(No Model.)

W. L. SILVEY.

ARC LAMP.

No. 398,906. Patented Mar. 5, 1889.

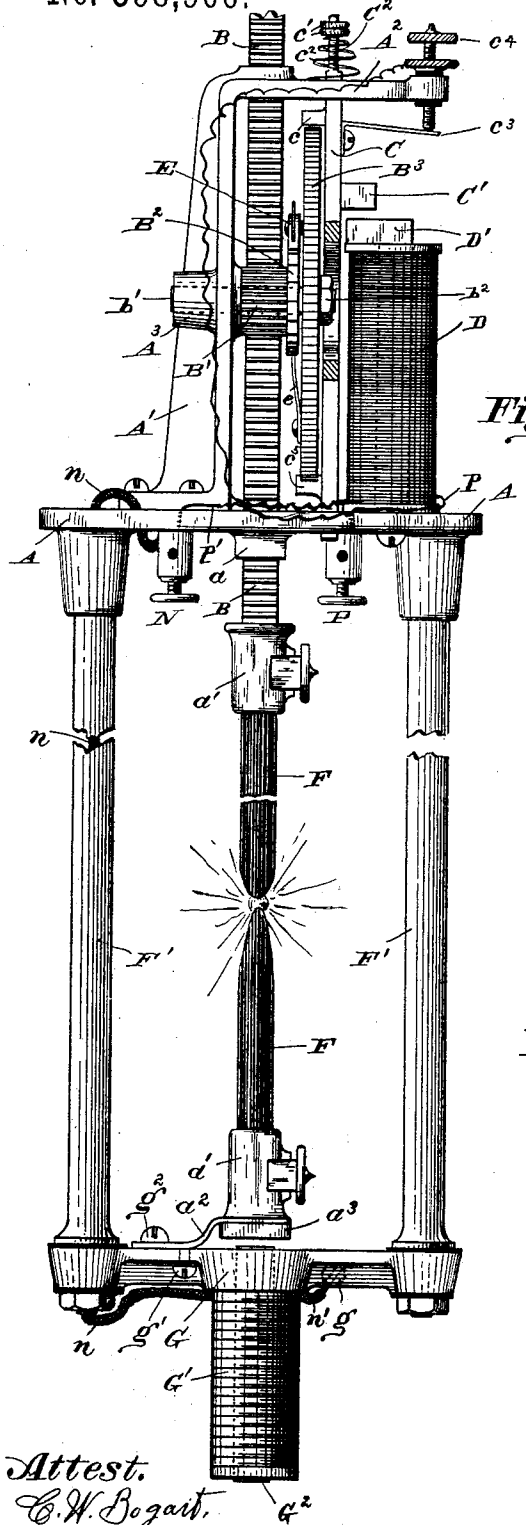


Fig. 1.

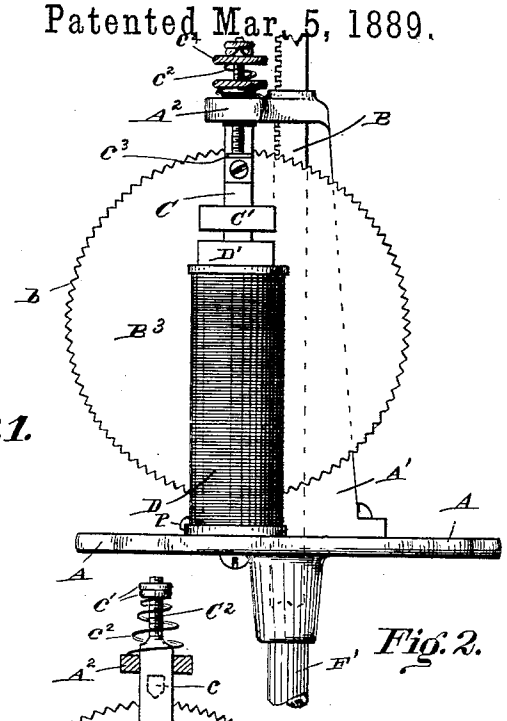


Fig. 2.

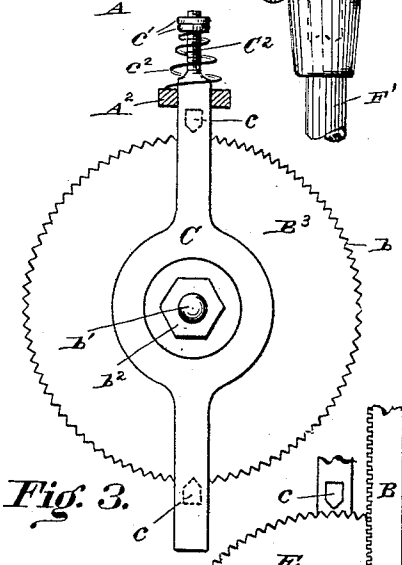


Fig. 3.

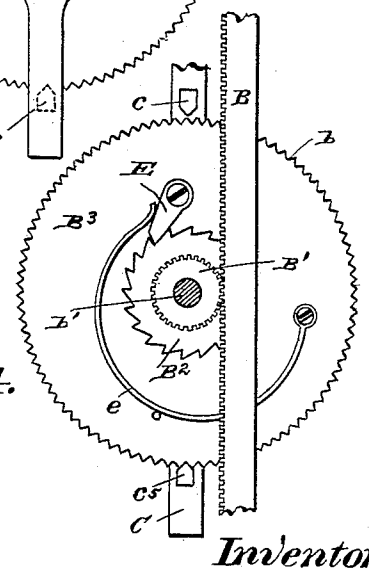


Fig. 4.

Attest.
C. W. Bogart.
C. F. Keller.

Inventor.
William L. Silvey

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM L. SILVEY, OF LIMA, OHIO.

ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 398,906, dated March 5, 1889.

Application filed February 21, 1888. Serial No. 264,868. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. SILVEY, a citizen of the United States, residing at Lima, in the county of Allen and State of Ohio, have invented certain new and useful Improvements in Arc Lamps, of which the following is a specification.

My invention relates to polyphotal arc lamps in which the positive carbon is always fed downward, the arc being formed by the carbon points, first, by coming together by the descent of the positive carbon until it touches the negative carbon, at which time the negative carbon is drawn down by the action of an electro-magnet placed immediately beneath it and in the main circuit of the lamp. This lamp is intended for multiple-arc circuits; hence no translating or cut-out devices are required, to prevent interfering with other lamps. Each lamp is intended for an independent circuit; hence this device is entirely different from the series system of running arc lamps usually employed.

Referring to the accompanying drawings, which are made a part hereof, similar letters refer to similar parts.

Figure 1 is a side elevation of the entire lamp. Fig. 2 is a front elevation of the working mechanism. Fig. 3 is a front view of the escapement mechanism, and Fig. 4 is a rear view of the escapement-wheels and feed-rod in their proper position.

The lamp consists of the usual base, A, side rod, F′ F′, and cross-bar on stand G, to which I attach my improved mechanism. To the top or planed side of the base-plate A, I secure the upright standard A′ and overhanging arm A^2. This standard serves the purpose of a stay to the upper part of the square carbon-rod B and also the moving mechanism. About half-way up the standard is a boss, A^3, which is drilled to receive the projecting stud b'. This small spindle acts as a carrier on which the small gear-wheel B′ and escapement ratchet-wheel B^2 and escapement-wheel B^3 revolve, the three wheels being held in place by a small, nut, b^2, on the outer end of stud b'. Just in front and in close proximity to the face of the escapement-wheel B^3 is the vertically-arranged escapement-bar C. On the back side of this escapement-bar and near each end are two small wedge-shaped projecting lugs c c^3. The lower end of this escapement-bar passes through a hole in the base A, and the upper part is threaded and passes through the standard A′. This threaded stem carries a thumb-nut, c', which is used to give more or less tension to the conical compression-spring c^2. By screwing down this nut more tension is imparted to the spring, and consequently it will take more power to draw the escapement-bar C down. On the outer face of the escapement-bar C an armature, C′, is fastened immediately above the polar extension D′ of the electro-magnet D. Just above this armature C′ is a projecting flat spring, c^3, screwed to the face of the escapement-bar C, the free end of the spring coming in contact with the regulating contact-screw c^4, the screw being insulated from the overhanging arm A^2 by a bushing through which it passes. The small pinion B′ and ratchet-wheel B^2 are screwed together, the escapement-wheel pressing up against them, the pawl E serving to allow the rod B to be pushed up for trimming, but preventing it from descending only by the action of the escapement. The action of the feeding is as follows, it being remembered that this lamp works in derived circuit or a current of constant potential.

It will be observed that the electro-magnet D is of high resistance, its circuit being derived or around the arc, so that as soon as any current is supplied to the lamp this magnet will come into action. The current to this high-resistance circuit enters at the negative insulated binding-post N, thence to the coils of the electro-magnet D, thence to insulated contact-screw c^4, from which it escapes by contact-spring c^3 and escapement-bar C to the frame-work of the lamp and escapes by non-insulated positive binding-post P to the external circuit. The current being turned on, the electro-magnet will immediately attract the armature C′ and draw the escapement-bar down, causing the contact-spring c^3 to break the derived circuit, in which the magnet is included. As soon as the circuit is broken the magnet loses its power and the retracting-spring c^2 immediately draws the bar back to its original position, closing the circuit, and the operation is repeated. The escapement-wheel has an uneven number of teeth, as 125, and the two small wedge-shaped

lugs c c^5 being placed opposite, it is evident that while one is drawn down into the wheel the other will be directly over the point of the tooth on the opposite side. Thus the bottom one beginning to draw out from between the teeth, the rod B will be sufficiently heavy to turn the wheel, and before this tooth is free the point on the opposite side begins to enter the next tooth, so that it is impossible for the lamp to feed more than the distance between two teeth at a time. The up-and-down motion being caused by the make and break of the circuit in which the magnet-coil is included at the point of contact between the spring c^3 and contact-screw c^4, at each make and break of the circuit the rod is allowed to descend the distance of one tooth, which amounts to about one two-hundredth part of an inch. In this way I maintain a perfectly steady light in the main or arc circuit. In the operation of the lamp, there being no means for separating the carbon points after they have come together in order to establish the arc, it being remembered that the positive carbon-rod has but one movement, that being downward, now, therefore, in order that the arc be established, we must use the negative side of the lamp to make the separation. To the lower side of the cross-bar G, I fasten an ordinary electro-magnet, G′, whose coils are in the main or arc circuit. The current on the negative side of the lamp enters at binding-post N, thence by negative conductor n to the coils of the electro-magnet G′, from which it escapes by short wire n' to cross-bar G, (the cross-bar being insulated from the rest of the lamp above,) thence to negative carbon a' and negative carbon F. The negative carbon is supported (when not in use) by a flat spring, a^2, the spring being held firmly against the negative carbon-holder by an iron armature, a^3. This armature is attracted by the electro-magnet as soon as the current is turned on. This attraction causes the armature to draw down against the end of the magnet-core G^2, to which it adheres as long as the current flows in the circuit. The drawing down of the negative carbon-holder forms an arc between the carbon points, which is maintained as long as any current flows.

Having fully described the main working features of my improved lamp, what I claim to have invented, and wish to secure by Letters Patent of the United States, is—

In an arc lamp, the combination of the base-plate A, bracket A′, and overhanging arm A^2, square rod B, having a rack cut in one side of it, pinion B′, ratchet-wheel B^2, and escapement B^3, all mounted on the common center, b', their motions being controlled by vertical escapement-bar C, having on one side two escapement-points, c c', engaging at diametrically-opposite points of the escapement-wheel, all being operated by electro-magnet D, armature B^3, spring c^2, contact-screw c^4, and vibrating circuit-breaker c^3, as set forth and described.

WILLIAM L. SILVEY.

Witnesses:
F. P. GRAF,
C. F. KELLER.