

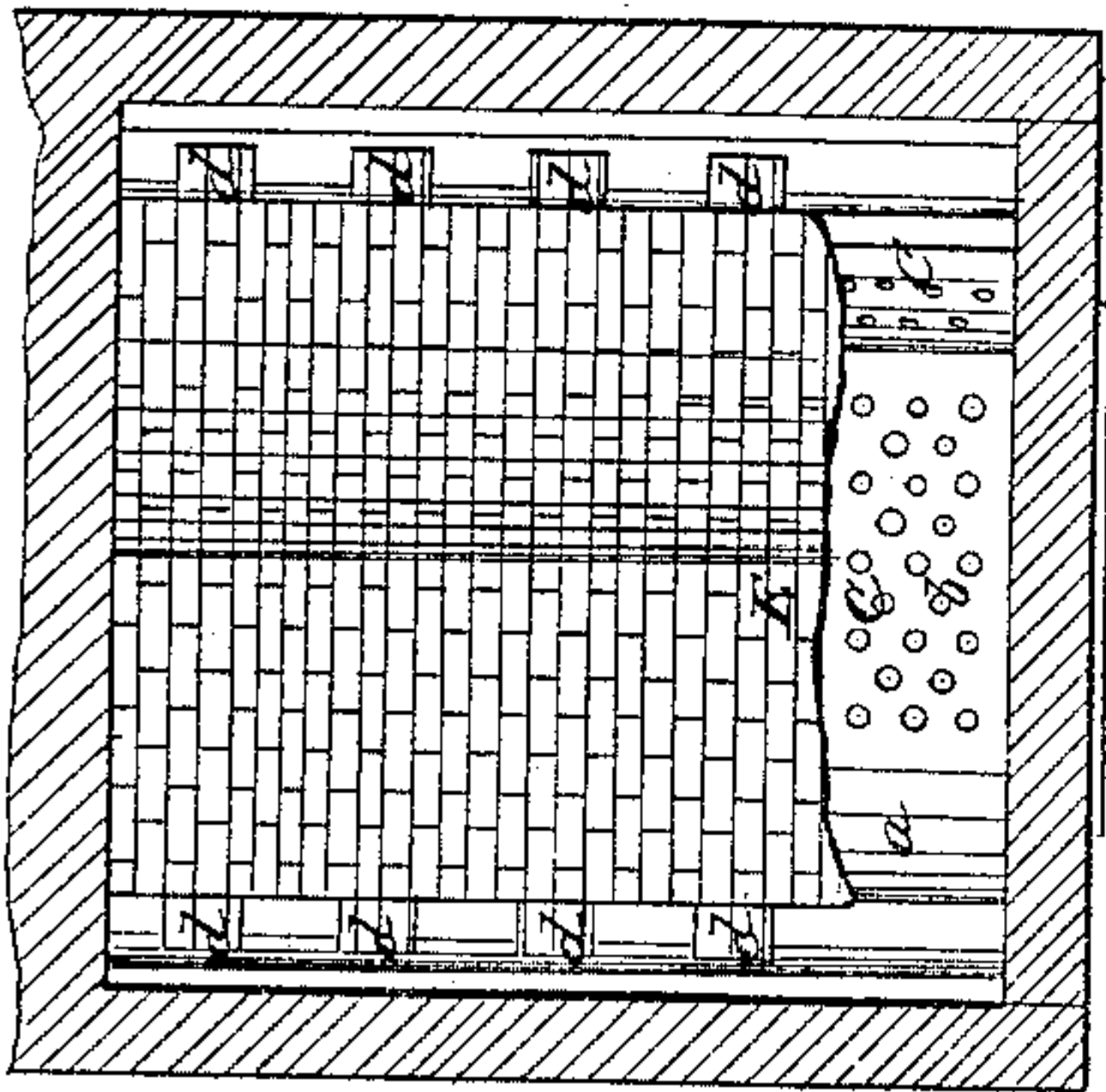
*J.J. Heindl,*

*Furnace Grate.*

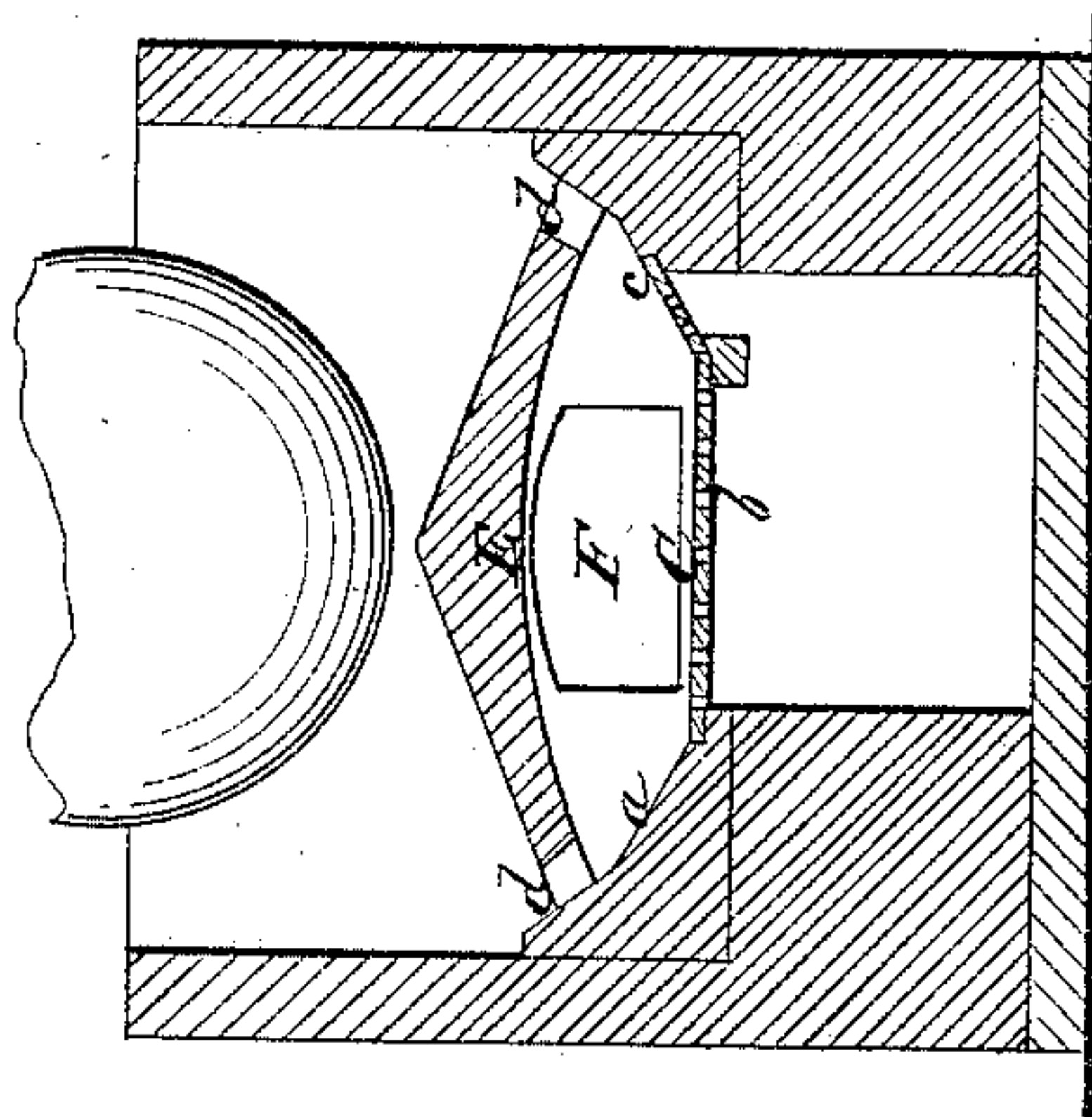
*N<sup>o</sup> 76,444.*

*Patented Apr. 7, 1868.*

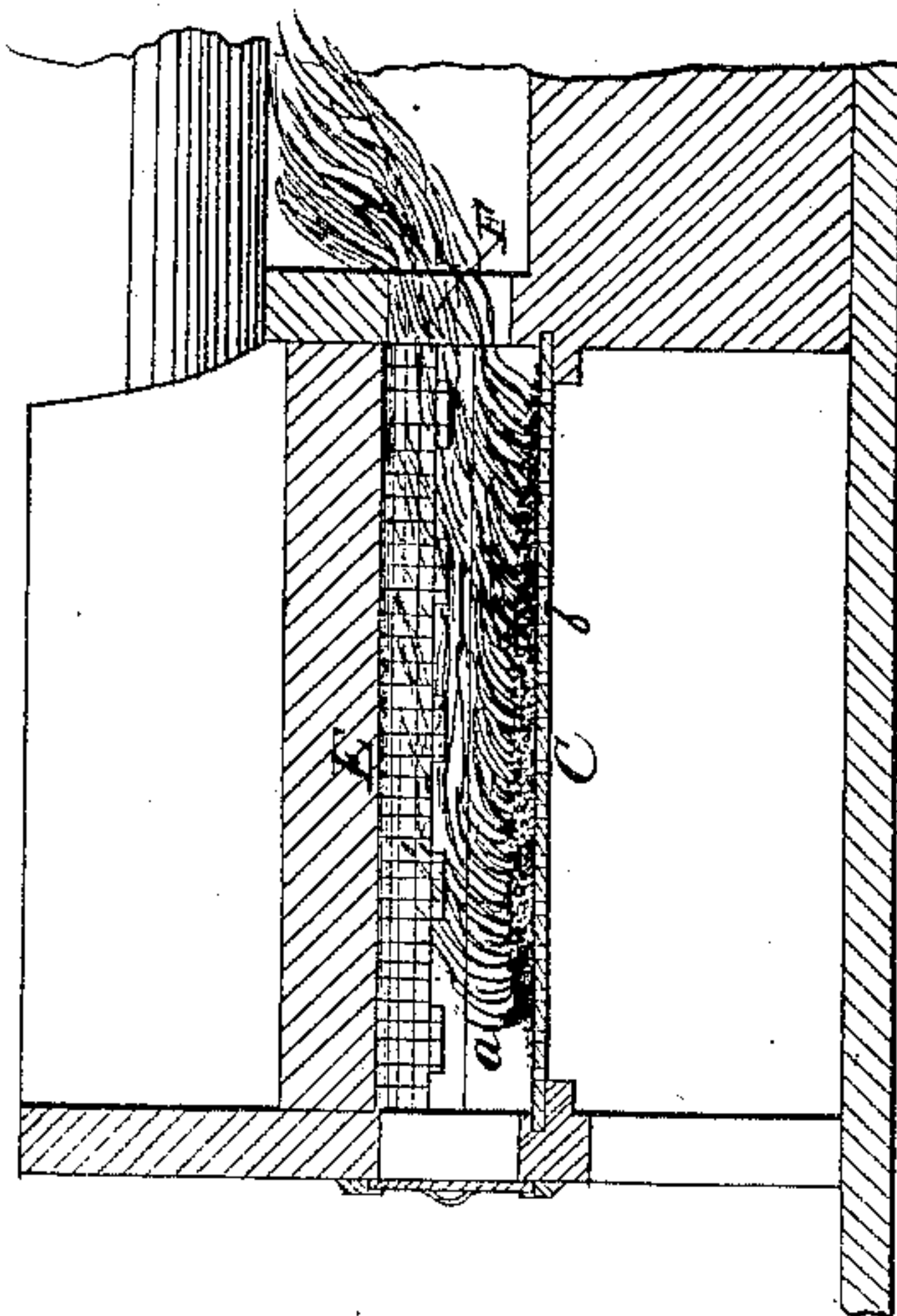
*Fig. 3*



*Fig. 2.*



*Fig. 1*



*Witnesses:*

*Geo. A. Southern*  
*Charles Berg.*

*Inventor:*

*J. J. Heindl*  
*By Karl Anton Hauff*  
*his atty*



# United States Patent Office.

JOSEPH J. HEINDL, OF NEW YORK, N. Y.

*Letters Patent No. 76,444, dated April 7, 1868.*

## BASKET-GRATE FOR FURNACES.

*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, JOSEPH J. HEINDL, of 41 Park Row, New York, in the county and State of New York, have invented a new and useful Improved Gas-Generating Basket-Grate; and I do hereby declare that the following is a full and clear and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a longitudinal vertical section of this invention.

Figure 2 is a transverse section of the same.

Figure 3 is a horizontal section thereof.

Similar letters of reference indicate corresponding parts.

This invention relates to an improvement on the patent, 42,816, granted to me as the sole assignee of Ferdinand Braun, on an improvement in furnaces for burning saw-dust, &c., and described in the words of said Braun, as follows:

“This invention consists in the arrangement of a drying-room situated above the fireplace, and provided with a convex or roof-shaped bottom, and holes or channels leading down to the grate, in such a manner that coal-dust, waste peat, saw-dust, spent tan, or other similar materials, when thrown in said heating-room, will readily dry and feed themselves automatically to the grate.

“It consists, further, in the employment or use of a basket-grate composed of a level bottom or centre-piece and inclined side-pieces, which extend up close under the holes or channels leading down from the drying-room, in such a manner that by raking out the slake from the flat centre-piece of the grate, a fresh supply of fuel is allowed to descend over the inclined side-pieces, without admitting any air from above, and thereby the furnace is rendered self-feeding.”

The basket-grate shown and described in the patent above referred to, is constructed of three sections, which may consist of perforated or slotted plates, or a series of grate-bars, according to the nature of the fuel to be consumed; and I have found that by making the inclined sides of the basket-grate of such perforated plates or grate-bars, the combustion is too intense, and no flame is created, which is absolutely necessary for a great many technical operations.

These difficulties are avoided by my present improvement, which consists in making the inclined sides of the grate partially or wholly closed, and of a bad conductor of heat, so that the fuel, in descending, is highly heated, and a large quantity of carbonic-acid gas is formed. This gas passes off into the arch, where it is mixed with the requisite quantity of atmospheric air, so as to consume the same and produce an intense flame, which is required for a great many technical operations, such as, for instance, the roasting of ores, melting of glass, &c. C represents a basket-grate, which is composed of a level section, *b*, and two inclined sections, *a c*, as clearly shown in fig. 2 of the drawing. Said grate is covered by the reflector *E*, and the fuel is fed to it through the channels *d*, over the inclined sections *a c*. These sections, instead of being made of perforated plates or a series of grate-bars, are partially or wholly closed, so that the fuel, which, in descending over them, is highly heated, is, during that period, not supplied with the requisite quantity of atmospheric air to support complete combustion, and consequently a large quantity of carbonic-oxide gas is formed. The carbonic-oxide gas which is thus disengaged from the fuel, passes off through the aperture *F* into the arch, where it is mixed with the requisite quantity of atmospheric air to form carbonic-acid gas, and as the carbonic-oxide is thus consumed, a very intense flame is produced. The gases which are disengaged from the fuel can be conducted a considerable distance from the grate before they are consumed; and with a proper supply of atmospheric air all the gases which disengage themselves from the fuel can be consumed, and a comparatively small quantity of fuel is capable to produce an intense heat; and furthermore, by heating the fuel on its descent over the inclined sides of the grate, while the air is shut off, the formation of slakes and clinkers is prevented, and the fire can be kept clean without difficulty.

I do not claim as my invention the basket-grate and reflector, such having been described in Letters Patent, 42,816, as above stated; but

What I claim as new, and desire to secure by Letters Patent, is—  
The basket-grate C, having its sides ~~are~~ constructed of inclined plates, partially or wholly closed, substantially as described.

JOSEPH J. HEINDL.

Witnesses:

W. HAUFF,  
D. B. CHILDS.