C. CRAWFORD.

Open Coal Grate.

No. 55,065. Patented May 29, 1866.

Fig. 1.

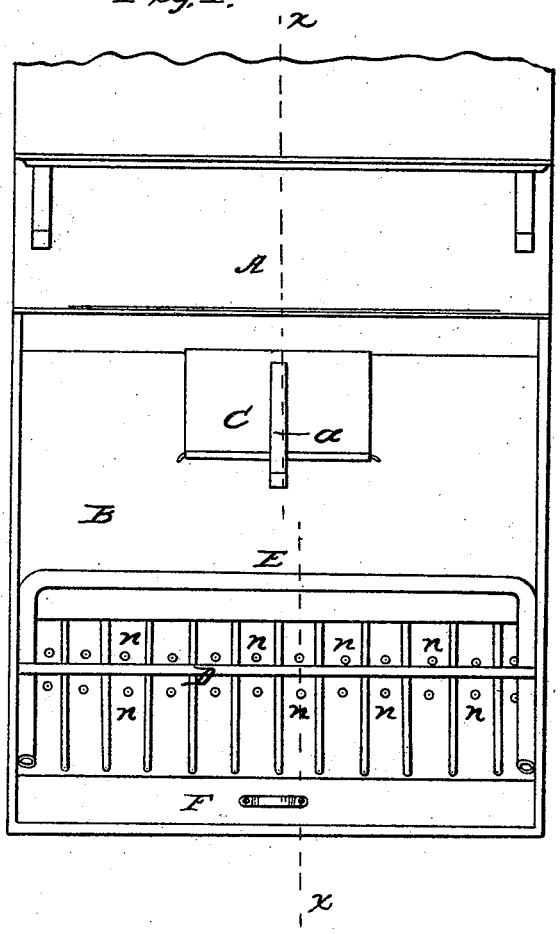
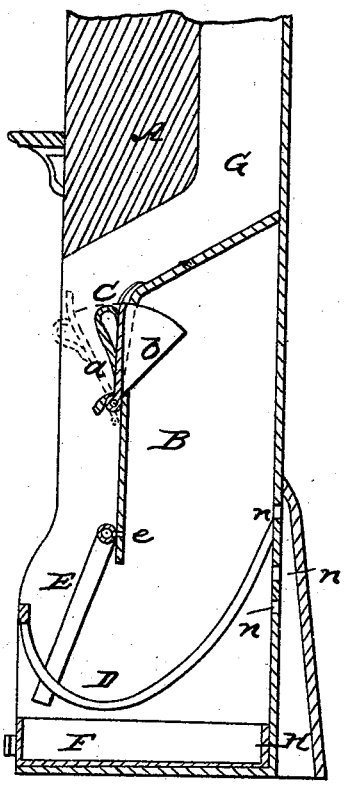


Fig. 2.



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UNITED STATES PATENT OFFICE.

CLAY CRAWFORD, OF EAST CLEVELAND, OHIO.

IMPROVEMENT IN OPEN COAL-GRATES.

Specification forming part of Letters Patent No. **55,665**, dated May 29, 1866.

To all whom it may concern:

Be it known that I, CLAY CRAWFORD, of East Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Magazine-Grates for Coal; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use the invention, I will proceed to describe it.

Figure 1 is a front elevation, and Fig. 2 is a transverse vertical section, of an open fire-grate for burning coal with my improvement applied.

My invention consists in locating in the back part of an open fire-place a magazine for containing the coal to be burned, and in certain devices arranged to operate in connection therewith to supply air to the fire and insure a more perfect consumption of the gases and smoke.

A represents the front of an ordinary chimney, G being the chimney-flue. B represents the magazine secured in the back of an open fire-place, as shown in Fig. 2, this magazine consisting of a box, of iron or other suitable material, secured at its top to the back wall of the chimney and at the sides to the side walls of the fire-place in such a manner as to be gas-tight, an opening being left at the bottom in front, as shown in Fig. 2.

C represents a door, located near the top of the magazine, for supplying it with coal. This door is hinged at its lower edge, and at each end has an inward-projecting flange, *b*, which, when the door is opened, forms with the body of the door a chute or spout upon which the coal slides into the magazine. The door C is provided with a handle, *a*, the lower end of which projects, as shown, and constitutes a bracket or brace, which supports the door in an inclined position when opened, as shown in red lines.

Underneath the magazine I locate a grate, D, the bars of which are curved, as shown, their rear ends projecting up into the magazine, as shown, so that the coal will slide down to the front, where it is intended to be ignited and burned outside and in front of the magazine.

H represents an air-chamber, from which the air enters the magazine through the holes *n*, from whence it passes out under the front edge of the magazine B, and thus supplies oxygen to the fire.

E represents a tube, located across the front of the magazine, near its lower edge, and communicates with the interior of the magazine by a series of holes, *e*, the tube E having its open ends bent down at the sides, as shown, or connecting with air-chambers or openings at the sides of the fire-place. This tube E being thus located in or over the fire, it is obvious that the air in its main portion will be rapidly heated, which will serve two purposes: First, it will cause a more thorough draft of air through the tube, and, second, the air being heated will render the combustion more perfect.

It will be seen that any gases which may escape from the coal up into the magazine will be caught and mingled with the currents of air flowing in through the openings *n* and tube E, and pass thence out under the front edge of B, over or among the burning coal, and be consumed, at the same time aiding to make the combustion of the coal and the gases more perfect. This is intended for use where soft or bituminous coal is used, and by its use not only the coal but the gases and smoke are very effectually consumed. Any gas that may rise up within the magazine and escape around the door C will be ignited and consumed at that point. If, as may happen, any of the air which enters the magazine should escape around the door C, it will supply oxygen to the gases which may escape with it at that point, and also to any gases which may pass up with the smoke or products of combustion in front of the magazine.

By these means I am enabled to fill in a supply of coal sufficient to last an entire day or more, according to the size of the magazine, and thereby avoid the dust and dirt incident to replenishing the fire in the ordinary manner, and at the same time secure a far more perfect combustion of the coal and the gases and smoke arising therefrom than can be done in the ordinary open grate.

It is obvious that my invention may be readily applied to any ordinary fire-place with but little expense or alteration, and that by these simple means I combine the advantages of the base-burning grate, the self-supplying or magazine arrangement, and the open fire.

Having thus described my invention, what I claim is—

1. The magazine B, in combination with an ordinary or open fire-place, substantially as and for the purpose set forth.

2. In combination with the magazine arranged in the open fire-place, as described, the grate D, having the bars inclined to throw the coal to the front, as shown and described.

3. The air-chamber H or its equivalent, arranged to operate in combination with the magazine B, as set forth.

4. The tube E, arranged to operate in connection with the magazine B, substantially as set forth.

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