(No Model.)

J. H. DUBROW.

INCANDESCENT BURNER.

No. 589,343. Patented Aug. 31, 1897.

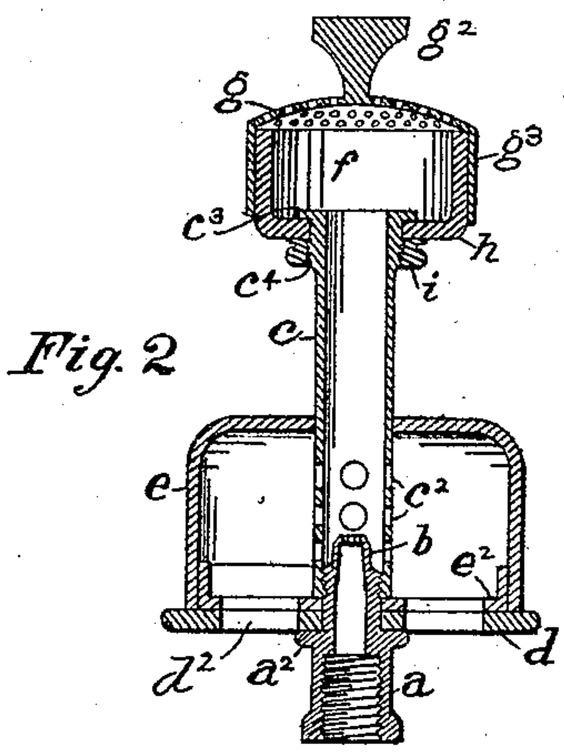

Fig. 2

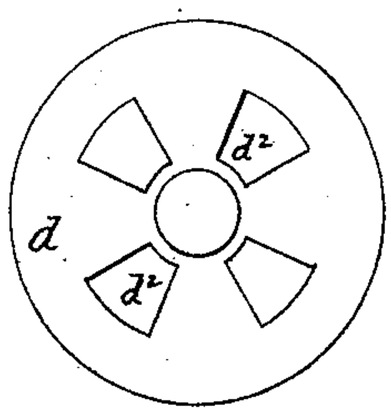

Fig. 3

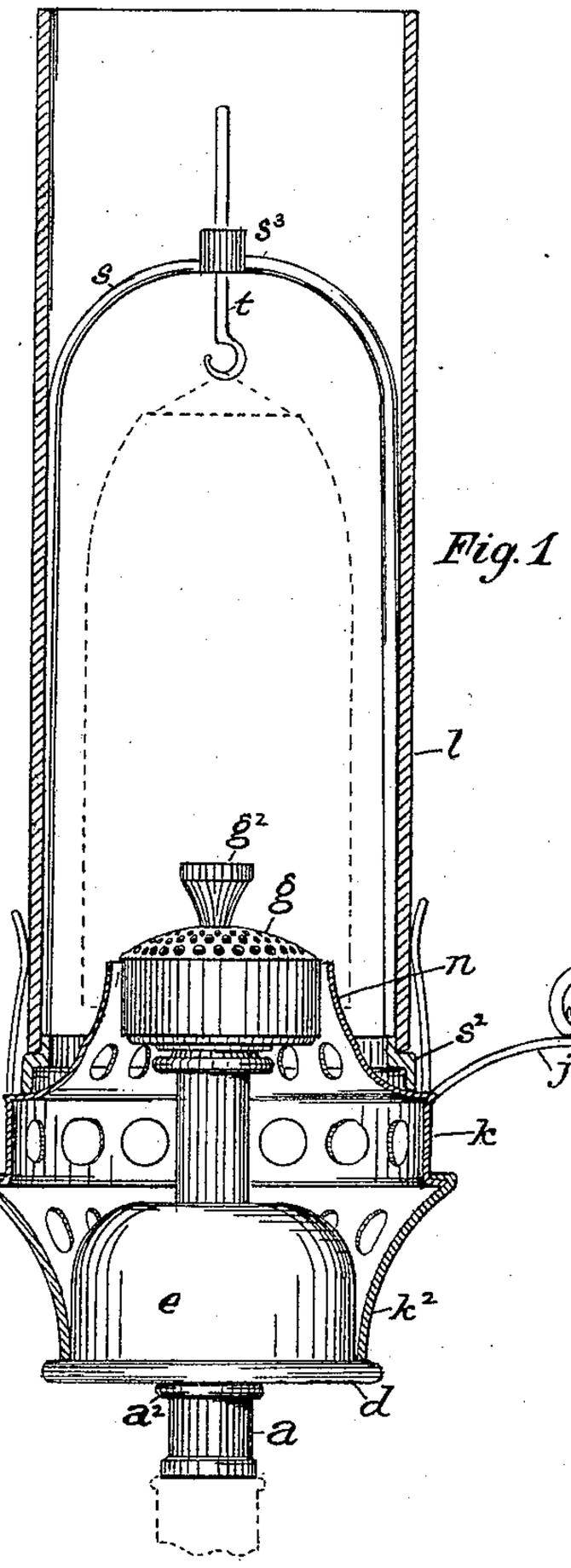

Fig. 1

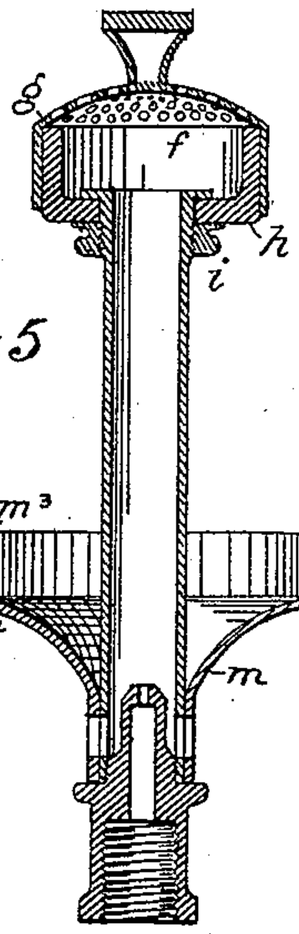

Fig. 5

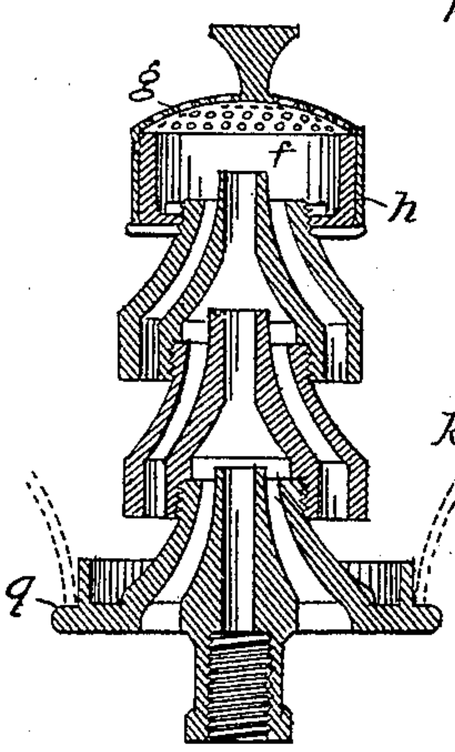

Fig. 6

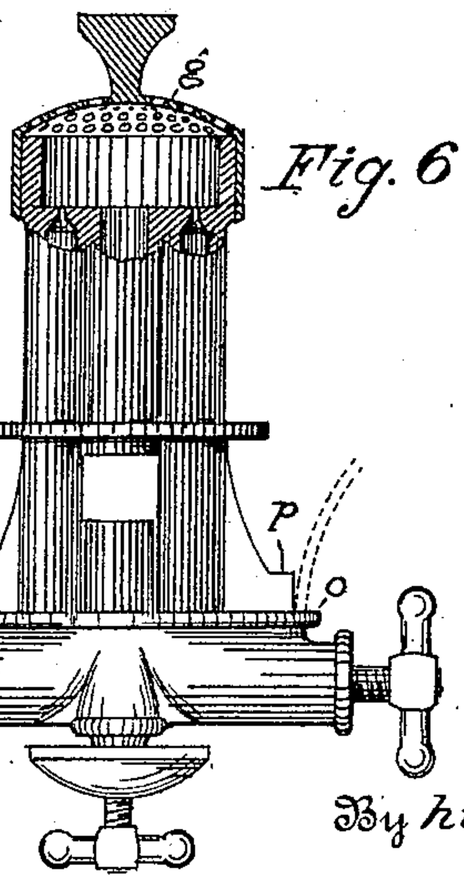

Fig. 7

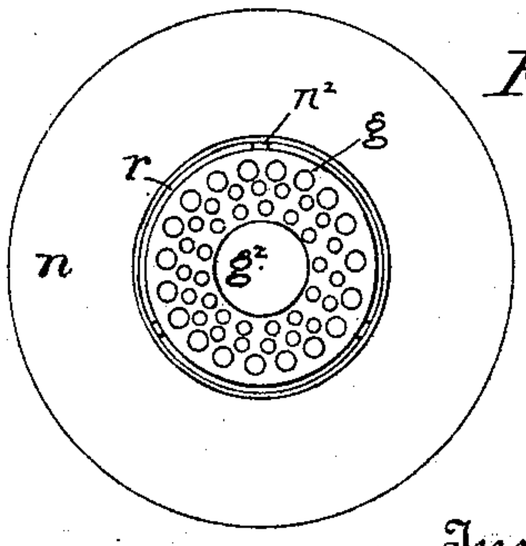

Fig 4

Witnesses
Myron B. Vorce.
John R. Ryder

Inventor
John H. Dubrow
By his Attorney

UNITED STATES PATENT OFFICE.

JOHN H. DUBROW, OF CLEVELAND, OHIO, ASSIGNOR TO WILLIS U. MASTERS, OF SAME PLACE.

INCANDESCENT BURNER.

SPECIFICATION forming part of Letters Patent No. 589,343, dated August 31, 1897.

Application filed March 27, 1896. Serial No. 585,049. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. DUBROW, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Incandescent Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in burners designed to be used with a hood or mantle of mineral or earthly substances incandescent when heated—such, for instance, as the well-known Frankenstein hood, which is frequently called the "Welsbach mantle," or any of the well-known equivalents therefor; and the invention consists in the improved construction, combination, and arrangement of parts of the burner itself and of its gallery, as hereinafter fully described, and pointed out in the claims.

In the drawings, Figure 1 represents in side elevation and partial section a burner having its gallery, chimney, and mantle in place, the mantle being indicated by dotted lines. Fig. 2 is a central vertical section of the burner shown in Fig. 1, omitting the gallery and other parts. Fig. 3 is a detached view of the diaphragm *d*. Fig. 4 is a top plan view of the gallery and burner-cap. Fig. 5 is a vertical sectional view of a common burner modified in construction to adapt it to use with my improved gallery. Fig. 6 is a side view of a hydrocarbon-burner adapted to be used with my improved gallery, and Fig. 7 is a central sectional view of the well-known "Bandceps" burner so modified in construction as to be used with my improved gallery. An incandescent mantle is to be employed in each case.

In burners employing an incandescent hood or mantle the burner is itself a modification of the well-known Bunsen burner, the flame being non-luminous, or nearly so, but intensely heating, and the light being obtained from the incandescence of the highly-heated mantle, which, as is well known, is itself an exceedingly fragile article, requiring very great care to use and not able to withstand much handling. A large part of the cost encountered in using such incandescent burners arises from the necessity for frequently replacing the mantles, and as the burners employed require, when good effects are to be obtained, to be frequently cleaned the removal of the mantle for that purpose, which is at present necessary, considerably increases the natural deterioration of the mantles and increases the cost of maintaining the light.

It is one of the aims of my invention to provide a burner at once simple, efficient, and cheap, more easily accessible than usual, more durable and efficient, and I seek to effect these ends in part by the improved construction and arrangement of the gallery and other parts and in part by the specific construction of the burner proper as distinguished from the burner as a whole.

The burner proper comprises a nipple *a*, internally threaded to fit upon the gas-fixture and having an external shoulder a^2 and a tip *b*, which is externally threaded and capped with wire-gauze or perforated with fine openings, so as to emit the gas in finely-divided jets. Upon the tip *b* screws the tube *c*, perforated at its lower part with openings c^2 and outwardly shouldered and externally threaded at its upper part, as seen at c^3 c^4.

Upon the shoulder a^2 external to the tube *c* rests a diaphragm or shutter *d*, having perforations d^2, and upon this rests an air-chamber *e*, the bottom e^2 of which is closed and provided with perforations corresponding to those in the diaphragm *d* and whose top encircles the tube *c*, as shown. The tube *c* opens at its top into a chamber *f* of larger diameter than tube *c* and closed by a perforated top *g*, having a deflector g^2 in the form of an inverted cone, by which the flame is laterally deflected in all directions. The sides and bottom of the chamber *f* are preferably formed of a porcelain cup *h*, fitting on the tube *c* beneath the shoulder c^3 and held in place by the collar *i*, screwed upon the thread c^4, the perforated top *g* having a depending rim g^3, which fits upon the porcelain cup *h*.

The chimney-gallery *k* has a downward-extending part terminating in a neck k^2 of greater diameter than the chamber *f* and rim g^3, so that it will readily pass over the same. The neck k^2 is supported on a ledge of suitable diameter attached to or supported on the

burner, preferably outside of the air-chamber *e*, over which the neck k^2 may fit and rest upon the diaphragm *d* or equivalent support.

The upper part of the gallery forms a cone or sleeve *n*, perforated at its lower part and surrounding the rim g^3 of chamber *f*, from which it is separated, as by projecting lugs n^2, so as to leave an annular space or opening *r* between the sleeve *n* and the inclosing walls of chamber *f*, through which space air ascends to the flame burning above the chamber *f*.

By this construction it will be seen that the parts of the burner are readily accessible, the combustion is very perfectly controllable, and air is supplied to the flame from outside the chamber *f* in an annular jet within the mantle, whereby a better incandescence of the lower part of the mantle is secured, and by the deflector g^2 the incandescence of the whole mantle is intensified and a better light is obtained from the same quantity of gas.

The mantle is supported over the flame in the usual way, or preferably by a rod or rods *s*, secured to a ring s^2, seating on the gallery and carrying at top a bearing s^3, through which passes the hooked rod *t*, to which the mantle is hung, the whole surrounded by the chimney *l*. In case it is desired to use a globe or shade around the chimney suitable supports therefor, as *j*, may be attached to the gallery in the usual way.

By the use of the porcelain cup *h* for the chamber *f* the parts of the burner below it become much less heated in use and the adjustment of the air-supply by the diaphragm *d* is feasible without disturbing the flame, whereas burners composed wholly of metal become so hot that they can not be handled until the flame has been extinguished or greatly lowered and the burner allowed to cool.

By a slight modification the ordinary Bunsen burner may be adapted to use with my improved gallery. To effect this, I take the nipple *a* and perforated tube *c*, which together constitute a common Bunsen burner, and by adding to it, as shown in Fig. 5, my improved chamber *f*, comprising the parts *g*, *h*, and *i*, and instead of the chamber *e* and diaphragm *d* fitting upon the outside of tube *c* at its lower part a sleeve *m*, perforated to correspond with the perforations in the tube and expanded at its upper part to form the ledge m^2 and rim m^3, adapted to receive the neck k^2 of the gallery, as indicated in dotted lines, I render the common burner completely adaptable to the uses of the improved burner shown in Figs. 1 and 2.

In Fig. 6 I show a hydrocarbon-burner which, by providing a chamber at the top, closed by the same construction of cap and deflector as is shown in Figs. 1 and 2, and by adding a ledge *o* and guiding-lugs *p* or equivalent over which the neck k^2 can seat upon the ledge *o*, is adapted to receive my improved gallery and be used with an incandescent hood, as in the other cases.

Fig. 7 shows how, by the addition of the chamber *f* and the proper supporting-ledge, as *q*, the well-known Bandceps and other forms of burner may be used with my improved gallery and such advantages as above described obtained therefrom by providing the annular jet of air directly around the burner and within the mantle and enabling the entire gallery, chimney, and mantle to be removed without jarring or disturbing the mantle.

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

1. The combination of a burner-tube having an expanded chamber at top and air-inlets below, a perforated air-chamber of larger diameter, inclosing said air-inlets, a revoluble shutter or diaphragm adapted to close the perforations of said air-chamber, and a chimney-gallery seating on said shutter and having an upward-extending sleeve surrounding the upper chamber with an annular space between, substantially as described.

2. The combination in a burner of the gas-tube having air-inlets at its lower part, a cup of mineral material attached to the top of said tube and into which it opens, a perforated cap closing the top of said cup and forming a chamber, an air-chamber of larger diameter inclosing the air-inlet of the gas-tube and perforated at its bottom, a revoluble shutter beneath the air-chamber and extending beyond the same and having corresponding perforations, and a chimney-gallery seating on said shutter outside of the air-chamber and having an upward-extending sleeve surrounding the upper chamber with an annular space between, substantially as described.

3. The combination in a burner of the gas-tube having air-inlets at its lower part, a cup of mineral material attached to the top of said tube and into which it opens, a perforated cap provided with a flame-deflector and closing the top of said cup and forming a chamber, an air-chamber of larger diameter inclosing the air-inlet of the gas-tube and perforated at its bottom, a revoluble shutter beneath the air-chamber and extending beyond the same and having corresponding perforations, and a chimney-gallery seating on said shutter outside of the air-chamber and having an upward-extending sleeve surrounding the upper chamber with an annular space between, substantially as described.

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

JOHN H. DUBROW.

In presence of—
JOHN R. RYDER,
LONN PRENTISS.