No. 816,427. PATENTED MAR. 27, 1906.

J. BRIDGER.

INVERTED INCANDESCENT GAS BURNER.

APPLICATION FILED MAY 8, 1905.

Fig. 1

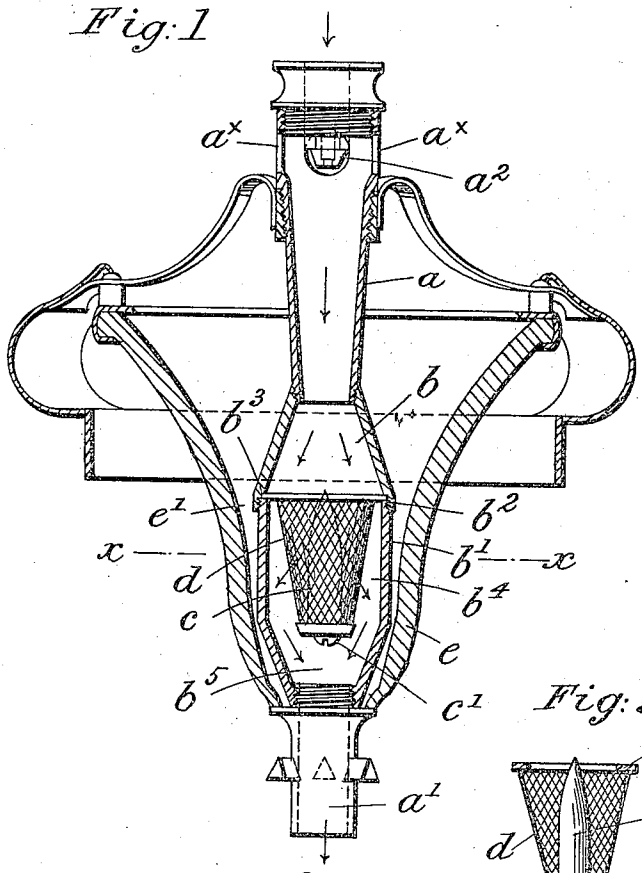


Fig. 2.

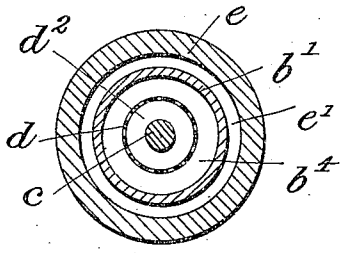
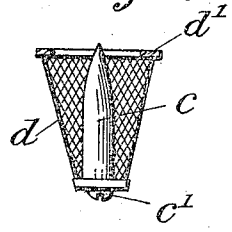


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES BRIDGER, OF LONDON, ENGLAND, ASSIGNOR TO THE NEW INVERTED INCANDESCENT GAS LAMP COMPANY, LIMITED, OF LONDON, ENGLAND.

INVERTED INCANDESCENT GAS-BURNER.

No. 816,427. Specification of Letters Patent. Patented March 27, 1906.

Application filed May 8, 1905. Serial No. 259,472.

To all whom it may concern:

Be it known that I, JAMES BRIDGER, a subject of the King of Great Britain and Ireland, residing at London, England, have invented new and useful Improvements in or Relating to Inverted Incandescent Gas-Burners, of which the following is a specification.

In inverted incandescent gas-burners as heretofore constructed the air and gas necessary to form the combustible mixture, although admitted in suitable proportions to the Bunsen tube, frequently rush through the burner at such a rate that no proper mixing of them ensues, and the consequences of this imperfect mixing are that what are known as "carbonizing" troubles result, thereby impairing the luminosity of the mantle and blackening the burner, that frequently a very disagreeable hissing or buzzing noise is produced, and that flashing or lighting back of the flame sometimes takes place, which is apt to be attended with serious and annoying results.

Now the object of this invention is to remedy these disadvantages or inconveniences and to provide a burner in which an intimate or perfect mixture of the air and gas shall be insured, which shall be noiseless when in use, and in which liability of the flame to flash or light back shall be obviated, so rendering the burner efficient and safe at all times, while greatly enhancing its lighting or illuminating properties. To this end there is interposed at a convenient point in the length of the Bunsen tube a mixing-chamber the interior of which is provided with a deflecting device and with a foraminous cage or basket, which are so disposed relatively to each other that the air and gas initially mixed in said tube on entering said chamber are deflected outwardly by the deflecting device and are caused to pass through the cage or basket, so that they become broken or split up by this latter into numerous fine jets or streams, which then reunite or combine and pass from the mixing-chamber to the burner tube or nozzle in an intimately-mixed condition suitable for proper combustion.

A device of the character above set forth will be found particularly applicable to that type of inverted incandescent gas-burner employing an external deflector or cone and will therefore be described in connection therewith.

Referring to the accompanying drawings, Figure 1 is a vertical sectional view of one form of an inverted incandescent gas-burner constructed in accordance with the invention, but with the mantle and its holder removed. Fig. 2 is a horizontal section thereof, taken on the line $x\,x$ of Fig. 1; and Fig. 3 is a detached view, partly in vertical section, showing the deflecting device and its cage or basket.

In carrying out the invention the Bunsen tube is divided into two portions $a\,a'$, the upper one, a, of which (provided, as usual, with air-holes $a^{\times}$ and injector a^2) conducts the initially-mixed air and gas to the mixing-chamber $b\,b'$, to the upper part of which it is secured by a screw-threaded connection, as shown. The lower portion a' of the said tube is in similar manner secured at its upper end to the lower part b' of the mixing-chamber and at its lower end carries the mantle.

The upper and lower parts b and b', respectively, of the mixing-chamber are detachable from each other, being connected together by screwing one into the other, as shown at b^2, or in any other appropriate way, and said chamber is of any convenient shape or configuration.

The internal deflector c is advantageously a cone or conoid and is either solid or hollow. It is arranged apex upward within the cage or basket d, which here consists of wire-gauze of a suitable mesh. The said cage has at its upper or open end a rim or flange d', which is seated upon the upper edge of the part b' of the chamber and is conveniently retained in position by an annular shoulder b^3 on the upper part b. From this rim or flange the cage is suspended, and it carries within it the deflector c, which may be secured to its bottom by a rivet or screw c' or by being screwed therein, and said deflector extends upward to a point approximately level with or just above the aforesaid rim or flange d' of the cage d. Between this deflector c and the sides of the cage or basket d there is an annular space d^2, (clearly seen in Fig. 2,) and between said cage and the wall of the chamber

b b' there is another annular space b^4, the arrangement being such that the initially or imperfectly mixed air and gas on issuing from the portion a of the Bunsen tube are deflected by the deflector c and are thus caused to pass into the space d^2 and thence through the meshes of the cage d into the space b^4, after which the air and gas broken up by their passage through the said cage flow downwardly, reunite or combine in the space b^5 near the outlet end of the mixing-chamber, and thence pass into the lower part or nozzle a' of the Bunsen tube in an intimately-mixed condition suitable for proper and silent combustion.

The upper portion of the Bunsen tube is preferably tapered downward, as shown in the drawings; but, if desired, the said tube may be straight throughout.

By this arrangement it will be seen that the combustible mixture of air and gas undergoes two different mixings—viz., the initial or preliminary one in the upper part of the Bunsen-burner tube and the secondary or final one in the mixing-chamber—and that said mixture is therefore brought into such a thoroughly intimate condition as to be eminently suitable for incandescent gas-lighting.

In the burner illustrated, in which an external cone or deflector e (of porcelain or metal) is employed, the above-described mixing-chamber is located within said deflector, and an anular space e' is advantageously provided between them to permit of a free circulation of air around the mixing-chamber to keep it cool.

Although in the arrangement shown in the drawings the lower portion a' of the Bunsen tube fits into the lower portion b' of the mixing-chamber, it will be obvious that, if desired, the lower end of the external deflector or cone e may be extended to form the burner tube or nozzle and that in such case the lower end of the mixing-chamber would be open and lead directly into the extended end of the deflector or cone e.

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

1. In an inverted incandescent gas-burner, the combination of a Bunsen tube divided into two portions, a mixing-chamber having means for attaching its upper end to the upper portion of the Bunsen tube, and its lower end to the lower portion of said tube, a foraminous cage or basket in said chamber, and a conical or conoidal deflector in said cage or basket.

2. In an inverted incandescent gas-burner, the combination with the Bunsen tube of a mixing-chamber constructed in two detachable parts and interposed in the length of said tube, a foraminous cage or basket located in said chamber and having its lower end closed, a rim or flange on the upper end of said cage or basket adapted to be supported within the mixing-chamber, and a conical or conoidal deflector extending upward from the bottom of the cage or basket.

3. In an inverted incandescent gas-burner, the combination, with the Bunsen tube, of a mixing-chamber interposed in the length of said tube, a foraminous cage or basket within said chamber, an internal deflector within said chamber for deflecting the downcoming air and gas outwardly through the sides of said cage or basket, and an external deflector or cone surrounding said mixing-chamber and part of the Bunsen tube, at a short interval therefrom.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JAMES BRIDGER.

Witnesses:
COLIN H. BURTON,
H. D. JAMESON.