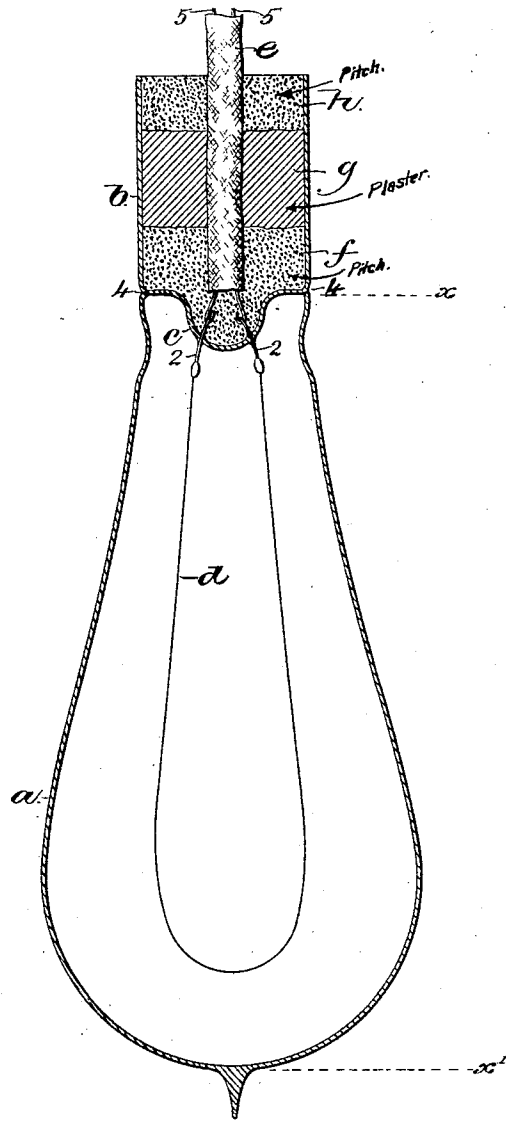


(No Model.)

I. J. FLAGG.  
INCANDESCENT ELECTRIC LAMP.

No. 452,780.

Patented May 26, 1891.



Witnesses.

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# UNITED STATES PATENT OFFICE.

ISAAC J. FLAGG, OF CLINTON, MASSACHUSETTS.

## INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 452,780, dated May 26, 1891.

Application filed September 17, 1890. Serial No. 365,207. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC J. FLAGG, of Clinton, county of Worcester, State of Massachusetts, have invented an Improvement in Incandescent Electric Lamps, of which the following description, in connection with the accompanying drawing, is a specification, like letters and figures on the drawing representing like parts.

In electric incandescent lamps as now commonly made the conducting wires or terminals are led through plaster-of-paris or some equivalent moisture-conducting substance, and such lamps cannot be used for any considerable time in dye-houses, bleacheries, and damp places, for moisture or dampness collecting in the said plaster-of-paris travels therein and short-circuits the lamp, extinguishing the light. In my experiments to obviate the trouble I have inclosed the conducting or terminal wires in a cable having an insulated sheath or covering, and where the conductors or terminals are laid bare within the socket of the lamp to enable them to be connected with the usual platinum wires in communication with the usual carbon filament I have embedded the said bared terminals and the platinum wires in a water and moisture proof insulating material.

To enable the weight of the lamp to be sustained by the insulated cable or suspensory I have applied some plaster-of-paris or calcium plaster in the socket about the suspensory, but to protect the same from moisture the upper end of the socket is filled in about the suspensory on the insulation thereof with a moisture and water proof material, so that it is impossible for moisture to come in contact with the terminal wires within the socket of the lamp to short-circuit the carbon.

My invention consists in the combination, with the socket of the lamp and its conducting wires or terminals, of water and moisture proof insulation to surround and protect the conducting-wires at their point of contact with the usual platinum wires in communication with the usual carbon filament, substantially as will be described.

The drawing represents in longitudinal section an incandescent electric lamp embodying my invention.

The lamp consists, essentially, of a bulb *a*

and a socket *b* in one piece of glass or vitreous material.

My improved lamp may be made by fashioning the lamp between the lines *a a'* of usual shape and material. The socket *b*, also of glass or vitreous material, has a bottom or end piece *c* containing usual wires *2 2*, with which is connected the usual carbon filament *d*. The closed end of the socket, after platinum wires (with carbon attached) have been inserted in the closed end and the upper open end of the bulb, are by heat brought into a semi-fluid or molten condition, or into such condition that when put in contact they will weld or unite as one piece, the degree of heat to be applied for the purpose being well known to glass-blowers. These two parts *a b*, welded together at their points of contact *4*, become practically one piece without leaving a space or seam, and it is impossible for moisture to enter the lamp from outside the bulb or socket. The conducting-wires *5 5*, laid bare below the insulation or covering *e*, are hooked into the platinum or other usual wires *2*, with which are connected the opposite ends of the carbon *d*. The socket is then filled with an insulating water and moisture proof compound, as at *f*, composed of tar or pitch or some usual kind, the said material covering the bared conducting-wires and preventing the passage of moisture from one to the other, which would short-circuit the carbon and put out the lamp. The upper end of the socket, outside the insulation *e*, is filled or packed with a like tarry insulating and water and moisture proof compound, as *h*, which may be the same as that used about the bared wires. Between these insulating water and moisture proof compounds *f* and *h* the socket has run into it plaster-of-paris or calcium plaster, as at *g*, it being used because of the property it possesses of firmly adhering to glass, it also holding firmly to the insulation *e* and sustaining the weight of the lamp. The insulating-wires or suspensory is flexible and of any desired length, according to the spot where the lamp is to be used.

Having described my invention, I claim—

1. An incandescent lamp having its bulb and socket in one piece of vitreous material and the insulated suspensory containing the conducting-wires, combined with terminals *2*

2 for the lamp and with which the said conducting-wires are joined within the socket, and water and moisture proof insulation, as *f*, surrounding the said terminals and the  
 5 bared conducting-wires at their point of junction within the said socket, substantially as described.

2. The combination, with the bulb of an incandescent lamp, its socket secured there-  
 10 to moisture-tight, and the lamp-terminals extended into the said socket, of an insulated conductor to which the lamp is connected within the socket, the wires of the conductor being connected to the lamp-terminals within  
 15 the socket, and water and moisture proof insulating material within the socket enveloping the lamp-terminals and the conductors to which they are joined, whereby short-circuiting of the lamp at the junction of the terminals and the conductors is obviated, substan-  
 20 tially as described.

3. The combination, with the lamp-socket, its terminals 2 2, and the insulated suspen-

sory having the conducting-wires, of the water-proof insulation *f*, surrounding the con- 25 ducting-wires below the point where the insulation is removed therefrom to be joined with the terminals, and a binder *g*, surrounding the conductor within the socket to secure the lamp to the suspensory, substantially as 30 described.

4. The combination, with the lamp-socket, its wires 2, and the insulated suspensory having the conducting-wires, of the water-proof insulation *f* surrounding the conducting- 35 wires below the point where the insulation is removed, and the binding material *g* and the water-proof insulation above it in the said socket, substantially as described.

In testimony whereof I have signed my 40 name to this specification in the presence of two subscribing witnesses.

ISAAC J. FLAGG.

Witnesses:

THOMAS J. KEATING,  
 JEROME A. CRANE.