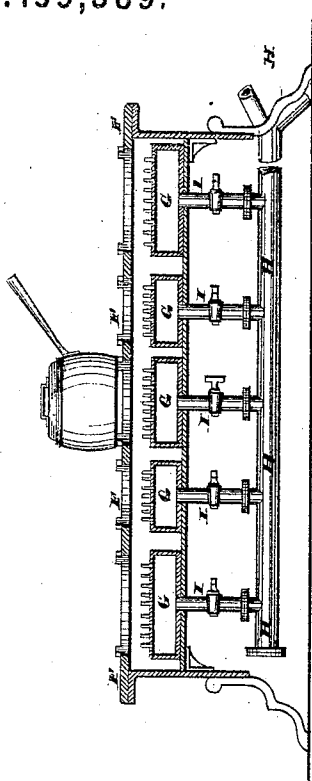


J. ROBERTSON.
Fire-Places, &c.

No. 155,389.

Patented Sept. 29, 1874.

FIG. 3.



Section on the line A. B.

FIG. 4.

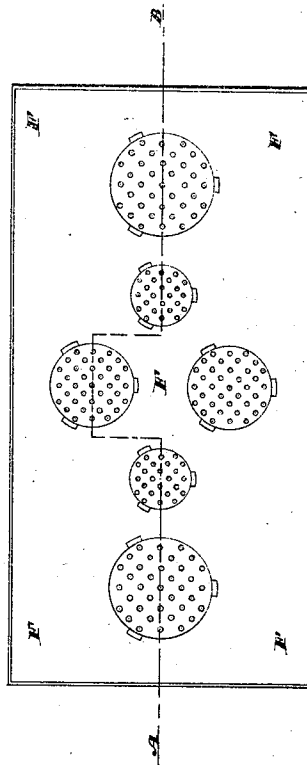


FIG. 1.

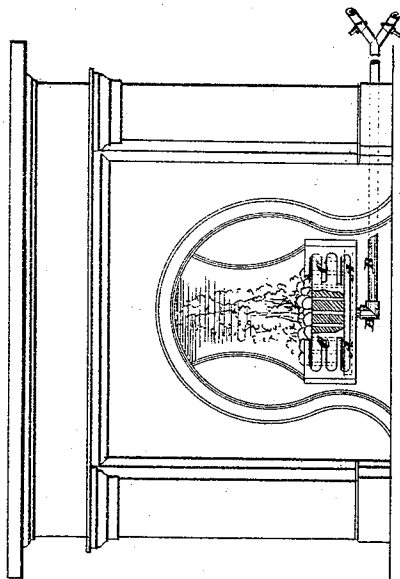
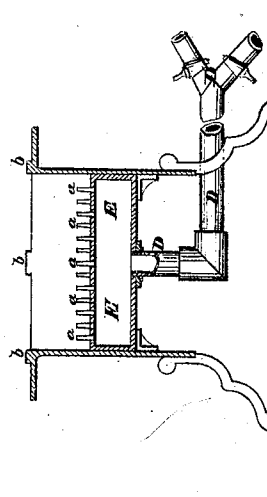


FIG. 2.



Witnesses.
Edward Fisher Bamber
John Clark

Inventor.
John Robertson

UNITED STATES PATENT OFFICE.

JOHN ROBERTSON, OF NITSHILL, NORTH BRITAIN.

IMPROVEMENT IN FIRE-PLACES, &c.

Specification forming part of Letters Patent No. **155,389**, dated September 29, 1874; application filed May 4, 1874.

To all whom it may concern:

Be it known that I, JOHN ROBERTSON, of Nitshill, in the county of Renfrew, North Britain, have invented Improvements on Fire-Places or Stoves, of which the following is a specification:

This invention relates to improvements in fire-places or stoves which are specially adapted for the burning of air and coal-gas, or air and hydrocarbon vapor, mixed or combined under pressure previous to issuing from the burners or jets at or in which the combination or mixture is burned.

Figure 1 is a front elevation of an open fire-grate to which my invention is shown adapted. A distributing-chamber, A, is situated at the lower part of the grate, into which a mixture or combination of air and coal-gas, or air and hydrocarbon vapor, mixed or combined under pressure, is conducted by a pipe, B. A perforated slab, c, of fire-clay or other refractory material, is placed in the fire-grate above the distributing-chamber A, and the mixture or combination of air and gas, or of air and hydrocarbon vapor, is ignited at burners (through which the mixture or combination issues) inserted in the upper side of the chamber A. By the combustion of the mixture or combination of gas and air, or air and hydrocarbon vapor, the slab c becomes highly heated, and the heat is thrown out therefrom into the room, hall, warehouse, or other place in which the fire-grate is situated.

Clay, chalk, asbestos, or other suitable material may, if desired, be piled loosely upon the top of the slab c; or, in lieu of these substances, a little coal may be placed thereon.

Fig. 2 is a vertical section of a portable cooking-stove arranged to be heated by the combustion of air and gas, or air and hydrocarbon vapor, mixed or combined under pressure. The gaseous mixture or combination is conducted through a pipe, D, into the distributing-chamber E, and consumed at the burners a, through which it issues. The cooking utensil rests upon the projections b, the products of combustion escaping through the spaces between these projections.

Fig. 3 is a vertical section, and Fig. 4 a plan, of a cooking-range adapted for burning the inflammable gaseous mixture to which my invention is shown applied. The heating-plate F of the range is formed with a number of openings therein, beneath each of which a distributing-chamber, G, similar to the chamber E in Fig. 2, provided with burners, is situated, as shown at Fig. 3. The mixture of air and gas is conducted into the several chambers G from the pipe H by branch pipes I, each of which is provided with a cock for regulating or cutting off the supply of air and gas to the chamber in communication therewith.

As above stated, the inflammable mixture consists of air and gas combined under pressure before issuing from the burner. To effect this, each main supply-pipe B, D, or H communicates with branch pipes K K—one for gas, the other for air under pressure—the flow of gas and air being regulated by suitable cocks on pipes K K, to insure admixture under pressure of the two elements in the desired proportions.

I am aware that coal-gas and hydrocarbon vapor or gas have been employed for heating stoves. This I do not claim. But I am not aware that before my invention either of the gases above named, in the heating of stoves or fire-places, have been combined with a superadded quantity of air under pressure, which serves at once to intensify the heat and prevent the formation or deposit of soot.

What I therefore claim is—

In fire-places or stoves, the combination of a distributing-chamber and burners with a pipe which communicates with the sources of air and gas supply, and supplies the burners with air and gas mixed or combined under pressure, substantially as shown and set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN ROBERTSON. [L. S.]

Witnesses:

EDWARD FISHER BAMBER,
JOHN CLARK.