2 Sheets--Sheet 1.

J. D. MURPHY & M. McNAMEE.

Street Lamps.

No. 153,493. Patented July 28, 1874.

FIG. 1.

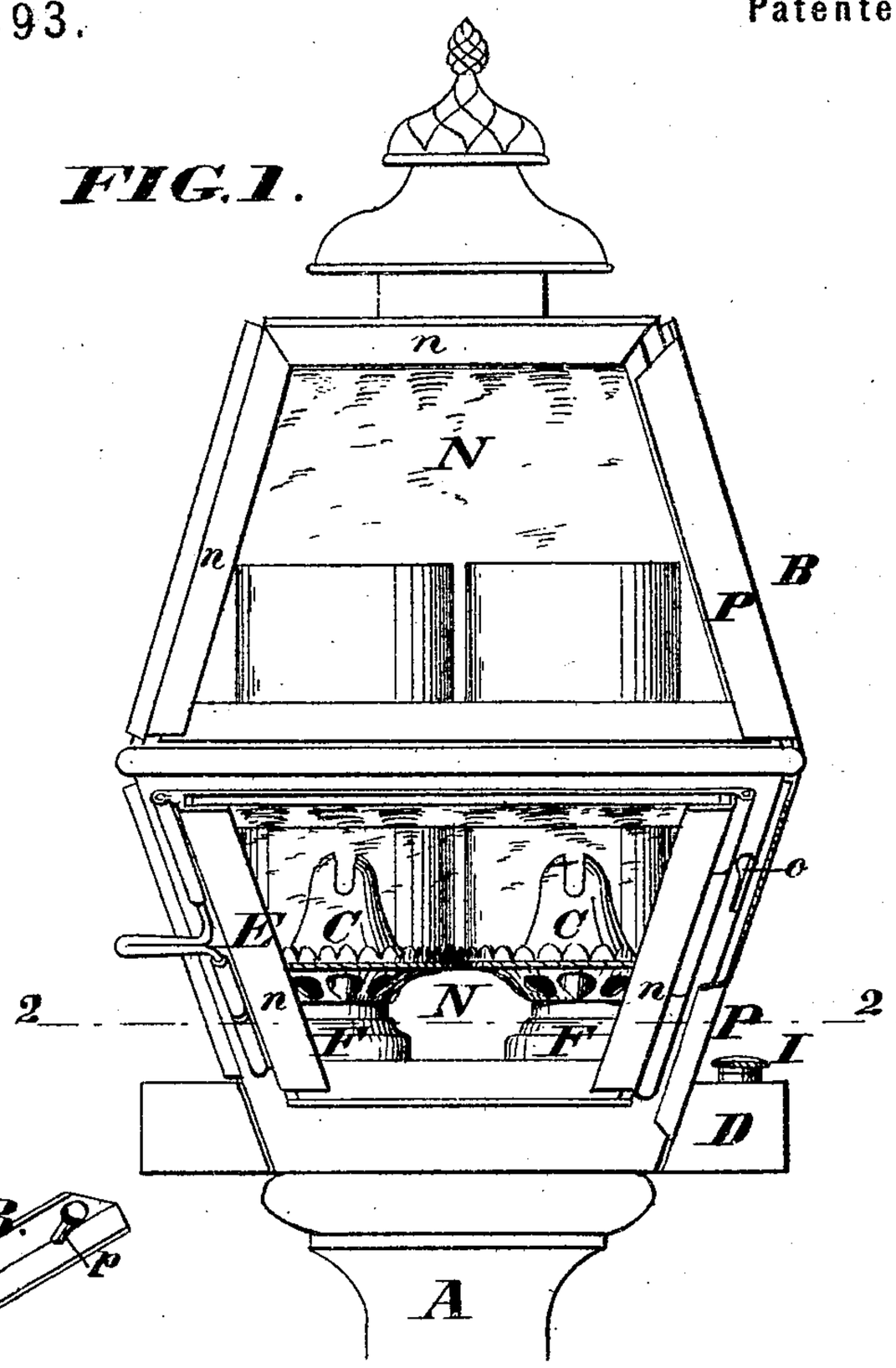


FIG. 3.

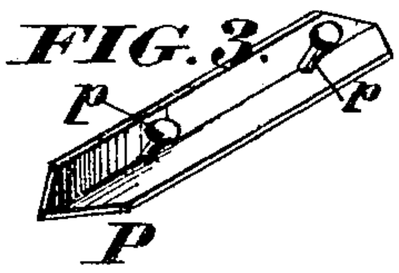
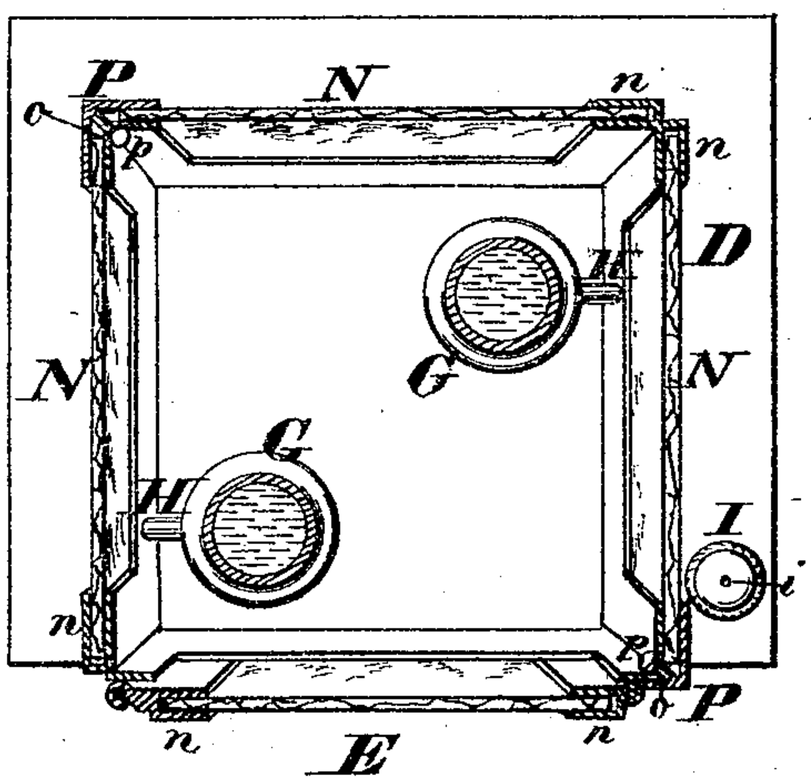


FIG. 2.



WITNESSES

Jas. L. Ewin

Walter Allen

INVENTORS.

John D. Murphy

Michael McNamee.

By Knight Bros Attorneys

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

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FIG. 4.

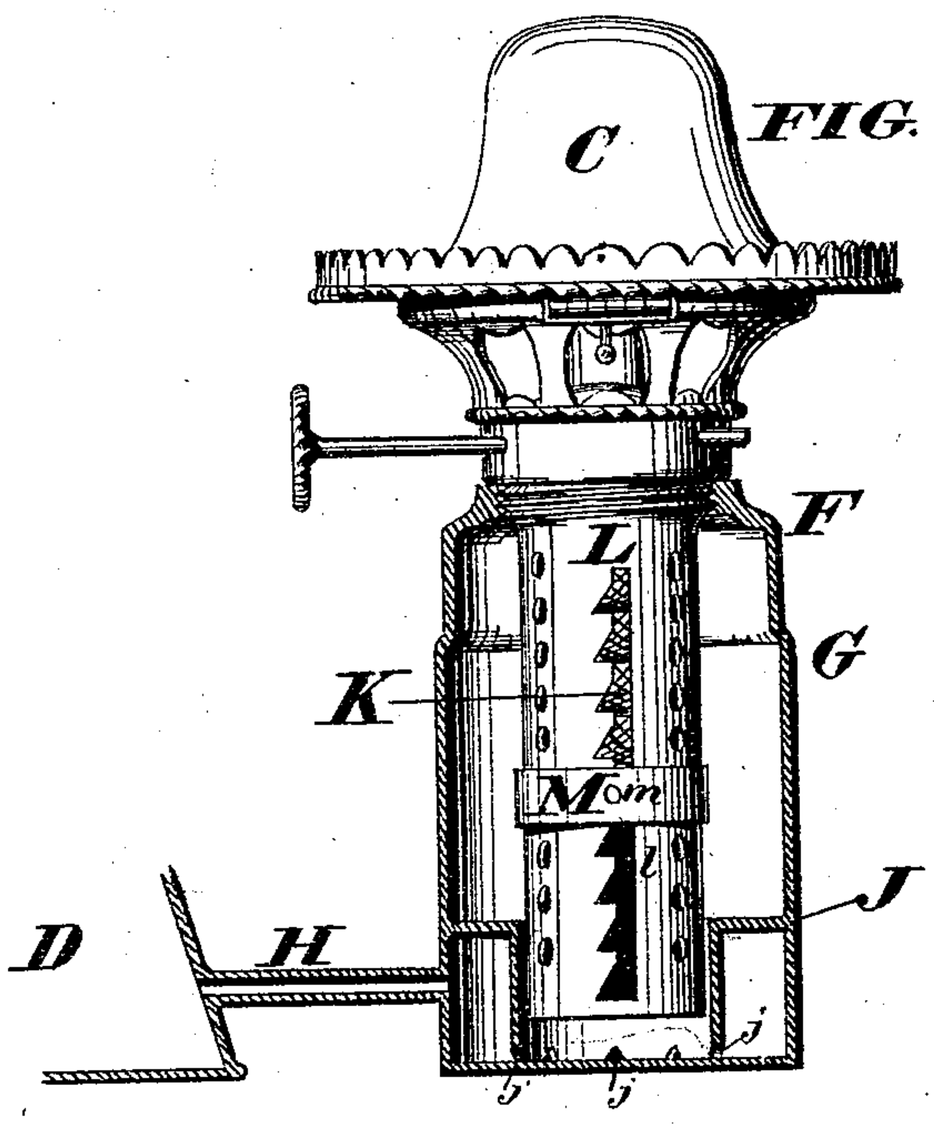
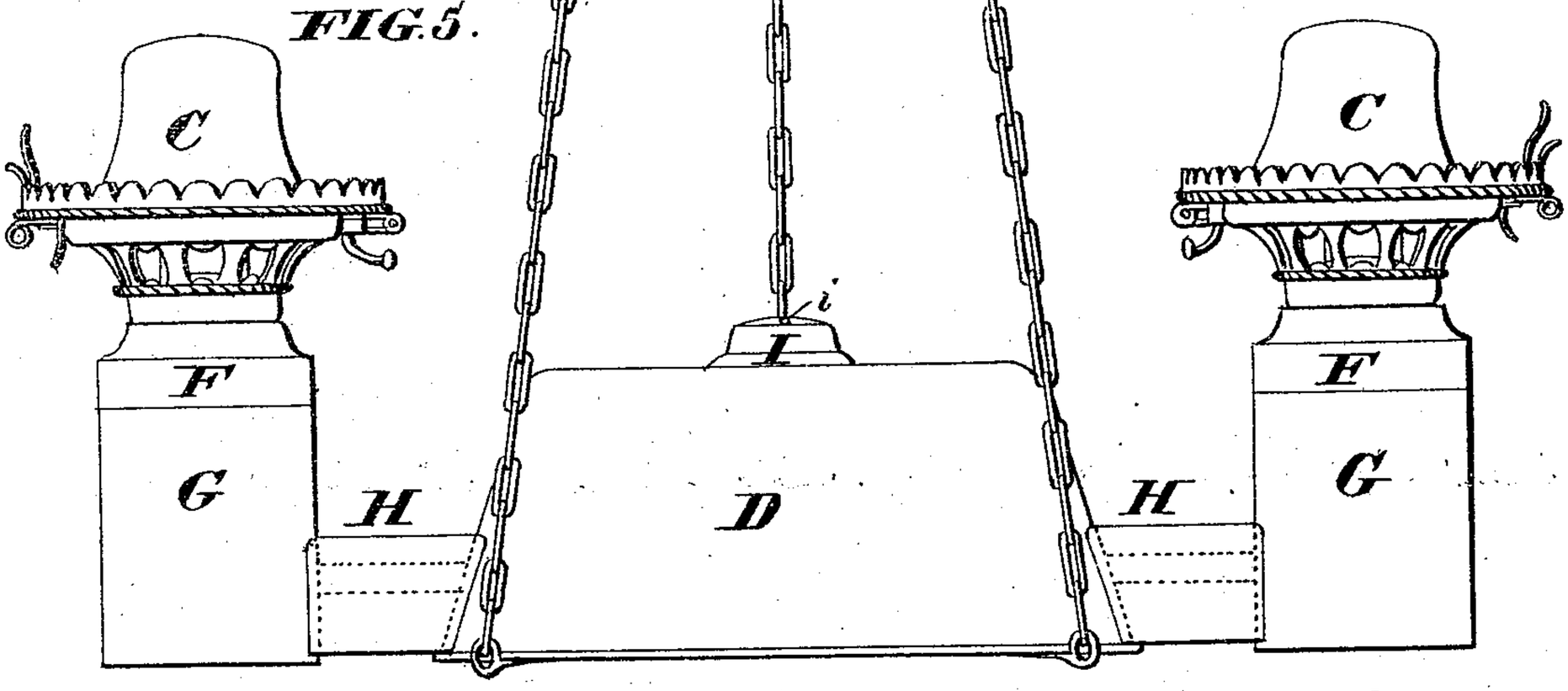


FIG. 5.



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UNITED STATES PATENT OFFICE.

JOHN D. MURPHY AND MICHAEL McNAMEE, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN STREET-LAMPS.

Specification forming part of Letters Patent No. **153,493,** dated July 28, 1874; application filed June 19, 1874.

To all whom it may concern:

Be it known that we, JOHN D. MURPHY and MICHAEL MCNAMEE, both of the city of Baltimore, in the State of Maryland, have invented a certain new and useful Improvement in Lamps for Lighting Streets and Alleys, and for other purposes, of which the following is a specification:

This invention relates primarily to a simple, cheap, and compact safety-lamp, adapted for universal use for obtaining the brilliant light of hydrocarbon or kerosene oil without the present fearful liability to accidents.

Notwithstanding the numerous statutes prohibiting the sale of explosive oil, the accidents from its use have continued, and, it is confidently believed, will continue until some safe means for using these cheap kinds of kerosene oil is introduced. To provide such means is, as before stated, the primary object of the present invention.

The invention relates, further, to means for automatically extinguishing the light at any hour which may be fixed on, to prevent waste. Thus, in street-lamps, the lights will be extinguished automatically in the morning, or at such hour as the moon may rise, and the lamps be no longer required. The invention also relates to means for securing the glass sides of the lanterns of street-lamps, so that they may be readily introduced and removed to facilitate cleaning and replacing the glass. We are thus enabled to apply the improved safety-lamp to old street-lanterns with facility.

In the accompanying drawing, Figure 1 is an elevation of the head of a street-lamp, illustrating this invention. Fig. 2 is a horizontal section on the line 2 2, Fig. 1. Fig. 3 is a perspective view of one of the glass-fasteners removed. Fig. 4 is a vertical section on a larger scale, representing the modes of feeding the oil to the wick, and of extinguishing the light. Fig. 5 is an elevation of a chandelier, illustrating the application of the invention to other forms of lamps than street-lamps.

A street-lamp constructed according to this invention may have an ordinary post, A, with a lantern, B, of any customary or approved shape to surmount the same. Within this lantern one or more burners, C, of any common or approved form, are arranged, the same having wicks for burning oil. For supplying oil to these burners, a flat reservoir, D, is employed, and this is made to embrace three sides of the square base of an ordinary lantern, the door E of the lantern being arranged at the other side, so as to open without interfering with the reservoir. The reservoir thus constructed is outside of the lantern, and distant from the flames, and its top is at, or slightly below, the collars F, into which the burners are screwed, so that there can be no overflow. The collars F are applied to small cylindrical cups G, which contain merely sufficient oil to keep the wicks saturated. The cups G are connected with the reservoir D by small tubes H, which are, preferably, arranged slightly above the bottom of the reservoir, so that any sediment in the oil may be deposited beneath the mouths of these pipes, and not clog the same. For filling the reservoir, a tight screw-cap, I, is applied thereto, and this is furnished with one or more minute orifices, *i*, to admit air above the oil in the reservoir. The quantity of air thus admitted will not be sufficient to cause the oil to flow from the reservoir as rapidly as it is consumed by the burners; but the suction of the latter is depended on to supply the wicks, the latter conducting the oil to the flame by capillary attraction, as in ordinary wick-lamps. To add still further to the security of the lamp against explosion, safety-guards J are applied within the bottoms of the cups G. These guards consist of rings, ┐-shaped in cross-section, applied within the bottoms of the cups, so as to form circumferential channels in communication with the pipes H. The cylindrical vertical portions of these guard-rings have small notches, *j*, in their lower edges, through which the oil must pass to the wick. A very small surface of oil is consequently exposed within these cups, and no considerable amount of gas can consequently be generated by the heat of the flames as conducted to the oil by the metallic burners and appurtenances. Owing, also, to the provision of these guards, the smallest quantity of oil within the cups G will close the notches *j*, and the guards thus form traps to prevent the access of flame to the reservoir through the connecting-pipes H,

should it become present in the cups. In order to provide for extinguishing the lights when they are no longer required, the wicks K are inclosed in perforated tubes or holders L, depending from the burners within the cups G. The lower ends of these holders occupy the central spaces in the guard-rings J, so that the access of flame to the exposed surface of oil in the cups shall be still further prevented. The lights are extinguished automatically by the oil in the cups G falling below the wicks, owing to its consumption; and in order to provide for varying and determining the time at which the lights shall be extinguished, the wick-holders L are provided with vertical slots *l*, having lateral notches, and rings M, having cross-bars *m*, are applied to the wick-holders, the cross-bars *m* occupying the vertical slots *l* and passing through the wicks. The notches in the vertical slots *l* may represent hours, and by adjusting the rings M vertically to any given notch the number of hours which will elapse before the oil falls below the wicks may be increased or lessened. This is accomplished by the wicks following the cross-bars *m* and folding within the upper ends of the wick-holders as the cross-bars are elevated, or unfolding and extending downward within the wick-holders as the rings are lowered. This does not interfere in the least with raising and lowering the wicks to regulate the flames. Loose pins in vertical series of perforations, or any similar device, may take the place of the rings and vertical slots, if preferred.

The lamps will be trimmed each day, and the reservoir D filled with oil, which may be of the kind considered dangerous in ordinary lamps. This is supplied to the wicks as it is consumed by the flames, and at the appointed hour for which the time-rings M or their equivalents have been adjusted the surface of oil falls below the wicks, and the latter cease to burn. The time-rings or their equivalents may be readily and quickly adjusted by the lamp-lighters when they trim the lamps, and they render unnecessary a separate visit of the lamp-lighters to extinguish the lights, while they more effectually prevent any waste of oil The mode of feeding the oil serves also to secure uniformity in the brilliancy of light produced.

The principles above described, as regards the mode of supplying oil to the wicks and the mode of extinguishing the lights automatically, either or both, may be applied to other forms of lamps than street-lamps, as illustrated in Fig. 5, which represents a two-burner chandelier.

Like letters of reference indicate corresponding parts of the apparatus.

The number of burners and their appurtenances may be increased, or a single burner may be connected to a flat reservoir in like manner, and in this form the apparatus is adapted for hand-lamps.

The lamps are preferably made of sheet metal, so as to be proof against accidental breakage.

Recurring to the street-lamp, the lantern B is constructed with a light metallic frame, forming apertures in each side, to be closed by glass panels or panes N. As means for securing these panes of glass so that they may be readily applied and removable, the lantern is provided at diagonally-opposite corners with fixed flanges *n*, and at its other corners is provided with vertical slots *o*, having enlarged upper ends; and caps P, Fig. 3, are provided for application to these corners, the same having headed pins or studs *p* projecting inwardly and adapted to occupy the slots *o* in the frame. These corner-caps are applied with the pins at the enlarged upper ends of the slots *o*, and by forcing them downward a short distance they are secured. The glass is first introduced into the fixed flanges *n*, and the caps P are then applied, each cap serving to secure two adjoining panes or panels. The door E has fixed flanges *n* at each edge, its wide upper end, exposed by opening the door, facilitating introducing and removing the glass.

This construction of the lantern provides for readily and quickly introducing the glass and for renewing panes which may be broken, and for removing and replacing the glass, to facilitate cleaning, and so as to secure a neat external appearance, and by means which are not liable to be accidentally broken or displaced.

The arrangement of the reservoir and burner-cups in one and the same horizontal plane is of prime importance, in that it precludes overflow at the burners, and thus dispenses with valves for this purpose, and permits the employment, as herein described, of a safety-guard or flame-trap of simple, and consequently cheap, construction, and which is not liable to become clogged. The employment of simple safety-guards within the burner-cups, in connection with a sediment-chamber at the other ends of the connecting-tubes within the reservoir, is held to preclude clogging, while it provides for inspecting, repairing, or cleaning the guards, if required, with the utmost facility.

The wick-holders operate, with reference to safety-guards within the burner-cups, to preclude the exhaustion of the oil to such an extent as to open passages through the traps. They thus coact with the traps to preclude the access of flame through the connecting-tubes to the interior of the reservoir.

The employment or use of safety-guards or flame-traps, broadly considered, in reservoir-lamps, is hereby disclaimed as old.

The following is claimed herein as new, namely:

1. An annular safety-guard, J, of ⅂ shape in cross-section, having small escape-notches *j* at bottom, and arranged within a burner-cup, G, in combination with a flat reservoir, D, in the same horizontal plane, and a connecting-pipe, H, opening laterally into the receiving-chamber of the flame-trap, formed by the safety-

guard, as herein specified, for the purpose set forth.

2. The combination of the flat reservoir D, one or more burner-cups, G, in the same horizontal plane, connecting-pipes H between the reservoir and cups, the annular safety-guards J, applied to the mouths of the connecting-pipes within the burner-cups, and constructed of ⅂ shape in cross-section, with notches *j* at bottom to form flame-traps, and wick-holders L, operating to insure the continued immersion of the guards, as and for the purpose herein set forth.

3. The combination of the metallic lantern-frame, having fixed flanges *n* and vertical slots *o*, with enlarged upper ends, and the corner-caps P, having inwardly-projecting headed pins or studs *p*, forming, with the slots *o*, concealed points, as herein specified, for the purpose set forth.

4. The combination of the wick-holders L, furnished with the notched vertical slots *l*, and the cross-bars *m* adjustable therein, substantially as herein described, for supporting the wick, so that the light shall be extinguished automatically after determinate intervals, substantially as herein specified.

JOHN D. MURPHY.
MICHAEL McNAMEE.

Witnesses:
OCTAVIUS KNIGHT,
JAS. L. EWIN.