(No Model.) 2 Sheets—Sheet 1.

A. B. LIPSEY.

GAS BURNER.

No. 298,215. Patented May 6, 1884.

Fig. 1.

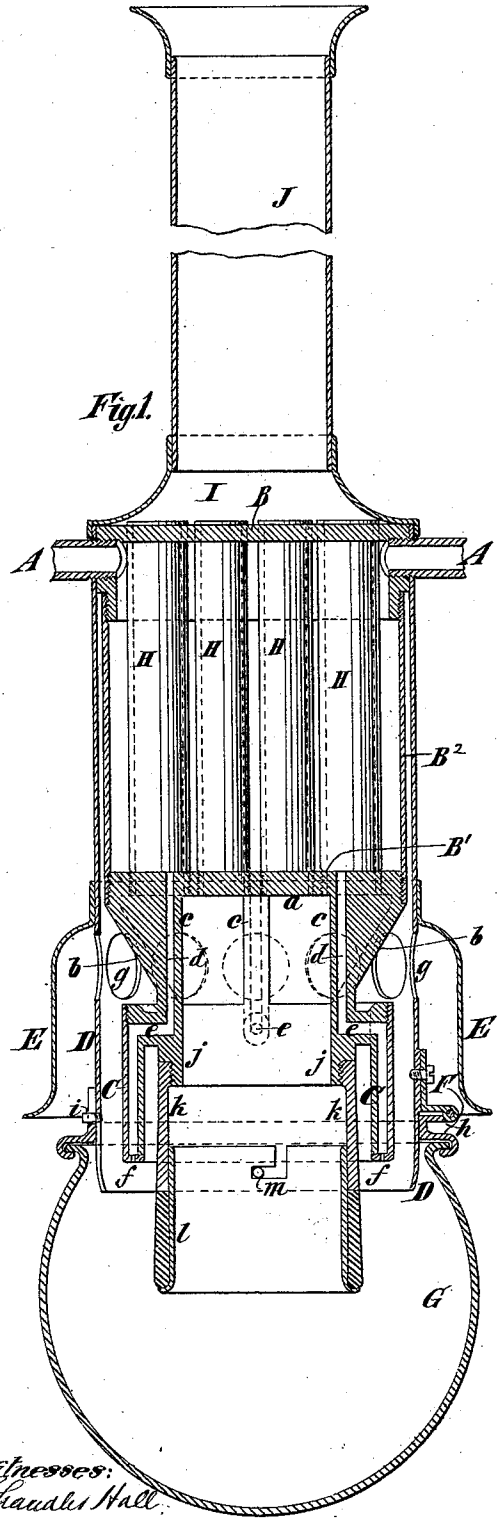
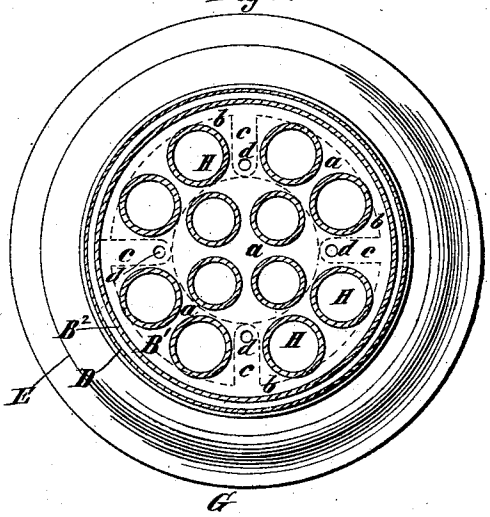


Fig. 2.



Witnesses:
Chandler Hall.
James R Bowen.

Inventor:
Andrew B Lipsey
by his attorney
Edwin H Brown.

N. PETERS, Photo-Lithographer, Washington, D. C.

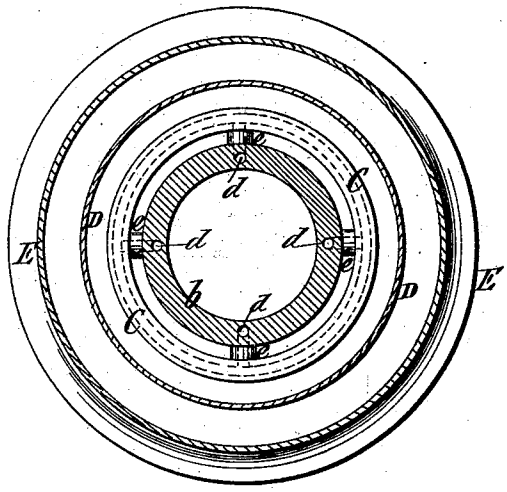
(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.



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UNITED STATES PATENT OFFICE.

ANDREW B. LIPSEY, OF WEST HOBOKEN, NEW JERSEY, ASSIGNOR TO WILLIAM BELL, OF NEW YORK, N. Y.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 298,215, dated May 6, 1884.

Application filed July 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, ANDREW B. LIPSEY, of West Hoboken, in the county of Hudson and State of New Jersey, have invented a certain new and useful Improvement in Gas-Burners, of which the following is a specification.

The improvement will be fully described, and then pointed out in the claims.

In the accompanying drawings, Figure 1 is a central vertical section of a gas-burner and appurtenances embodying my improvement. Fig. 2 is a transverse section of the same; and Fig. 3 is a transverse section in a plane just above arms which are designated in Fig. 1 by the letter *e*.

Similar letters of reference designate corresponding parts in both figures.

The gas used in the burner is supplied by a pipe or pipes, A, from any suitable source. It is delivered by the pipe or pipes A into a chamber, B B′ B². This chamber consists of a disk-shaped head, B, a circular bottom, B′, and a cylindric shell, B². The shell may be screwed onto the exterior of both the head and bottom and packed with any suitable material to form a tight joint. The pipe or pipes A are shown as screwed into a flange extending from the head, and may be packed in any suitable manner to prevent leakage between the same and the head. The upper portion, *a*, of the bottom B′ is disk-shaped; but the lower portion consists of a conical shell, *b*, provided with rib-like portions *c*, extending from its interior. Ducts *d* extend through the disk-like portion *a* and the rib-like portions *c* to hollow arms *e*, extending radially outward. The gas which enters the chamber B B′ B² passes through the ducts *d* to the arms *e*, and thence to the interior of an annular burner-tip, C. The inner wall and upper end of this burner-tip are shown as made integral with the arms *e*, and the outer wall and lower end are shown as made of a separate piece and screwed onto the exterior of the upper end. The various parts may be made in any other suitable manner. Gas escapes in jets from apertures *f* in the lower end of the burner-tip.

D designates a shell, which may be of sheet metal, extending from the gas-chamber B B′ B² to a point slightly below the burner-tip C. At the lower edge it is bent inward toward the burner-tip.

A short distance above the burner-tip the shell D is provided with a number of holes, *g*, through which air may enter.

Outside the holes *g* is a petticoat or shell, E, which at the upper end is fastened to the shell D, but is open and bell-mouthed at the lower end. Air entering the lower end of this shell E passes through the holes *g* into the interior of the shell D. Thence it passes between the arms *e* to the space encircled by the burner-tip and to the exterior of the burner-tip. The lower end of the shell D serves to deflect the air toward the flame which issues from the burner.

To the shell D is attached a holder, F, for a glass globe, G. This holder F is connected to the shell D by a hinge, *h*, and a spring-catch, *i*.

H designates a number of pipes, which extend between the head B and the disk *a* of the bottom B′ of the gas-chamber B B′ B². These pipes are shown as screwed into holes in the disk *a* of the bottom B′, and as extending through holes in the head B. They may be expanded into the holes in the head B, if desirable.

Over the head B is fitted a dome-like shell, I, which has fastened to it a chimney, J. The pipes H communicate with the lower conical shell, *b*, of the bottom B′, and with the dome I and chimney J.

Below the conical shell *b* of the bottom B′ is a cylindric shell, *j*, which may be integral with the said conical shell.

To the exterior of the shell *j* a metal shell, *k*, is screwed. This shell *k* flares downwardly, or, in other words, approaches the burner-tip as it extends downward. A shell, *l*, made preferably of incandescing material—such, for instance, as porcelain, magnesia, or lime—attached to a sheet-metal tube extends below the shell *k*. This sheet-metal tube is shown as connected to the shell *k* by a fastening, *m*, of the kind known as a "bayonet fastening." The gas issuing from the burner-tip may be ignited upon throwing back or removing the globe. The products of combustion pass around the end of the shell *l* into the interior of the latter, thence into the coni-

cal shell *b*, and thence through the pipes H into the dome I and chimney J. In their passage through the pipes H the escaping products of combustion heat the gas in the chamber B B′ B². The air entering the shell D becomes sufficiently heated before its arrival at the lower end of the burner. It is not only caused to impinge against the outer side of the flame by the deflector at the end of the shell D, but it is also forced against the inner side of the flame by the shells *k* and *l*. The air passes downward to the inner side of the burner-tip C through openings *c′* between the arms *c*. (Shown in Fig. 3.)

A circular series of downwardly-extending burner-tips might be used in lieu of a single annular tip.

I have obtained Letters Patent No. 278,568, dated May 29, 1883, for an improvement in gas-burners. In this improvement a gas-pipe passed upwardly into a flue by which the waste products of combustion were conveyed away, and from the upper end of this gas-pipe a number of smaller gas-pipes extended downwardly to a large gas-pipe surrounding the gas-pipe first mentioned and communicating with the burner-tip.

I have also obtained Letters Patent No. 282,337, dated July 31, 1883, for an improvement in gas-burners. In this improvement I employed an annular gas-chamber and a number of passages extending thence through a pipe, which conveyed away the waste products of combustion.

I have filed an application, No. 77,087, on the 4th day of November, 1882, for an improvement in gas-burners. This improvement involved the same construction of burner as that which is the subject of my Letters Patent No. 282,337.

I have also filed an application, No. 109,176, on the 16th day of October, 1883, for an improvement in burners. The construction of this burner is like that which is the subject of my application for Letters Patent No. 99,750, except for the presence of a deflector arranged between the burner-tips for directing air to the inside of the flame from one burner-tip and the outside of another.

I have also filed an application, No. 99,750, on the 2d day of July 1883, for an improvement in gas-burners. In this improvement there were the same parts as mentioned in my reference to Letters Patent No. 282,337; but these parts were, in the last improvement, differently arranged and combined.

I have also filed an application, No. 114,969, on the 18th day of December, 1883, for an improvement in burners. The construction of this burner is very similar to that which is the subject of my Letters Patent No. 282,337. It differs therefrom, principally, in that in this burner I show a flue for carrying off the products of combustion, and such retort arranged in said flue in a position as to be subjected to escaping products of combustion, a hydrocarbon or oil tank connected thereto, and means for connecting the retort with the burner-tip and a gas-holder, means for connecting the retort with the gas-holder, and means for connecting the gas-holder with the burner.

I have also filed an application, No. 97,245, on the 12th day of June, 1883, for an improvement in gas-burners. In this improvement I used an annular gas-chamber and a concentrically-arranged gas-passage extending downwardly therefrom and communicating with the burner-tip. Surrounding this gas-passage was a corrugated shell, the interior of which formed a flue for conveying away the waste products of combustion, and the exterior of which formed one wall of an air-passage. In the present case I provide a very large cylindrical gas-chamber, through which the gas will flow or pass quite sluggishly, and in this chamber I arrange a number of pipes, which conduct away to a chimney the products of combustion that emanate from the burner tip or tips. These pipes are so small and numerous that they secure the heating of the gas in the gas-chamber at all points, and at the same time they afford a passage for the products of combustion, which in the aggregate is so large that the products of combustion can pass away easily.

In none of my former improvements was there a cylindrical gas-chamber and a flue for the waste products of combustion, consisting of a number of pipes extending through the gas-chamber. The deflection of the air toward both the outer and inner surfaces of the frame by the shells D *k l* promotes combustion.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a downwardly-extending annular burner-tip or a circular series of burner-tips, of a gas-chamber, B B′ B², pipes extending through the same, and communicating at one end with shells which extend below the burner tip or tips, and at the other end with a chimney, substantially as specified.

2. The combination, with a downwardly-extending annular burner-tip or a circular series of burner-tips and means for conveying gas thereto, of a shell, D, forming an air-flue and deflector for turning air inward toward the flame, and the shells *k l*, forming part of a flue for the waste products of combustion, and forming a deflector for turning air outward toward the flame, substantially as specified.

ANDREW B. LIPSEY.

Witnesses:
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