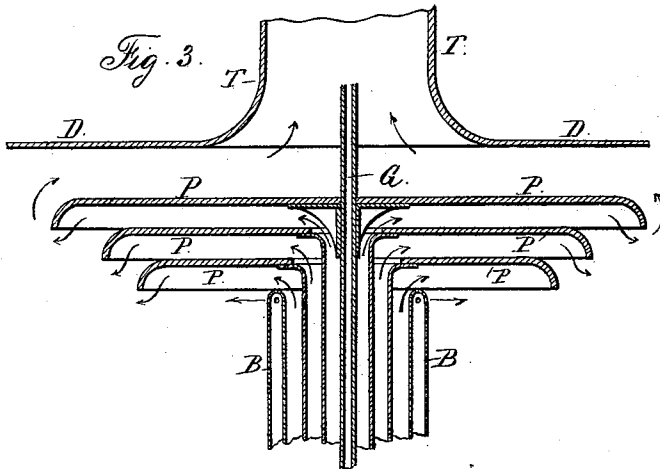
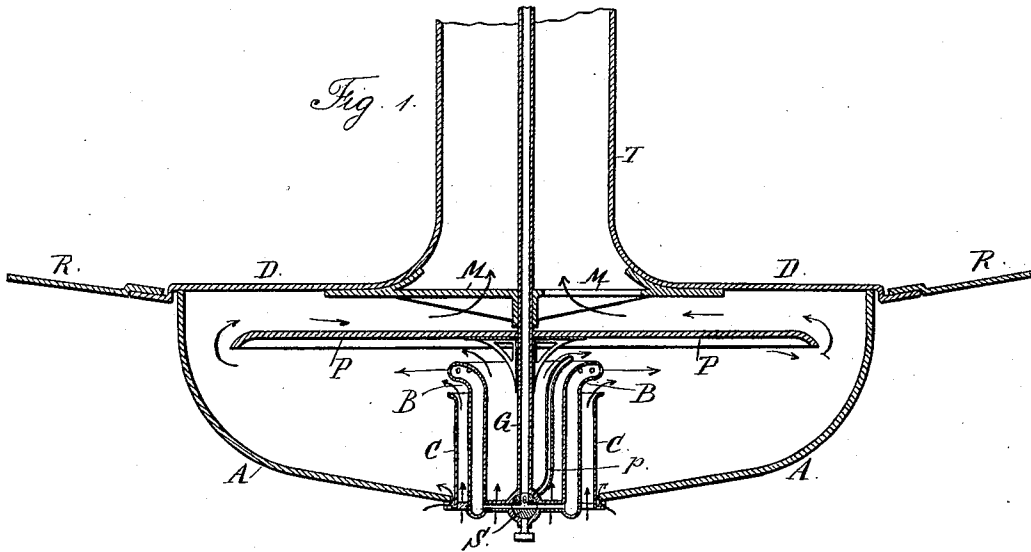


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BURNER FOR GAS OR OIL.

No. 300,879.

Patented June 24, 1884.



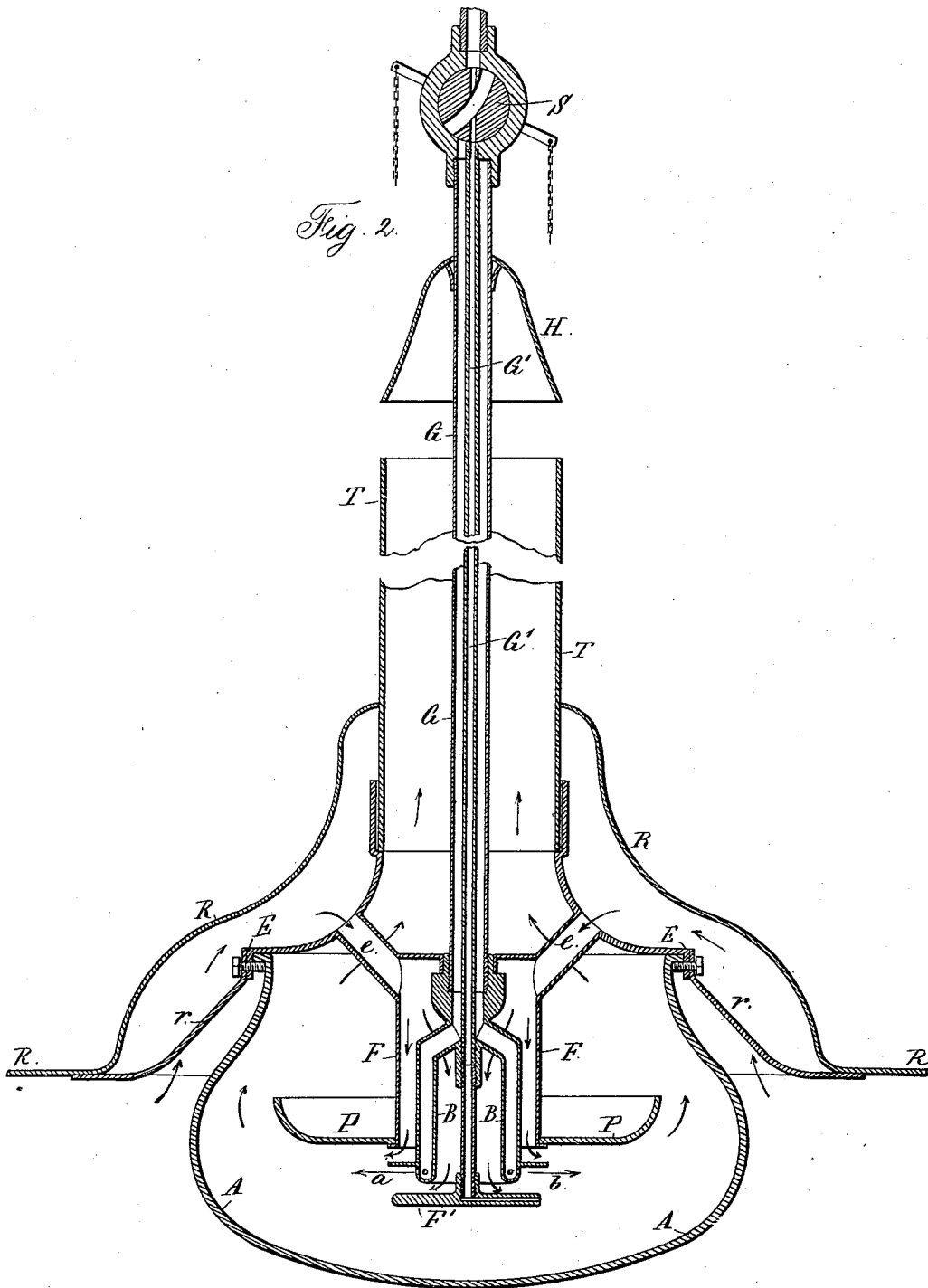
Witnesses:
J. Haib
Chas. H. Smith

Inventor
Charles Marshall Lungren
 per *Samuel W. Serrell atty.*

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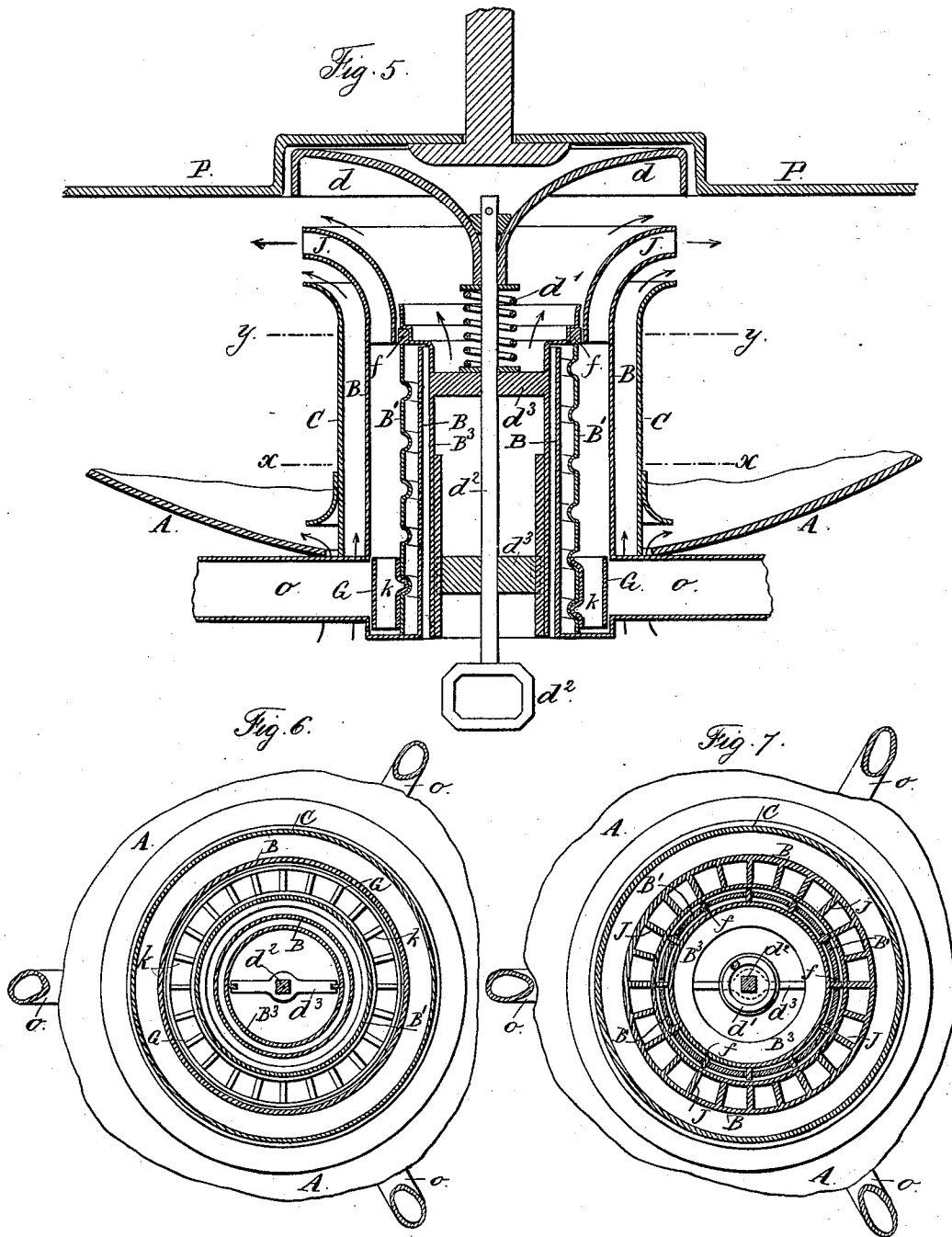
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UNITED STATES PATENT OFFICE.

CHARLES M. LUNGREN, OF NEW YORK, N. Y.

BURNER FOR GAS OR OIL.

SPECIFICATION forming part of Letters Patent No. 300,879, dated June 24, 1884.

Application filed July 3, 1882. Renewed April 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MARSHALL LUNGREN, of the city and State of New York, have invented an Improvement in Burners for Gas or Oil, of which the following is a specification.

The object of this invention is to provide a burner for gas or oil in which the intensity of the light yielded by the flame will be greater than in ordinary burners, and in which this light will be cast almost wholly downward, and be obstructed as little as possible by the burner or fixture. To accomplish this I arrange my gas or oil flame so that it burns horizontally, or nearly so, beneath and close to a refractory plate. This plate, being of white porcelain or other refractory material, acts as a strong reflector of the light, and, becoming highly heated, serves to greatly raise the temperature of that portion of the air-supply passing between it and the flame, and consequently increases perfection of the combustion and the brilliancy of the light. It also serves to direct the flame and keep it in the desired form. The entire air-supply is also heated by passing over the hot metal surfaces of the burner and air-passages, and the gas in the supply-pipe becomes heated to a greater or less extent by this pipe passing through the escape chamber or flue for the products of combustion.

In the drawings, Figures 1 and 2 show sections of the burner arranged for gas; Figs. 3 and 4, details of the same. Fig. 5 shows a vertical section of the burner as arranged for oil; Fig. 6, a section of the same at the line *x x*, and Fig. 7 a section of the same at the line *y y*.

In Fig. 1, P is a circular refractory plate, and B an annular gas-burner suspended by the gas-supply pipe G. D D is a refractory plate closing the top of the glass A, and T the chimney. M is a tripod supporting the plate D and chimney T, and R R a shade or reflector. The gas issues horizontally through a number of small holes or openings in the side of the burner near the top, and passes along the under side of the plate and around its curved edges, as shown. The products of combustion pass up over the top of the plate

and to the chimney T, as indicated by the arrows. The air supplied to the flame is divided into two portions. One passes up through the interior of the burner and strikes the plate P P, and then spreads out into a thin sheet, becoming highly heated by contact with the hot plate. The other portion passes up through annular space between the burner B and the wall C, and impinges upon the flame near the gas-openings. A further inlet for air may be provided at the base of the globe A outside the wall C, to supply a stream that will pass up in contact with the inner surface of the globe and impinge on the flame at the edge of the plate P P. At *p* is shown a small subsidiary jet, by means of which the burner is readily lighted.

In Fig. 2 is shown a form of the apparatus in which the heating of the air is more thoroughly accomplished, and in which the burner offers no obstruction to the light. The glass globe A in this case is unbroken except at the top, where it is provided with a lip, by which it is supported by the metal closing-piece E E. The annular burner B is inverted, the gas issuing from its lower end in the plane of the arrows *a b*. It is surrounded by a casing, F, supported at its upper end, which forms an air-chamber, into which the air enters by the tubes *e e*. The air divides, part of it passing around the burner and between the plate P P and the flame, and part down through the center and against the under side of the flame. A disk, F', serves to deflect this air against the flame.

In order to insure a sufficient draft through the air-tubes *e e*, I surround the upper portion of the apparatus with a bell-shaped piece, R, which fits snugly against the chimney T. This piece may be a separate one, or simply an extension of the shade R R. This piece, as well as the shade, is supported by the arms *r r*. The heat of the globe A causes a current of air to pass up through the annular space thus formed, and this air, having no other outlet except the tube *e e*, is the more readily drawn in to supply the burner.

In order to supply a subsidiary jet for lighting, I inclose a small pipe, G', within the gas-supply pipe G. This terminates in the disk

F', in which there is a small channel from the center to the edge, from the outlet of which the subsidiary jet burns. I place the stop-cock in this case in the gas-supply pipe above the smoke-bell H. It is provided with two gas-ways to supply the burner and subsidiary jet in the proper manner, and operated by ornamental chains, cords, or similar means.

In Figs. 1 and 2 I have shown the air-deflector P P above the flames, consisting of a single plate. I may, however, use any number of superposed plates, as illustrated in Fig. 3, the air passing between each pair. The surface of the plate, instead of being plain, may be corrugated, as shown in Fig. 4. The edge may be turned down, as in Fig. 1, turned up, as in Fig. 2, or be plain. The plates can be constructed of porcelain, or any other refractory material which answers the two requirements of being refractory and being white, or nearly so, in color.

While for most uses I prefer to make the entire apparatus of circular form (in horizontal projection) it may be of any desired form—triangular, rectangular, oval, &c. The gas may issue from a number of perforations, as described, or it may be burned from tips such as used with the ordinary bat-wing or fish-tail flame, and these flames may be distinct, or preferably they may overlap.

In Fig. 5 is shown a burner suitable for use with oil. As the increasing and diminishing of the flame is in a horizontal plane, I curve the burner outward at the top, and instead of a single annular wick I use a number of small wicks. When these are raised, they project horizontally, or nearly so, and in radial lines under the plate P.

The wicks may be raised by any suitable means; but I prefer to use the movement shown, in which a metal wick-carrier, G, is caused to travel up and down by the rotation of the screw-threaded tube B', said tube B' having slots that receive projections *f* on the tube B³, this tube B³ being rotated by the key *d*², passing through a square opening in the cross-pieces *d*³.

The wick-carrier G is made with a number of radial division-pieces, *k*, between which the wicks are placed and clamped by a ring. Similar division-pieces, J, are fixed on the inner surface of the flared end of the oil-tube B, to guide the wicks as they are raised and issue from the burner.

The rotation of the tube B' is accomplished by turning the key *d*², as aforesaid. The stem of this key passes up through the center of the burner, and it can be moved endwise through a square opening in the cross-pieces *d*², and it carries on its upper end a disk, *d*, which serves to extinguish the light when it is drawn down. This disk is supported by the spring *d*¹. Oil is supplied to the oil-tube B through the tubes *o o*, leading to the reservoir. The air passes up through the center and in the annular space between C and B, the

same as in the gas-burner in Fig. 1, and the glass globe A A is arranged in the same way.

By providing a proper opening in the ceiling this burner readily becomes a ventilating one. It can be used in any place instead of the ordinary chandeliers, or may form an element in such chandelier, taking the place of the ordinary drop-light. It is especially suitable for halls, libraries, dining-rooms, billiard-rooms, show-windows in stores, and for car-lamps. In this case all above the reflector can be set in the roof of the car.

I am aware that deflecting-buttons having air-passages between them have been employed above the base of the flame; but the same did not form a reflector. In my improvement the frame-plate, having a reflecting-surface, and being of a diameter as large as the flame, or nearly so, serves to increase the brilliancy of the light and to insure a perfect combustion, in consequence of the air passing in between the reflector and flame, and in some instances this reflector becomes also luminous by the heat. Neither do I claim, broadly, a burner that is inverted, and in which the flame issues below a conical surface, as in English Patent No. 5,091 of 1881.

I claim as my invention—

1. The combination, with a burner, of a flame-plate, P, above the flame, of a diameter corresponding, or nearly so, to the flame, and having a reflecting-surface, air-supply passages for admitting air between the flame-plate and the flame, and means for admitting atmospheric air to the under side of the flame, substantially as specified.

2. The combination, with a burner, of air-supply passages through the burner, a flame-plate, P, of a diameter corresponding, or nearly so, to the flame, and having a reflecting-surface, a central air-supply passage, an exterior glass, and an ascending flue for the escape products of combustion, substantially as set forth.

3. The combination of an inverted gas-burner, an air-supply passage conveying air downwardly to the burner, a reflecting plate or surface of refractory material, over which the flame from the burner sweeps, and a passage through which the products of combustion escape upwardly.

4. The combination of an inverted burner, a concentric exterior flame plate or surface of refractory material, an air-passage delivering air through the burner to the outside of the flame, and a deflecting button or surface beneath the burner, as described.

5. The combination of an annular inverted burner, air-supply passages through the burner, a concentric reflecting flame-plate, an enclosing transparent globe beneath the burner and plate, and an ascending flue for the escape of the products of combustion passing upwardly around the edge of the flame-plate.

6. The combination of a downwardly-directed burner, a refractory reflecting flame-

plate surrounding the burner-tips, and suitable air-passages for the escape of the products of combustion.

5 7. The combination of an inverted gas-burner, reflecting flame plate or surface, over which the flames are directed, a suitable passage for conveying the products of combustion upward, an air-supply passage conveying air downward to the burner, and an inclosing transparent
10 globe beneath the burner.

8. The combination of an inverted burner, passages which deliver a current of air downward to the flame, and a reflecting button or surface beneath the flame for deflecting air to
15 the under surface thereof.

9. In a gas-burner, the combination of a

downwardly-directed Argand burner, suitable air-passages delivering air both sides of the flame, a flame-director surrounding the lower
end of the burner, and a button or disk beneath
20 the burner, by which the air and flame are directed outward and beneath the under surface of the flame-director, and suitable passages for the escape of the products of combustion.

Signed by me this 26th day of June, A. D.
1882. 25

C. M. LUNGREN.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.

Correction in Letters Patent No. 300,879.

It is hereby certified that in Letters Patent No. 300,879, granted June 24, 1884, upon the application of Charles M. Lungren, of New York, New York, for an improvement in "Burners for Gas or Oil," errors appear in the printed specification requiring correction, as follows: In line 83, page 2, the word "frame-plate" should read *flame-plate*, and in line 13, page 3, the word "reflecting" should read *deflecting*; and that the Letters Patent should be read with these corrections therein to make it conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 8th day of July, A. D. 1884.

[SEAL.]

M. L. JOSLYN,
Acting Secretary of the Interior.

Countersigned:

BENJ. BUTTERWORTH,
Commissioner of Patents.