

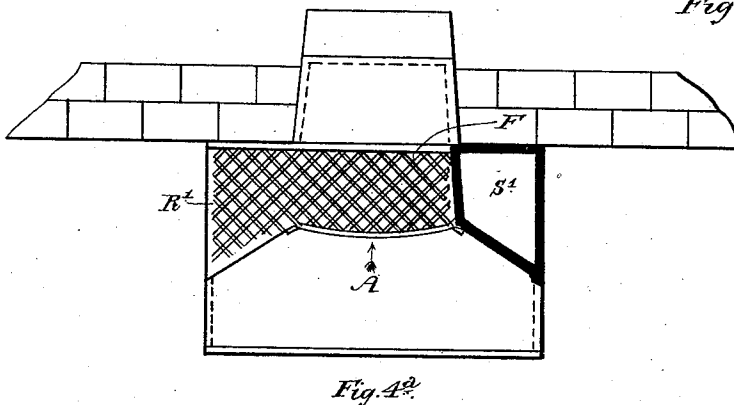
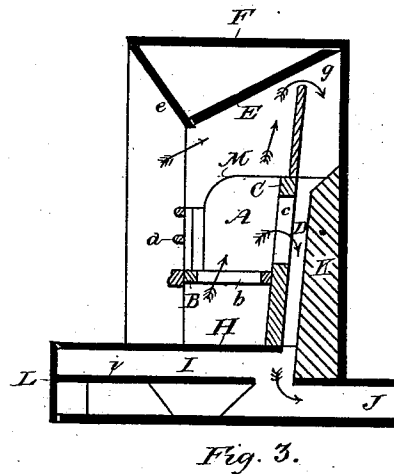
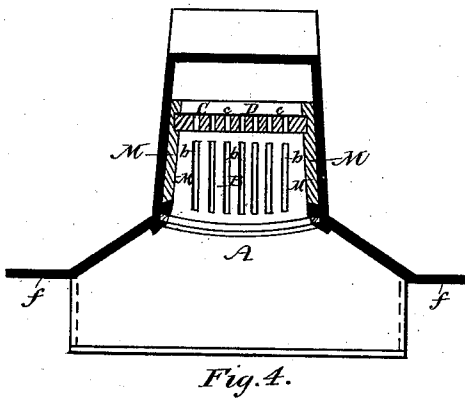
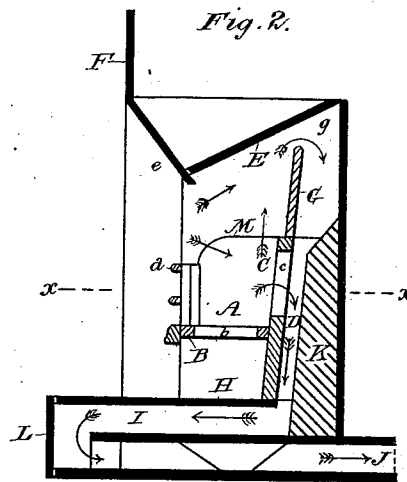
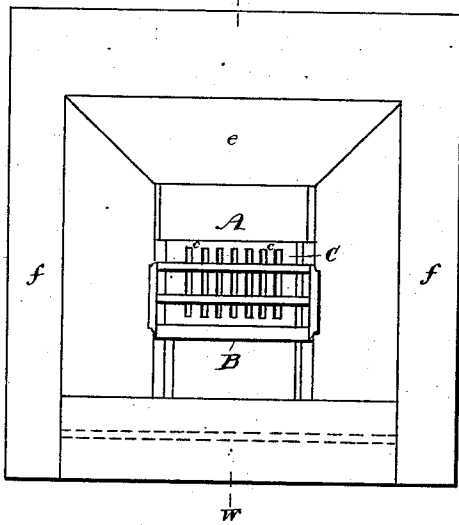
(No Model.)

E. LOFTS.

FIRE PLACE OR STOVE.

No. 367,149.

Patented July 26, 1887.



Attest:
W. E. Boulter
Paul M. Knobloch

Inventor:
Ezra Loftis
per Henry Orth
his atty.

UNITED STATES PATENT OFFICE.

EZRA LOFTS, OF CAMBRIDGE, ENGLAND.

FIRE-PLACE OR STOVE.

SPECIFICATION forming part of Letters Patent No. 367,149, dated July 26, 1887.

Application filed July 21, 1885. Serial No. 172,234. (No model.) Patented in England May 7, 1884, No. 7,356.

To all whom it may concern:

Be it known that I, EZRA LOFTS, a subject of the Queen of England, residing at Cambridge, England, have invented new and useful Improvements in Fire-Places or Stoves, (for which Letters Patent have been obtained in Great Britain, No. 7,356, dated May 7, 1884,) of which the following is a specification.

The object of this invention is to provide a fire-place or stove which will more effectually consume the smoke than many of those at present in use and at the same time increase the heating capacity of the apparatus.

It consists in improvements in such fire-places or stoves as those in which a combustion-chamber is placed at the back of the grate or coal-receptacle, into which the products of combustion pass through bars placed in the back of the grate, and combustion is assisted by heated air passing down a passage leading from above the fire into the said combustion-chamber.

Referring to the accompanying drawings, Figure 1 is a front elevation of a fire-place made in accordance with my invention; Fig. 2, a sectional elevation on line *ww*, Fig. 1; Fig. 3, a sectional elevation on line *ww*, Fig. 1, showing alternate positions of the damper and of the top; Fig. 4, a sectional plan on line *xx*, Fig. 2. Fig. 4^a is a slight modification of the form shown in Fig. 4.

A is the grate of the fire-place for the reception of the fuel. It is open at the top and fitted with bars *a* of ordinary construction in front. The bottom B of the grate may be made of a perforated metal plate or grating, such as is in general use, or of fire-brick with perforations or openings *b* for the admission of air into the fire from beneath and for the ashes to fall through. C is a perforated plate, forming the back of the grate, made of fire-clay or metal. The products of combustion from the fuel pass through the perforations or spaces *c* in the plate C into the combustion-chamber D behind the grate.

E is a plate forming the top or roof of the fire-place, inclined upward toward the back. Any smoke or gas rising from the top of the fire in the grate will ascend along this plate, rising to the highest point, and will then be drawn down by the current into the combustion-chamber.

e is a front plate, connecting with the plate E, forming the front of the fire-place. F is another plate, which for an ordinary fire-place would take the position shown in Fig. 2 and be built up against or into the wall, forming the chimney-breast *f*, placed at the sides of the fire-place to abut against or be built into the wall.

When intended to be used as a stove, or to be set into a prepared opening in the chimney without being built in, the plate may be placed as shown at F', Fig. 3, and the plates *f* be dispensed with altogether or turned back, as in Fig. 4^a, to form the chambers S'. The combustion-chamber D is best placed directly behind or at the back of the grate A. A second plate, G, or a prolongation of the plate *e*, extends above the back of the grate, and an opening or air-passage, *g*, communicates with the combustion-chamber, and through it a current of air passes into the chamber and impinges upon and mingles with the products of combustion entering through the passage and assists in the more complete combustion of unconsumed or only partly consumed products. The air, entering through *g*, is heated in its passage over the fire and by its contact with the plate E, thus being in a condition to more readily intermingle with the products of combustion in the chamber. No air is permitted to enter the combustion-chamber except through the spaces *c* in the back plate, C, or through the passage *g*, as I consider that the combustion is less complete in such fire-places where air is allowed to enter the combustion-chamber at a point between the fire and the flue. H is the ash-hearth or receptacle for ashes as they fall or are raked from the fire. Below the ash-hearth H is furnished a chamber or passage, I, into which the heated gases from the combustion-chamber are free to pass. This chamber is preferably made of metal on its top, bottom, and sides, which become heated as the products of combustion play upon or against them, the heat therefrom radiating out into the room or compartment in which the fire-place is placed. This may be merely made as a chamber, which the heated gases will fill, or it may be provided with a division or damper, *i*, over and under which the heated products may be led, as shown by the arrows, Fig. 2, and thence to the flue J.

When the division *i* is used as a damper or made movable, it can be drawn forward into the position shown in Fig. 3, and the products of combustion allowed to pass directly to the flue J. This will cause the fire to burn more briskly and to burn up quickly when first lighted. The heat from the products of combustion is radiated from the walls of the chamber I into the apartment and the top will form a hot hearth, upon which a kettle, saucepan, or the like may be boiled or kept hot. This will be found very serviceable, especially in fire-places designed for kitchen use. The front L of the chamber I may be made movable, so that access may be had to the chamber and flues.

K is a wall of fire-bricks forming the back of the combustion-chamber. The wall or back K projects down below the level of the top of the chamber I. This tends to prevent the escape of only partly-consumed products to the flue, and also, where no division is placed in the chamber I, causes the heated gases to spread out into the chamber, and, where the division *i* is used, acts as a back for the upper part of the chamber.

M is a fire brick or tile placed at each side of the grate.

The fire-place may either be set upon bricks or mounted upon feet or a stand. In the latter case the bottom surface of chamber would be applicable for the radiation of heat.

Though chiefly designed for what are known as "open fire-places," the described improvements are also applicable to stoves and ranges, as will be readily understood.

I claim—

1. A fire-place comprising an open-front grate, an open-work grate-back extending into proximity to the roof of the fire-place, an ash-pit below the grate, a chambered hearth below the ash-pit extending from the open-work grate-back in front of the open grate, a combustion-chamber between the grate-back and back wall of the fire-place, a diving-flue communicating with the combustion-chamber and the chambered hearth, and a flue communicating with said hearth and the chimney, substantially as and for the purpose specified.

2. A fire-place comprising an open-front grate, a perforated or slotted back therefor, an ash-pit below the grate, a chambered hearth extending from the grate-back outwardly beyond the face of the fire-place, a combustion-chamber formed by and between the grate-back and the back wall of the fire-place, a diving-flue communicating with the chambered hearth, and a flue communicating with said hearth and the chimney, and a damper arranged in the chambered hearth to divide the same horizontally into two chambers and operating to cut off the direct communication between the diving-flue and chimney and divert the products of combustion toward the front of the hearth, and thence under the damper to the chimney-flue, substantially as and for the purpose specified.

In testimony whereof I have hereto set my hand in the presence of the two subscribing witnesses.

EZRA LOFTS.

Witnesses:

LEWIS LOFTS,

FREDERICK BRAITHWAITE.