No. 827,380. PATENTED JULY 31, 1906.

P. LUCAS.

INTENSE LIGHT LAMP.

APPLICATION FILED JAN. 23, 1905.

Fig. 1.

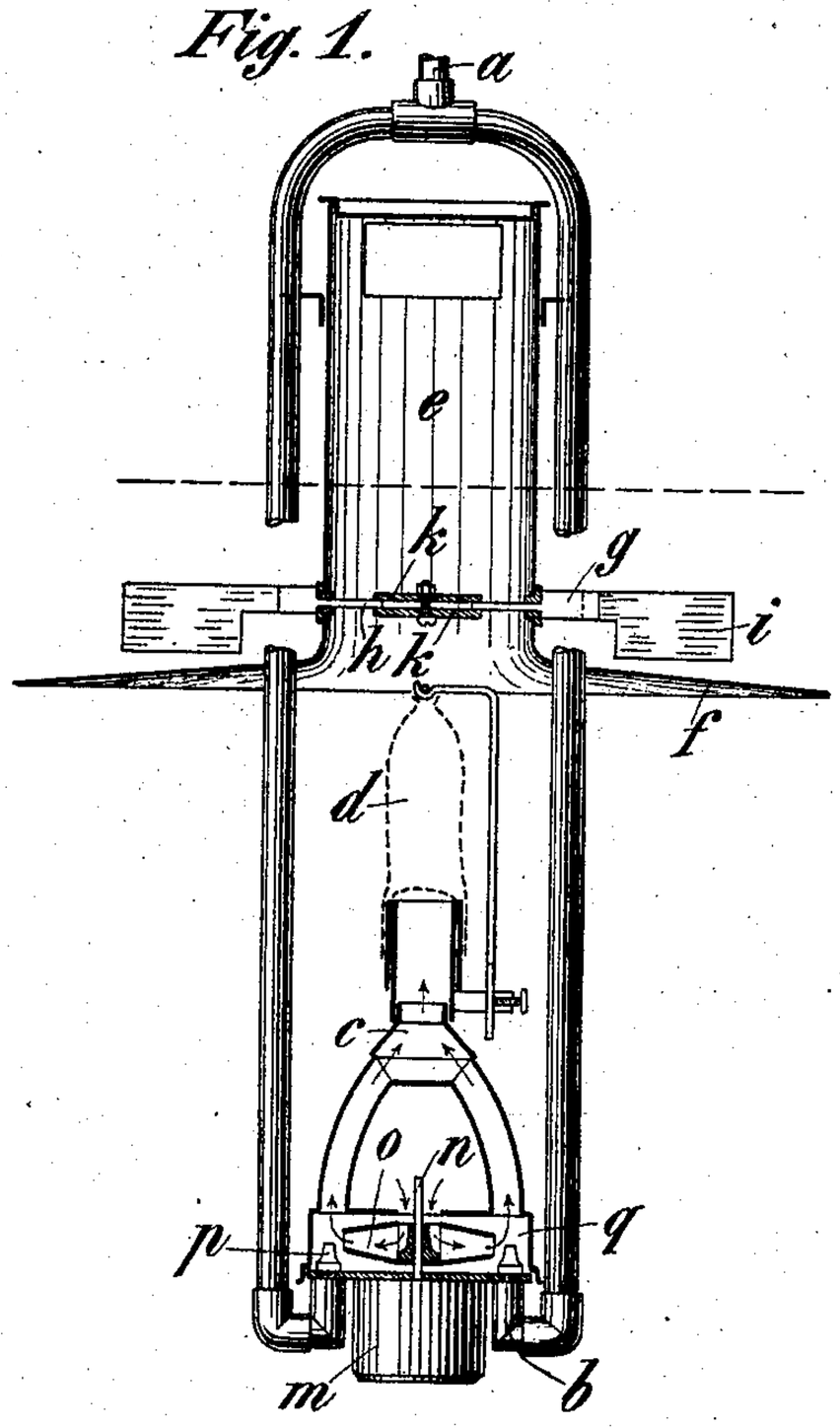
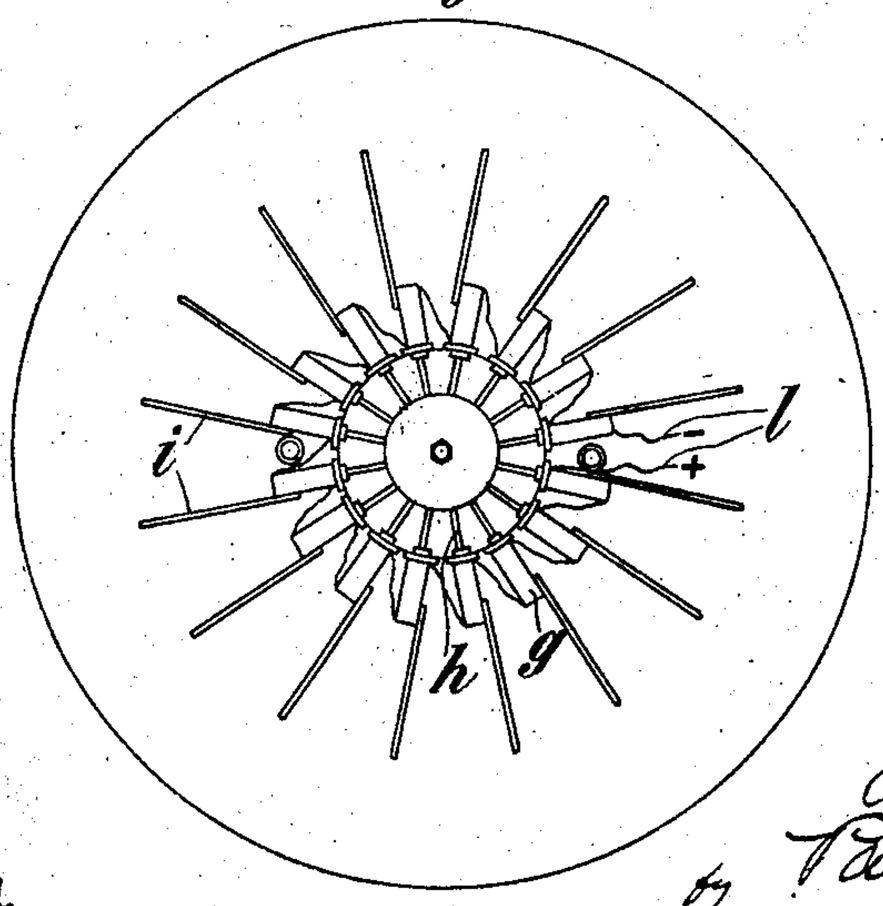


Fig. 2.



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INTENSE-LIGHT LAMP.

No. 827,380. Specification of Letters Patent. Patented July 31, 1906.

Application filed January 23, 1905. Serial No. 242,368.

To all whom it may concern:

Be it known that I, PAUL LUCAS, engineer, a subject of the King of Prussia, German Emperor, residing at 3 Klixstrasse, in the city of Schöneberg, near Berlin, Kingdom of Prussia, and German Empire, have invented a certain new and useful Improvement in Intense-Light Lamps, of which the following is a specification.

Gas-light incandescent lamps for intense powerful light have heretofore been employed in which an intimate mixture of the gas with the air of combustion for each lamp was produced by a separate ventilator, the latter being operated by a small electric motor. It has also been suggested to utilize the heat of the waste gases of the lamp for the operation of such electric motor. However, I am not aware of any suggestion in this way that would admit of practical utilization in an economical manner.

This invention has reference to such a construction of gas-light incandescent lamp where the current for the operation of the ventilator is generated by the lamp itself, so that a very uniformly burning gas-light of enormous power is produced independently of any exterior source of power and without the structure of the apparatus interfering in any way injuriously with the light, inasmuch as an unimpeded radiation of light can take place from the flame in a horizontal direction and also in a downward direction.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both figures.

Figure 1 is a central sectional view showing an embodiment of the invention. Fig. 2 is a plan view of the top of the lamp, the chimney and gas-admission tube being not illustrated.

The lamp is composed, in the first place, of the well-known parts the lyre-shaped gas-admission tube *a*, the burner *b*, with the burner-head *c* and the incandescent mantle *d*, and of the draft-pipe *e* and the reflector *f*.

The new and novel device for the automatic operation of any one of such lamps comprises two separate parts—the source of power and the motor or operating device—both of which are so arranged as not to interfere in any way with the unimpeded radiation of the light.

The source of power comprises a series of thermo-batteries the construction of which is immaterial, but which has to be such as to produce a constant force. The batteries used in the present instance, given by way of example, consist of a piece of metal *g*, to the front part of which a heating-stud *h* and to the rear part of which a cooling metal sheet *i* is attached. The batteries are arranged above the flame, and in the present case they are mounted particularly above the reflector—that is to say, the base parts of the elements constitute directly the reflector. The powerful radiation of heat of the flame is kept off as much as possible from the exterior soldering-joints of the batteries both by the mounting of the batteries above the reflector and by the arrangement of the centrally-placed chimney. The heating-studs of the batteries extend through suitable guides arranged in the chimney-wall and are reaching radially into the chimney. In order to produce a uniform powerful heating of the said studs only at the connecting places of the same with the battery, a cover *k*, consisting of an asbestos plate, is mounted upon the free ends of the said studs in the center of the chimney, whereby the hot waste gases of the lamps are compelled to rise in the annular space between the asbestos plates and the chimney-wall, so as to impart a powerful heat to the studs in the neighborhood of their connecting places with the battery. By means of this arrangement a very excellent effect of the battery is produced. The current generated thereby is conducted to the motor *m* by means of the conductor *l* and by way of the base of the lamp.

The electric motor *m* of any suitable construction is located in a casing mounted upon the base of the burner. The shaft of the motor *n* is provided with an upward extension for the purpose of directly mounting thereon a ventilator *o*, which is arranged at a level with the gas-exit openings *p*, so as to force the air into a closed annular mixing-chamber *q*. It is advantageous to have several gas-nozzles open out into this chamber and to have several mixing-tubes extending up to the burner-head correspondingly.

The mode of operation of this kind of lamp is as follows: When igniting the lamp, the suction produced by the rushing-out jets of gas is sufficient to carry along sufficient air such as is required for starting combustion. The waste gases of the flame will immediately flow around the heating-studs of the batteries and operate the battery. There-

upon the motor-engine drives the ventilator, the working of which is so arranged and calculated that it forces a sufficient quantity of air into the mixing-channel and around the gas-nozzles, which will be sure to be sufficient for the complete combustion of the total amount of gas admitted. The direction of movement of the powerful current of air of combustion which is forced in insures the intimate mixing of gas and air before the rising into the burner-head. By the arrangement of several conduits which lead from the lower mixing-chamber into the burner-head an additional mixing of the fuel of combustion admitted to the burner is insured within the burner-head and an exceedingly quiet flame of very high heating power is produced which results in producing the most perfect efficiency of the incandescent mantle.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a gas-light incandescent lamp for intense light, a battery of thermo-electric elements located above the flame to be heated by the products of combustion, combined with an electric motor adapted to be supplied by the electric current produced by the battery, a ventilator operated by the motor, a burner, and pipes receiving the air supplied by the ventilator and commingling it with the gas and delivering it toward the burner.

2. In a gas-light incandescent lamp with artificially-increased air-supply, a ventilator effecting the introduction of the air in the gas-supplying pipe, said ventilator being arranged below the burner in such a manner, that it does not prevent the radiation of light horizontally and downwardly, an electromotor operating said ventilator and a thermobattery supplying the electric current to the electromotor, said thermobattery being arranged on the top of the flame, where the products of combustion heat the thermo elements.

3. A gas-light incandescent lamp for intense light with artificially-increased air-supply by means of a ventilator, electric driving of the ventilator, a battery of thermo elements for producing the electric current, said thermo elements being arranged on the top of the flame, its heating-studs projecting through the chimney of the lamp.

4. A gas-light incandescent lamp for intense light, with a ventilator for increasing the supply of combustion-air, and with a reflector above the burner of the lamp, an electromotor for operating the ventilator, and thermo elements for producing electric current for the motor, said elements being provided with heating-studs arranged within the chimney of the lamp, while the other parts of said elements extend above the reflector by which they are protected from heat radiating from the lamp.

5. In a gas-light incandescent lamp for intense light, the combination with a ventilator for increasing the air-supply and electrically driven, of a thermobattery arranged around the chimney of the lamp, the heating-studs of said thermobattery extending through the chimney and a ring-shaped plate for covering the ends of the said studs in the chimney.

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

PAUL LUCAS.

Witnesses:
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