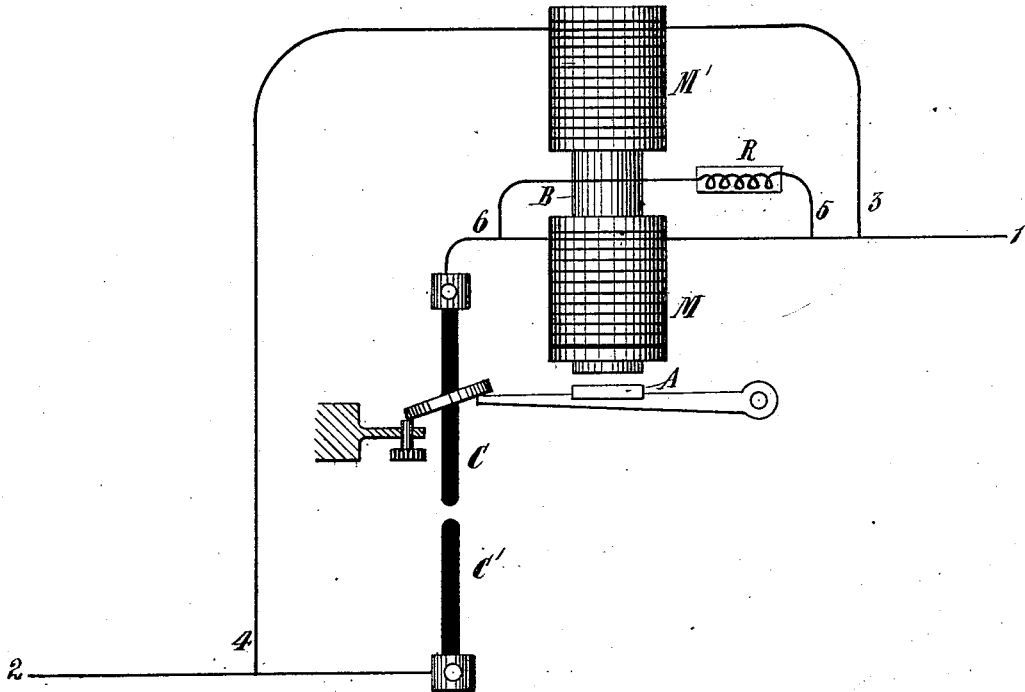


(No Model.)

T. A. EDISON.  
ELECTRIC ARC LIGHT.

No. 297,580.

Patented Apr. 29, 1884.



WITNESSES:

*D. W. Mott*  
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INVENTOR:

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BY  
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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-ARC LIGHT.

SPECIFICATION forming part of Letters Patent No. 297,580, dated April 29, 1884.

Application filed November 28, 1881. (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 Electric-Arc Lights, (Case No. 368;) and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object I have in view is to produce means for governing the regulating mechanism of voltaic-arc lamps which will be simple in construction and efficient in action by the employment of opposing solenoids or electro-magnets having coils of the same resistance.

In carrying out my invention I arrange the coils of one solenoid or electro-magnet in the line or arc circuit, and the coils of the other solenoid or electro-magnet in a shunt-circuit around the carbons and the first solenoid or electro-magnet. Around the solenoid or electro-magnet in the line I form a shunt containing a resistance, which is proportioned to make a proper division of the current and to increase to the required degree the current-carrying capacity of the line over that of the shunt around the arc. This resistance is preferably made adjustable. The coils of the two solenoids or electro-magnets are wound in opposite directions, and may act upon the same or different movable cores or armatures. It will be understood that the magnet or solenoid in the line, while of the same resistance as that in the shunt around the arc, has a greater number of coils in its winding, so as to give it a predominating force when the carbons are in contact. This is accomplished by making the wire of the magnet or solenoid in the line of greater conductivity per unit of length than that of the magnet or solenoid in the shunt, the length being increased to equalize the resistance. Where they act upon the same movable or stationary core, one set of such coils can be wound upon the other.

Heretofore, in regulating arc-lamps by the differential action of opposing solenoids or electro-magnets, one of such solenoids or electro-magnets has been made of low resistance

and placed in the line, while the other solenoid or electro-magnet located in the shunt around the arc has been made of much higher resistance; but by the use of the shunt-circuit around the solenoid or electro-magnet in the line, and by providing the magnet with a greater number of coils in its winding, I am enabled to make both of such solenoids or electro-magnets of the same resistance.

The foregoing will be better understood from the drawing, in which the figure is a diagrammatic view of my arrangement.

1 2 represent the line in which are placed the carbons C C' and the coils of the solenoid or electro-magnet M.

3 4 represent a shunt-circuit around the carbons and the solenoid or electro-magnet M.

In 3 4 are placed the coils of the solenoid or electro-magnet M'. Both M and M' are shown as surrounding the same stationary core B and acting on the same armature A which is arranged to control the regulating mechanism. M and M', being wound in opposite directions, act oppositely upon the core B and armature A.

Around the electro-magnet or solenoid M is a shunt-circuit, 5 6, which is connected with the line on opposite sides of M, and is provided with a proper resistance, R, which is preferably adjustable. When the lamp is first put in circuit, the carbon-points are together; but the passing of the current through the magnet M energizes said magnet, which, acting on the armature A, draws the upper carbon, C, away from the lower one, C', a sufficient distance to cause the formation of the voltaic arc. When the carbons become consumed, however, and the resistance of the main circuit which contains the arc becomes greater, a greater portion of the current flows through the shunt 3 4, energizing the magnet M', which, acting in opposition to the magnet M, causes the armature A to drop and let the carbon C fall the proper distance. It is evident that in practice this operation after the arc is once formed would be a continuous one.

What I claim is—

1. In regulating mechanism for arc-lamps, the combination of the opposing solenoids or electro-magnets located one in the line and the

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other in a shunt around the arc, both of such solenoids or electro-magnets having the same resistance, substantially as set forth.

2. In regulating mechanism for arc-lamps,  
5 the solenoid or electro-magnets of the same resistance located in the line and in a shunt around the arc, in combination with a shunt around the solenoid or electro-magnet in the line, substantially as set forth.

This specification signed and witnessed this 10  
7th day of November, 1881.

THOS. A. EDISON.

Witnesses:

RICHD. N. DYER,  
H. W. SEELY.