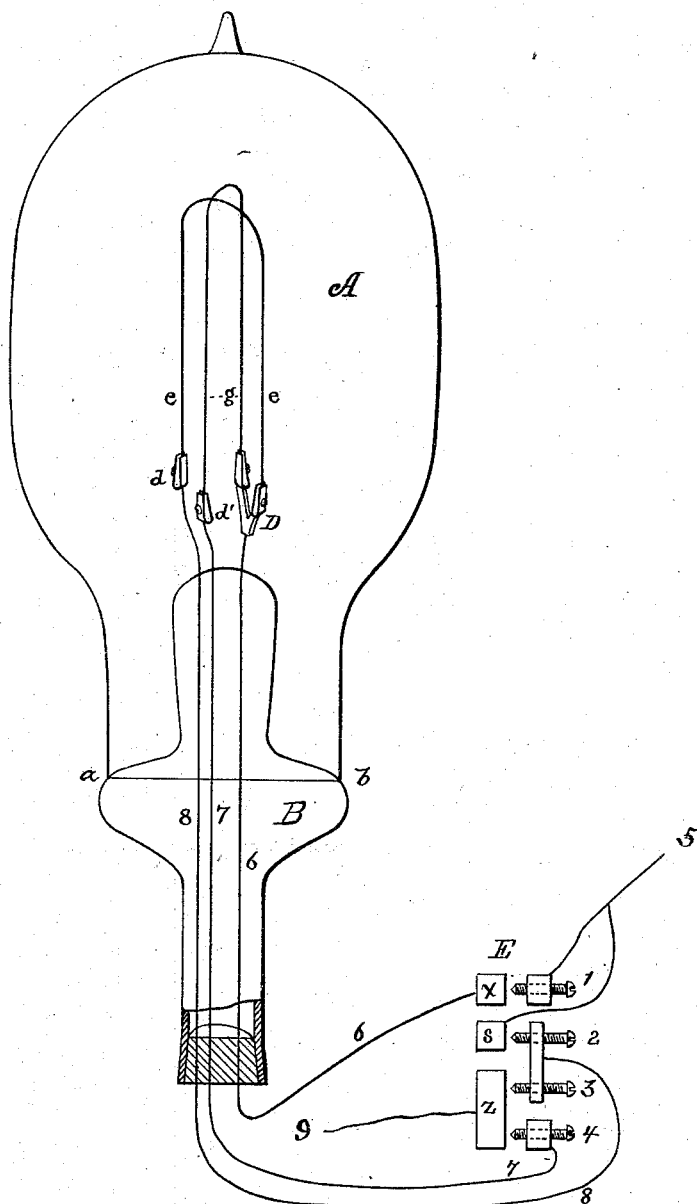


(No Model.)

T. A. EDISON  
ELECTRIC LAMP.

No. 263,135.

Patented Aug. 22, 1882.



Witnesses:

*S. W. Mott*  
*James A. Payne*

Inventor:

*T. A. Edison*  
*per Dyer & Wilbur*  
Attorneys.

# UNITED STATES PATENT OFFICE.

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

## ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 263,135, dated August 22, 1882.

Application filed August 17, 1880. (No model.) Patented in England September 16, 1880, No. 3,765; in Italy November 6, 1880; in Canada November 11, 1880, No. 11,968; in Belgium November 15, 1880, No. 52,890; in Victoria December 13, 1880, No. 2,936; in Austria January 7, 1881; in Queensland February 7, 1881; in New Zealand March 7, 1881, No. 510; in Portugal March 31, 1881, No. 661; in New South Wales April 2, 1881; in Spain April 26, 1881, and in India July 22, 1881, No. 535.

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 Electric Lamps, (Case No. 239;) and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

In the system of electric lighting devised by me I prefer to use an incandescent lamp which shall give a light about equal to a standard gas-jet, say, of eighteen candle-power. In order to insure economy of material in the conductors therefor the incandescing portion is usually of very high resistance. The resistance usually given them is sufficient for any desired economy in ordinarily thickly-settled localities. For use, however, in sparsely-settled neighborhoods—as, say, the outskirts or suburbs of a town or city—it may be desirable to have a lamp by the use of which still greater economy of conductor is attained. In such localities, in order to lessen the number of lights needed in streets, it may be also desirable to have a lamp in which the volume of light is increased, in order that economy in the erection of lamp-posts, &c., may be subserved; and it may also be desirable to use lamps in which the volume of light may be increased in other localities. As there is eventually a limit to the effective life of the carbons used, it seems desirable to so arrange a lamp that the operative life of the lamp may be prolonged beyond the average life of a carbon, to the end that the cost of the labor expended in embodying a carbon in a lamp may be reduced.

The object of this invention is to furnish a lamp which will accomplish the results set forth, as desired, to which end it consists in the features more particularly hereinafter set forth and claimed.

An inclosing-globe is used, made and put together in the usual manner of my lamps. To the inner end of one of the conductors lead-

ing into the lamp is fastened a double clamp—that is, one which is Y-shaped, a carbon being fastened to each limb of the Y-clamp. At the other end each carbon is fixed in an individual clamp, each clamp having its own conductor leading outside of the lamp. The wires leading out of the lamp and the wires leading from a suitable source of electricity are united at a circuit-controlling device constructed so that it may close the circuit through either carbon, the circuit through the other remaining open; or it may close the circuit through both, as carbons in a series; or it may close a circuit through each, the circuits through them being derived or multiple-arc circuits.

In the drawing (one figure) such a lamp is illustrated.

A is the glass globe, and B the supporting-neck united at *a b*. Through the neck B passes the conductors 6 7 8, which are sealed therein. Upon the inner terminal of 6 is the Y-shaped clamp D, in each leg of which is fixed a carbon, *e* or *g*. The other ends of these carbons are in separate clamps, *e* being fastened in the clamp *d* of conductor 8 and *g* in clamp *d'* of conductor 7. These conductors, 6, 7, and 8, and the circuit-conductors 5 9, are connected to a key, E, composed of contact-points 1 2 3 4 and anvils *x s z*, as follows: Circuit-conductor 5 is connected to point contacting with *x*, and to anvil *s*, on which 2 contacts, while 9 is connected to anvil *z*, with which both 3 and 4 may make contact. Conductor 6 is connected to anvil *x*, 7 to point 4, which contacts with *z*, and 8 to 2, which contacts with *s*, and to 3, which contacts with *z*. If points 1 and 3 be put in contact with their anvils *x z*, a circuit is formed, from 5, via 1 *x* 6 D *e d* 8 3 *z*, to 9, the circuit through *g* being open, and *e* only being used for the production of light. If 1 and 4 be closed on *x* and *z*, the circuit is from 5, via 6 D *g d'* 7 4 *z*, to 9, the circuit through *e* being open and *g* alone in circuit and use. If 2 and 4 be closed on *s* and *z*, the circuit is from 5, via *s* 2 8 *e* D *g* 7 4 *z*, to 9, and both *e* and *g* are in one circuit—that is, in series. If 1, 3, and 4 be closed on *x*, *s*, and *z*, the circuit is from

5, *via* 1 *x* 6, to D, where two paths are found, the current consequently dividing, one circuit being D *e* 8 3 *z*, to 9, the other, D *g* 7 4 *z*, to 9, both carbons being in circuit, but each having its own circuit, which is a derived one, so far as the main circuit is concerned. When both are used in multiple arc it is evident that the net resistance of the circuit is one-half the resistance of one, and a certain sized conductor is required. If both are used in series, the resistance is double that of one and four times that of the multiple arc, in which case the conductor may be diminished three-fourths. As the volume of light is that of two ordinary lamps, it is evident that a much less number may be used with the same light-giving result. Thus economy in laying main conductors and in the erection of lamps is secured.

It is evident that as one carbon only may be used at a time, by so using one only at a time the life of a manufactured lamp is practically doubled, for where one carbon has reached its effective limit the circuit there-through is transferred to the other, thus saving the expense involved in sealing one carbon in its globe, the cost of a globe, and of its exhaustion.

It is evident, while only two carbons are shown, that more may be sealed in one globe, D being provided with the same number of clamps, and each carbon provided with a separate return-wire, for which proper connections are made by enlarging key E on the principle shown.

It is also evident that E may be provided with lever-contacts, instead of the screw-contacts used to explain the principle of my invention.

I am aware that it is old to place two or

more carbons within one chamber and connect them so that they shall be rendered incandescent simultaneously, and that it is old to place several carbons in one lamp to be used successively. Therefore I do not claim such.

What I claim is—

1. The combination, in one electric lamp, of two or more incandescing conductors, a single electric circuit leading thereto, and a circuit-controller therein, substantially such as described, adapted to connect the incandescing conductors in series or in multiple arc, as may be desired, substantially as set forth.

2. The combination of a single electric circuit, an electric lamp containing two or more incandescing conductors, and means for throwing the current through any desired incandescing conductor independently of the others, substantially as set forth.

3. The combination, in one electric lamp, of two or more incandescing conductors, a single electric circuit leading thereto, and a circuit-controller therein, substantially such as described, adapted to complete circuit through either of the incandescing conductors independently of the others, or through all simultaneously, substantially as set forth.

4. The combination of an incandescent electric lamp containing two conductors arranged as described, the circuit leading thereto and therefrom, the contact-points 1 2 3 4 and anvils *x s z*, substantially as and for the purposes set forth.

This specification signed and witnessed this 7th day of August, 1880.

THOS. A. EDISON.

Witnesses:

WM. CARMAN,  
OTTO A. MOSES.