

(No Model.)

T. GORDON.

GAS BURNER.

No. 345,499.

Patented July 13, 1886.

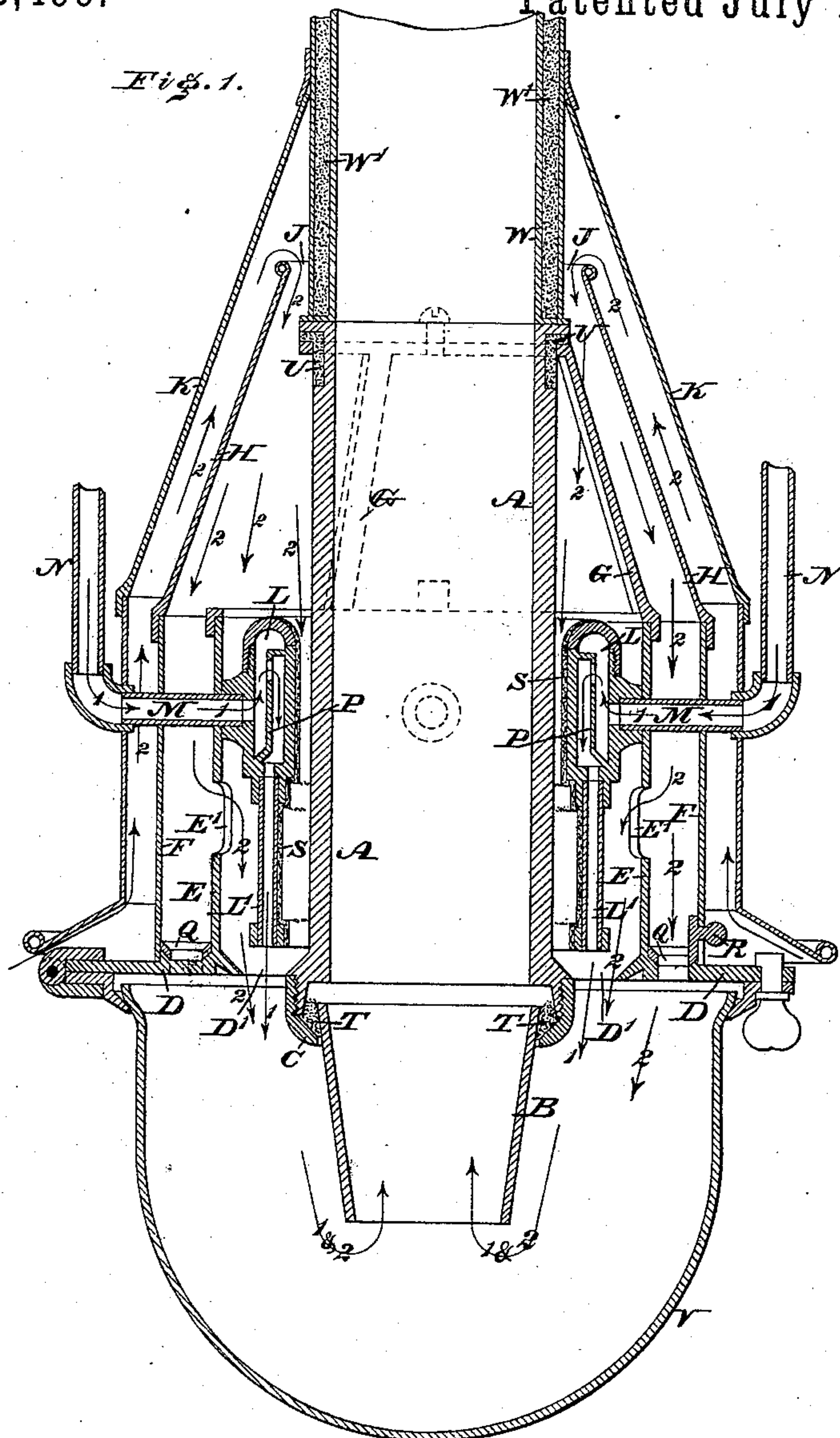
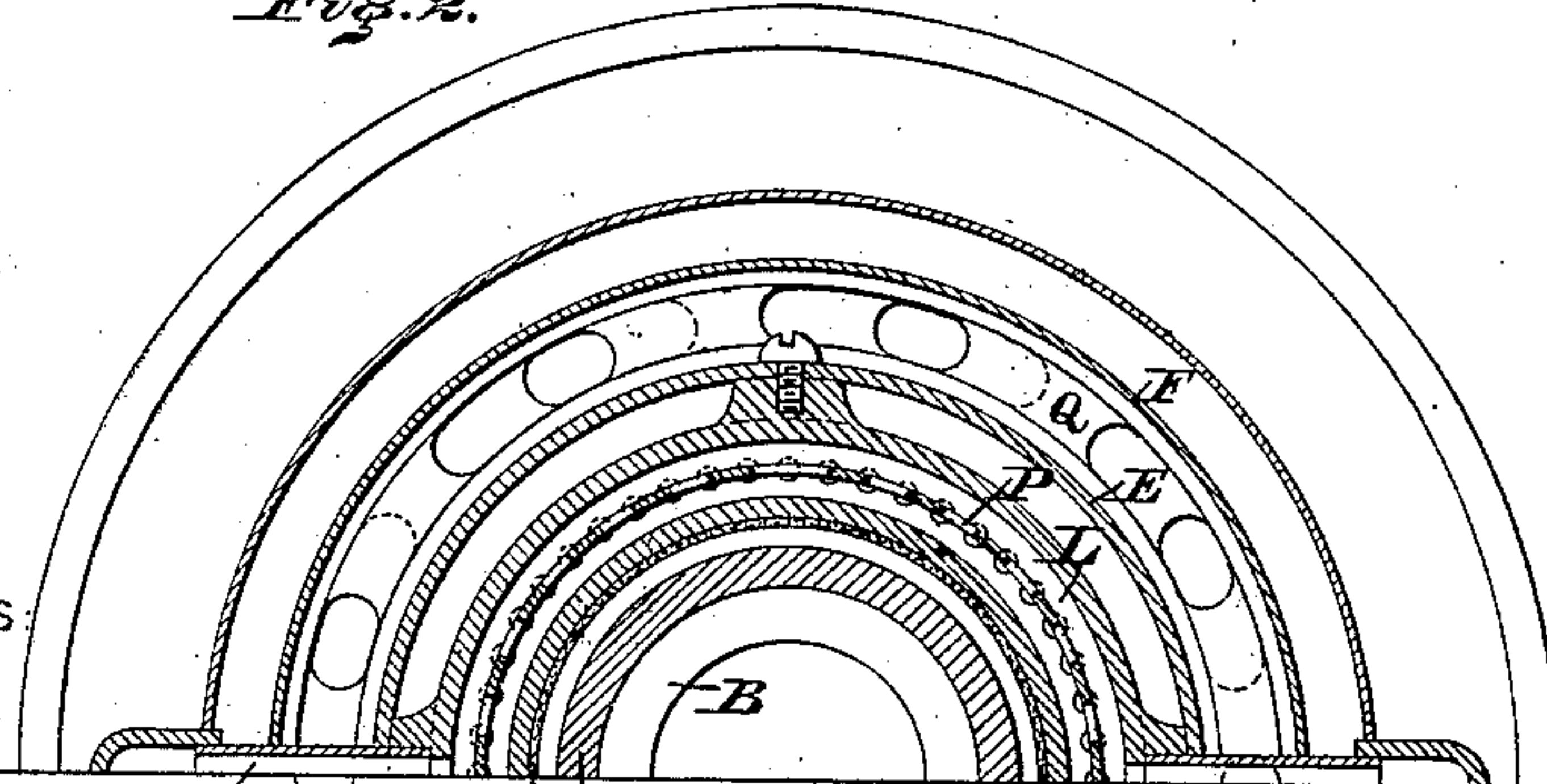


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 345,499, dated July 13, 1886.

Application filed December 23, 1885. Serial No. 186,523. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS GORDON, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Gas-Burners, which improvement is fully set forth in the following specification and accompanying drawings, in which--

Figure 1 represents a vertical section of a gas-burner embodying my invention. Fig. 2 represents a horizontal section thereof.

Similar letters of reference indicate corresponding parts in the two figures.

My invention consists of a gas-burner provided with means, as hereinafter set forth and claimed, whereby the gas is primarily heated, and a constant current of air admitted to the burner.

It further consists in the peculiar construction and combination of various parts, as hereinafter described and claimed, for the purposes set forth in this specification.

It further consists in covering or partly covering the gas-chamber with non-conducting material, for preventing said chamber from becoming overheated.

It finally consists of a valve or register for controlling the supply of air to the burner to suit different conditions of draft.

Referring to the drawings, A represents a flue, which is supported in any suitable manner, and adapted for the escape of the products of combustion of the burner, said flue having at its lower end a thimble, B, of refractory material, which is connected with the flue by means of an annulus, C, which encircles the top of the thimble, and is screwed to the end of the flue. Around the lower end of the flue is the base-plate D of the frame of the burner, and from the same rise the cylinders or shells E F, respectively, which encircle the flue A. Attached to the shell E are arms G, whose upper ends are connected with the flue, said shell E having air passages or ports E'. Rising from the shell F is a cone-shaped shell, H, whose upper end is separated from the flue, as at J. Encircling the shells F H is a hood, K, which is open at the bottom and closed at top, at which latter place it is

connected with the flue A. Between the shell E and flue A is the gas-chamber L, which is connected with branches M of the supply-pipes N. The lower ends of the burners L' are open, and located adjacent to an annular opening, D', in the base-plate D, it being noticed that the chamber L is separated from the shell E and flue A. In the head of the chamber L is a diaphragm, P, which extends vertically, and is closed at its lower end and open at the top, whereby gas entering the chamber from either or both the branches M strikes the deflectors, and then ascends to the opening at the top, so as to be admitted into the portion of the head behind the diaphragm, and thus reaches the chamber proper, causing a uniform distribution of gas and an equable supply of the same to the place of combustion. At the base of the space between the shells E F is a register-valve, Q, the seat whereof is on the base-plate D, which is perforated in accordance with the openings of the valve. In order to operate the valve, the same has connected with it a knob or handle, R, which projects through an opening in the shell F, so as to be conveniently accessible.

The outer faces of the gas-chamber and burners on the side toward the flue A are coated with non-conducting material, as at S, the object whereof is to prevent overheating of said chamber.

Interposed between the annulus C and adjacent portion of the top of the thimble B is insulating material T, the object whereof is to cause the thimble to become highly heated, thus increasing the temperature of the flame.

Interposed between the upper end of the arms G and flue A is insulating material U, whereby said arms are caused to be kept cool, the effect whereof is communicated to the frame of the burner.

V represents a globe, which is somewhat hemispherical, and depends from the base-plate D, and is secured thereto in any suitable manner.

Rising from the flue A is a flue, W, formed of two cylinders or shells, between which is a filling of non-conducting or insulating material, as at W', for preventing the escape of heat through the walls of said flue W.



The non-conducting or insulating material I employ at the several places is preferably asbestos.

The branches M pass through the shells E F and hood K, at or near the level of the chamber L, so that gas can be readily supplied to the burner without being overheated during its passage through the lamp, and the upper part of the gas-chamber is made removable for access to said chamber and the diaphragm therein. The gas enters the chamber L from the pipes N, as has been stated, and escapes therefrom at the lower end of the burners L', which latter may be of the form of a circular row of tubes. When the gas is ignited the flame extends downwardly and into the thimble B, the products of combustion escaping through the flue A, the course of the gas being indicated by arrows 1. Air enters the hood K from below and reaches the passage J. It is heated by contact with the flue and passes into the shell H, from whence it is distributed between the arms G into the shell E, in the space around the gas chamber and burners, so that air escapes through the openings D' of the base-plate into the globe, supplying both the interior and exterior of the flame, the branch pipe M being heated by the descending hot air, thus heating the gas before it enters the chamber I. Air also descends the shell F, and escapes through the ports E' of the shell E and valve or register Q into the globe, thus supplying the proper quantity of air to the exterior of the flame.

Should it be desired to increase or decrease the supply of air to the globe, it is accomplished by moving the valve Q in the proper direction, whereby the openings of the valve and of the seat thereof in the plate D are uncovered to the required extent, thus adjusting the air-supply.

As the gas-chamber is separated from the outer wall of the escape-flue, and a current of air passes through the shell E the entire length of the gas chamber and burners, between the same and the escape-flue, the decomposition of the gas and clogging of the gas-chamber and burner-tubes are prevented. The air is supplied to the burner in a highly-heated condition, and the gas is also heated, the effect of which is a brilliant and powerful light. The course of air is indicated by arrows 2.

I am aware that it is not new to employ in gas-burners central flues or tubes, gas-chambers, and rows of burners surrounding the said

flues, shells, and hoods, and regulators for the admission of air to the burner, and such I do not broadly claim.

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

1. A gas-burner having the central flue, A and W, in combination with the thimble B, the perforated base-plate D, the shells E F, resting thereon, the outer hood, K, secured to the flue W and open at the bottom, the shell H, secured to the upper part of the shell F, and having a passage, J, between it and the flue W, the chamber L, the burners L', the globe V, and inlet-pipes N and M, passing through the hood K, and shells E F at or near the level of the chamber L, all substantially as and for the purpose set forth.

2. In a gas-burner, a central flue and pendent thimble, a base-plate with shells E F rising therefrom, a gas-chamber, L, with depending burners L', between the central flue and inner shell, E, said base-plate having openings beneath the burner, and gas-supply pipes or branches M in the air-passages, said parts being combined and operating substantially as and for the purpose set forth.

3. A gas-burner having a central flue with a pendent thimble, the concentric shells E F, the gas-chamber L with depending burners within the inner shell, E, the concentric arms, shell, and hood G H K, and the base-plate with perforations D', the said gas-supply pipe or branches M, the shells E F being open at top, the shell H, rising from the shell F and separated from the central flue by the passage J, the hood being open at bottom and depending from the central flue, and the gas-supply pipe or branches extending through the shells E F, the parts being combined and operating substantially as described.

4. A gas-burner having a central flue and a pendent thimble and globe, a gas-chamber with pendent burners around said flue, a base-plate with perforations below said burners, concentric shells rising from the base-plate surrounding the gas chamber and burners, and a valve resting on the base-plate, the latter having perforations for the burner, said parts being combined and operating substantially as and for the purpose set forth.

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Witnesses:

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