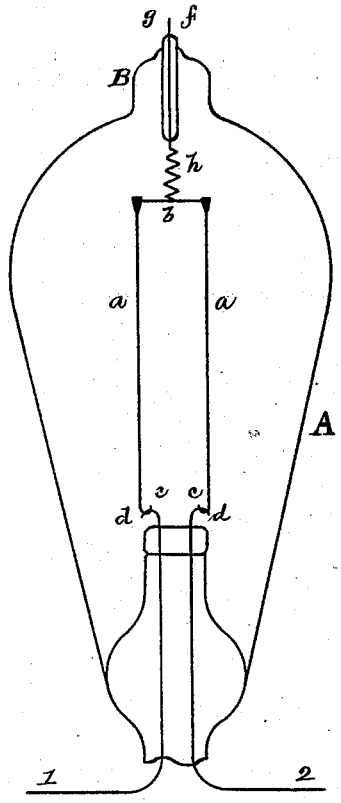
(No Model.)

T. A. EDISON.

INCANDESCENT ELECTRIC LAMP.

No. 317,633. Patented May 12, 1885.



ATTEST:
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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO THE EDISON ELECTRIC LIGHT COMPANY, OF NEW YORK, N. Y.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 317,633, dated May 12, 1885.

Application filed November 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Incandescent Electric Lamps, (Case No. 507,) of which the following is a specification.

In my application No. 506 (Serial No. 76,378) I have set forth various means by which the flexible carbon filament of an incandescing electric lamp may be removably attached to the leading-in wires. The object I now have in view is to provide, in connection with such removable connections, means for compensating for the expansion and contraction caused by the heating and cooling of the filament, so as to prevent any bending or breaking of such filament. I prefer to accomplish this by attaching to the filament a spiral spring whose tension is in the same direction as the expansion and contraction of the filament, and such spring being also firmly attached to the glass of the lamp-globe, so that when the filament expands the spring will contract, and when the filament contracts the spring will lengthen.

My invention is illustrated in the annexed drawing, in which the figure is an elevation of a lamp embodying the invention.

The incandescing conductor consists of two straight filaments of carbon, *a a*, connected by a wire, *b*, at their upper ends. To the other end of each is attached a hook, *c*. The ends of the leading-in wires 1 2 are formed into corresponding hooks, *d d*. The filament is inclosed in the glass vacuum-chamber A, at whose top is the projection B, of sufficient diameter to allow the incandescing conductor to pass through it when the glass is cut or otherwise removed from the top of said projection.

A glass tube, *f*, is sealed in the top of the globe, and a platinum wire, *g*, is sealed in said tube. The wire *g* terminates in a spring, *h*, which is attached to the wire *b*. Such spring serves to keep the hooks in good electrical and mechanical contact, to keep the carbon upright, and to compensate for the expansion and contraction of the carbon.

What I claim is—

1. In an incandescing electric lamp, the combination, with the carbon filament, of removable connections with the leading-in wires and a tension-spring drawing upon such filament, to compensate for the expansion and contraction of the filament, substantially as set forth.

2. In an incandescing electric lamp, the combination, with the straight carbon filaments connected by a wire, of the tension-spring attached to said wire and sealed in the glass of the inclosing-globe, substantially as set forth.

3. In an incandescing electric lamp, the combination, with the straight carbon filaments connected by a wire, of the tension-spring attached to said wire and sealed in the glass of the inclosing-globe, and removable connections between said filaments and the leading-in wires, substantially as set forth.

This specification signed and witnessed this 26th day of October, 1882.

THOS. A. EDISON.

Witnesses:

WM. H. MEADOWCROFT,

H. W. SEELY.