

A. LYND.

STOVE.

No. 191,807.

Patented June 12, 1877.

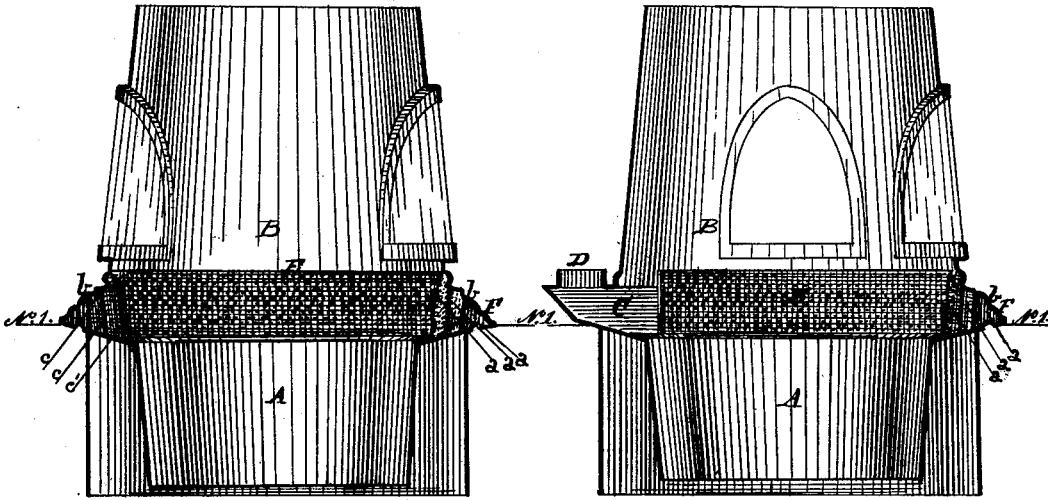


Fig. 1.

Fig. 2.

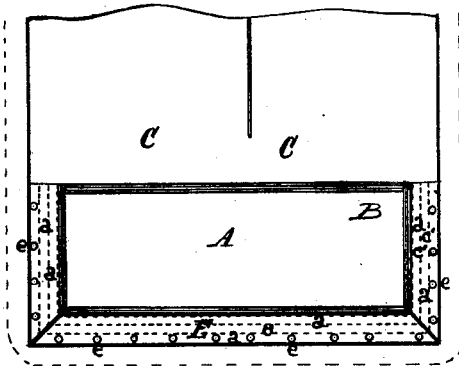


Fig. 4.

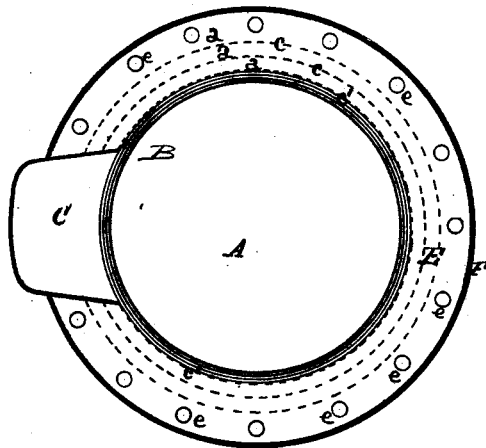


Fig. 5.

Witnesses. { Cole T. Lynd  
William F. Selbirk

Andrew Lynd  
by his attorney  
Alex. Selbirk  
Inventor.

# UNITED STATES PATENT OFFICE.

ANDREW LYND, OF ALBANY, NEW YORK, ASSIGNOR OF ONE-HALF HIS  
RIGHT TO JOHN E. MILLER, OF SAME PLACE.

## IMPROVEMENT IN STOVES.

Specification forming part of Letters Patent No. **191,807**, dated June 12, 1877; application filed  
March 7, 1877.

*To all whom it may concern :*

Be it known that I, ANDREW LYND, of the city and county of Albany, in the State of New York, have invented a new and useful Improvement in Stoves, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a sectional elevation of a heating-stove, taken at line No. 1 in Fig. 3, illustrating the improvement in this invention. Fig. 2 is a sectional elevation, taken in the transverse. Fig. 3 is a horizontal sectional view, taken at lines No. 1 in Figs. 1 and 2; and Fig. 4 is a modification of this improvement, illustrating the same applied to a cook stove or range.

The object of my invention is to produce, with the combustion-chamber of a stove, a series of heating-chambers, by which air may be gradually heated to a high temperature before entering into the combustion-chamber, and be admitted, when heated, in minute streams or jets to mingle with the hot gases evolved from the burning fuel, so that the hot gases may not be in the least reduced in their temperature, while at the same time a sufficient quantity of oxygen from the air, heated to an equal temperature, may unite with the said hot gases, and produce perfect combustion of the same without being cooled and forming smoke.

In the drawings, A represents the fire-pot. B is the combustion-chamber, into which the inflammable gases evolved from the fuel in the fire-pot rise and are intended to be consumed. C is a flue, leading from the combustion-chamber to the exit D, either in a direct manner or in a circuitous direction, as is common in reversible flue-stoves, such as is found in base-heating stoves, or cooking stoves and ranges. Placed at the base of the combustion-chamber B, and at or above the top margin edge of the fire-pot, is the air-heating chamber E, composed of a series of two or more compartments, *a*, each separated from the other by a perforated wall, *c*, which walls may be made of perforated metal or woven wires. The outer wall of the outer compartment is made imperforate or closed, or solid in its outer or upper side *b*, so that no air entering the said outer compartment

may escape into the room. Air is admitted into the said outer compartment through openings *e e* made in the lower side of the said compartment. The inner wall, or the wall *c'*, separating the heating-chamber from the combustion-chamber, is made of perforated metal or woven wire similar to the dividing-walls *e e*.

In heating-stoves I prefer to place the said heating-chamber below the base or lower margin edge of the mica windows, and employ the usual division-ring F to form a portion of the outer imperforate wall, while the openings or ports *e e* for the admission of air may be made in that portion of the wall of the stove directly below the said ring. Yet it is evident that any portion of the wall of the combustion-chamber, or a plate adjunctive to the same, may be employed to form such an imperforate wall for the said heating-chamber for securing the same results. I also prefer to extend the heating-chamber in a continuous manner around the combustion-chamber from one side of the flue C to the opposite side, as shown. Yet it is evident that a continuity of the said chamber is not absolutely necessary, as it may be divided, or made to consist of several smaller chambers, capable of aggregating about an equal amount of heating capacity.

The manner in which the improvement in this invention operates is as follows: While the fuel is being burned in the fire-pot, and the inflammable gases are being evolved from the top surface of the said burning fuel into the combustion-chamber, fresh air, having its full natural amount of oxygen, may pass through the ports *e e* into the outer compartment of the heating-chamber E, where the said air will become somewhat heated, after which it will pass into the next adjoining compartment through the minute and numerous openings in the separating-wall *c*, into which compartment the air will be yet more highly heated to escape into the combustion-chamber, or into a third compartment, and thence into said combustion-chamber, to mingle with the inflammable gases in the same, and be drawn with them toward the flue C, as shown by arrows, over the top surface of the burning fuel in the fire-pot, when the hot gases and the oxygen of the highly-heated air may unite and

cause a complete combustion of said hot gases without producing smoke or soot, as the said hot gases will not be liable to be reduced or cooled in their temperature before entering the flue C by the supply of air being introduced.

I am aware that air-chambers have been employed with fire-pots, and were made to surround the same in whole or part, and were provided with small openings, through which air might escape from such air-chambers into the fire-pot. Such chambers are not claimed by me, and form no part of my invention.

In my invention the inner wall of the air-chamber is at a distance from the incandescent coals in the fire-pot, so that no excessive expansion of the same greater than the outer walls can be had, while in the old arrangement and employment of air-chambers the inner walls, being formed by the wall of the fire-pot itself, would become expanded to such a degree greater than the outer walls as to cause them to crack, part, or break. In my invention this, in no case, can happen, while at the same time it may be readily seen that by my improvements the heated air is only brought in contact with the gases after they have fully

separated from the fuel, while in the employment of air surrounding the fire-pot and made with it, the air escaping from such chambers acts on the gases while they are being evolved from the fuel, and, therefore, only supplement the grate for substantially the same operation of contributing to the combustion of the fuel.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination, with the combustion-chamber B, in which the disengaged gases burn above the fuel, of the air-heating chamber E, situated above the plane of the top edge of the fire-pot and concentrically with the same, and composed of two or more compartments, each separated from the other by finely-perforated walls, and from the combustion-chamber by a finely-perforated wall, and the air ducts or ports *c e* leading to the first compartment of the series from without, substantially as and for the purpose set forth.

ANDREW LYND.

Witnesses:

COLE T. LYND,  
WILLIAM F. SELKIRK.