

No. 629,068.

Patented July 18, 1899.

P. J. FITZGERALD.
INCANDESCENT VAPOR LAMP.

(Application filed Feb. 16, 1898.)

(No Model.)

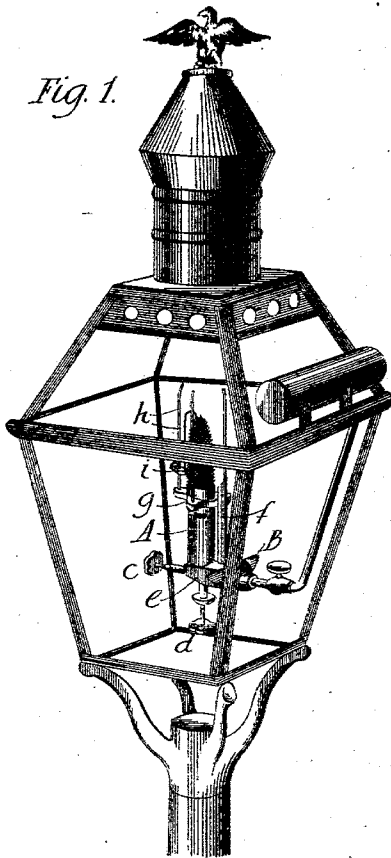
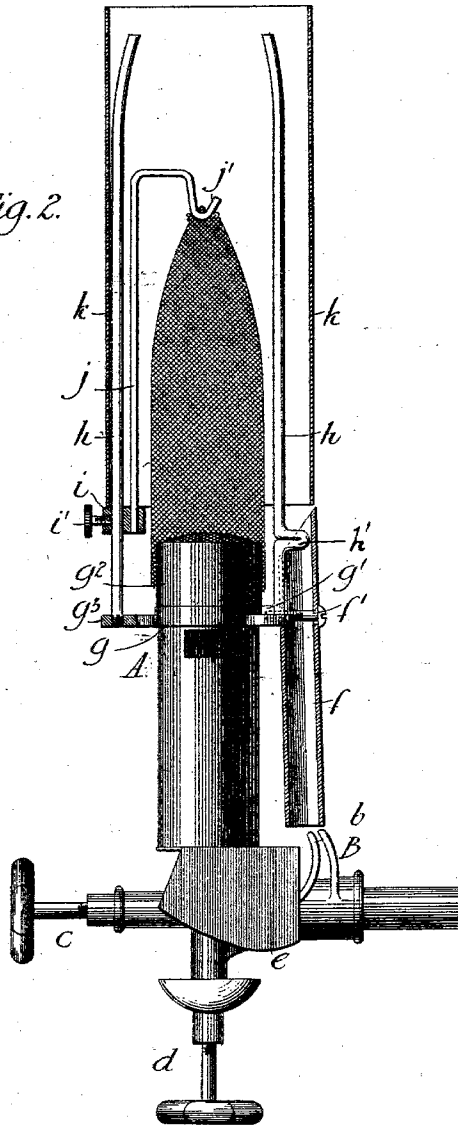


Fig. 2.



WITNESSES
Benjamin Hobster
Arthur Browning

INVENTOR
Peter J. Fitzgerald
By *W. W. Dudley & Co.*
his Attorneys

UNITED STATES PATENT OFFICE.

PETER J. FITZGERALD, OF BOSTON, MASSACHUSETTS.

INCANDESCENT VAPOR-LAMP.

SPECIFICATION forming part of Letters Patent No. 629,068, dated July 18, 1899.

Application filed February 16, 1898. Serial No. 670,516. (No model.)

To all whom it may concern:

Be it known that I, PETER J. FITZGERALD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Incandescent Lamps for Hydrocarbon Liquids; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to incandescent lamps for hydrocarbon liquids, and while certain of its features are susceptible of embodiment in this class of lamps generally the improvements as a whole are more especially concerned with the character of lamp set forth and claimed in my Letters Patent dated March 15, 1898, No. 600,774.

In the lamp which forms the subject of my said application two illuminating-burners are employed, one of which is of the incandescent type, while the other is adapted for supplying the heat of vaporization and also for supplanting the incandescent burner when the latter shall have become impaired. With the incandescent burner in a serviceable condition the auxiliary burner is adjusted to emit what may be termed the "pilot-flame," and while under ordinary conditions this pilot-flame is maintained it is possible that under other and extraordinary conditions the flame may become extinguished, in which event the vaporization of the liquid will after a time be interrupted and the incandescent light will fail.

One of the objects of my present invention is to render the operation of the lamp certain at all times by providing means whereby in the event of the extinguishment of the pilot-flame the same will be instantly restored from the incandescent flame, the said means consisting generally of a passage between the two burners, whereby communication is established between the flames in a manner to insure the desired stated result. It must be understood that the lamp forming the subject of my prior application obtains in operation the highest efficiency and that the liability of its impairment is the minimum; but

I deem it advisable to employ in connection therewith the present improvement more as a precautionary than a necessary means.

Another object of my present invention is to facilitate the adjustment of the mantle or other incandescing feature by the provision of means whereby the shifting of the mantle-support may be easily and quickly effected without the danger of contact with the mantle, the very fragile nature of which precludes of its being handled in any but the most delicate manner.

Still another object of my present invention is to provide against the fracture of the mantle during the task of cleaning the lamp or making repairs thereto by the employment of a shield which is temporarily placed around the mantle and effectually protects it against injury either by the hands of the operator or by the means employed for the cleansing or repairing operations.

The details of construction and arrangement of the several means by which the objects sought for are obtained will now be described in detail, and in connection with the description attention is directed to the accompanying drawings, which form a part thereof, and in which—

Figure 1 is a perspective view of a lamp of the street-lighting type embodying my invention, and Fig. 2 is an enlarged side elevation with certain of the parts in section.

Referring to the said drawings by letter, A denotes the incandescent burner, and B the auxiliary burner, the latter being by preference one of the kind which is known in the art as the "plate" type.

c d are the valves for controlling the supply of fluid to the burners, and *e* is a hood employed in conjunction with the flame-plate *b* of the auxiliary burner for the purpose of conserving the heat of vaporization. In the operation of the burner the pilot-flame impinges against the flame-plate, and the heat generated produces the vaporization of the liquid, which is conducted to the burners through a passage in close proximity to said plate. This pilot-flame will under ordinary conditions be maintained; but it will be obvious that where the burner is employed for street-lighting or where it is exposed to sudden drafts of air the flame may be extinguished, in which event vaporization is no

longer effected. To insure the restoration of this flame when extinguishment takes place, I provide a passage from one burner to the other, and thereby establish a communication between them, with the result that unignited vapor from the auxiliary burner is conducted through the passage and into contact with the flame of the incandescent burner and is ignited thereby, and as the pressure of the ascending vapor in the passage is comparatively slight the flame rapidly travels downward therethrough and reaches the plate-burner, when the restoration of the pilot-flame at once takes place. Communication between the burners may be established in a variety of ways; but for economy of construction I prefer to employ for this purpose a tube *f*, open at each end and secured to the burner in position to bring its lower end centrally over the flame-plate *b* and its upper end in close proximity to the incandescent burner. Said upper end is preferably beveled to facilitate the ignition of the ascending vapor. The tube *f* may be attached to any convenient part of the burner or may be made integral with a part—as, for instance, the flame-plate *b* or the hood *e*. It is preferable, however, from a standpoint of simplicity and economy to attach the tube at a point near its upper end to a bracket *g* on the incandescent burner by passing a screw *f'* through said tube and into a lug *g'* on said bracket.

The bracket *g* comprises a sleeve *g*², which fits closely the upper end of the incandescent burner, and from said sleeve extend radially a series of arms *g*³ *g*³, having threaded apertures, in which are screwed the lower ends of vertical rods *h* *h*. On one of these rods is slidably arranged a block *i*, having a set-screw *i'*, by which the block may be readily moved and secured at any desired height on said rod. At the inner side of the block is secured the lower end of the mantle-support, which consists of a rod *j*, vertically disposed and provided at its upper end with a depending mantle-engaging hook *j'*. As is well known to those skilled in the art, the length or vertical dimension of a mantle is subject to constant variation due to the shrinking action of the heat on the material, and it is necessary, therefore, that adjustments be made from time to time to preserve the proper relative position of the mantle and burner. Shiftable mantle-rods have heretofore been provided; but such rods, so far as I am aware, must in the adjustment be seized by the operator in the manipulation, and this practice has frequently resulted in the fracture of the mantle by contact therewith of the hand or tool employed in the operation. By my improvement the handling of the rod is avoided, the adjustment being readily effected by loosening the set-screw *i'* and with the fingers on said screw moving the block, the rod, and mantle to the proper position, after which the screw is again tightened. In this manner all contact with the mantle is avoided,

and, moreover, the adjustment may be more easily and quickly effected than heretofore.

The very fragile nature of the present mantle, in addition to the safeguard just described, necessitates the employment of great care in the task of cleaning and repairing a lamp, and even with the utmost precaution a fracture of the mantle often occurs, in which event it is rendered useless. This difficulty I have surmounted by the provision of a shield which is temporarily placed around the mantle and which, in addition to protecting the mantle against injury, enables the cleaning or repairing operations to be more quickly accomplished than at present. The shield *k* is of cylindrical form and is adapted to be removably placed on the outer side of the rods *h* and to be supported in position to envelop the mantle on the block *i* or on offsets *h'*, provided on the rods *h*. To facilitate the placing of the shield in position, the rods are at their upper end bent inwardly, as shown. In practice but a single shield is required for a number of lamps, and viewing the improvement from a standpoint of economy the advantage of such an arrangement is obvious.

I claim as my invention—

1. In a lamp of the character described, the combination with an incandescent illuminating-burner, and an auxiliary illuminating and vaporizing burner, said burners being adapted to be used alternately for illumination, of a tube interposed between the burners the upper open end of which is at the point of ignition of the incandescent burner and the lower end of which is above and adjacent to the point of ignition of the auxiliary burner.

2. In a lamp of the character described, the combination with an incandescent illuminating-burner, and a plate-burner below the same for vaporization and auxiliary illumination, of a loosely-mounted tube the upper open end of which is at the point of ignition of the incandescent burner and the lower open end of which is immediately over the flame-plate of the auxiliary burner.

3. In an incandescent gas-burner, the combination of a sleeve on the burner having arms provided with threaded apertures, rods having their lower ends screwed into said apertures, certain of the rods being provided with offsets, a block slidable on one of the rods which is free from an offset and provided with a set-screw to maintain the adjusted position of the block on said rod, a mantle-supporting rod the lower end of which is rigidly held in said block, and a cylindrical shield adapted to be temporarily placed over the rods to rest on the block or offsets whereby contact with the mantle is prevented.

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

PETER J. FITZGERALD.

Witnesses:

W. F. FITZGERALD,
C. G. FISHER.