No. 755,687. PATENTED MAR. 29, 1904.

O. A. MYGATT.

RETORT INCANDESCENT LIGHT.

APPLICATION FILED APR. 5, 1901.

NO MODEL.

Fig. 1.

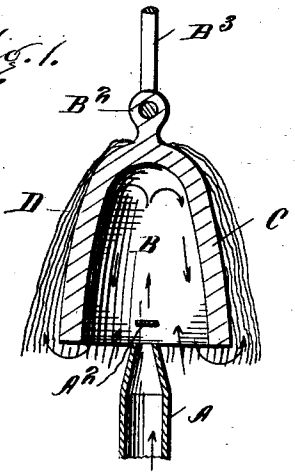


Fig. 4.

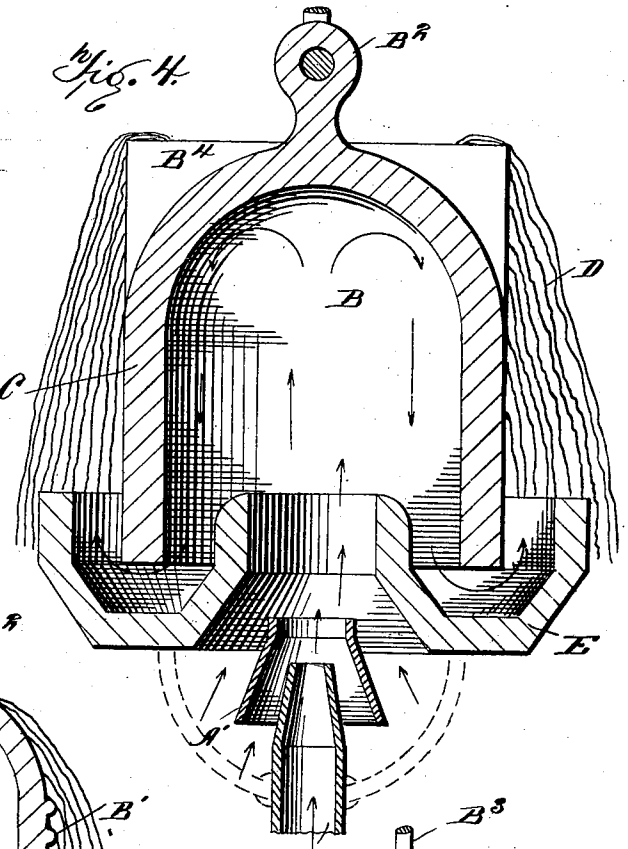


Fig. 3.

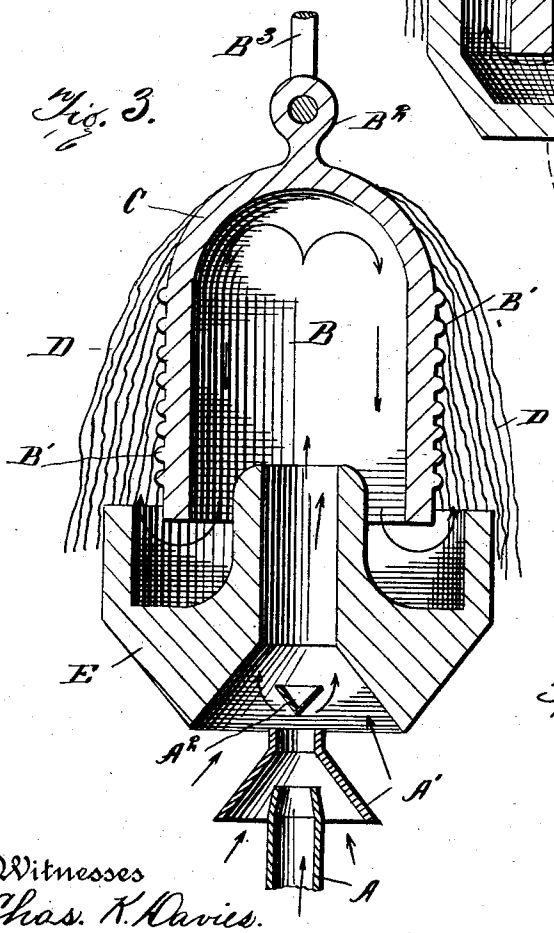
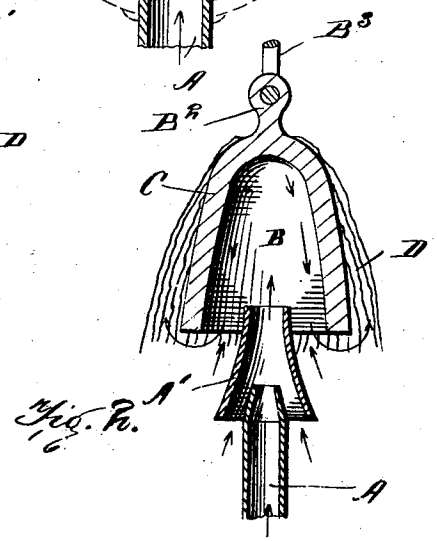


Fig. 5.



Witnesses
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No. 755,687. Patented March 29, 1904.

UNITED STATES PATENT OFFICE.

OTIS A. MYGATT, OF NEW YORK, N. Y.

RETORT INCANDESCENT LIGHT.

SPECIFICATION forming part of Letters Patent No. 755,687, dated March 29, 1904.

Application filed April 5, 1901. Serial No. 54,407. (No model.)

To all whom it may concern:

Be it known that I, OTIS A. MYGATT, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Retort Incandescent Lights, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to incandescent lights of the character which are luminous by the heating of a mantle or filaments of material which become incandescent at high temperatures.

The object of the invention is to improve the combustion of hydrocarbons, gas, or a mixture of air and gas in a chamber, which secures a more perfect mixture and combustion of the gases than where no such chamber is employed. In most burners of this character the aim is to secure as complete combustion as possible, so as to produce a high temperature at the mantle; but, so far as I am aware, such combustion has not heretofore been confined in a combustion-chamber.

Figure 1 is a vertical section of a simple form of burner involving my burner. Fig. 2 is a section of the same modified as to the injector or jet. Fig. 3 is a vertical section of an enlarged burner with compound chamber. Fig. 4 is a similar section of burner with compound combustion-chamber.

Let A indicate a gas-burner of ordinary construction. The passage of gas through burner A tends to draw in air about the nozzle, and the air and gas together pass into the chamber B. A cup-retort or cupel C is made of fire-brick, clay, refractory metal, or other material which will retain its form under a very high temperature. Within this cup or cupel there is a combustion-chamber B. The chamber is preferably arched at the top, so that the gas or mixed gas and air which is blown into the open end of the cup near the center reverts in flames when combustion is going on, and the flame and products of combustion curl round the lower end or edge of the chamber, and so among the fibers or against the film of the mantle or other material desired to be incandescent.

Fig. 2 is a modification wherein an injector-burner is used. A A′ indicate diagrammatically the usual arrangement of gas and air pipes. The cupel or retort C is as described in the former example. Outside the cup C there is hung a mantle or tassels or shreds of material such as used in the construction of mantles, as indicated at D. In this form of burner the mixture of air and gas begins to be effected as soon as these bodies are brought together, and the mixing effect continues within the cup or retort. The flame is ignited at the end of nozzle A. Instead of burning in the open air the mixed air and gas make a thorough mixture within the combustion-chamber and are protected from the retarding action of the cold outer air. The combustion within the chamber secures both chemical and mechanical combination of the elements of combustion under conditions favorable for intense heat. The cup C becomes intensely heated, as to a white heat. The conducted heat from the chamber highly heats the filaments, shreds, or tassels of material D, which is luminous when highly heated. The flame and products of combustion flowing round the bottom of cup C turn upward and envelop the shreds or tassels D and heat the same to a very high temperature. By forcing the gas into the chamber under pressure a very intense combustion may be obtained, and the mantle or filaments D will be protected by the cup or cupel from the direct action of such a blast or current of gas and flame as would break up and destroy ordinary mantles as heretofore used.

Fig. 3 is a modification in which the lower edge of the cup C is partly within the annular deflector E. This deflector has a central passage for the air and gas and has an annular concave surface just below the edge of cup C, which surface deflects or reflects the flame. The outer surface of the cup C may have rings or bosses B′ thereon to sustain the filaments of mantle material away from too close contact with the cup or cupel. The retort may be suspended above the gas-nozzle in any suitable manner. A knob B^2 will answer the purpose, the rod extending from any suitable support. The reflector or deflecting ring or cup E permits the entrance of the gas or gas

and air through the central openings and guides the incoming current. The air and gas being ignited while mixing and being impelled forward by a blast from the nozzle, as well as by its own combustion, spreads against the walls of cup C and is driven back into the cup-ring E. By the ring E the flame and heat are deflected outwardly and upwardly through the filaments, shreds, or tassels D of mantle material, and this material is heated to a very high degree. The material D may be simply hung on the retort B or thrown loosely thereon, and when partly burned away may be replaced in the same manner. The deflector-ring E may be modified in form to suit the circumstances of the case. It will be adjusted to such distance from the cupel B as will best secure such confinement of the gases and deflection of the heat as may be advisable for the circumstances of the case.

In Fig. 4 I indicate in dotted lines a support for the deflector E; but any suitable support may be used. The cup C may have shoulders B^4 to support the mantle material loosely from the retort. The shreds are intended to be merely hung on the retort. With a device of this character I may employ a blast of steam along with gas, or with hydrocarbon will give a most intense heat, and therefore secure the higher degree of luminosity by incandescence. The cup or cupel C and the ring E when the latter is employed become intensely heated and may then be themselves luminous; but they serve, further, to confine and direct the gases of combustion, producing a more intense combustion, and also to protect the delicate material of the mantle or tassels and to impart heat to this material while holding it in position for incandescent heating. A large part of the cost of mantles as usually constructed is thus saved. So mantles or the eqivalent of mantles may be made of any size, as the delicate films, fibers, or shreds are supported and protected by the retort.

While I have described the retort as over the nozzle, these terms are relative. The positions of the parts may be changed as occasion warrants.

The combustion of the gas or combustible mixture in a retort gives a much more intense heat than when the combustion takes place in the open air. The mantle of this invention is thus heated to a much higher temperature by means of gases burned in a retort than it can be by gases mechanically mixed in a mixing-chamber, whether superheated or not, and then burned in the open air in proximity to a mantle.

What I claim is—

1. The combination, in an incandescent burner, of a gas-supply pipe and an air-supply conduit surrounding the same, an inverted cup or cupel of refractory material over the mouth of said pipe, and forming a combustion-chamber, and filaments of mantle material resting on the outer surface of the cup or cupel, with their lower ends near the edges of the cupel, substantially as described.

2. The combination, in a gas-light of the character described, of a gas-supply pipe and an air-supply conduit in proximity thereto, an inverted cup of fire-clay over the mouth of the gas-pipe, whereby a combustion-chamber is produced, a ring having a concave deflecting-face under the edge of said cup, and shreds of mantle material supported by the outer surfaces of the cup and ring, substantially as described.

3. In an incandescent illuminator, the combination of a gas-supply tube and an air-supply conduit, a cup or cupel of fire-clay or similar material inverted over the gas-supply tube and forming a combustion-chamber with its mouth toward said tube, and filaments of mantle material supported on the outside of the cup or cupel and having their ends projecting, so that the flame curving around the lower edges of the cupel encounters the filaments.

4. The combination of a gas-supply tube, an air-supply conduit, and a cup of refractory material with its mouth over said tube and passage, said cup being the combustion-chamber, external shoulders on the cup, and shreds of mantle material resting on said shoulders.

5. In an incandescent gas-light, the combination of a cupel of fire-clay or like material inside of which gas combustion takes place, and outer filaments of mantle material resting on and supported by the cupel.

6. The combination of a gas-supply pipe, an air-supply conduit, a retort into which said passages open, and filaments of material which is incandescent when highly heated, in proximity to the retort, and in position to be heated therefrom.

In testimony whereof I affix my signature in presence of two witnesses.

OTIS A. MYGATT.

Witnesses:
I. H. FERGUSON,
CHAS. K. DAVIES.