

E. DUFFEE.
Protecting Furnaces.

No. 52,929.

Patented Feb. 27, 1866.

Fig. 2.

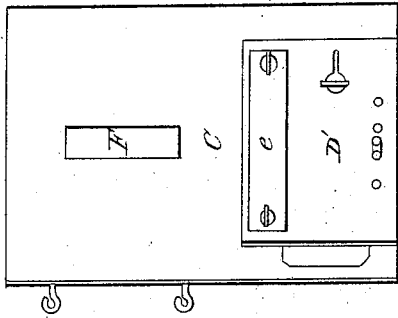


Fig. 5.

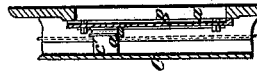


Fig. 1.

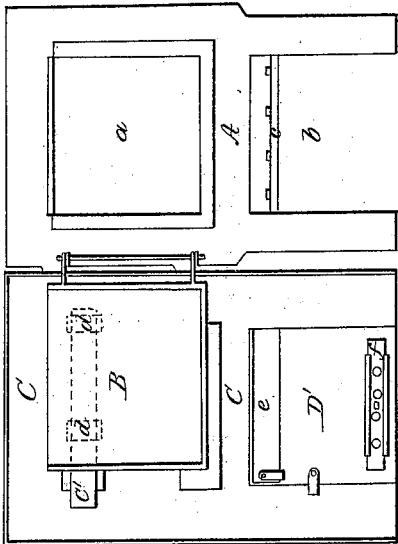


Fig. 4.

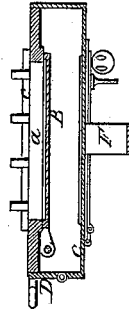
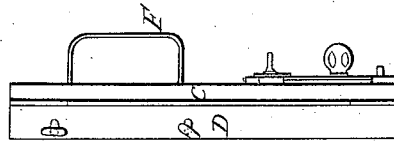


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

EDWARD DUFFEE, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND JOHN A. APPLETON, JR., OF SAME PLACE.

IMPROVEMENT IN GAS-RETORTS.

Specification forming part of Letters Patent No. 52,929, dated February 27, 1866.

To all whom it may concern:

Be it known that I, EDWARD DUFFEE, of Haverhill, in the county of Essex and State of Massachusetts, have made a new and useful Invention having reference to Retorts for the Manufacture of Gas, or the Furnaces thereof; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is an elevation of a gas-retort furnace and door-front with my invention applied to them and turned aside therefrom. Fig. 2 is a front view, and Fig. 3 an edge view, of the guard applied to the said furnace and door. Fig. 4 is a horizontal section of the whole, such section being taken through the furnace mouth and door. Fig. 5 is a vertical section of the door and its connection with the cover or guard, to be hereinafter described.

In the said drawings, A denotes the metallic frame or front of a gas-retort furnace, it being constructed with a mouth or opening, *a*, for the chamber of combustion over the grate, and also with an ash-pit mouth, *b*, which extends above the grate in the ordinary manner, in order to enable a person to introduce a stirring-rod or poker into the fuel when on the grate, such grate being supported in part by a cross-bar, *c*. To the said front part of the furnace there is hinged a door, B, adapted to the mouth of the furnace.

c is a guard or sheet-iron case, hinged at one edge to a plate, D, which is to be fastened or secured to one edge of the frame A by pins or other suitable means, the same being so that the guard or case C may be made to cover or uncover the said frame, as circumstances may require, the guard being so formed that there shall be a chamber or air-space within it and between it and the frame A when the guard covers such frame.

The furnace-door B is to be so connected with the guard C as to be moved therewith in a manner to either open or close the mouth of the furnace. To this end there may be one or more clasps, *d d*, projecting from the front face of the door and going around a rod or bar, *c'*, extending from the guard or case, in manner as shown in the drawings.

The case or guard C is provided with an opening whose height and width correspond in size with those of the mouth of the ash-pit. This opening is furnished with a door, D', which also has an opening made through it and arranged just in front of the stirring-space over the grate. A door, *e*, is applied to this latter opening.

There is also an air-register applied to the lower part of the door D', the same being shown at *f*, and consisting of not only one or more holes through the door, but of a valve or slide to such holes. A handle, E, is applied to the front of the case or guard C.

One object of the case or guard so made is to protect the attendants on the furnace from the great heat usually radiated from its front. It also enables the supply of air to the furnace to be regulated. Another or the great object of the guard is to cause the heat to be uniformly applied to the retort, for without the guard the retort will be heated more at its rear than at its front part, and thus the destructive distillation of the coal will be improperly carried on, it being the case that on withdrawing the coke much of it, or that in the front of the retort, is usually found still retaining a large amount of gas.

With my said invention there is not only a greater quantity of gas made, but in the fuel used in the furnace there will be a large saving effected, comparatively speaking. From the practical results of my invention I am led to believe the saving in gas and fuel will reach twenty-five per cent. of what would be expended under ordinary circumstances.

Without the guard the inrush of air into the ash-pit and furnace is so great as to force the greater part of the heat of the flame to the back part of the retort; but with the guard and its door and the auxiliary door-opening and door and the register access can be had to the grate or the ash-pit, and the supply of air to the furnace may be regulated to advantage, while the guard is in front of the furnace-mouth, covers and protects it, and causes its radiated heat to pass into the furnace or prevents it from being thrown off, to the inconvenience of the attendant. On swinging the guard back on its hinges the furnace,

mouth door will open or move with it, and will be closed by it, while the guard may be in the act of being closed or brought around in front of the furnace.

I claim—

1. The combination of the guard C, made substantially as described, or the same and its connection-plate D, with the front A of a gas-retort furnace, the same being to operate therewith, as specified.

2. The application of the guard C to the furnace-mouth door by means whereby the said door shall be moved or operated by the guard, in manner as specified.

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