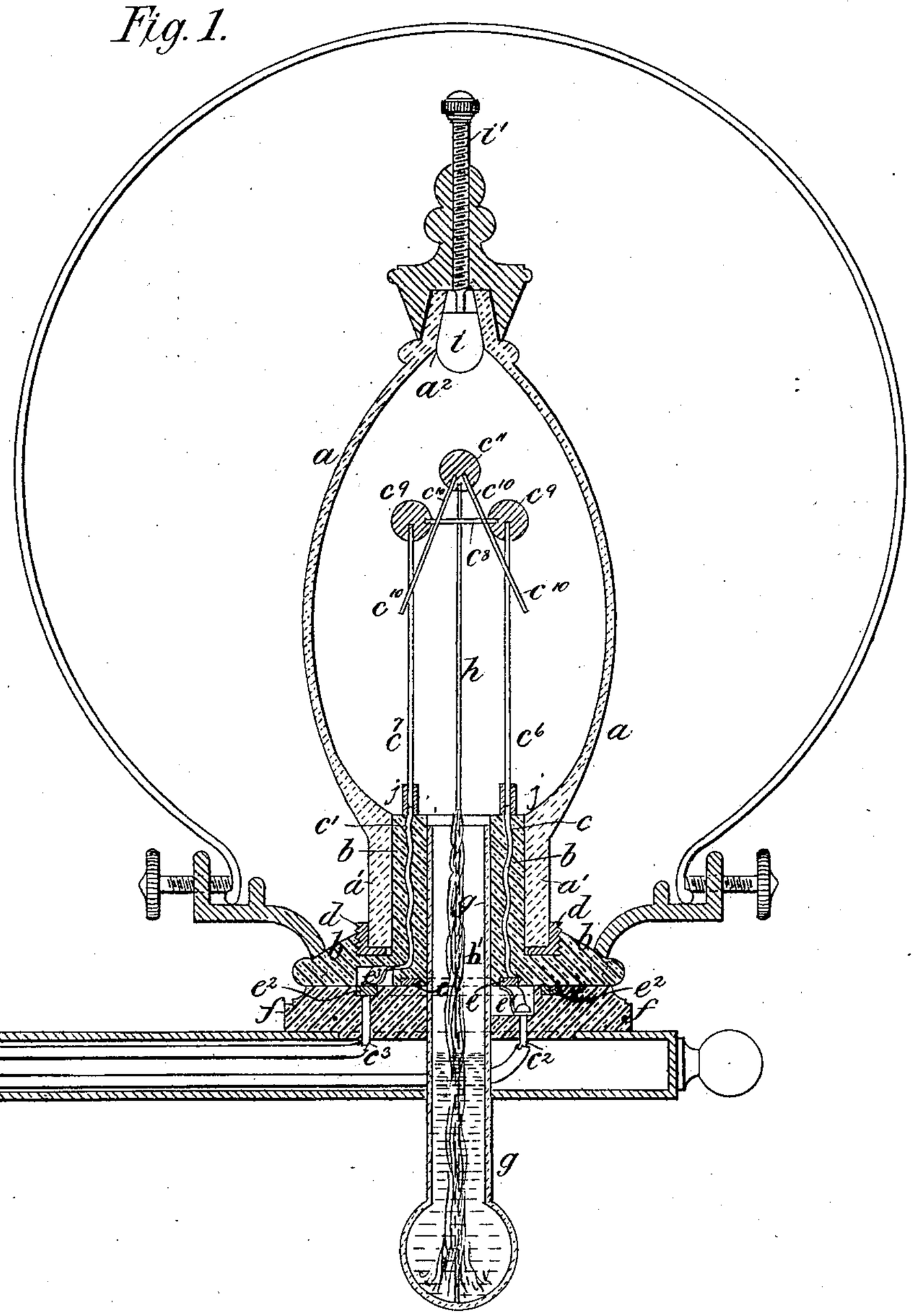
(No Model.) 2 Sheets—Sheet 1.

# P. R. DE FAUCHÉUX D'HUMY.

## INCANDESCENT ELECTRIC LAMP.

No. 282,861. Patented Aug. 7, 1883.

*Fig. 1.*

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by Knight Bros Atty's.

(No Model.) 2 Sheets—Sheet 2.

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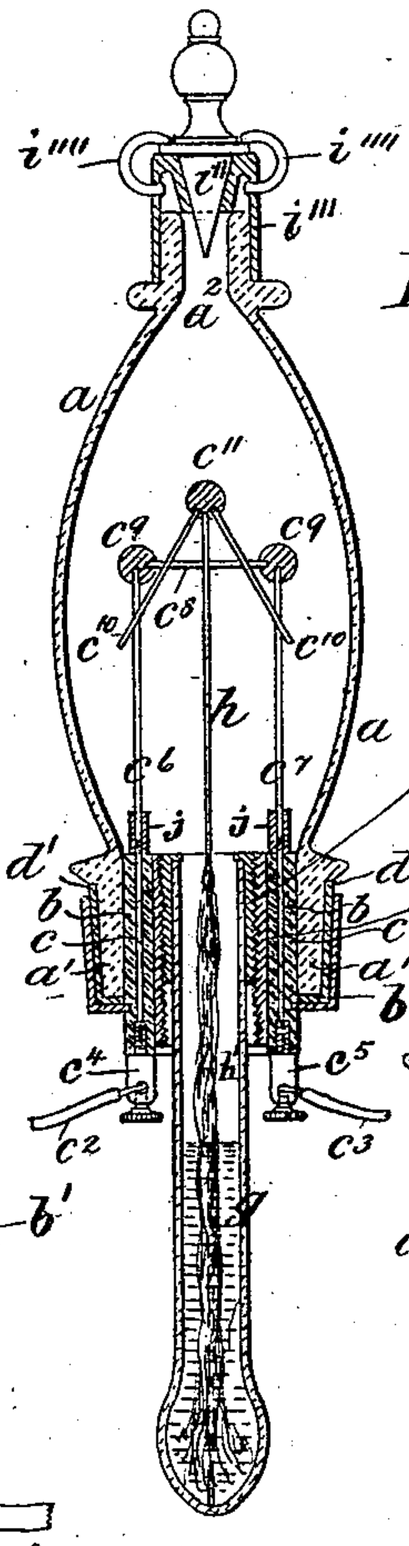


Fig: 2.

Fig: 3.

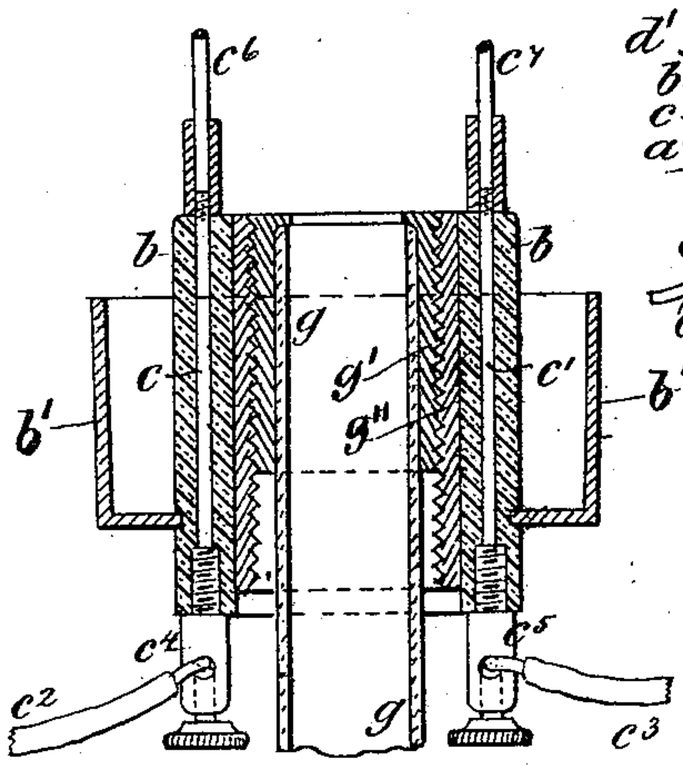


Fig: 5.

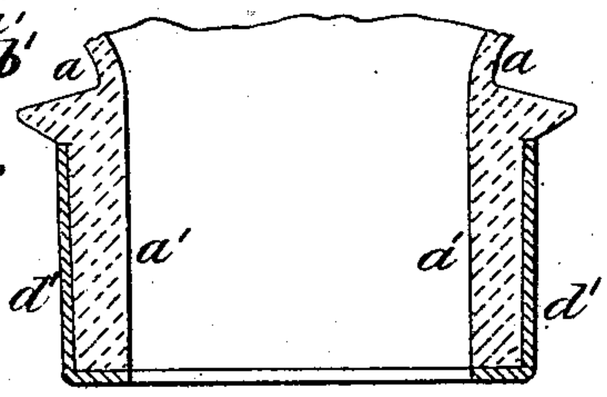


Fig: 4.

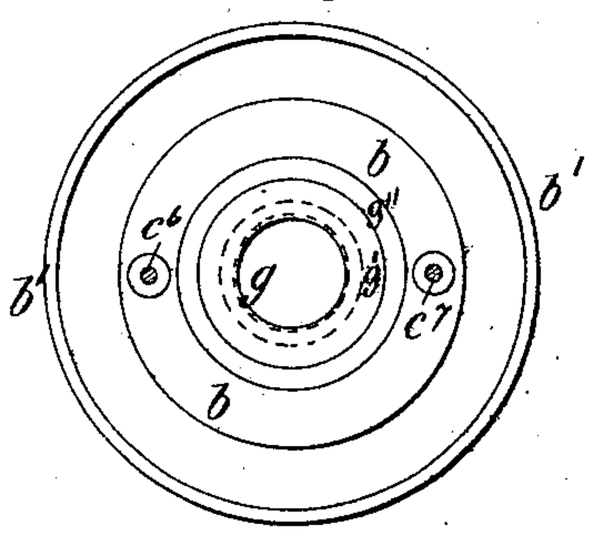
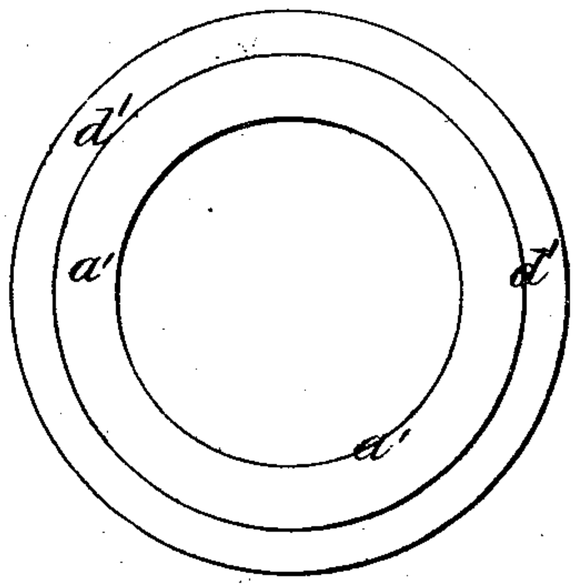


Fig: 6.



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Inventor:
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by Knight Bros Atty's

# UNITED STATES PATENT OFFICE.

PAUL RAOUL DE FAUCHEUX D'HUMY, OF CARLETON MANSIONS, CLAPHAM RISE, COUNTY OF SURREY, ENGLAND.

## INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 282,861, dated August 7, 1883.

Application filed April 19, 1883. (No model.) Patented in England October 14, 1882, No. 4,883.

*To all whom it may concern:*

Be it known that I, PAUL RAOUL DE FAUCHEUX D'HUMY, a citizen of the French Republic, of Carlton Mansions, Clapham Rise, in the county of Surrey, England, have invented certain new and useful Improvements in Electric Lamps, (for which I have received Letters Patent in Great Britain, No. 4,883, dated October 14, 1882,) of which the following is a specification.

The invention has for its object improvements in that class of electric lamps known as "incandescent lamps," and relates to those devices in which means are employed whereby the destruction of the metallic carbon or other filament or other substance composing the burner is delayed or prevented for a considerable period, and the necessity of employing costly and troublesome machinery and processes for producing a vacuum in the glass globe or bulb is obviated, while facility is afforded for cleansing and renewing the various parts of the lamp without the necessity for destroying any part thereof.

In order that my said invention may be clearly understood and readily carried into effect, I will proceed, aided by the accompanying drawings, fully to describe the same.

In the drawings, Figures 1 and 2 are sectional elevations of electric lamps, showing two modifications of my invention. Fig. 3 is a vertical section, and Fig. 4 is a plan, of the lower part of the lamp shown at Fig. 2; and Fig. 5 is a vertical section, and Fig. 6 is a plan, of the lower part or fitting of the glass globe or bulb shown in Fig. 2. Figs. 3, 4, 5, and 6 are drawn to a larger scale than Fig. 2.

Like parts are marked with similar letters of reference in all the figures.

*a* is a glass globe or bulb surrounding the burner. This globe or bulb *a* is formed with an aperture at both top and bottom thereof. The bottom *a'* is passed over a cylindrical insulator, *b*, through which the wires *c c'*, connected with the burner, are passed. The glass globe or bulb *a* is provided at its lower end, *a'*, with a metallic ring or socket, *d*, for facilitating its connection and disconnection with its support *b*.

In Fig. 1 the bottom of the insulating-support *b* is provided with a contact-ring, *e*, in connection with the wire *c*, and said ring *e*, by a spring contact-piece, *e'*, is capable of connection and disconnection with the wire $c^2$, while a contact-ring, $e^2$, is fixed to the ebonite or other insulating-support, *f*, and the wire *c'* is capable of connection and disconnection with the ring $e^2$, and consequently with the wire $c^3$, through a spring contact-piece, $e^3$.

In Fig. 1 the ring or socket *d* is shown provided with a screw-thread to enable it to be screwed into its support *b*.

In Figs. 2 to 6 the ring or socket *d'* is shown cylindrical, and to fit tightly into its support *b'* without screwing, and in the latter case the wires *c c'* are shown connected at their lower ends to terminals $c^4$ $c^5$, with which the wires $c^2$ $c^3$ can be connected or disconnected by binding-screws.

Into or through the center of the cylindrical insulator *b* is passed the open upper end of a glass or other vessel, *g*, which is capable of being raised and lowered and retained in any desired position by simple friction with the socket-sides of the insulator, as shown at Fig. 1; or it is secured to an externally-screw-threaded tube, *g'*, adjustable by screwing in an internally-screw-threaded tube, *g''*, as shown at Figs. 2, 3, and 4. This vessel *g* is supplied with any suitable hydrocarbon fluid or other material capable of giving off carbon or hydrocarbon. A wire strip, stick, or tube, *h*, from the burner is passed down into the hydrocarbon fluid or other substance in the vessel *g*, and is supported in the bottom of such vessel, and a wick, *h'*, dipping into such fluid, (when the latter is employed,) is carried a short distance up the said wire strip, stick, or tube *h*.

The aperture at the upper part, $a^2$, of the glass globe *a* is provided with a valve, *i*, or other closing means capable of being operated from the exterior. In the arrangement represented at Fig. 1 it is shown provided with a screw, *i'*, by which it can be caused to open or close the aperture in the upper part, $a^2$, of the glass globe *a;* but in the arrangement shown at Fig. 2 a valve, *i''*, is shown to rest in its seat in a cap, *i'''*, by the force of gravity, while it is raised from its seat by hand or by any ex-

cessive pressure in the interior of the glass globe *a*. If desired, however, the said valve *i''* may be provided with springs *i''''* to press it to its seat.

The burner is constructed of wire filament or sticks or tubes $c^6$ $c^7$, of metal or of other suitable material, carried upward from the wires *c c'* on each side of the globe or bulb *a*, and connected at their upper ends by a cross-piece, $c^8$. A small globe, $c^9$, of carbon mixed with graphite or other like material, is placed at the upper end of each vertical portion $c^6$ $c^7$ of the filament wire, stick, or tube, and such globes $c^9$ are formed with central holes to fit the parts $c^6$ $c^7$, so that they can rest on the latter by gravity, and as the upper ends of the parts $c^6$ $c^7$ become consumed the globes follow such parts $c^6$ $c^7$ and remain supported thereby; and in order to increase the life of the burner, other wires, filaments, sticks, or tubes, $c^{10}$, are connected to the vertical wires, filaments, sticks, or tubes below the carbon globes $c^9$, and to the horizontal part $c^8$ of the filament wire, stick, or tube, above which they are united and terminate in a third carbon globe, $c^{11}$. Thus whenever the horizontal part $c^8$ of the wire, filament, stick, or tube becomes severed, and the current thereby prevented passing through the same, these latter wires, filaments, sticks, or tubes $c^{10}$ and their carbon globe $c^{11}$ continue to receive the current, and the lamp consequently continues to work.

The wire or strip, stick, or tube *h*, dipping into the hydrocarbon fluid or other material in the vessel *g*, will, when the lamp is in use, convey heat to such fluid or material and cause vapor to be given off therefrom. This vapor will (the top aperture in the globe or bulb *a* being open) first drive out the atmospheric air from the globe or bulb *a*, after which the said top aperture is closed. Then, in the continued working of the lamp, the carbonaceous vapor will continuously deposit a thin layer of carbon on the incandescent filament, wire, stick, or tube $c^6$ $c^7$ $c^8$ $c^{10}$ and on the carbon globes $c^9$ $c^{11}$, and thereby for a long period prevent the destruction thereof, while the hydrocarbon vapor in the globe or bulb *a* will also assist in such operation.

By raising and lowering the vessel *g*, I obtain facility of adjustment, whereby I can, as may be required, adjust the position of the parts $c^{10}$ $c^{11}$ in relation to the parts $c^6$ $c^7$ $c^9$ of the burner when the burner is first about to be used, and afterward to maintain the correct relation of such parts as the parts $c^6$ $c^7$ become shorter by combustion at their upper ends. The parts $c^6$, $c^7$, and $c^{10}$ are so formed or sprung toward each other as to enable the part $c^{10}$ to to be raised and lowered, and yet to retain such parts constantly in contact.

When desired, the glass globe or bulb *a* can be removed from the cylindrical insulator *b*, and all parts of the lamp can then be cleansed, repaired, or renewed, as may be required. The upper ends of the wires *c c'* are preferably provided with sockets *j*, as shown, to receive the vertical portions $c^6$ $c^7$ of the burner, thereby enabling the latter to be readily renewed when required.

The metallic wire or filament or other material forming the burner may be still further protected by applying thereto a coating composed of lime, carbon, plumbago, or graphite, separately, or of two or more of them combined in about equal proportions.

Having thus described the nature of my said invention and the manner in which I carry the same into effect, I would have it understood that what I claim is—

1. The combination, in an electric lamp, of the vessel *g*, insulator *b*, supporting the vessel, a suitable globe fitting around the insulator, a burner within the globe, and a device, *h*, connecting the burner with the interior of the vessel, as set forth.

2. In an electric lamp, the combination of a vessel, *g*, insulator supporting the vessel, a globe having an opening at bottom to fit over the insulator and an opening at top to permit the atmospheric air to escape, valve closing said top opening, a burner within the globe, and a device, *h*, connecting the interior of the vessel with the burner, as set forth.

3. In an electric lamp, the combination of a vessel, *g*, insulator supporting the vessel, a globe having an opening at top, valve *i* closing said top, screw *i'* for adjusting the valve, a burner within the globe, and a device, *h*, connecting the interior of the vessel with the burner, as set forth.

4. In an electric lamp, the combination of a vessel, *g*, for containing hydrocarbon, and adjustable in its support, a burner having an adjustable portion, and a device, *h*, resting on the bottom of the vessel, connected to the adjustable portion of the burner to support the latter, and adjustable with the vessel, as set forth.

5. In an electric lamp, the combination of vessel *g*, burner, and device *h*, having a wick, *h'*, dipping into the vessel, as set forth.

6. In an electric lamp, the combination of insulator *b*, socket *d*, screw-threaded insulator, and globe *a*, having opening fitting over the insulator and seated in the socket, as set forth.

7. In an electric lamp, the combination, with insulator carrying wires *c c'*, of the burner formed of wire filaments $c^6$ and $c^7$, cross-piece $c^8$, and globes $c^9$ $c^9$, of carbon or analogous material, fitted to the cross-piece, and formed with central holes to fit the filaments to adapt the globes to descend by gravity as the filaments are consumed, as set forth.

8. In an electric lamp, the burner consisting of vertical filaments $c^6$ and $c^7$, cross-piece $c^8$, globes $c^9$ $c^9$, connecting the cross-piece and filaments, supplemental globe $c^{11}$, and supplemental filaments $c^{10}$ $c^{10}$, connecting the supplemental globe, cross-piece, and vertical filaments, as set forth.

9. In an electric lamp, the combination of the burner consisting of vertical filaments $c^6$ and $c^7$, cross-piece $c^8$, small globes $c^9$ $c^9$, supplemental filaments $c^{10}$ $c^{10}$, and supplemental small globe $c^{11}$, the vessel $g$, and device $h$, connecting the supplemental small globe to the interior of the vessel, as set forth.

10. In an electric lamp, the means for connecting the vessel $g$ to the insulator, consisting of externally-screw-threaded tube $g'$ and internally-screw-threaded tube $g''$, as set forth.

11. In an electric lamp, the combination, with suitable connecting-wires, of the insulator $b$, carrying wires $c$ $c'$, contact-ring $e$, and spring contact-piece $e'$, and the insulating-support $f$, having contact-ring $e^2$, spring contact-piece $e^3$, and wires $c^2$ $c^3$, as set forth.

P. D'HUMY.

Witnesses:
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