

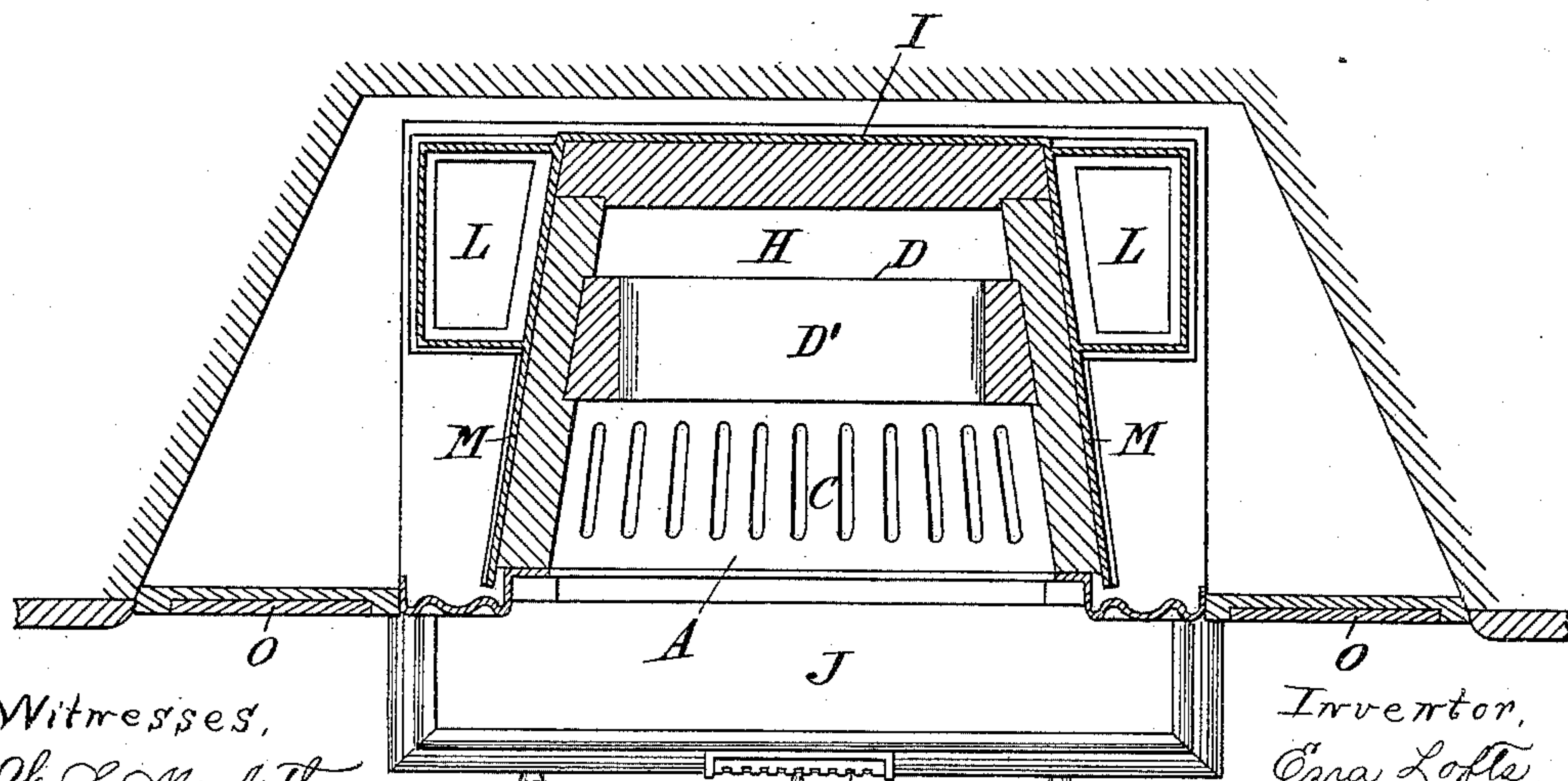
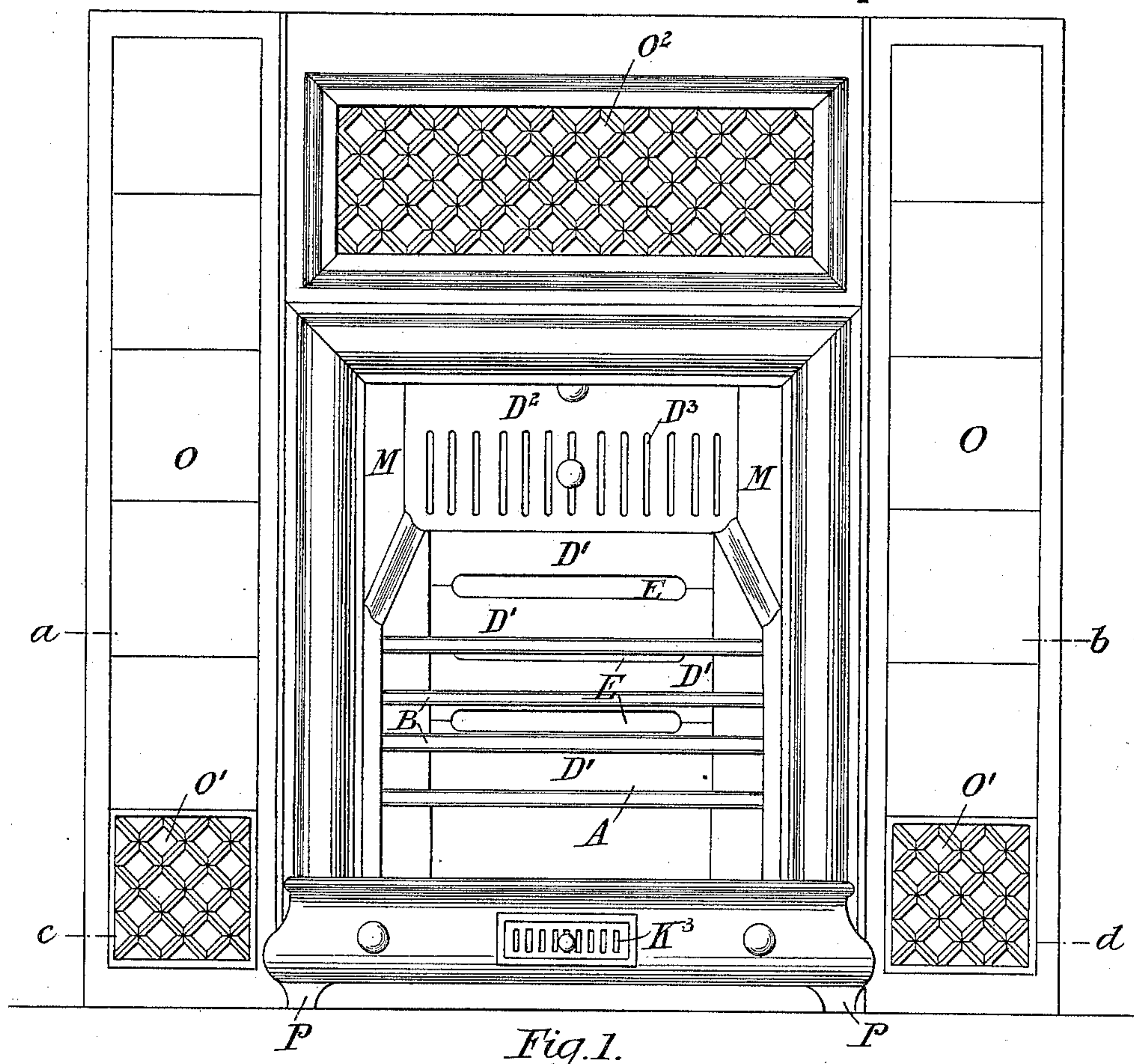
(No Model.)

2 Sheets—Sheet 1.

E. LOFTS.
STOVE.

No. 411,459.

Patented Sept. 24, 1889.



Witnesses,

Ch. S. McArthur
S. S. Johnson

Fig. 3. K³

Inventor,
Ezra Loftis,

By *John & Leonard*

Attorneys,

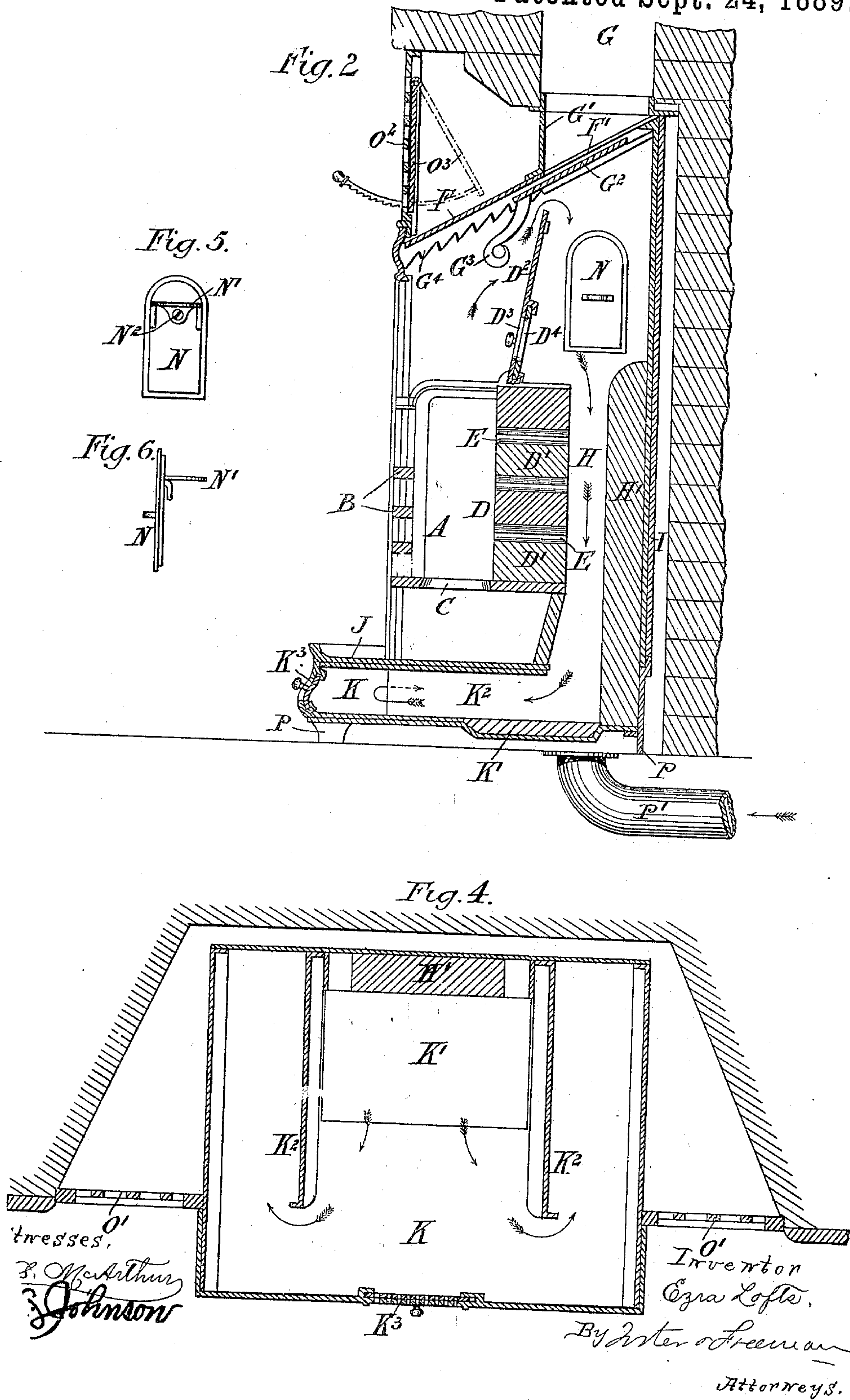
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UNITED STATES PATENT OFFICE.

EZRA LOFTS, OF CAMBRIDGE, ENGLAND.

STOVE.

SPECIFICATION forming part of Letters Patent No. 411,459, dated September 24, 1889.

Application filed January 31, 1889. Serial No. 298,219. (No model.) Patented in England March 5, 1888, No. 3,385.

To all whom it may concern:

Be it known that I, EZRA LOFTS, a subject of the Queen of England, residing at Cambridge, in England, have invented certain new and useful Improvements in Stoves and the Like, (for which I have made application for Letters Patent of Great Britain, No. 3,385, bearing date the 5th day of March, 1888,) of which the following is a specification.

This invention, while applicable to other stoves, &c., of a similar character, is especially designed to improve my own well-known stoves, &c., and I will describe it with reference to these. I find by experience that the combustion is sometimes so rapid—especially with a chimney having a naturally strong draft—that the back plate of the stove is apt to get burned out, with the additional disadvantages of consuming the fuel too quickly and not sufficiently heating the incoming fresh air. I get over these difficulties and improve the construction of the stove, &c., in the following manner:

In my former stoves the back plate was made with a number of vertical slots or openings, through which the flames passed to the combustion-chamber and hot plate. This back plate was made thin, about three-quarters of an inch. I now make this plate thick, preferably three or four inches, and place the slots or openings horizontally, by which I get a better sheet of flame and so more effectually consume the smoke. The former plates were made of cast-iron or fire-clay, in one piece, so that when part of it was spoiled the whole plate required to be renewed. I now generally make it of a number of slabs or pieces, preferably of the same materials as before, recessing the edge or face of such as may be necessary, so as to produce the slots or openings, which may be half in each of two contiguous pieces or entirely in one of them. If part of a back thus formed be spoiled, it can be easily replaced, the remaining pieces being still fit for use. I find a back thus formed will last far longer than those formerly used by me; but it is necessary to still further control the draft, or the enormous heat generated will melt or destroy even these backs. To accomplish this I place in the upper part of the back plate what I may term a

“ventilator,” preferably of the hit-and-miss description. By opening this the draft may be controlled to a considerable extent, and an opening, the size of which can be varied, in the top or upper back of the stove may also be used.

In my former pattern I employed in the hot chamber, at the bottom of the stove or range, a movable plate, which in one position caused the flame and heated gases to pass to the front of the chamber, but when moved to another position allowed the gases to pass direct to the chimney. This latter position caused one of the troubles I am now endeavoring to avoid, for it so increased the draft that it was to a large extent responsible for burning out the backs, as above described. I therefore now dispense with the movable plate in the hot chamber, and instead so form it that the gases pass centrally to the front of the chamber and then back by side passages to two side vertical flues, which, if necessary, may be controlled by dampers should the ventilator in the back plate and the extended travel given to the gases not be sufficient to control the draft.

In the accompanying drawings, Figure 1 is a front elevation of an open fire-place constructed according to my present invention, and of which Fig. 2 is a central vertical section and Figs. 3 and 4 horizontal sections taken, respectively, on the lines *a b* and *c d* of Fig. 1, Figs. 5 and 6 being views of a detached portion of the same.

Like letters indicate like parts throughout the drawings.

A is the fire-place, which, as shown, is provided with ordinary fire-bars B and grate C.

D is the back plate, which I construct of a number of parts D', each having formed in it either a complete horizontal opening E, or, as shown in the drawings, one or two recesses, which, together with similar recesses of other parts, will form one or two such openings E, such a construction admitting of those portions of the back which may have become burned or otherwise destroyed being removed and other whole portions substituted therefor. The upper part D² of the back plate is preferably of cast-iron, and has formed in it slits D³, which, with corresponding slits in the

sliding plate D^4 , Fig. 2, constitutes a hit-and-miss ventilator, by regulating which the draft through the fire may to a considerable extent be controlled.

5 F is a plate inclining upward toward the back, and an opening F' in which is made to connect with the chimney G by a connecting-piece G' . A valve or damper G^2 , provided with a handle G^3 , is arranged so that it may
10 be caused to expose more or less of the opening F' for regulating the draft through the fire, the said valve or damper engaging with racks G^4 , (only one of which is shown,) which will retain it in any position to which it may
15 be moved. Sufficient space is left between the upper edge of the back plate D^2 and the damper G^2 or top of the grate or stove to admit of the escape of any of the gases which may happen to rise from the fire instead of
20 passing through the openings E, as indicated by the arrows.

H is the combustion-chamber between the back plate D and fire-brick slab H' , which is supported by the stove-back I, which closes in
25 the whole of the stove at its rear side. The combustion-chamber H extends down behind the hearth or bottom of the ash-pit J and connects with the horizontal chamber K, which, at the part where the flames or gases will first
30 strike, is lined with fire-clay K' , and the front of which is made removable for cleaning purposes.

As shown in Fig. 4, the chamber K is constructed with partitions K^2 , (which extend
35 vertically from top to bottom thereof,) and is connected with the chimney G by the two flues L, Fig. 3, at the outer sides of the walls M of the stove.

N, Figs. 2, 5, and 6, is a soot-door, one similar to which is fitted to each flue L for cleaning
40 purposes. In some cases I find it necessary to reduce the draft through the chambers H and K and side flues L, and for this purpose secure a check plate or damper N'
45 to each of the soot-doors N, a ready means of doing which is by a screw N^2 , which will easily admit of its removal. Figs. 5 and 6 represent in back and edge view one of the soot-doors N with such a plate or damper N' .

50 K^3 is a hit-and-miss ventilator, by which cold air may be admitted into the chamber K when too much heat is being given off.

The front plate O, which for ornamental purposes may be constructed partly of tiles,
55 as shown in the drawings, is formed at its lower part with gratings O' and at its upper part with a grating O^2 , at the back of which is hinged a flap or valve O^3 , which may be regulated so that more or less heated air will
60 be allowed to pass into the apartment warmed by the fire-place. The whole arrangement is supported on feet P, and when fitted into a recess in a wall, as shown in the drawings, space is left so that air can freely circulate
65 around it and become heated by contact with

its heated surfaces before it passes through the grating O^2 into the apartment. If desired, a supply of heated fresh air may be admitted to the apartment by employing a
70 pipe—such as P' —which passes through the exterior wall of the building and through the floor and introduces cool air to the under side of the hot chamber K, by contact with which and the other heated surfaces it becomes
75 heated before finally passing through the grating O^2 into the apartment.

It will be understood, as the flues of the stove proper are all closed in or complete in themselves and in no way benefited by being
80 built into a wall or chimney-recess, that if the outlet-flue G' be connected to a suitable chimney or the like the said stove will be admirably adapted for use in halls and other such places, where it will preferably stand out from
85 the wall.

When a fire is kindled and until it is well alight in the before-described grate, the damper G^2 is pulled into and left in its most
90 forward position, and the ventilator D^3 is or may be opened, so that the gases and other products of combustion are drawn directly up the chimney G. When, however, the fire is
95 sufficiently advanced, the damper G^2 and ventilator D^3 are closed and the gases are drawn through the openings E into the combustion-chamber H, and thence into the chamber K, in
100 which they divide, some, as indicated by the arrows, passing around one and some around the other of the plates K^2 on their way to the two side flues L, whence they escape to
the chimney G.

I do not in this application present claims for the back plate constructed as shown and described, since I have made the same the
105 subject of certain claims in another application of mine, Serial No. 298,218, of even date herewith.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be per-
110 formed, I declare that what I claim as the improvements in stoves and the like is—

1. The combination, with the soot-door N, of a damper or baffle plate N' , substantially as herein described, and illustrated in the ac-
115 companying drawings.

2. A fire-place stove having the fire-place, the back plate of which is provided with slots E and D^2 , the latter being regulated by a damper, the combustion-chamber in rear of
120 the back plate, the divided flue K below the fire-place, and the flues L, connecting with the chimney, substantially as set forth.

In testimony whereof I have hereto set my hand in the presence of two subscribing wit-
125 nesses.

EZRA LOFTS.

Witnesses:

ALFRED J. BOULT,
HAROLD WADE.