

(No Model.)

T. GORDON & W. R. SWIFT.
LAMP HAVING REGENERATIVE GAS BURNER.

No. 539,175.

Patented May 14, 1895.

Fig. 1

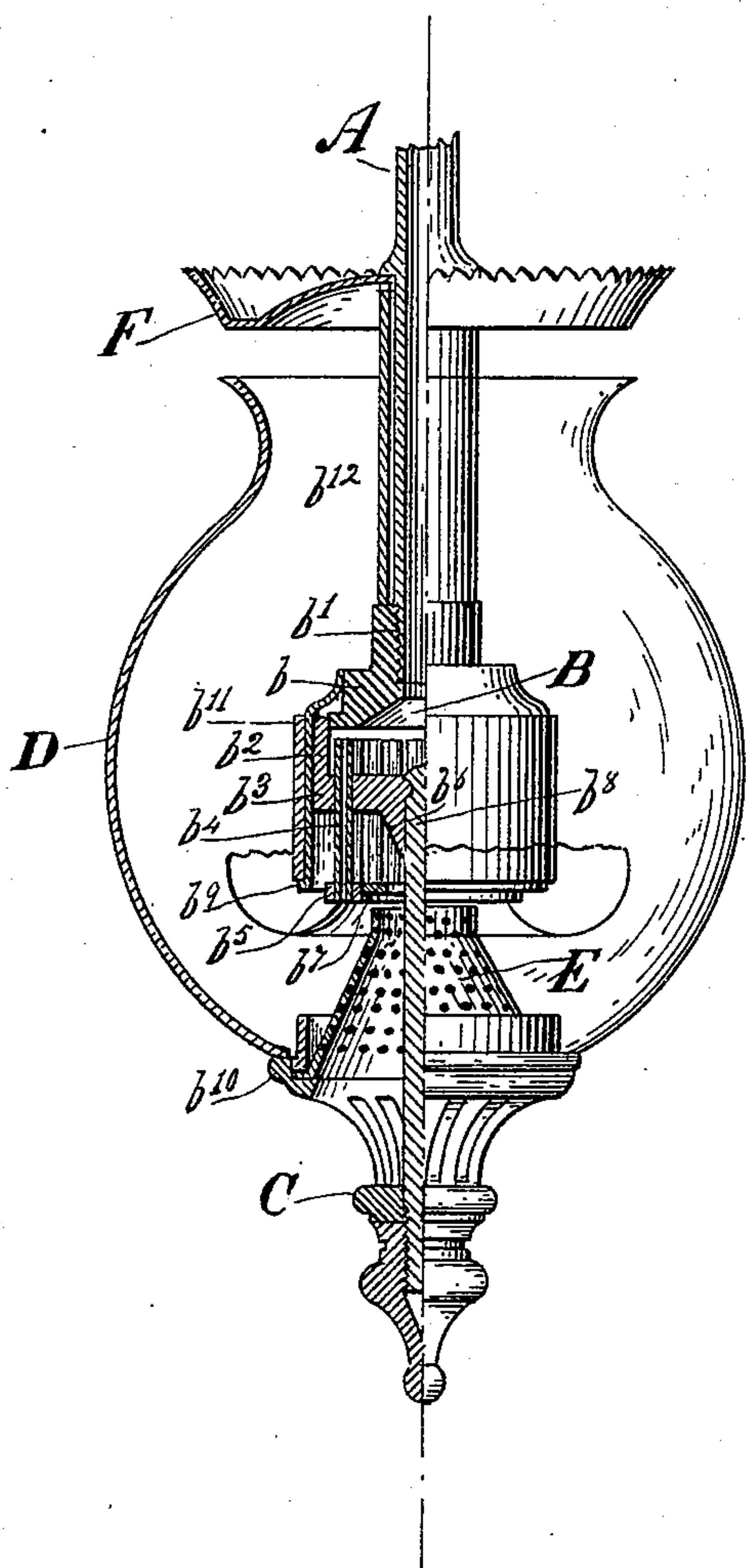
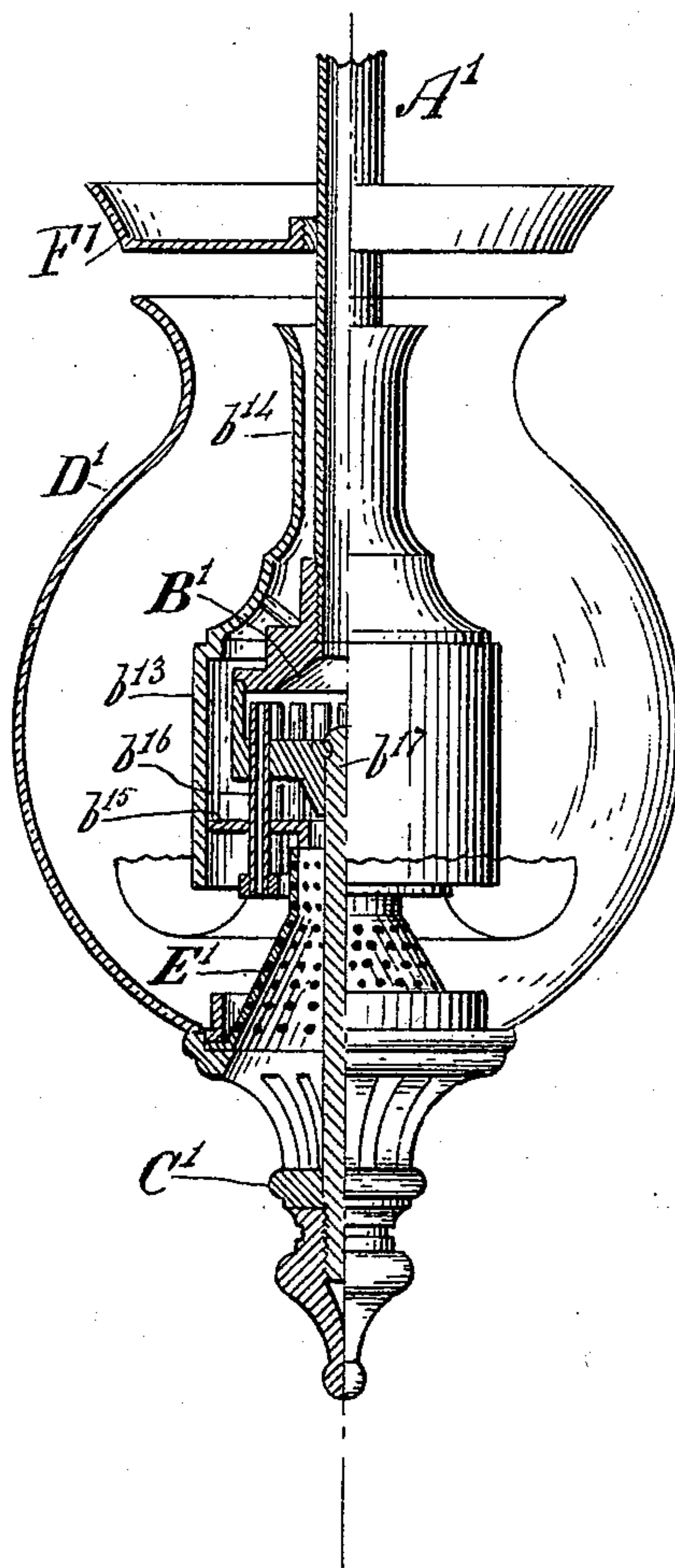


Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS GORDON AND WILLIAM R. SWIFT, OF NEW YORK, N. Y., ASSIGNORS
TO THE GORDON-MITCHELL GAS LAMP COMPANY, OF SAME PLACE.

LAMP HAVING REGENERATIVE GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 539,175, dated May 14, 1895.

Application filed April 3, 1891. Serial No. 387,499. (No model.)

To all whom it may concern:

Be it known that we, THOMAS GORDON and WILLIAM R. SWIFT, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Lamps Having Regenerative Gas-Burners, of which the following is a specification.

We will describe burners embodying our improvement, and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 represents at the right of the center an outside view and at the left of the center a central vertical section of a suspended lamp embodying our improvement. Fig. 2 represents at the right of the center an outside view and at the left of the center a central vertical section of a modified form of lamp.

In Fig. 1, A is a gas supply pipe communicating at the upper end with a source of gas and leading to a gas chamber B, which as here shown, consists of a plate-like portion *b* having at its upper part an internally screw-threaded socket *b'*, with which the gas supply pipe engages and a shell-like portion *b²*, here shown to be cylindrical in form, having formed integral with it at the lower end, a diaphragm *b³*. The plate like portion *b* may be united with the cylindric portion *b²* of the gas chamber. The interior surface of the plate-like portion *b* is shown as being dome-shaped. A number of tubes *b⁴* arranged in a circle extend from the interior of the gas chamber down through the diaphragm *b³* thereof. They may be fastened friction tight or otherwise in said diaphragm. The lower ends of the tubes preferably extend through holes in a ring *b⁵*, and are thereby properly spaced and sustained. The diaphragm forming the bottom of the gas chamber has formed on the exterior of its central portion a part *b⁶*. From the ring *b⁵* a diaphragm *b⁷* extends inwardly toward a post *b⁸*, and has a central opening through which air may ascend. Outside the cylindric portion of the gas chamber, a deflector *b⁹* is arranged, and this directs air to the outer side of the flame. The post *b⁸* extends downwardly from the deflector of the gas chamber B, and at the lower end sustains a part C, provided with radial openings for the admission of air and a seat *b¹⁰* for a com-

bustion chamber D, which is made in the form of a globe. An air distributor E is fitted to the part C above its radial openings, and is contracted toward the upper end, where it terminates in a cylindric portion which is open at the top. Air may pass through the open top of this air distributor to the part *b⁶*, and from the latter between the gas tubes *b⁴* to the deflector *b⁹* and thence to the outside of the flame. The air escaping from the perforations of the air distributor E may support combustion at the tip of the tubes *b⁴*. A hood F is sustained by the gas supply pipe above the combustion chamber.

Outside the cylindric part of the gas chamber B and the deflector *b⁹* is a shell *b¹¹* of asbestos, porcelain or like substance, which not only protects the gas chamber from undue heating by reason of being a poor heat conductor, but affords a white reflecting surface. This shell *b¹¹* may rest upon an outward projection at the lower end of the deflector *b⁹*. With corresponding advantage a shell *b¹²* of similar material may surround the gas supply pipe A within the combustion chamber D. When such a shell is used, it may rest upon the top of the gas chamber.

In Fig. 2, the gas chamber B' is constructed similarly to the gas chamber already described, and is supplied with gas by a descending pipe A', and surrounded by a deflector *b¹³*. In this instance, the deflector is made considerably larger circumferentially than the gas chamber, so as to leave between it and the gas chamber a space for the circulation of air, and this deflector is surmounted by a tube *b¹⁴* which surrounds the upper part of the gas chamber and the gas supply pipe, but is so much larger than these parts as to afford a passage for air.

A short distance below the gas chamber, the deflector has connected to it a diaphragm or plate *b¹⁵*, through which the gas tubes *b¹⁶* of the burner pass. A post *b¹⁷* extends downwardly from the gas chamber and sustains a part C'.

The diaphragm or plate *b¹⁵* does not extend inwardly as far as the post *b¹⁷*, but has a central opening, which is a passage for air around the post. A perforated air distributor E' which is contracted upwardly and at the up-

per end has a cylindric portion which is open at the top, communicates with the opening in the diaphragm or plate b^{15} . This air distributor is supported by the part C' , which has radial openings for the entrance of air. Air ascending through the air distributor and through an opening of the diaphragm or plate b^{15} passes under the gas chamber, then around the side of the same and afterward up over its top and around the gas supply pipe, escaping at the upper extremity of the tube b^{14} . Air passing through the perforations of the air distributor E' supports combustion at the tip of the burner tubes b^{14} .

The part C' is provided with a seat for a combustion chamber D' of globe form, and above the latter a hood F' is fastened to the gas supply pipe. By the peculiar construction of the deflector b^{13} , with its diaphragm or plate b^{15} and the tubes b^{14} , we form a passage through which air may circulate for the purpose of preventing the gas supply pipe from being unduly heated by the products of combustion.

In every one of the described examples of our improvement, there is formed an air heating chamber, which is entirely between the tip of the gas burner or gas burner tubes and the base of the gas chamber. It is formed within a deflector arranged outside the burner tubes.

Having described our invention, what we consider as new, and desire to secure by Letters Patent, is—

1. In a lamp having a regenerative burner, the combination of a gas chamber, gas burner tubes extending below said chamber, an upwardly contracted perforated shell, a shell surrounding the gas chamber and tubes, a diaphragm extending inwardly from the latter shell, and below said gas chamber, having holes through which said tubes pass and having an opening communicating with the contracted top of the perforated shell, substantially as specified.

2. In a lamp having a regenerative burner, the combination of a gas chamber, a supply pipe leading thereto, gas burner tubes extending below said chamber, an upwardly contracted perforated shell having at its upper end a cylindric open topped portion, a shell surrounding the gas chamber and tubes, a tube surmounting said shell and surrounding the supply pipe, a diaphragm extending inwardly from the latter shell, and below the gas chamber, having holes through which the tubes pass and having an opening with a downwardly turned flange communicating with the open topped cylindric portion of the perforated shell, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

THOMAS GORDON.
WILLIAM R. SWIFT.

Witnesses:

S. O. EDMONDS,
WILLIAM M. ILIFF.