T. A. EDISON.
Electric-Light.

No. 219,628. Patented Sept. 16, 1879.

Fig. 1.

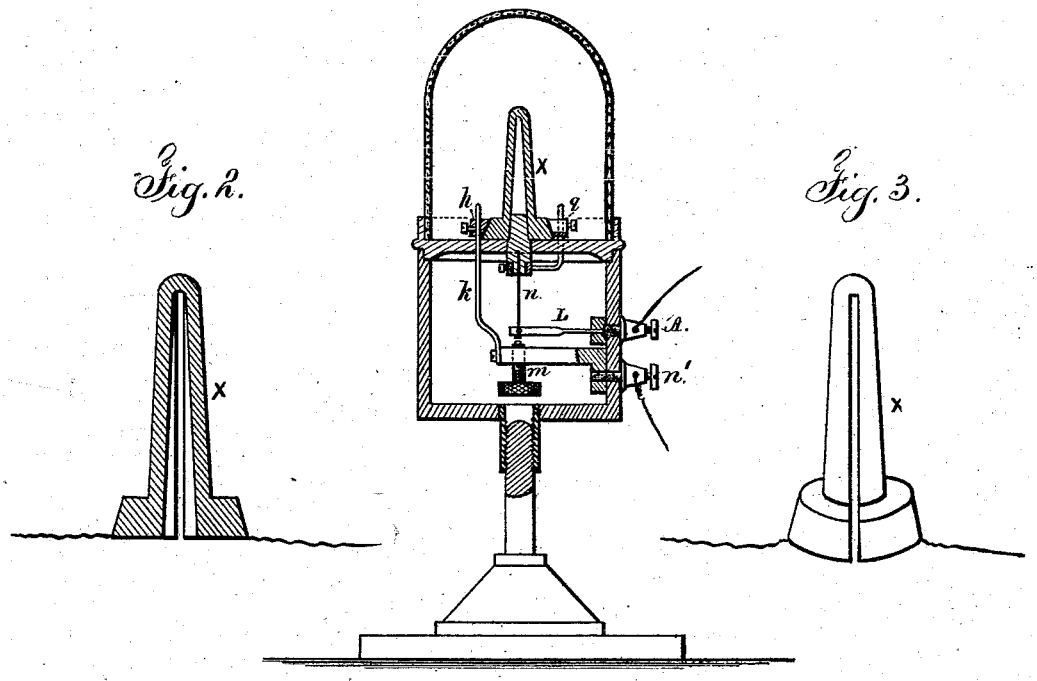


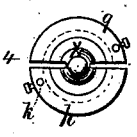

Fig. 2.




Fig. 3.




Fig. 4




Witnesses

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# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

## IMPROVEMENT IN ELECTRIC LIGHTS.

Specification forming part of Letters Patent No. **219,628**, dated September 16, 1879; application filed December 9, 1878.

*To all whom it may concern:*

Be it known that I, THOMAS ALVA EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented an Improvement in Electric Lights, and the following is declared to be a description of the same.

The object of this invention is to produce a candle or light-giving body by the incandescence of a conductor of electricity in the form of a cylinder, prism, or other mass of a size adapted to yield the required volume of light.

The invention consists in an electric-light-giving body formed of a conductor, such as finely-divided platinum, iridium, ruthinium, or other metal difficult of fusion, incorporated with non-conducting material.

The candle, made as aforesaid, can be of any desired size or shape, and the metallic particles become incandescent by the passage of the current, and the non-metallic materials are luminous and increase the brilliancy. This is accomplished by a comparatively small electric current. I mix with such finely-divided conductors infusible materials—such as oxide of magnesium or zirconium—in different proportions, so as to obtain any degrees of conductivity required.

In some instances I saturate rods, sheets, or other forms of infusible oxides with a salt of the metal difficult of fusion, and reduce the same by heat to a metallic state.

I will mention that the use of a non-conducting material is not absolutely necessary, as the finely-divided metals, owing to their porosity, have high resistance, and become easily incandescent; but I prefer to use the non-conductor.

In Figure 1 is shown a lamp composed of finely-divided iridium mixed with oxide of zirconium and molded in the form of a split hollow cylinder, *x*. Fig. 2 is a detached section of the same. Fig. 3 is a perspective view, and Fig. 4 is a plan view.

The cylinder being split, the current enters the binding-post A, passes through the lever L, through the regulating-wire *n* to the plate *g*, thence up one side of the iridium cylinder *x*, down the other side to the plate *h*, thence, by wire *k*, to the regulating-screw *m* and binding-post *n'*.

The regulation of the temperature of the cylinder *x* is obtained by the thermal-current regulator in the same manner as is shown in my application No. 156, filed October 14, 1878.

The incandescent conductor made in this manner may be of any desired shape.

I claim as my invention—

1. For electric lighting, a conductor of electricity formed of finely-divided metal incorporated with a non-conductor of electricity, substantially as set forth.

2. A rigid electric-light-giving body having a longitudinal incision or separation from the base to near the end, for insuring the circulation of the electric current through the entire body, substantially as set forth.

3. In combination with a rigid light-giving body having a longitudinal incision, an expansive thermal-circuit regulator to control the strength of the current by the heat developed, substantially as set forth.

Signed by me this 3d day of December, A. D. 1878.

THOMAS A. EDISON.

Witnesses:

STOCKTON L. GRIFFIN,

GEO. E. CARMAN.