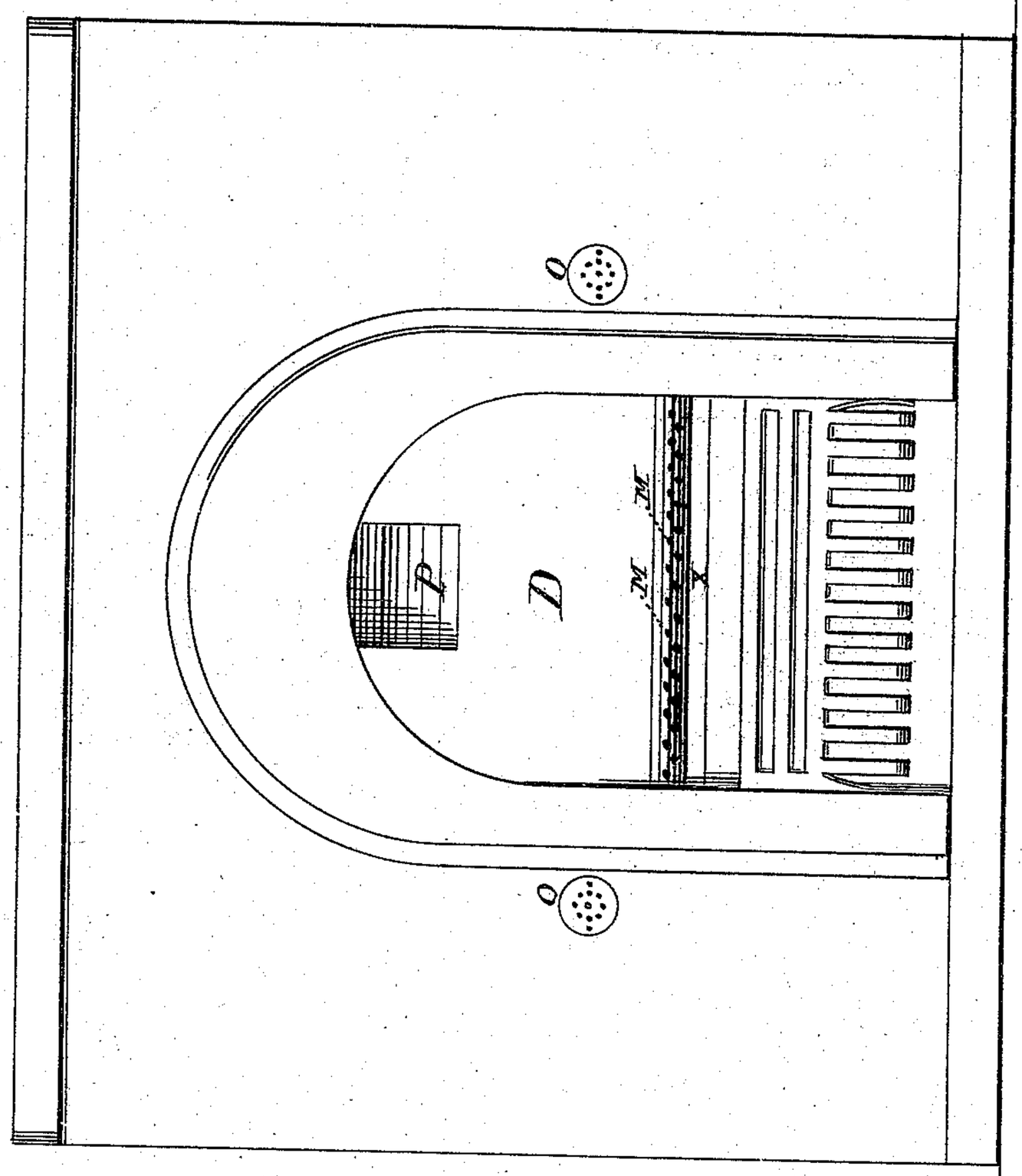
2 Sheets--Sheet 1.

L. M. CHIPLEY.

Fire-Places.

No. 156,659. Patented Nov. 10, 1874.

Fig. 1.



Witnesses.

T. C. Smith

Wm. E. Chaffee

Inventor:

Lucien M. Chipley

by his atty

Cox & Cox

2 Sheets--Sheet 2.

L. M. CHIPLEY.

Fire-Places.

No. 156,659. Patented Nov. 10, 1874.

Fig. 3.

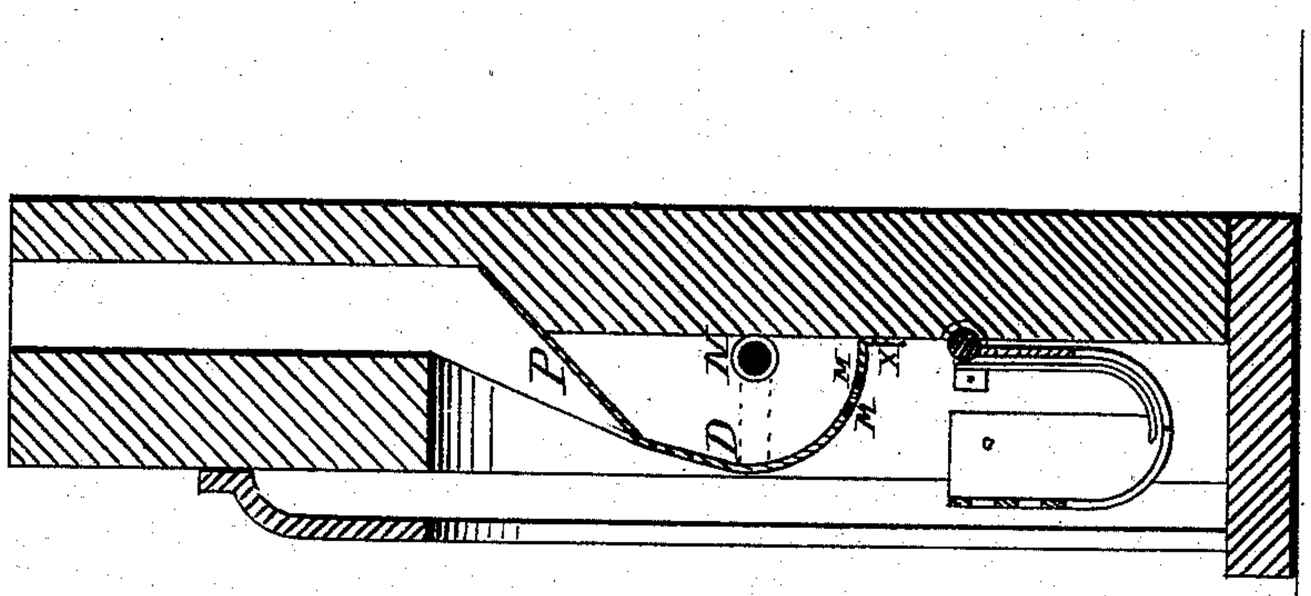
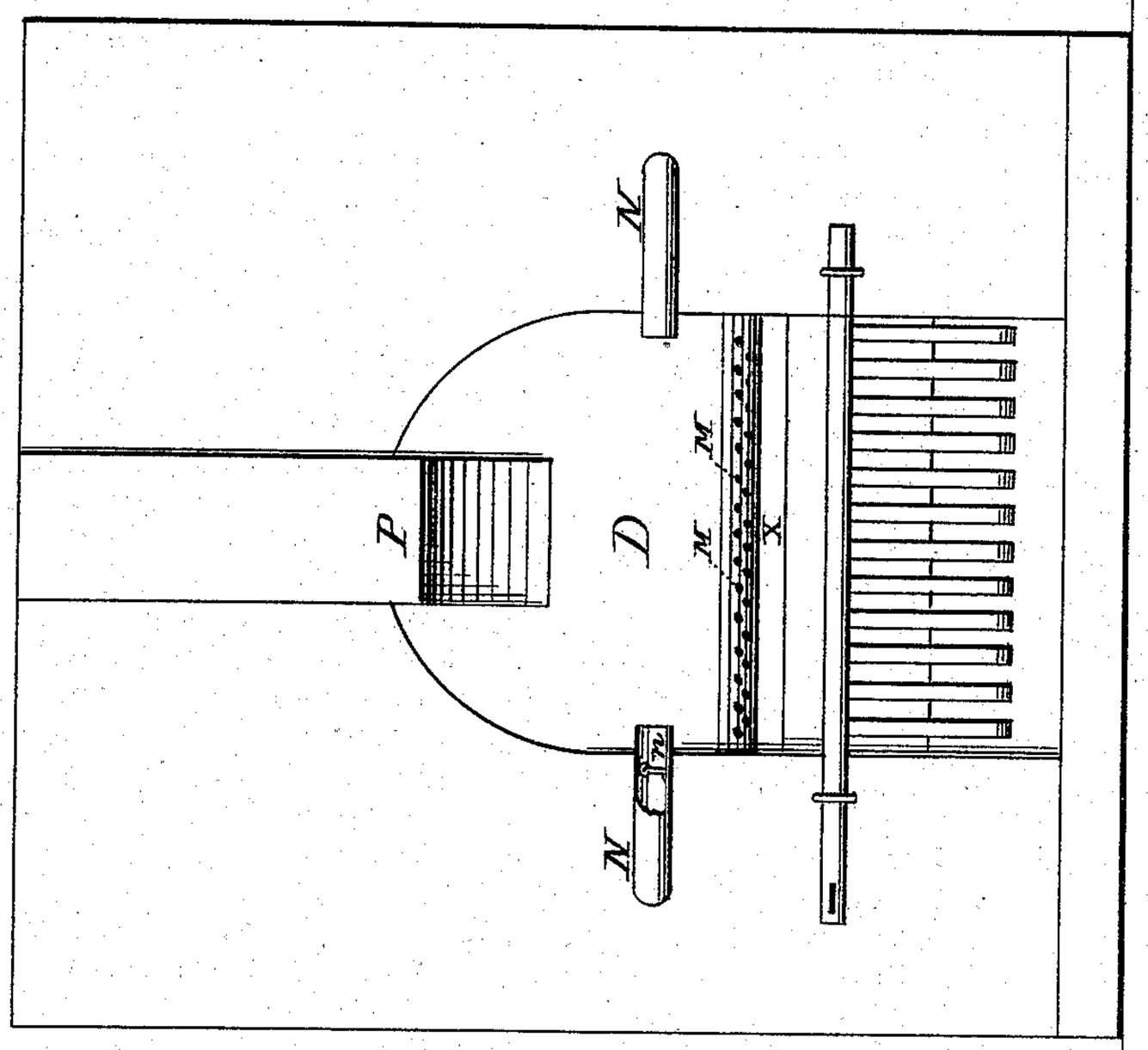


Fig. 2.



Witnesses.
T. L. Smith
Wm. E. Schaffer

Inventor:
Lucien M. Chipley
by his atty
Cox & Cox

UNITED STATES PATENT OFFICE.

LUCIEN M. CHIPLEY, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN FIRE-PLACES.

Specification forming part of Letters Patent No. **156,659**, dated November 10, 1874; application filed March 25, 1874.

To all whom it may concern:

Be it known that I, LUCIEN M. CHIPLEY, of St. Louis, Missouri, have made and invented a new and useful Improvement in Fire-Place Backs, of which the following is a specification:

The invention relates to an improved fire-back, which, in the present instance, is concavo-convex in form, but which may be constructed in many different shapes, the only essential point being that the part adjacent to the fire be so conformed as to insure the delivery of oxygen by means of the pipes, as will more fully appear. The fire-back is made of metal, preferably, and is attached to the inside of the chimney, its lower part, which will probably be more efficient when convex in form, extending to a point where its surface will be contiguous to the flame of the fire in the grate, its central parts being carried well over the grate and its upper parts receding, thus forming, with the walls of the chimney back of it, a heat-chamber of desirable character. In the lower part of the fire-back, which has been described as being contiguous to the fire, are provided numerous apertures or perforations, and leading into the heat-chamber, just mentioned, are two air-pipes, which have their mouths upon either side of the grate, and which constantly deliver oxygen into the heat-chamber, from whence it passes through the apertures in the fire back into the flames, thus increasing combustion. Apart from the perforations the heat-chamber is made air-tight, and valves, opening inward, are inserted in the air-pipes, whereby the delivery of the air to the flames is insured; and passing through the upper part of the chamber is an air-tight funnel or conductor, which is of smaller dimensions than the chamber or chimney, and which leads from the fire-place into the chimney and serves to carry off the smoke.

The object of the invention is to increase combustion and heat by delivering a constant and abundant supply of oxygen in the manner described, and which is with greater particularity hereinafter set forth.

Figure 1 is a front elevation of a device embracing the elements of the invention. Fig. 2 is a rear view of same. Fig. 3 is a vertical central transverse section of same.

D is the fire-back, which is secured in the fire-place above the grate, the lower flange of which, X, is in close relation with the top of the back of the grate B, while the parts above the flange are concavo-convex in form, the convexity projecting outward over the grate and the concavity forming with the walls of the fire-place a heat-chamber of approved construction, which, in addition, serves as a means by which combustion is increased, as will more fully appear.

In that portion of the fire-back D that projects outward over the grate, near the flange X, are cut the apertures or perforations M, which lead into the heat-chamber. N are the air-pipes, the mouths of which are upon either side of the fire-place, and which lead into the heat-chamber, their ends projecting above the apertures M. In the present instance they are constructed to turn inward at a right angle, but may be made in any other form—as, for example, they may be straight and inserted diagonally, or they may be curved or otherwise arranged. In the pipes N are the valves *n*, which open inward, and which prevent the escape of the air and compel its delivery into the heat-chamber. O are perforated plates that cover the mouths of the pipes N, and which are designed to prevent the introduction of dust, and for purposes of ornamentation. P is an air-tight pipe or funnel, which leads from the fire-place through the top of the heat-chamber into the chimney, and which conveys the smoke upward. It is smaller than the chamber and deflected toward the flue, so as to increase the draft. The apertures M, when the fire in the grate is burning, will be in such position that the air is forced into the flames and the combustion and consequent propagation of heat very greatly increased. The delivery of the oxygen must ensue from the arrangement of the parts. The air having entered the heat-chamber its escape through the pipes N is prevented by the valve *n*, and being expanded by the heat of the chamber is forced through the apertures M into the flames, and thus in combination with the pressure of the cold air from without

a sufficient draft is created to open the valve *n* and permit a fresh supply of the desired element. The apertures M should be of such size as to prevent the flames from entering the heat-chamber to any considerable extent, and, at the same time, sufficiently large to preclude their being closed by the expansion of the metal.

It is well known that a large amount of non-combustible gas is generated by igneous action, which, when charged with oxygen, burns readily, increasing the amount of heat. In devices of ordinary construction this non-combustible matter passes off and is lost. In others it is retained in temporary juxta-position to the surface of the fire, and there acts deleteriously thereon. In this invention the convexity of the fire-back retains this non-combustible gas about the surface of the fire, and while there retaining it charges it with a column of oxygen, rendering it inflammable, and thus both saving and utilizing its heating properties.

What I claim as my invention, and desire to secure by Letters Patent, is—

A perforated concavo-convex fire-place back in combination with the air-pipes N, provided with the valves *n*, substantially as shown and described.

In testimony that I claim the foregoing improvement in fire-place backs, as above described, I have hereunto set my hand and seal this 27th day of January, 1874.

LUCIEN M. CHIPLEY. [L. S.]

Witnesses:
H. L. WARREN,
JNO. A. HAZENSTAB.