JAMES G. HUNT.

Improvement in Open Front Stoves and Fireplaces.

No. 115,476. Patented May 30, 1871.

Fig 1.

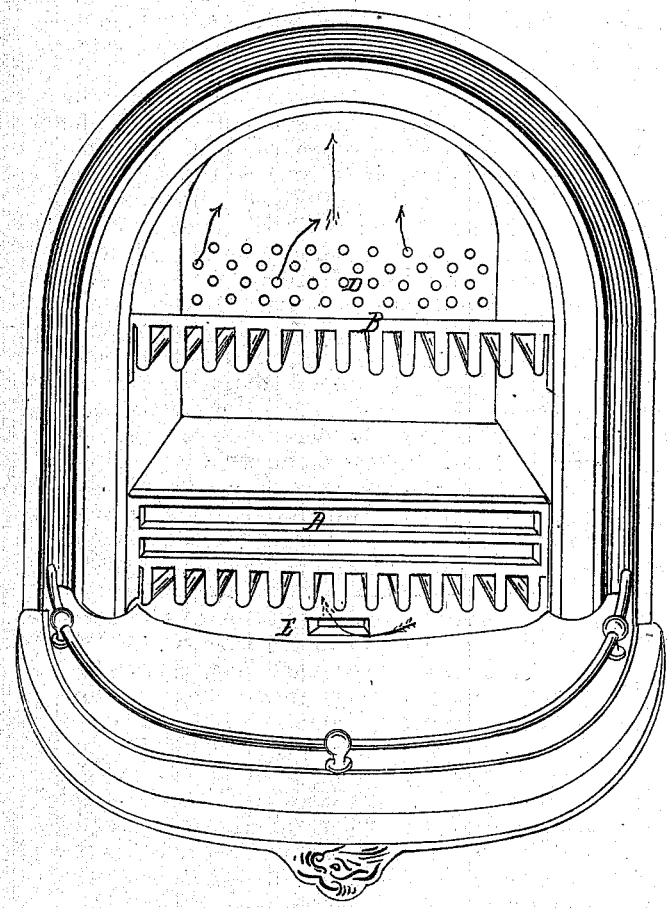
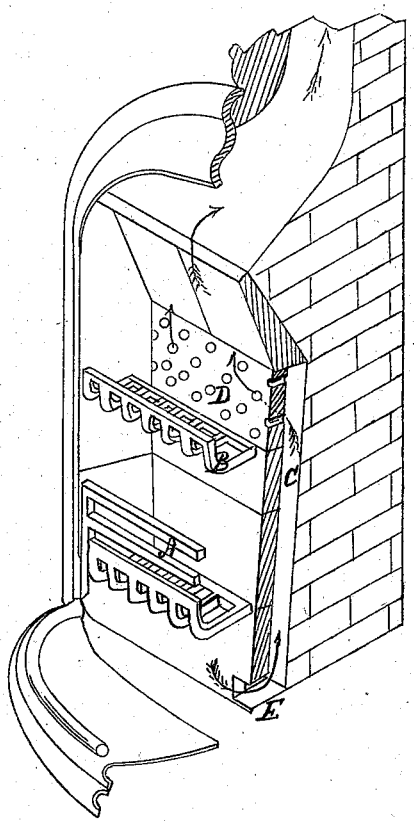


Fig 2



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JAMES G. HUNT, OF CINCINNATI, OHIO.

IMPROVEMENT IN OPEN-FRONT STOVES AND FIRE-PLACES.

Specification forming part of Letters Patent No. 115,476, dated May 30, 1871.

To all whom it may concern:

Be it known that I, JAMES G. HUNT, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in the Mode of Constructing Grates, Fire-Places, and Furnaces to produce a more perfect combustion of fuel; and I do hereby declare that the following is a full and correct description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention consists in providing above the ordinary fire a receptacle for incandescent coals, through which the carbonaceous matter (soot) and partially-oxidized hydrocarbureted gases (at least fifty per cent. of the fuel, and which ordinarily escape and pass off, forming a nuisance—*vide* Pittsburg) are compelled to pass, and are there burned, thereby preventing a waste of fuel and a nuisance, particularly in the burning of bituminous coal.

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

Figure I is a front view of my invention as arranged in an ordinary grate. Fig. II is a section of the same; it may be used in an ordinary fire-place or in an open stove, and of any desired pattern.

In Figs. I and II A is an ordinary grate, where the usual imperfect combustion of coal takes place. Above this is placed B, another grate, the smoke-consumer. This may be made of various shapes or patterns, and may project or recede from the front of the stove or fire-place, according to the wish of the maker. I do not confine myself to any particular form. Immediately behind B there is an air-chamber, C, which is tightly inclosed on the top and all sides, except at the bottom, from which the air enters either underneath the grate or from the back or sides. In this it is from the front, underneath the grate, as is shown at E; and the front D, which is made of iron or tile, perforated by rows of holes, extending from even with or just below the bottom of the grate B for several inches upward.

The fire having been built in grate A, as usual, the smoke-consumer, grate B, is filled with incandescent coals. The usual imperfect combustion takes place in A, leaving the unconsumed carbonaceous matter to rise; but instead of passing off up the chimney, a loss and a nuisance, as usual, in passing through the incandescent coals in the grate B, further combustion takes place, which is made more perfect by the fresh air from the air-chamber coming through the holes of the front D, intimately mingling with and supplying the necessary oxygen for perfect combustion. The gases and carbonaceous matter thus consumed very materially increase the heat that is thrown into the room, and fuel is thus economized and the nuisance of soot abated. In keeping up the fire, when a fresh supply of coal is needed, enough of the live coals from grate A are added to those already in grate B to keep up the supply, and the fresh coal is placed, as usual, in grate A. The volatile unconsumed products in rising are intercepted, as before described, before escaping, and thus is obtained the long-sought desideratum—an open fire with almost perfect combustion, economy of fuel, and cleanliness. It is also found that this arrangement is admirable to improve the draft of chimneys, and keep them clean and free from taking fire, by removing the cause—the soot.

It will be seen that this invention is entirely different in principle and action from any of those devices of tile or plate which have sometimes heretofore been placed over the fire-basket of a grate to catch the flame and smoke and give them a downward tendency, and which have proved so futile as smoke-consumers. It also obviates any necessity for deep fire-baskets where a large quantity of coal is consumed, so placed that most of the heat cannot be radiated. By it, instead of the radiation of heat into the room from one fire, as usual, we have the radiation from a second, obtained by the burning of the smoke and gases which have heretofore escaped up the chimney, really duplicating the heat. This invention is applicable to closed stoves, and also to furnaces under boilers, as exhibited in Fig. III.

The value of the saving in coal by the use of this improvement applied to furnaces may be learned by estimating the millions of bushels used in the Ohio valley alone for the manufacture of steam; while a vigorous imagination can only conceive the vastness of the

pleasure and saving to the people in the wear of furniture, paint, and lungs, by stopping the flow of soot from the furnace-stacks that now pour down their constant showers of carbon, begriming everything, and converting their emanations into light transparent wreaths, gracefully rising and floating off into the region of space.

What I claim, and wish to secure by Letters Patent, is—

1. In an open fire-place or open stove, the grate A and receptacle B, located relatively to each other, and operating in the manner described.

2. The air-chamber C, perforated back D, and receptacle B, when combined and operating as described.

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