W. CHILDERS.

Fire-Place.

No. 211,457. Patented Jan. 21, 1879.

Fig. 1.

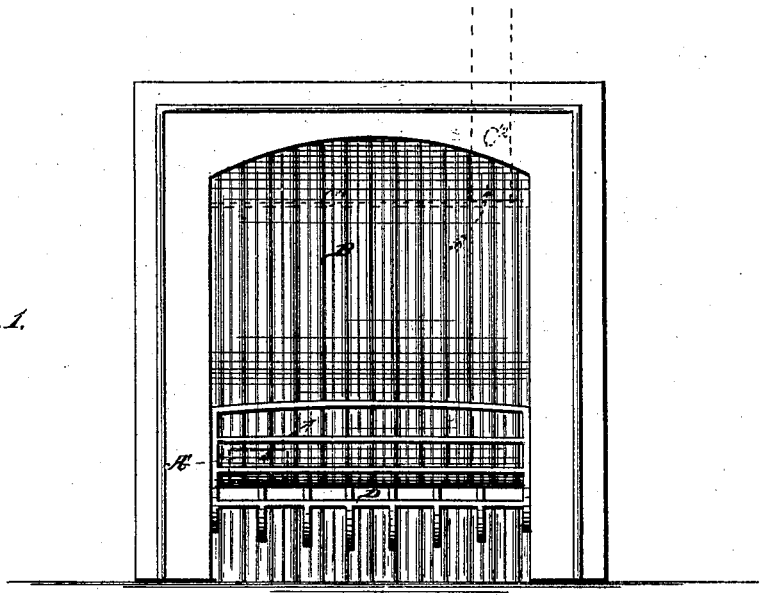


Fig. 2.

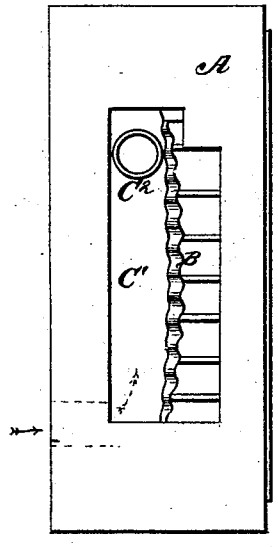
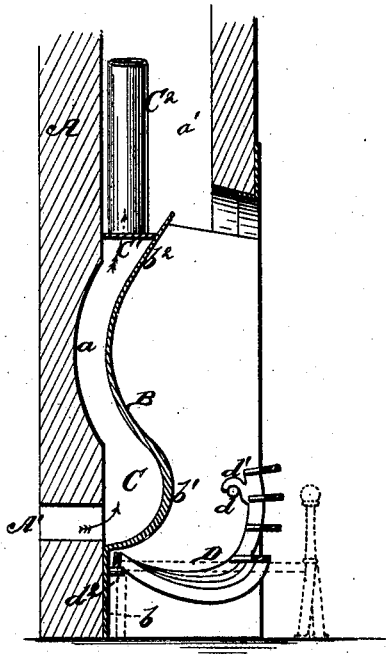


Fig. 3.



WITNESSES

Robt Everett.

N. Clay Smith.

INVENTOR.

William Childers.

By Gilmore, Smith & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM CHILDERS, OF EDDYVILLE, KENTUCKY.

IMPROVEMENT IN FIRE-PLACES.

Specification forming part of Letters Patent No. **211,457**, dated January 21, 1879; application filed December 19, 1878.

To all whom it may concern:

Be it known that I, WILLIAM CHILDERS, of Eddyville, in the county of Lyon and State of Kentucky, have invented a new and valuable Improvement in Fire-Places; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a front of my fire-place. Fig. 2 is a top-plan view of the same, and Fig. 3 is a vertical central sectional view.

My invention relates to fire-places, such as are built in the masonry of house-chimneys and the like; and the novelty consists in the construction and arrangement of peculiar parts, as will be more fully hereinafter set forth.

The object of the invention is to provide a fire-place of such construction as to allow the same to be interchangeably employed with a grate for the combustion of coal, and with andirons for the combustion of wood, and to furnish the back of the fire-place with a corrugated cast plate having an outward bulge, which serves as a back-log when wood is being burned, and serves as a partition between the fire and an air-heating chamber in the rear when either wood or coal is used, such air-heating chamber receiving cold air from the outside atmosphere, retaining it in the chamber until it absorbs the heat, and then leading it up the flue in a suitable conductor to the different rooms of the house.

Referring to the drawings, A represents the masonry of a fire-place, having formed in its back face a curved recess, *a*, and an air-inlet aperture, A′, through the back, to which a chute or tube leading from the outer atmosphere may be attached; or, if desired, it may lead from another apartment in the dwelling, such as a store-room, and in such case it will serve as an efficient ventilator for such apartment. The fire-place has an ordinary escape-flue, *a′*, through which the products of combustion pass.

B represents a corrugated fire-back, covering the entire back face of the fire-place; but in no place does it come in contact with such back face except at the portion beneath the fire when the said back is in use. This fire-back is preferably of cast metal; but other material may be employed, if desired; and it is formed with the corrugations running longitudinal with it, so that the grooves and ridges will be vertical when the back is in position. It is cast in one piece, which I will describe as the base portion *b*, being that part which rests against the back face below the fire, the outwardly-bulged portion b^1, which forms the fire-back proper, and the curved portion b^2, which corresponds with the curvature *a* in the back face, in which it operates, a suitable space intervening to allow the passage of the air.

Between the portion b^1 and the back is formed an air-heating chamber, C, which extends upward to a plate, C^1, above, which plate is perforated and receives a vertical pipe, C^2, tube, or chute, preferably of sheet metal, which operates in the flue.

In order to make the passage of the air tortuous from the inlet to the outlet into the pipe C^2, I arrange the inlet upon one vertical side of the back face near the bottom, and the other at the opposite side in the throat.

The fire-back B is preferably formed with the portion *b* and portion b^2 of about equal thickness—say, about one-fourth of an inch—while the part b^1, which is exposed to the greatest heat, is about double that thickness—say, about one-half of an inch. In different materials these figures may vary; but the proportions will remain about the same.

The fire-back B may be removably secured in place, or be built in the masonry, it being, of course, understood that proper jambs and face-frames are provided.

To the jambs, as shown, I secure, or cast in one therewith, lugs *d*, which are received in pockets d^1 upon the front standards of the coal-grate D, the back part of said grate resting upon lugs d^2 upon the portion *b* of the fire-back.

The upper portion of the fire-back B rests against a properly-formed edge of the plate C^1, and the extreme upper edge forms a flange, which, extending forward in the throat, partially limits the egress of the products of combustion.

The portion b^1 forms a very efficient back-log when wood is being burned, and when a log of wood rests against the same the grooves in the corrugations allow a draft between the log and the part b^1.

The grate, as will be seen, is readily removed, and when wood is to be burned proper and-irons are used, as shown, in either case the portion b^1 of the fire-back serving to form the air-heating chamber, as well as to serve as a back-log.

Proper plates may be arranged in the air-heating chamber to make the air-passage more tortuous.

The advantages of my invention are as follows:

First, economy of fuel. This is due to the particular curvatures of the fire-back, which deflects the rays of heat and throws them out into the room, producing a maximum of heat with a minimum of fuel.

Secondly, the fire-back protects the back-face masonry from heat, and consequent disintegration and crumbling.

Thirdly, the contraction of the egress for the production of combustion in the throat prevents the chimney from smoking.

Fourthly, the upper rooms of the house are heated by utilizing the waste heat from the fire, which would otherwise be absorbed by the back masonry.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The fire-back B, constructed, as shown, of the portions $b\ b^1\ b^2$, constructed and adapted to operate in relation to a back face having a curved recess, a, and an intervening air-heating chamber, C A′, as and for the purpose specified.

2. The fire-back B $b\ b^1\ b^2$, in combination with masonry A a A′, plate C^1, escape-pipe C^2, and air-heating chamber C, as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM CHILDERS.

Witnesses:

JAMES J. SHEEHY,

ROBERT EVERETT.