

(No Model.)

O. F. GRANT.
BURNER FOR NATURAL GAS.

No. 435,299.

Patented Aug. 26, 1890.

Fig. 1.

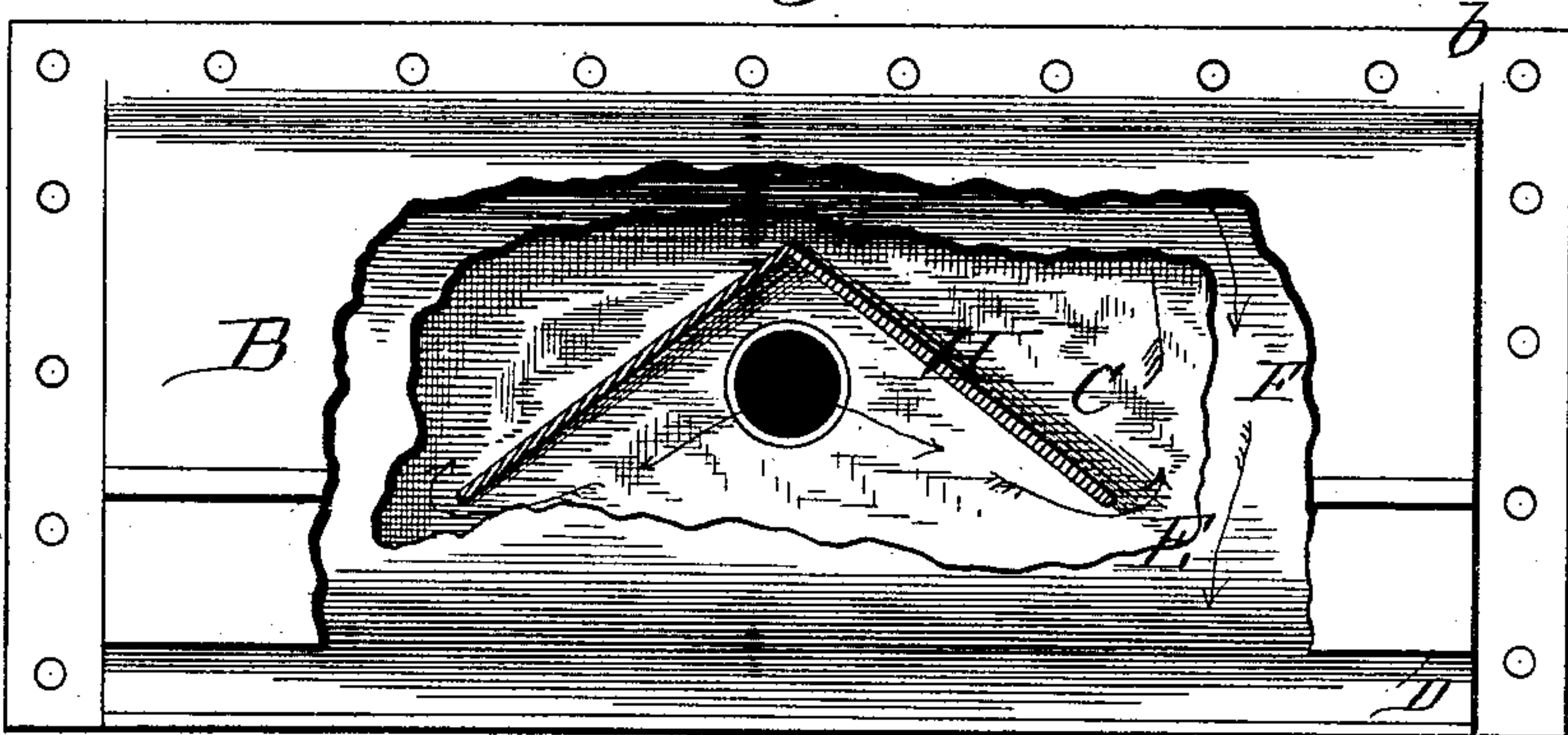
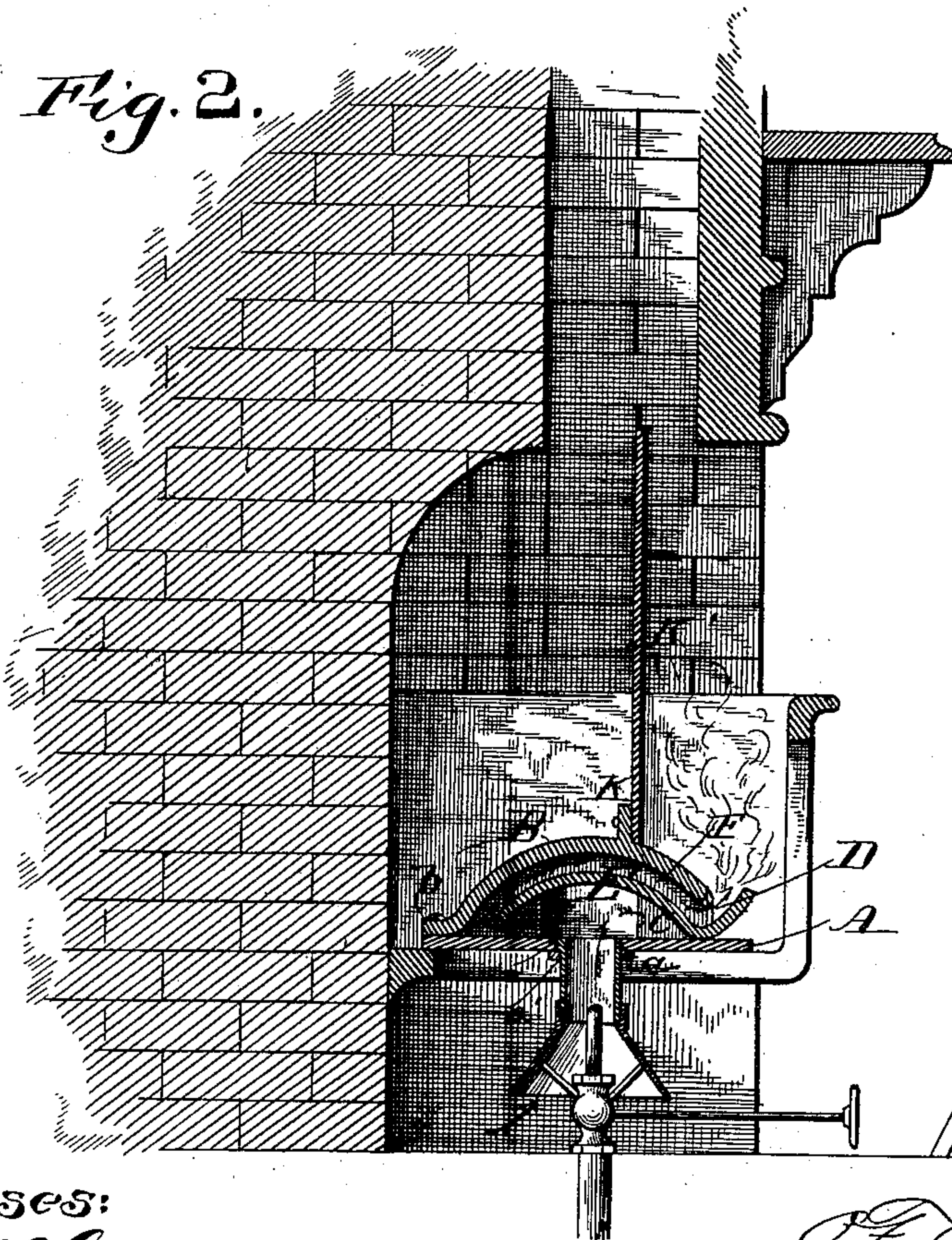


Fig. 2.



Witnesses:

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J. L. Curtis

Inventor.

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UNITED STATES PATENT OFFICE.

OSCAR F. GRANT, OF PITTSBURG, PENNSYLVANIA.

BURNER FOR NATURAL GAS.

SPECIFICATION forming part of Letters Patent No. 435,299, dated August 26, 1890.

Application filed May 5, 1890. Serial No. 350,592. (No model.)

To all whom it may concern:

Be it known that I, OSCAR F. GRANT, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Burners for Natural Gas; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification.

My invention has relation to burners for the utilization of gaseous fuel, particularly natural gas, in stoves and fire-places, and has for its object the provision of a novel construction of burner by which the gas is thoroughly mixed or commingled with air and the mixture heated before issuing from the burner; also, in the provision of a novel construction of burner by which the gaseous fuel is spread, distributed, and deflected, so as to issue from the mouth of the burner uniformly throughout its length and rise in the front portion of the grate or fire-place, thereby insuring, when ignited, a wide practically unbroken sheet of flame which will radiate its heat outward and greatly economize the use of the fuel.

My invention consists in the novel construction, arrangement, and combination of parts, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is plan and partly horizontal sectional view of a burner constructed according to my invention. Fig. 2 is a transverse vertical section of the same.

The burner, which is made of cast iron or other suitable material, is in the form of a retort, of which A is the base-plate, having a boss *a* in the center, with a threaded opening *a'* for the connection of the gas-supply pipe. The plate A is of an oblong rectangular form and supports the arch-shaped cap B, which is flanged at *b* and bolted or screwed to the base, thus forming with the base a chamber or cavity C, with which the gas-supply pipe has communication. Below the boss A is arranged a funnel-shaped air-supply device, into the mouth of which the gas-supply nozzle enters and from the walls of which the latter is separated so as to admit the air

around it, the air being drawn in by suction, as in an injector. Along the base of the arch B in the forward part of the burner is formed a narrow slit or opening D, constituting the gas-outlet.

Within the chamber C is arranged an arched partition E, which is concentric with the arch of the cap B and extends from the slit D to near the base-plate A at the rear portion thereof, a narrow channel F being left between the rear edge of the partition and the upper surface of the base-plate for the passage of gas. The forward edge of the partition is curved upward outside the slit D, and forms a deflector to throw the flame and issuing gas back against the outer surface or front of the arch B and cause it to rise in front of the burner.

H designates a V-shaped partition located within the chamber C below the arched partition E, cast onto base-plate A. The partition H extends up to the under surface of the arched partition E, and at its base surrounds the gas-inlet opening, from which the walls diverge toward the front of the burner.

The burner, constructed as described, being placed at the bottom of a grate or fire-place with the slit D in front, the gas and air entering through the opening *a'* are mixed together and the vapor caused to flow forward by the deflecting-partition H, around the ends of which it circulates and then passes back toward the opening below the arched partition E and enters the curved chamber formed by and between the two arched plates, from which it finally issues at the burner-slit D. It will be seen that as soon as the burner becomes heated the gas admitted thereto begins to expand and its thorough admixture with the air is insured. The circuitous route which the vapor is compelled to take keeps it in confinement a sufficient length of time to allow the heat to take effect and cause the vapor to come into intimate contact with the heated metallic surfaces along its route. The V-shaped deflector H is designed to impede the too rapid circulation of the vapor and to spread it out so that it will uniformly fill the curved upper chamber of the burner and issue at every part of the burner-slit.

If desired, the arched plate B may be flanged

along its upper surface, as shown at K, and a sheet-metal plate K secured thereto, which will stand vertically within the fire-place and serve as a deflector to throw the heat outward.

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

1. A gas-burner for grates, fire-places, &c., consisting of a metallic box or chest having
10 an inlet in its lower portion for the admission of air and gas, a narrow channel or slit in its front portion for the escape of vapor, the said opening extending lengthwise of the box or chest, and a deflecting-partition located be-
15 tween its upper and lower walls and extending from below the escape opening or slit to the rear portion of the box or chest, its forward or lower portion being in close contact with the base of the chest and its rear edge
20 free, thus forming a flue or passage-way for the vapor having its outlet solely at or through the said narrow channel or slit, substantially as described.

2. A gas-burner for grates, fire-places, &c.,

consisting of a metallic box or chest having 25 an inlet in its lower portion for the admission of gas and air and a narrow slit or opening in its front for the escape of vapor and having a deflecting-partition between its upper and lower walls extending from below said 30 slit to near the rear portion of the chest and having an external and upwardly-turned lip outside said slit, substantially as described.

3. A gas-burner for grates, fire-places, &c., consisting of a metallic box or chest having 35 an internal longitudinal partition located between the gas inlet and outlet openings and a vertical deflecting-partition located between the internal partition and the base of the burner and extending around the back of the 40 inlet-opening, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of March, 1890.

OSCAR F. GRANT.

Witnesses:

FRANCIS J. TORRANCE,
A. B. DAVIS.