

(No Model.)

C. E. HEQUEMBOURG.
REGENERATIVE GAS HEATER.

No. 286,301.

Patented Oct. 9, 1883.

Fig. 1.

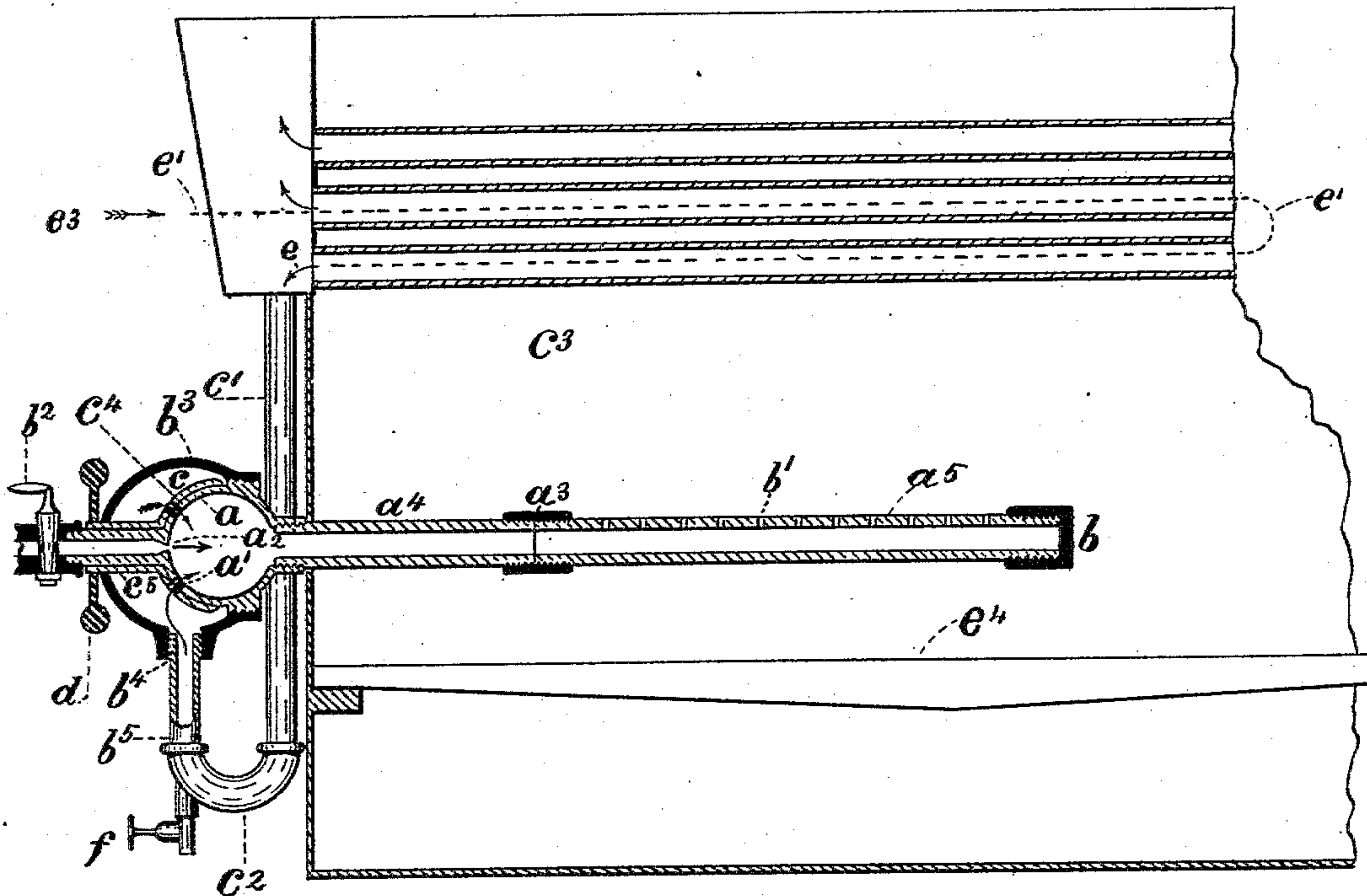


Fig. 2.

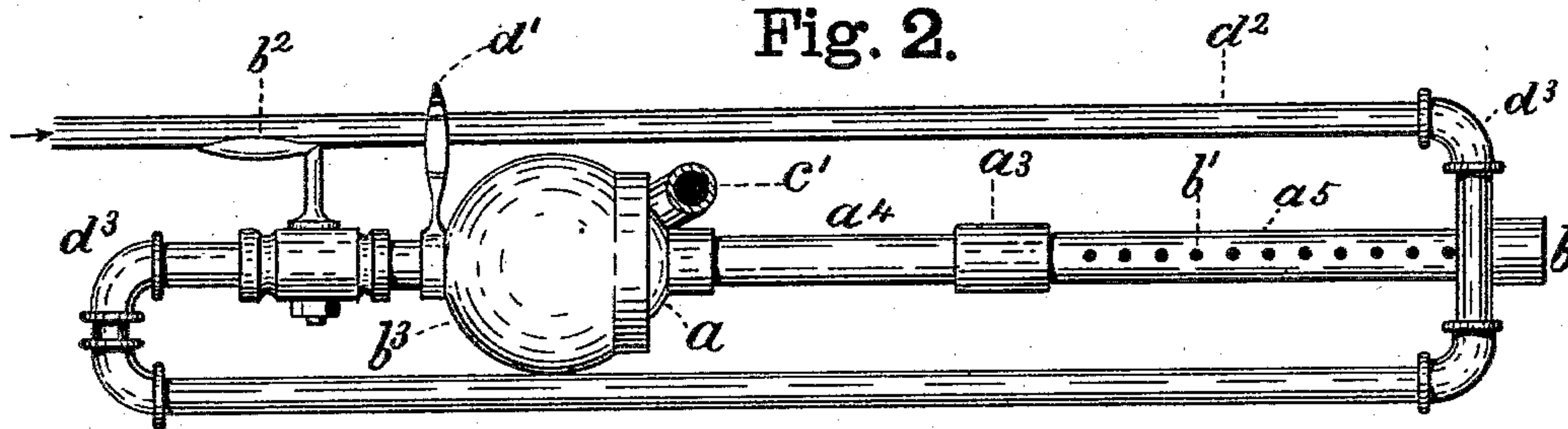
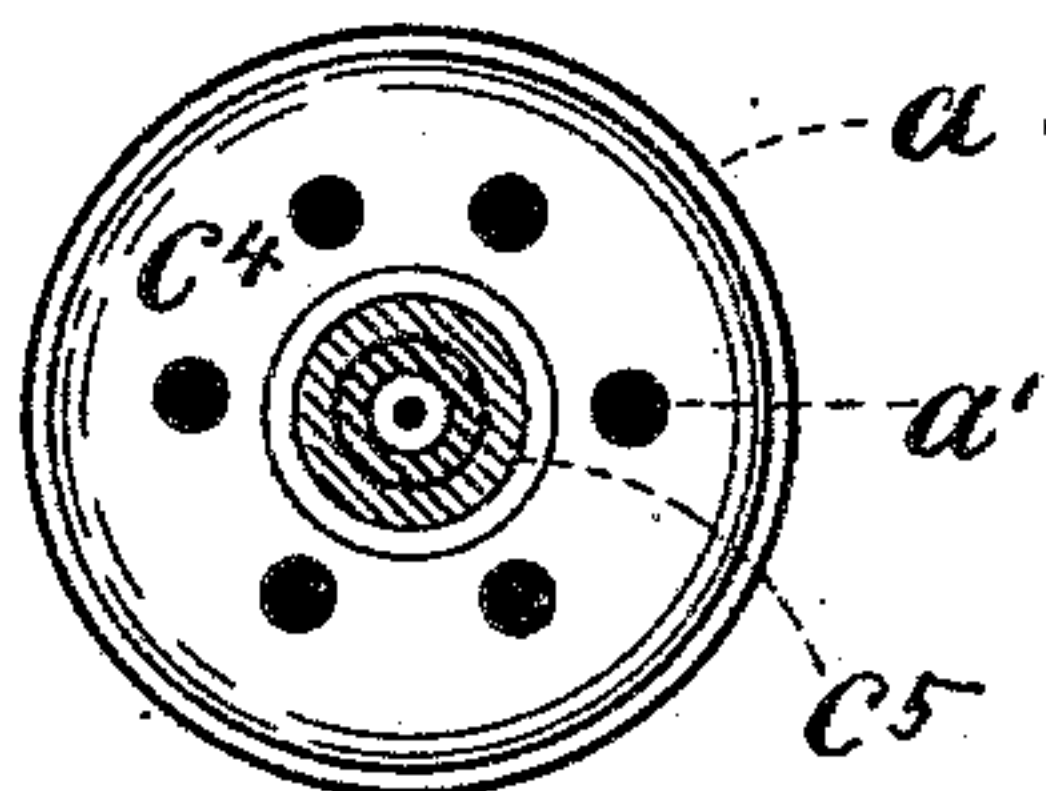


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES E. HEQUEMBOURG, OF DUNKIRK, NEW YORK.

REGENERATIVE GAS-HEATER.

SPECIFICATION forming part of Letters Patent No. 286,301, dated October 9, 1882.

Application filed June 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HEQUEMBOURG, a citizen of the United States, residing in Dunkirk, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Regenerative Gas-Heaters, of which the following is a specification.

My invention relates to certain improvements in gas-heaters, whereby a larger amount of heat may be obtained from a given quantity of fuel than can be got in the ordinary way; and it consists in combining with the gas-burner a means for heating the air before it enters and mingles with the gas, and also a means for heating the gas as it passes to the burner, and certain details of construction, all of which will be fully and clearly hereinafter shown by reference to the accompanying drawings, in which—

Figure 1 is a sectional elevation of the device, showing it connected to an ordinary steam-boiler. Fig. 2 is a plan or top view of the burner, showing a suitable coil in which the gas may be heated; and Fig. 3 is a front view of the inner bulb of the heater, showing the device for regulating the admission of air.

a represents the bulb, into which the gas and air pass and combine in the proportions suitable for combustion. The air-openings a' are arranged around the gas-opening a^2 . The bulb a is connected by a screw, as shown, to a short tube, a^1 . A coupling, a^3 , connects the perforated gas-tube a^5 to the tube a^1 . At the end of the gas-tube a^5 is a cap, b , for inclosing it. b' are the perforations through which the gas issues.

b^2 is a stop-cock for admitting or shutting off the gas; but as this part of the device is similar to that shown and described in the patent granted to me July 12, 1881, No. 244,056, a further description is not required here. An outer shell, b^3 , is screwed onto the bulb a . (See Fig. 1.) It is provided with an opening, b^4 , into which the pipe b^5 is secured in the ordinary way, and is made sufficiently large to inclose the bulb a and leave an air-space, c .

To the pipe b^5 is secured a pipe, c' , by means of an elbow, c^2 , or its equivalent. The pipe

c' leads up to a boiler, c^3 , or other air-heating device.

The bulb a is provided with concave valve or shut-off c^4 , having its inner face adapted to closely fit the bulb, and is provided with a series of holes corresponding in number, size, and position with the holes a' . The tubular portion c^5 of this valve fits the gas-pipe and projects out through the opening in the bulb b^3 , so as to receive a hand-wheel, d , (shown in Fig. 1,) or the handle d' , (shown in Fig. 2,) so that the valve may be turned in either direction, and thereby open or close the holes a' . The object of this valve is to adjust the amount of air to be admitted to the burner and mingled with the gas, thereby providing the means for perfectly regulating the combustion.

d^2 represents a coil of pipe for heating the gas, when required, before it is admitted to the burner.

d^3 are the usual elbows for connecting the several parts of the coil. It is shown as slightly elevated above the burner, so as to receive a portion of the heat, for the purposes before mentioned; but any other suitable or well-known form or arrangement of the coils for heating the gas may be used.

The operation of the invention is as follows: The gas being let on by the cock b^2 , either from the main direct, or, when required to be heated, from the coils d^2 , the gas, by creating a partial vacuum as it moves forward through the nozzle or opening a^2 , draws a portion of the air through the openings a' , to mingle with it, and the burner being lit increases the action, the proportion of air to be admitted to the gas and mingle with it being regulated by the handle d' , or its equivalent. The air supplied to the burner is heated, before it enters the chamber c , by passing through the boiler-tubes, and from thence down into the pipe c' in the direction of the arrow e ; but if fresh air is used, which is better, a coil of pipe from the pipe c' may, for instance, run through the flues of the boiler in the direction of the dotted lines e' , (see Fig. 1,) the fresh air entering in the direction of the arrow e^3 ; but the air-heating coil may be arranged in any other well known way, and may be arranged to be heated in the furnace, if desired.

This invention is adapted for stoves, or for any purpose where a heating device is required.

The adjusting-valve c^4 is very necessary, as different qualities of gas require different proportions of air to be mingled with it to get the best results, and different temperatures of the air and gas sometimes require different proportions of the same.

f is a stop-cock for admitting fresh air when required.

I claim as my invention—

1. In a regenerative gas-heater, a perforated burner, a bulb, and an inlet for the gas, controlled by a stop-cock or valve, in combination with a bulb or case, b^3 , and a suitable air-heating device, substantially as specified.

2. The combination of a gas-heating burner having a bulb, a , with a supplementary bulb or casing, b^3 , forming an air-chamber, c , for receiving the hot air from the pipe c' , for the purposes described.

3. The burner a^5 , having a bulb, a , a gas-opening, a stop-cock for regulating the admission of gas, and a gas-heating coil, in combination with a supplementary bulb, b^3 , the pipe c' , and a suitable air-heating coil, substantially as specified.

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Witnesses:

J. M. CALDWELL,
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