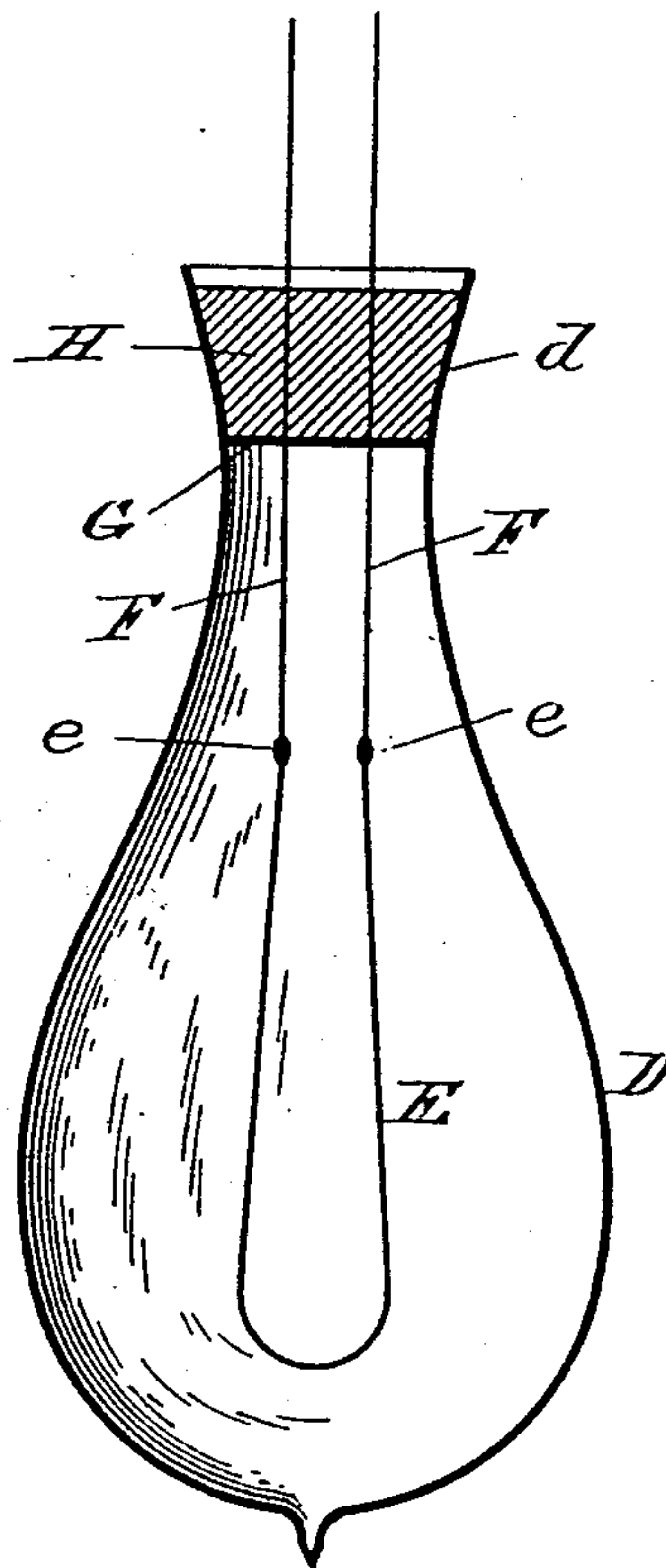


(No Model.)

W. E. NICKERSON & E. E. CARY.
INCANDESCENT ELECTRIC LAMP.

No. 501,530.

Patented July 18, 1893.



WITNESSES.

Franklin Parker.
Frank G. Vailie

INVENTORS.

William Emery Nickerson
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by
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UNITED STATES PATENT OFFICE.

WILLIAM EMERY NICKERSON, OF CAMBRIDGE, AND EDWARD EGBERT CARY,
OF BOSTON, MASSACHUSETTS.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 501,530, dated July 18, 1893.

Application filed March 31, 1893. Serial No. 468,554. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM EMERY NICKERSON, of Cambridge, county of Middlesex, and EDWARD EGBERT CARY, of Boston, county
5 of Suffolk, 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.

10 Our invention relates to an incandescent electric lamp, and pertains especially to the composition of a cement whereby leading-in wires, which may be of any metal, can be sealed in the lamp air-tight, rendering the use
15 of platinum unnecessary.

The resin of the southern pine known in commerce as rosin, as well as that of many other trees, consists largely of an organic body taking the part chemically of an acid, that is
20 to say, having the power to combine with a base to form a chemical salt. Ordinary rosin is largely composed of a substance known as pinic acid. This acid has the property of chemically combining with the oxides of the
25 alkaline earths, of which that of the lime is well adapted, to form compounds whose physical appearance very closely resembles that of rosin itself, but which contain when pure, no very volatile constituents, and their melting
30 points are very much higher than that of rosin, being nearly 350° Fahrenheit. This chemical compound of pinic acid and oxide of an alkaline earth, and which when lime is used contains about twenty per cent. of the latter, we use as the basis of our new cement for incandescent electric lamps. It is transparent,
35 which indicates its lack of porosity. It has a vitreous fracture and a convenient melting point, not sufficiently low to be readily affected by the temperature attained in the neck of an incandescent lamp, and not so high but that it may be easily poured into the neck of the lamp globe in a thoroughly fused state. It is, however, when used alone ex-
40 ceedingly brittle and liable when in masses to split into fragments from its own contraction, upon cooling down from the melted state. Further it has comparatively little adhesion to the glass of the lamp globe. These obsta-
50 cles we overcome by adding from one quarter to one-half its weight of some suitable oil, as

linseed, which imparts to it the required adhesiveness and flexibility without diminishing its imperviousness.

The accompanying drawing illustrates the
55 construction of an incandescent electric lamp in which our cement may be used.

D is the glass globe of the lamp having a conical neck *d*.

E is the filament connected at *e e* with the
60 leading-in wires F F. The wires F F pass through the disk G which fits loosely within the conical neck of the lamp globe.

H is a plug of our fusible cement by which the lamp globe is rendered air-tight and which
65 is poured into the neck of the lamp upon the disk while in the melted state.

The characteristics of our improved cement are radically different from a mere mechanical mixture of air slaked lime, or other lime
70 powder, and rosin, in which the lime powder is merely held together by the adhesive properties of rosin or rubber, and oil, which mixture has been heretofore used as a protective covering in electrical appliances. Such a me-
75 chanical mixture would not be suitable for use in making an air-tight seal in an incandescent lamp. The mechanical mixture with lime powder would not raise the melting point
80 of the resinous portion, but would destroy the transparency and imperviousness of the rosin, and would render it pasty and prevent it from becoming sufficiently fluid to make a proper contact with the neck of the
85 globe, or even from flowing into it at all. Neither would it prevent the rosin from eliminating rosin oil and vapors within the lamps when subjected to heat, while lime chemically combined with the pinic acid of the rosin and properly prepared, raises the melting point
90 and prevents the formation of vapors at the moderately elevated temperature of an operating lamp.

We claim—

1. In an incandescent electric lamp, the
95 combination of a glass globe having a neck adapted to be closed air-tight by fusible cement; with a sealing of fusible cement, composed of rosin chemically combined with lime, and a suitable oil, substantially as and for
100 the purpose set forth.

2. In an incandescent lamp, the combina-

tion of the glass globe B having a neck adapted
to be closed by fusible cement, the filament
E and leading-in wires F F; with the disk G
and the fusible cement plug H, said cement
5 being composed of rosin chemically combined
with lime, and a suitable oil, substantially as
and for the purpose set forth.

In testimony whereof we have signed our

names to this specification, in the presence of
two subscribing witnesses, on this 29th day of 10
March, A. D. 1893.

WILLIAM EMERY NICKERSON.
EDWARD EGBERT CARY.

Witnesses:

FRANK G. PARKER,
FRANK G. HATTIE.