G. W. S. LUCAS.

FIRE-PLACE.

No. 174,829. Patented March 14, 1876.

Fig. 1.

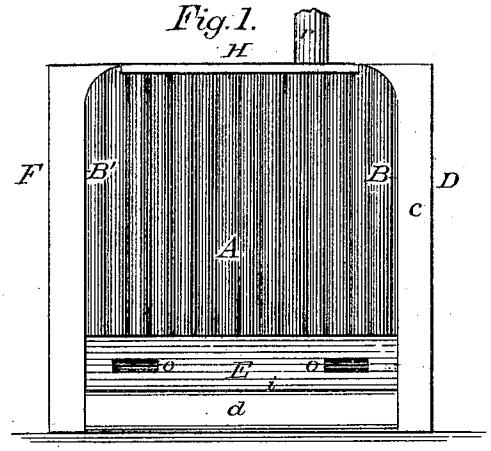


Fig. 2.

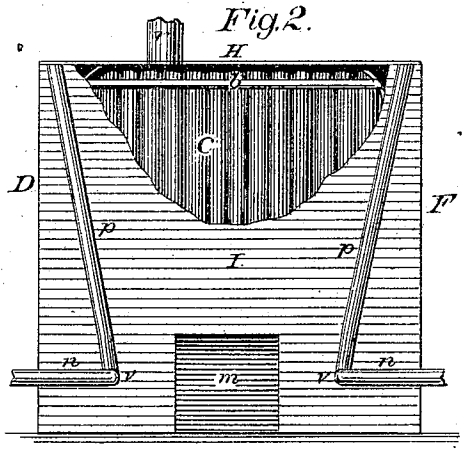


Fig. 3.

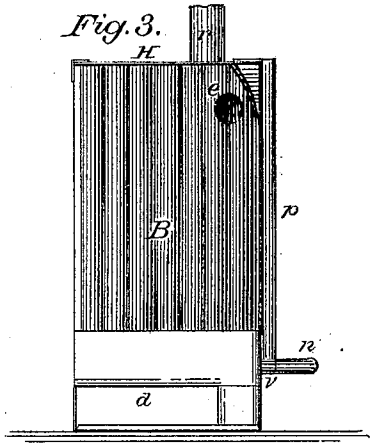


Fig. 4.

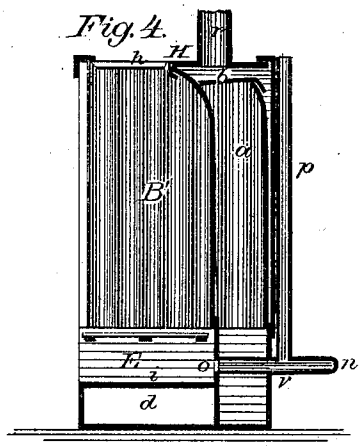
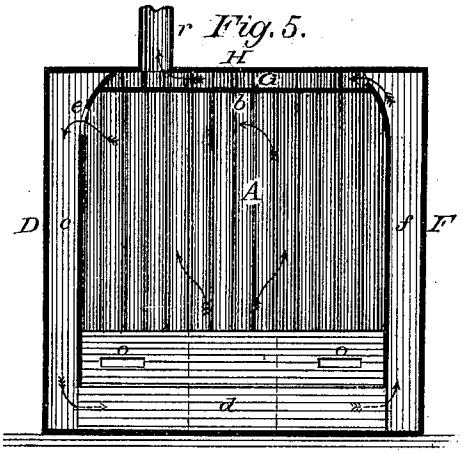


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE W. S. LUCAS, OF SALEM, OHIO.

IMPROVEMENT IN FIRE-PLACES.

Specification forming part of Letters Patent No. **174,829**, dated March 14, 1876; application filed February 9, 1876.

To all whom it may concern:

Be it known that I, GEORGE W. S. LUCAS, of Salem, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in 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 which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a front elevation. Fig. 2 is a rear elevation, partly in section. Fig. 3 is a side view, partly in section. Fig. 4 is a sectional view after the line *x x* in Fig. 2, and Fig. 5 is a sectional view after the line *y y* in Fig. 3.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to open grates or fire-places; and it consists in the construction and arrangement, behind and around the same, of chambers, in which cold air may be heated, for the purpose of supplying other rooms than that in which the grate is located with hot air, all as hereinafter more fully shown and described.

In the drawing, A is the fire-place. This is constructed of corrugated cast-iron plates A B B′, arranged as shown in the drawing—that is, plates B B′ forming the sides and plate A the back of the fire-place. Plates B B′ extend somewhat back of plate A, and between them is inserted another plate, C, similar to A, thus leaving a chamber or space, *a*, between the two. The roof of this space is formed by an inclined cut-off plate, *b*, under the higher end of which, in wall B, there is a perforation, *e*, leading to a space, *c*, between plate B and an outer wall or plate, D. Space *c* is connected by a channel, *d*, under the hearth-trunk E, with a space, *f*, between plate B′ and an outer plate, F, from which a perforation, *g*, in plate B′ leads to chamber G, between inclined plate *b* and the top plate H of the grate. From this chamber G a pipe or pipes, *r*, lead to the rooms that are to be supplied with hot air. Slot *h* in top plate H over the fire-place leads to the chimney. The back plate C is covered with another sheet-metal plate, I, that extends down to the bed-plate *i* of the hearth-trunk, and is provided with an opening, *m*, for the admission of cold air from without. Opening *m* may be covered with a register for regulating the supply of air. *n n* are pipes leading from without through chamber *a* to the fire-place, where they end in slots or openings *o o*, Fig. 1. Through these pipes air is supplied to fan the fire in the grate. Pipes *n* are intercepted at *v* by pipes *p*, leading to the flue or chimney. Part of the air supplied through pipes *n* thus escapes in the chimney, thus producing suction draft, by which the products of combustion from the grate are carried directly through the chimney, and prevented from escaping into the room.

From the foregoing description the advantages of my improved grate will be readily understood. It combines the comforts of an open fire-place with those of the hot-air stoves now in use. Good draft, and the consequent prevention of smoke in the room where it is located, is insured by the introduction of air through pipes *p*. It can be manufactured at a comparatively small cost, and, being less complicated, it is more easily managed and regulated than most of the grates or stoves now in general use.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination of corrugated inner plates A B B′, outer plates C D F, inclined cut-off plate *b*, and top plate H, all constructed and combined to form the air-chambers *a c d f* G, substantially as and for the purpose shown and specified.

2. The combination of the induct-pipes *n n*, having mouths *o o*, opening under the grate, and branch pipes *p p*, leading into the throat of the chimney, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

GEORGE W. S. LUCAS.

Witnesses:

SAMUEL HARDMAN,

ALBERT CAMERON.