

P. LUCAS.
 INCANDESCENT GAS LAMP.
 APPLICATION FILED MAY 26, 1910.

1,055,342.

Patented Mar. 11, 1913.

3 SHEETS-SHEET 1.

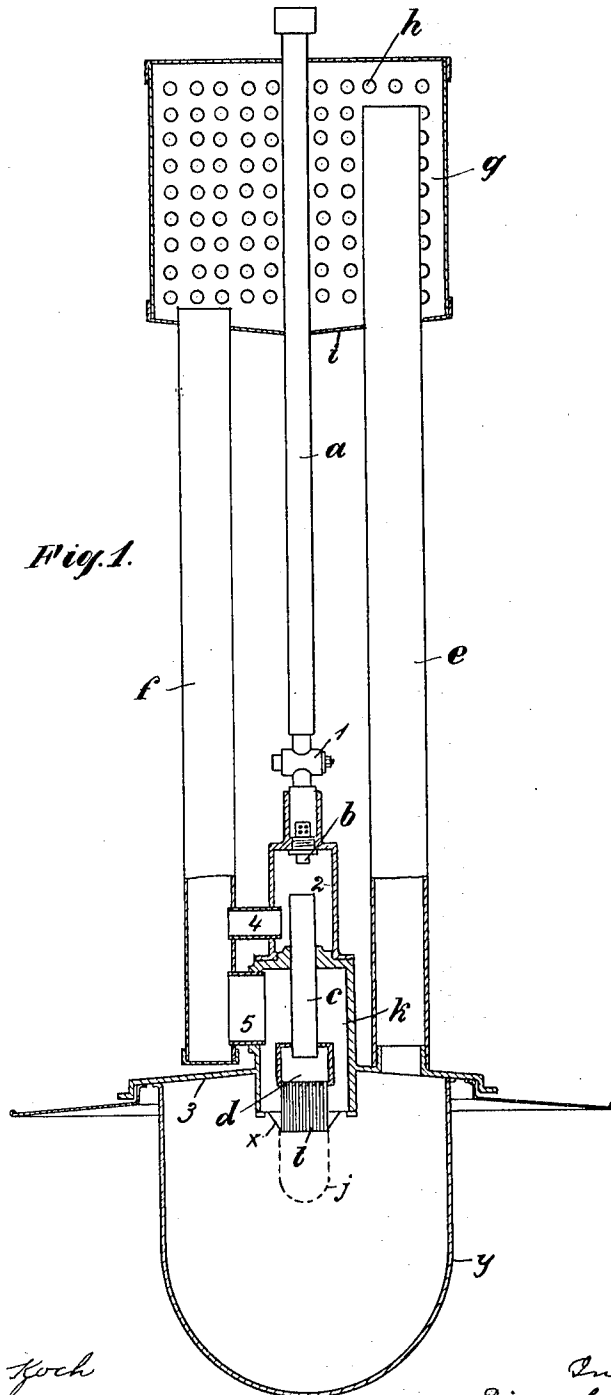


Fig. 1.

Witnesses:
 Katherine Koch
 Daniel Holmgren

Inventor:
 Paul Lucas
 by his attorneys
 Brereton & Juniper

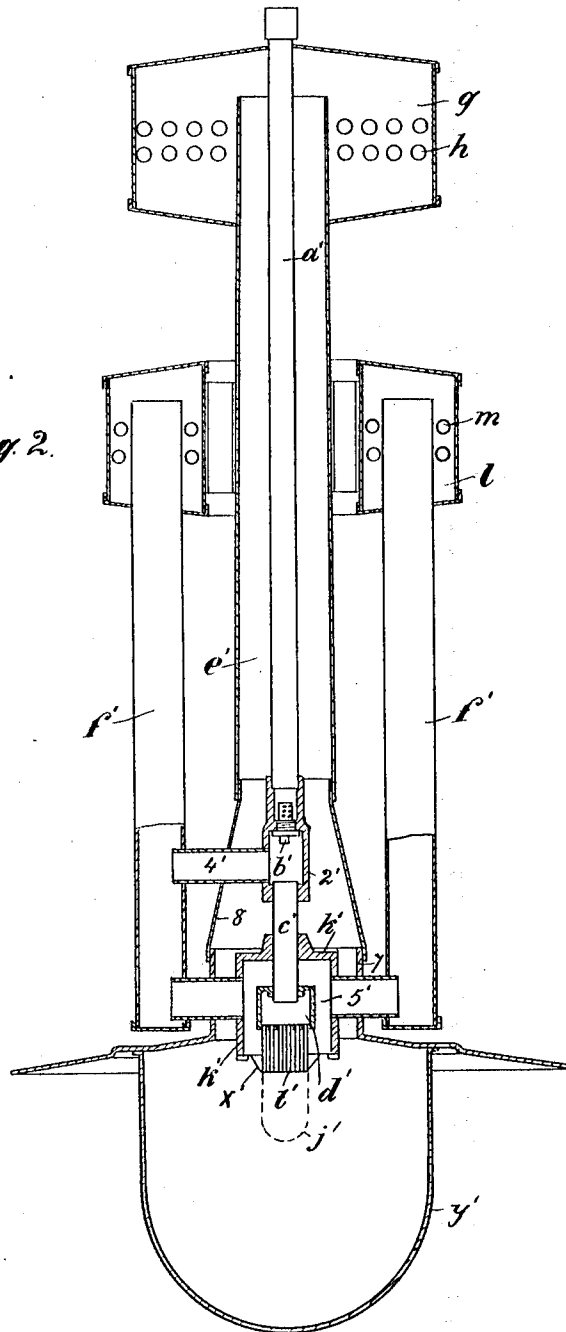
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3 SHEETS-SHEET 2.

Fig. 2.



Witnesses:
 Karlheinz Koch
 Daniel Holmgren.

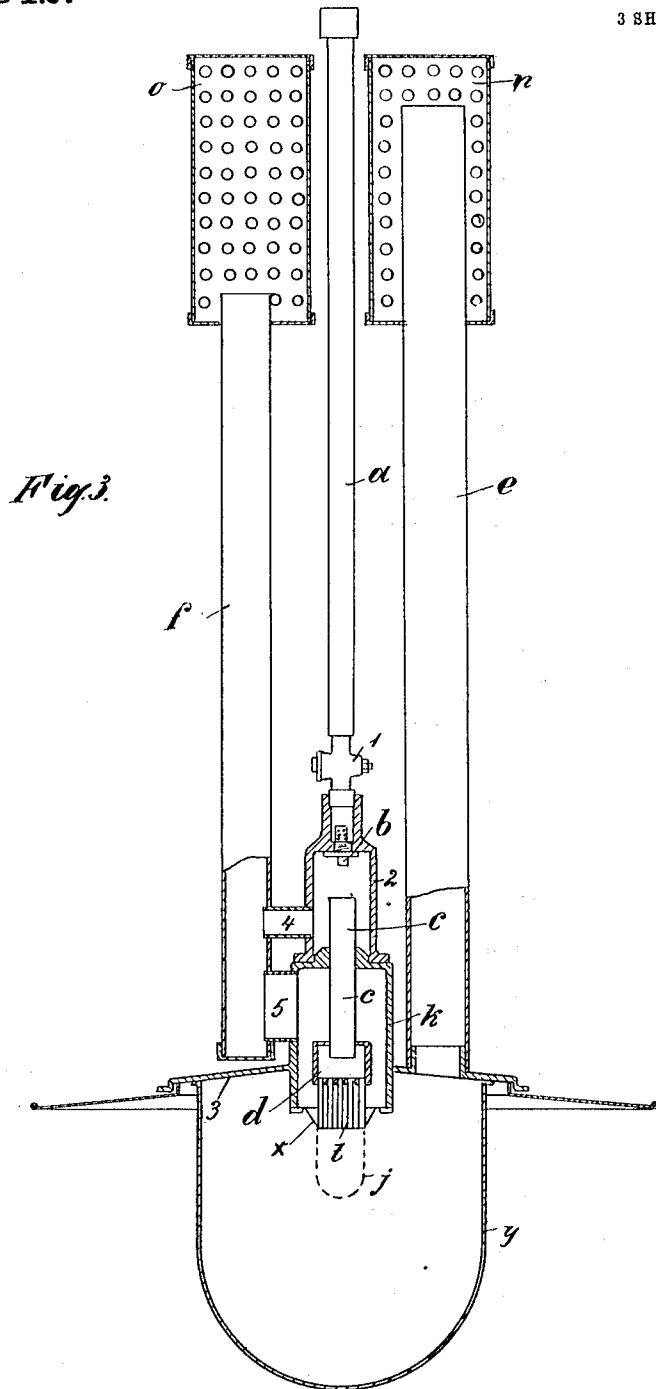
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3 SHEETS—SHEET 3.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

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INCANDESCENT GAS-LAMP.

1,055,342.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed May 26, 1910. Serial No. 563,463.

To all whom it may concern:

Be it known that I, PAUL LUCAS, a citizen of the Empire of Germany, residing at Süden-
de, near Berlin, Germany, have invented
5 new and useful Improvements in Incandescent Gas-Lamps, of which the following is a specification.

This invention relates to an improved incandescent gas lamp which is so constructed
10 that a maximum draft within its chimney, and consequently a high illuminating power is obtained, while at the same time the lamp is effectively protected against extinction by wind.

In the accompanying drawings: Figure 1 is a vertical longitudinal section through an incandescent gas lamp embodying my invention; Fig. 2 a similar section through a modification, and Fig. 3 a vertical longitudinal section through a further modification.

Similar characters of reference refer to similar parts throughout the several views.

In Fig. 1, I have illustrated for example an inverted incandescent gas lamp of the kind described in my copending application, Serial No. 563,464, filed May 26th, 1910. *a* is the gas tube provided at its lower end with a cock 1, by means of which it is connected with a casing 2. From the latter depends a second casing *k*, which is shown to be made integral with an annular cover 3. Through the cover of the casing *k* passes a mixing tube *c* and in the cover of the casing 2 is arranged a nozzle *b* adapted to project
35 the gas in a jet into the mixing tube *c* while at the same time it injects air supplied in manner hereinafter described through a lateral tube 4. To the lower end of mixing tube *c* is fastened a mixing chamber *d*, the
40 bottom of which is provided with a plurality of depending small tubes forming a burner *t*. The annular space between casing *k* and burner *t* is closed by a ring *x* which is adapted to carry the inverted incandescent mantle
45 *j*. From the cover 3 is suspended a glass globe *y*, of any suitable construction. The chimney *e* carried by casing *k* extends into a perforated cylindrical box *g* to a point near the top of the latter. On the opposite side
50 of the gas tube *a*, a vertical air-supplying tube *f* is arranged, which passes upward through the bottom of the box *g* to a point just above said bottom and is closed at its lower end. Tube *f*, is by tubes 4 and 5 connected with the casings 2 and *k* respectively.
55 The box *g* has a plurality of superposed se-

ries of openings *h*, the total area of which should be so proportioned as to facilitate the draft.

It is of course essential that the chimney *e* 60 be higher than the air-supplying tube *f*, as this difference in height is necessary for producing the draft in the chimney, which draft sucks in the fresh air through the lower holes *h* of the box *g* and through the tubes *f* 65 and 5 and the casing *k* between the thin tubes of the burner *t* to the flame and forces the products of combustion upward through the chimney *e*, whereupon they will escape through the upper holes *h* of the box *g*. The 70 cross area and the height of the chimney *e* should be so selected as to insure the necessary draft. The distance of the two tubes *e* and *f* is so great, that the air-supplying tube *f* remains cold, which is essential for a satisfactory operation of the chimney *e*. Care 75 should also be taken to maintain the air-tube *f* in its cooled state by avoiding as much as possible all transmission of heat by radiation, conduction and similar reasons. For 80 this purpose the bottom *i* of the perforated box *g* may be made from a bad heat conducting material or the air tube *f* may be insulated from the bottom of the box *g* in suitable manner. The cylindrical mantle of the 85 box *g* may be so constructed as to avoid the downward transmission of heat. Care may also be taken to insulate the air-tube *f* from the casing *k*, so as to avoid all transmission of heat therefrom. 90

By the construction described the important advantage is obtained, that the temperature of the fresh air in the tube *f* is but a few centigrades higher than the temperature of the ambient air, while the temperature in the chimney *e* may amount to 300° centigrade and more. Under these circumstances the draft of the chimney *e* is fully maintained and the quantity of air required for the complete combustion of the gas can be 100 obtained through the cool air tube *f*.

The perforated cylindrical box *g* will prove to be absolutely reliable for protecting the lamp from extinction by any wind, since the wind can enter the box only through the 105 holes *h* and the differences in pressure of the air thereby produced in the amply sized box will be instantaneously equalized without hindering the admission of the air to the burner. 110

It is not necessary to employ a single common perforated cylindrical box *g* for both

the air tube *f* and the chimney *e*. Where so preferred, the air-tube *f* may receive its own box *o*, as shown at Fig. 3, and the chimney *e* may receive its own box cylinder *n*.

5 Hitherto one air-tube and one chimney were assumed to be employed, but it is obvious, that any number of air tubes and chimneys may be employed for a lamp. For example Fig. 2 shows an inverted incandescent gas lamp with one chimney *e*¹ in the center and two air tubes *f*¹ *f*¹ on both sides. This modified construction also differs from the preceding one in that two separate perforated cylindrical boxes are provided at 10 different heights viz. one box *g* having holes *h* at the upper end of the chimney *e*¹, and one annular box *l* provided with the holes *m* for the two air tubes *f*¹ *f*¹. Preferably the lower box *l* is insulated from the chimney *e*¹ in order to prevent the transmission of heat therefrom. The casing 2¹ for the nozzle *b*¹ may be connected with one air-tube *f*¹ only, through the tube 4¹. The annular cover 6 may have a cylindrical rim 7 15 at a distance from the casing *k*¹, so that an annular space is formed for the upward passage of the products of combustion. The upper end of the rim 7 is connected with the lower end of the chimney proper *e*¹ by a conical piece 8. The other parts of the lamp corresponding with those in Fig. 1 are denoted by the same characters of reference, only that the latter are primed. The cylindrical boxes *g* and *l* are preferably made 20 similar to one another, so that the wind will exert the same effect upon them, that is to say, it will force fresh air through the holes *m* of the box *l* into the air tubes *f*¹ *f*¹ and

suck the products of combustion from the chimney *e*¹ through the holes *h* of the box *g*. 40 In consequence of this no disturbance will be created by the wind either in the burner or in the chimney.

I claim:

1. In an incandescent gas lamp, the combination with a cover of a globe suspended therefrom, a burner in said globe and provided with an incandescent mantle, means for supplying gas to said burner, a wind-guarded chimney adapted to conduct the products of combustion from said cover upward, and a wind-guarded air supply tube arranged at the side of the chimney, said chimney extending vertically above the air supply tube. 50 55

2. In an incandescent gas lamp, the combination with a cover, of a globe suspended from said cover, a burner in said globe and provided with an incandescent mantle, means for supplying gas to said burner, a chimney adapted to conduct the products of combustion from said cover upward, a cylindrical box at the upper end of said chimney and perforated in its cylindrical wall, and an air tube outside said chimney and lower than it and connected with said cylindrical box, it being adapted to supply fresh air to said burner, said cylindrical box being adapted to supply the fresh air through its lower perforations to said air tube and to discharge the products of combustion from said chimney through its upper perforations. 60 65 70

PAUL LUCAS.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."