J. HABERMEHL.

Grate.

No. 47,947. Patented May 30, 1865.

Fig. 1.

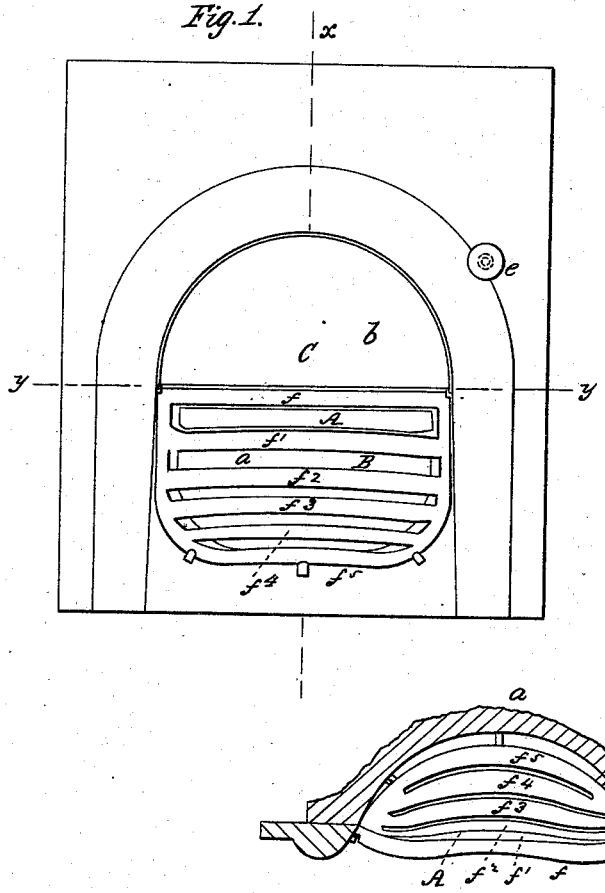
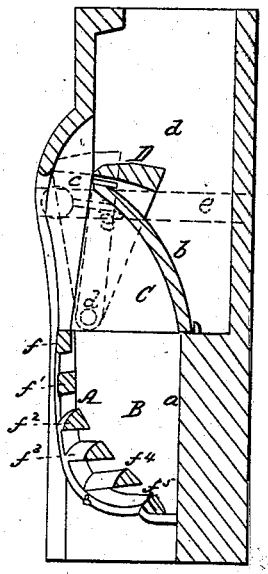
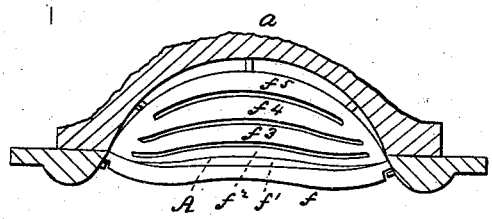


Fig. 2.





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UNITED STATES PATENT OFFICE.

JOHN HABERMEHL, OF WHEELING, WEST VIRGINIA.

IMPROVEMENT IN FIRE-GRATES.

Specification forming part of Letters Patent No. **47,947**, dated May 30, 1865.

To all whom it may concern:

Be it known that I, JOHN HABERMEHL, of Wheeling, in the county of Ohio and State of West Virginia, have invented a new and useful Improvement in Fire-Grates; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front view of my invention; Fig. 2, a transverse vertical section of the same, taken in the line *x x*, Fig. 1; Fig. 3, a horizontal section of the same, taken in the line *y y*, Fig. 1.

Similar letters of reference indicate like parts.

This invention relates to a new and improved manner of forming the walls of the fire-space over or above the fire-grate, whereby the heat which has hitherto escaped up into the chimney or flue is thrown or radiated into the room or compartment, while at the same time smoke, gases, and other products of combustion are allowed to pass up into the flue or chimney.

The invention also relates to an improvement in the construction of the grate, whereby ashes are not allowed to choke or clog up the same, and the grate allowed to throw out the heat much better than those constructed in the usual manner.

The invention further relates to a new and improved damper or draft-regulator, for the purpose of regulating the draft, as hereinafter set forth.

A represents the grate, the rear wall, *a*, of the chamber B of which is of semicircular form, and the fire-space C above the grate has its wall *b* in the form of a section of a sphere, the front of said wall being a semicircle the plane of which has an inclined position, inclining backward from the upper bar of the grate, as clearly shown in Fig. 2.

The wall *b* may be of fire-brick or cast-iron, and its lower edge rests on the wall *a* of the fire-chamber B, and in consequence of the spherical form of wall *b* it has a tendency to throw or deflect the heat out into the room, while the inclined front of said wall admits of a sufficient draft-opening, *c*, into the flue or chimney *d*, as will be fully understood by referring to Fig. 2, said opening gradually increasing in width from each end toward its center, which is over the front part of the center of the grate, so that the main portion of the products of combustion from the fire-chamber will pass up through the center of *c*, and this is an important feature, for owing to the spherical form of wall *b* the greater portion of the products of combustion will have a tendency to pass up at that point, and by my arrangement smoke and offensive gases are not allowed to escape into the compartment. Thus I am enabled to use the spherical wall *b* and obtain the advantage of its heat-radiating property and avoid the contingency of smoke and offensive gases being thrown into the room.

The capacity of the opening *c* may be regulated as desired by means of a damper, D, which is of semicircular form, corresponding to the front of the wall *b*, and has its ends fitted on pins *d d* at the lower part of the front of the spherical wall. This damper may be of cast-iron, and it works over the front end of *b*, and may be moved or adjusted by means of a rod, *e*, so as to contract the opening *c* to any extent desired, so that the draft may be ergulated in a perfect manner.

The grate A is constructed in a novel way, its bars $f f' f^2 f^3 f^4 f^5$ being all curved inward at their centers, the curvature of each bar increasing from the top one, *f*, downward to the lowest one, f^5. By this arrangement an inclined position is given the grate, the latter inclining outward from its lower to its upper end, and while considerable space is allowed between the bars horizontally, there will be no space vertically sufficiently wide for coal to pass through, except between the lowest bar, f^5, and wall *a* of fire-chamber B. By having the grate inclined the coal will have a tendency to settle downward and backward within the fire-chamber, while the ashes will drop out of the grate, the coal being mostly consumed to ashes before it reaches the lowest bar, f^5. This form of grate also radiates more heat than those provided with bars arranged one directly over the other in a vertical plane, for there is a greater fire-surface obtained for radiation.

I do not confine myself to any precise disposition of the parts herein shown and de-

scribed, nor to any particular degree of inclination of the grate A and the front of the wall *b*.

I claim as new and desire to secure by Letters Patent—

1. A fire-space, C, above a fire-grate, A, having its wall in the form of a section of a sphere, with its front edge in a plane inclined relatively with the fire-grate, substantially as and for the purpose set forth.

2. The semicircular sliding damper D, pivoted at its extremities to the forward part of the wall *b*, and adjusted by the rod *e*, substantially as and for the purposes specified.

3. Constructing the fire-grate A with curved bars arranged so as to form an inclined front, substantially in the manner as and for the purpose set forth.

JOHN HABERMEHL.

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