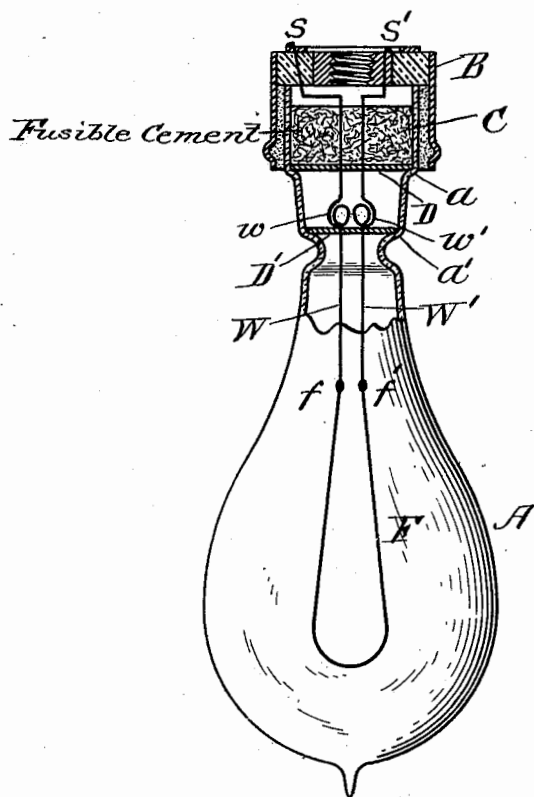


(No Model.)

W. E. NICKERSON.  
INCANDESCENT ELECTRIC LAMP.

No. 507,558.

Patented Oct. 31, 1893.



WITNESSES

*Frank M. Parker*  
*Frank G. Hattie*

INVENTOR

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# UNITED STATES PATENT OFFICE.

WILLIAM EMERY NICKERSON, OF CAMBRIDGE, MASSACHUSETTS.

## INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 507,558, dated October 31, 1893.

Application filed August 5, 1893. Serial No. 482,469. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM EMERY NICKERSON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Incandescent Electric Lamps, of which the following, taken in connection with the accompanying drawing, is a specification.

My invention relates to incandescent electric lamps of that class in which the neck of the lamp bulb is closed air-tight by a plug of fusible cement, and has especially to do with the composition of the cement of which the plug is made.

My invention is illustrated in the accompanying drawing, which represents, partly in vertical section and partly in side elevation, an incandescent electric lamp of the class referred to.

In the drawing, A is the glass bulb of the lamp, and C is the plug of fusible cement, which is poured into the lamp neck in the melted state, and which is supported while soft by the disk D, of mica or other suitable material. The disk D rests upon the shoulder *a*, formed in the neck of the lamp bulb.

F is the filament, attached at *f* and *f'* to the leading-in wires W and W'.

D' is a heat-reflecting disk, located in the lamp neck, between the cement plug and the filament, for the purpose of protecting the former from the radiant heat of the latter, and rests upon the shoulder *a'*, formed in the neck of the lamp bulb, from which it is prevented from rising by the coils *w* and *w'*, in the leading-in wires W and W'. The wires W and W' are attached at S and S' to the proper parts of an ordinary base or cap B, which surmounts the lamp neck and to which it is secured by plaster in the usual manner.

It has been customary heretofore, to make the cement plug C of some resinous substance like ordinary rosin, copal, &c., whose flexibility and adhesiveness have been increased by the addition of a quantity of a suitable oil, as linseed for example. I prefer to use as the basis of my cement a compound consisting of pine rosin chemically combined with oxide of lime, which has been subjected to the action of a vacuum at a temperature considerably above its melting point, mixed

with a quantity of sand, in such proportion that it a little more than fills the spaces between the sand particles, as set forth in my patents No. 501,530, dated July 18, 1893; No. 501,531, dated July 18, 1893, and No. 500,075, dated June 20, 1893.

When oils (which are liquid at ordinary temperatures), are used for imparting flexibility and adhesiveness to the cement; there is a gradual softening of the cement as the heat increases from ordinary temperatures upward, so that considerably below the actual melting point of the cement, it becomes too soft to obtain the best results. When, however, a fatty body which is solid at ordinary temperatures, for example, below 80° or 90°, there is no perceptible softening of the cement until a heat somewhat above the melting point of the fatty body itself is reached. As the temperature of the cement plug of a lamp of the class described, if properly constructed, is not above 100° while in operation, the cement thus composed remains entirely unaffected, while one containing an oil, in sufficient quantity to obtain the desired flexibility, softens considerably. I have found by experiments, that stearic acid is well adapted for the purpose. Its melting point is about 150° Fahrenheit, which is considerably above the normal temperature of the cement plug of an operating lamp of the class described. Stearin, paraffine, and other fatty bodies which are solid at ordinary temperatures may be used, but I prefer stearic acid. These solid fats impart to the resinous base, flexibility and adhesiveness in an equal, if not superior degree, as the oils, while they do not tend to lower the melting point of the cement to nearly so great an extent whereby much advantage is gained from their use, since it is very desirable to keep the melting point of the cement as high as is consistent with the necessary flexibility and adhesiveness.

The gist of my invention consists, in rendering the resinous cement by which the neck of an incandescent lamp is closed air-tight, flexible and adhesive by the addition of a solid fat or fatty acid, whereby the greatest flexibility and adhesiveness combined with the highest melting point is secured.

I claim—

1. In an incandescent electric lamp, the neck of which is adapted to be closed air-tight by a plug of fusible cement, a cement plug composed of a resinous body made flexible  
5 and adhesive by fat solid at ordinary temperatures, substantially as and for the purpose set forth.

2. In an incandescent electric lamp, the combination of the glass bulb A having a neck  
10 adapted to be closed air-tight by a plug of fusible cement, the filament F, and the leading-in wires W and W'; with the cement plug

C composed of a resinous body made flexible and adhesive by a solid fatty body as stearic acid, substantially as and for the purpose set forth. 15

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 3d day of August, A. D. 1893.

WILLIAM EMERY NICKERSON.

Witnesses:

FRANK G. PARKER,  
FRANK G. HATTIE.