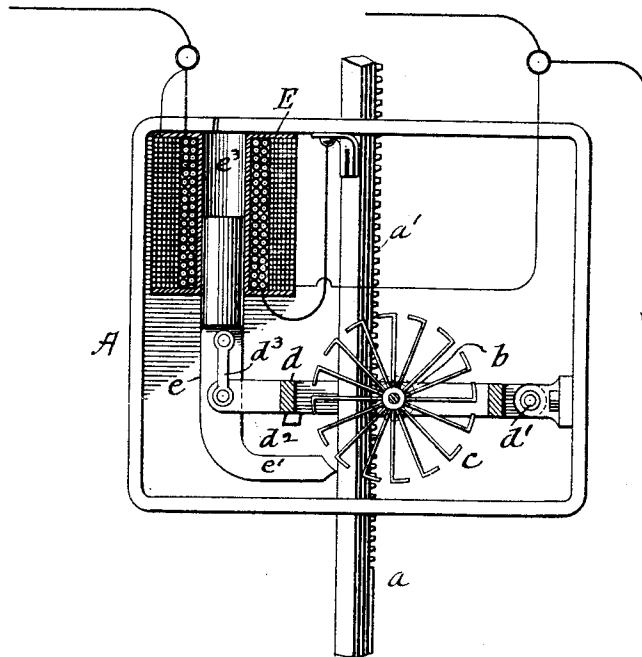


(No Model.)

F. A. PERRET.
ELECTRIC ARC LAMP.

No. 513,725.

Patented Jan. 30, 1894.



WITNESSES:

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FRANK A. PERRET, OF BROOKLYN, NEW YORK.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 513,725, dated January 30, 1894.

Application filed November 7, 1892. Renewed July 15, 1893. Serial No. 480,662. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. PERRET, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electric-Arc Lamps, of which the following is a full, clear, and exact description.

My invention relates to electric arc lamps, the object being to provide simple mechanism for regulating the arc.

In general terms, the invention consists of a train of wheels geared to the upper carbon rod, a rotary armature controlling the movement of said train, a pivoted frame supporting said train, and an electro-magnet connected with the frame and controlling the rotary armature.

In the accompanying drawing, the figure represents a sectional view of the protecting box and the mechanism within constituting my invention.

Referring to the drawing by letter, A represents the ordinary lamp box or casing containing the regulating mechanism.

a is the upper carbon rod provided with a rack a' which engages with a pinion b shown in dotted lines. On the shaft with the pinion is a rotary armature c consisting of a series of flat, iron spokes secured to the hub and having their outer ends bent at right angles as shown, the right angled portions being all in the same circle. These spokes are made, preferably, of sheet iron and are of some considerable width, so that in rotating, their movement will be more or less impeded by the air. This construction of armature is preferred, although a plain solid disk or any star form may be used. The shaft carrying the pinion and armature is mounted in a frame d pivoted at d' , and resting normally upon a stop d^2 .

E represents a solenoid having a core e . The solenoid is secured to the roof of the box and the core is lengthened and provided with an angular extension e' which stands adjacent to the periphery of the rotary armature c . The frame d carrying the train of wheels is connected at its free end with the core e by means of a link d^3 . The solenoid is wound with two coils, one of which is in series with the arc and the other in a shunt to the arc; these coils are wound upon a spool in oppo-

site directions and act differentially upon the core.

The operation of the lamp is as follows: When the lamp is not burning the frame d is resting upon the stop d^2 , and the carbons are together. When the current is turned on the series coil of the magnet being the stronger the core is drawn upward and the frame d lifted. When the core becomes thus magnetized, the projection e' attracts that portion of the armature c adjacent to it, very strongly, and holds it stationary or very nearly so while the frame is being lifted. Consequently, the carbons are separated and the arc is established. Inasmuch, however, as the projection e' is at its greatest distance from the armature, when the current is turned on, there will be a very slight movement of the armature at the start, which movement, however, will be an advantage, in that it prevents a too sudden movement of the carbon rod. This retarded movement when the arc is struck is also secured by reason of an air chamber e^3 in the solenoid above the core. If the arc is too long the current will be sent into the shunt coil of the solenoid, which will correspondingly demagnetize the core e , and the weight of the carbon rod will overcome the attraction between projection e' and the rotary armature, and will fall until the arc becomes normal. In the feeding process, as the magnetism in core e weakens it simultaneously recedes from the armature, thus doubly increasing the attraction and enhancing the delicacy of the operation.

It is obvious that other wheels may be added to the train, but, I believe, this will be unnecessary if the rotary armature is made sufficiently large and the pinion engaging the carbon rod very small.

Having described my invention, I claim—

1. In an arc lamp, the combination with the carbon rod, of a pivoted frame carrying a train of gear engaging with the rod, a rotary armature in the form of a disk or star controlling said train and a solenoid having its core connected with said frame and also extending into attractive distance of said rotary armature, substantially as described.

2. In an arc lamp, the combination with the carbon rod, of a pivoted frame carrying a train of gear engaging with the rod, a rotary

armature in the form of a disk or star controlling said train and a solenoid having its core connected with said frame and also extending into attractive distance of said rotary armature, the said solenoid being wound differentially with coils respectively in the main and shunt circuits of the lamp, substantially as described.

3. In an arc lamp, a train of gear engaging with the carbon rod, a rotary armature controlling said gear, a solenoid wound differentially with coils in the main and shunt circuits, the core of the solenoid being located within attractive distance of the periphery of the armature, but arranged to approach

and recede from the armature to vary its attractive force.

4. In an arc lamp, the combination with a train of gear and a rotary armature controlling the same, consisting of a series of sheet iron radial spokes set at right angles to the plane of rotation, and an electro-magnet acting upon said armature for the purpose set forth.

In testimony whereof I subscribe my signature in presence of two witnesses.

FRANK A. PERRET.

Witnesses:

FRANK S. OBER,
JOS. J. UHL.