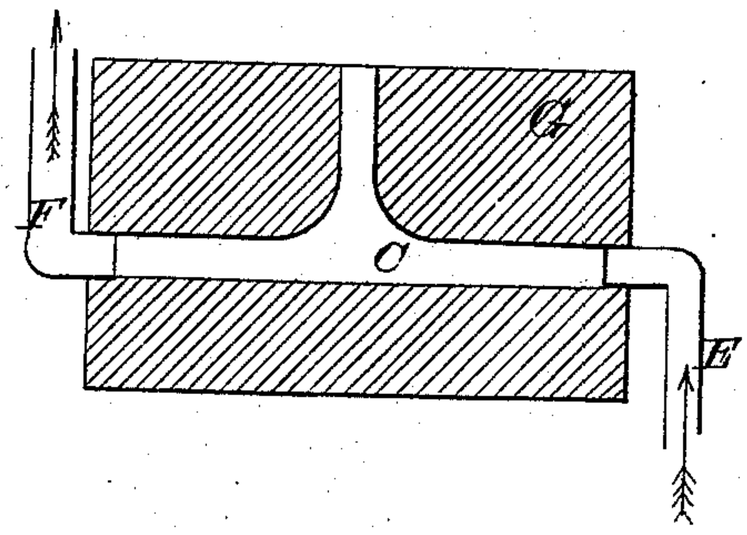


Fig: 4.



Witnesses;
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C. K. MARSHALL, OF NEW ORLEANS, LOUISIANA.

Letters Patent No. 79,845, *dated July* 14, 1868; *antedated June* 27, 1868.

IMPROVEMENT IN COAL-GRATES AND STOVES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, C. K. MARSHALL, of New Orleans, parish of Orleans, and State of Louisiana, have invented certain new and useful Improvements in Fire-Grates; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, and to the letters of reference marked thereon, and making part of this specification, in which—

Figure 1 is a front view, the dotted lines on the face of the fluted tile showing the internal grooves.

Figure 2 is a sectional view.

Figure 3 is a plan view.

Figure 4 is a plan view of the tile, illustrating an interior section of the same.

It is a well-known fact that in open fire-grates, as at present constructed, but a small portion of the air which is heated by the combustion of the fuel is introduced into the room or apartment which it is desired to warm. In order to have a free draught, the back tiles are invariably placed in an angular position, so that there may be a large and free opening at the point of contact with the flue of the chimney, and the consequence is that a great portion of the air is carried, by the force of the draught, through the chimney-flue, instead of being thrown into the room for the purpose of warming the same.

To devise some means to remedy this evil has long been considered a great desideratum, and is the object of my present invention.

The nature of my invention consists in constructing the tile with an internal groove or grooves, and connecting said groove or grooves with a supply-pipe, by which fresh air is constantly introduced into the body of the tile, by means of which the air, after it has become thoroughly heated by its passage through the tile, is discharged into the room.

My invention also consists in arranging a damper immediately above the tile, so that when the apartment becomes uncomfortably warm, the course of the current of air, introduced through the agency of the supply-pipe, can readily be changed, and, instead of being thrown into the room, will be made to escape by means of the chimney-flue.

My invention also consists in arranging, along the bottom of the grate, a hollow triangular tile, so arranged that a passage is left for the fuel between the same and front bars of the grate, and also between the triangular and back tiles, so that, when the grate is properly filled, the entire tile will be embedded in the coal. This triangular tile is connected with suitable openings in the sides of the grate, by which a constant current of fresh air is admitted and passed under the mass of heated coal, and discharged into the room, the whole acting precisely on the same principle as do the grooves in the rear tile, before referred to.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is an open fireplace, and may be faced with stone, metal, or any other suitable material, and constructed in any of the usual forms.

B is an ordinary grate, and suspended in the fireplace A in the usual manner.

C is a rear tile of the grate, and may be made either of fire-clay, soapstone, or any other like material, and its face may be either plain or fluted. Within the body of this tile C, I introduce one or more grooves, *c*, so arranged that they will either serve as a passage for the air within and across the entire tile, or as a passage, when the damper is turned, to convey the same to the chimney-flue. These grooves *c* can be introduced into the body of the tile with but little trouble, and adding scarcely at all to the expense of the same. The fire-clay, while in a plastic state, can readily be manipulated for the purpose, while the soapstone, when taken from the quarry, and before the same is exposed to the action of the atmosphere or heat, is equally easy to work.

D is a triangular tile, arranged horizontally across the centre of the grate, the base of the tile being in such proportion to the width of the bottom of the grate that a passage is left for the coal between the same and the back tile, and also between the same and the front bars of the grate. This tile D is hollowed out or

grooved like C, and the spaces thus formed are connected with suitable openings in the side of the grate, in like manner with those in C, and for the same purpose.

E and F are two straight pipes, with curved elbows, or of any other desired form. These pipes enter the groove *c* of the tile C sufficiently far to enable a tight connection to be secured between said pipes and the groove *c*.

e and *f* are two dampers, which cover the mouths of the pipes E and F. When these dampers are open, a current of fresh air is constantly introduced into the grooves *c*, and caused to pass through the tile C. The air becoming heated in its transit through the tile, is discharged into the room by means of the pipe F.

G is a damper on top of the triangular tile D, and covers the mouth of the groove *c*. By turning this damper, the course of the air can readily be changed, so that, instead of passing through the tile and being discharged into the room by means of the pipe F, it can be caused to pass out through the chimney-flue.

Practical experience has fully attested this fact, that a grate constructed on the plan herein described will, with the same amount of fuel, afford more than twice the amount of heat to the apartment than can possibly be obtained from a grate constructed on the principle of the one now in general use.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The tile C, with its internal grooves *c c*, in combination with the pipes E and F, or their equivalents, and the grate B, when the same are constructed and arranged substantially as described, and for the purpose set forth.

2. The tile C, with its internal grooves *c c*, in combination with the pipes E and F, and damper G, when the same are constructed and arranged substantially as described, and for the purpose set forth.

3. Arranging, in the bottom of an open fire-grate, a hollow triangular tile, D, when the same is connected with openings in the side of the grate, substantially as described.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

C. K. MARSHALL.

Witnesses:

JOHN D. BLOOR,

JOHN S. HOLLINGSHEAD.