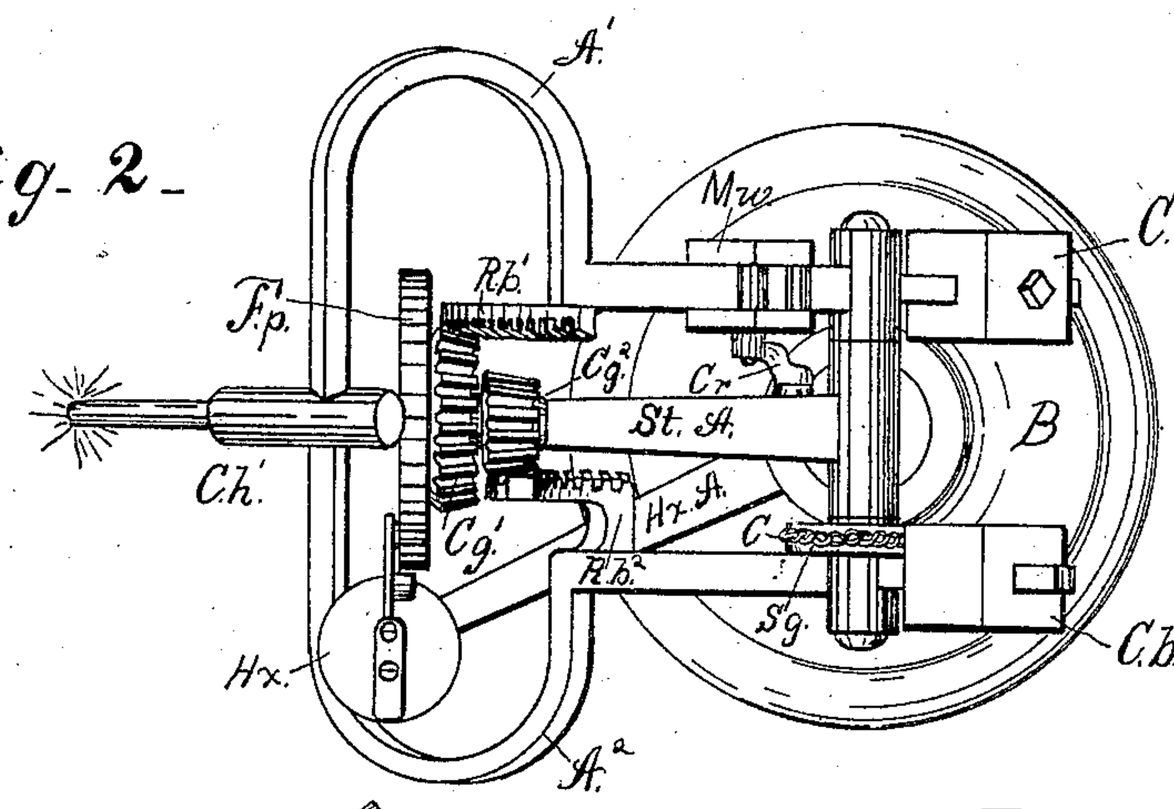
(No Model.)

M. N. LYNN.

ELECTRIC LAMP.

No. 300,095. Patented June 10, 1884.

Fig. 2.



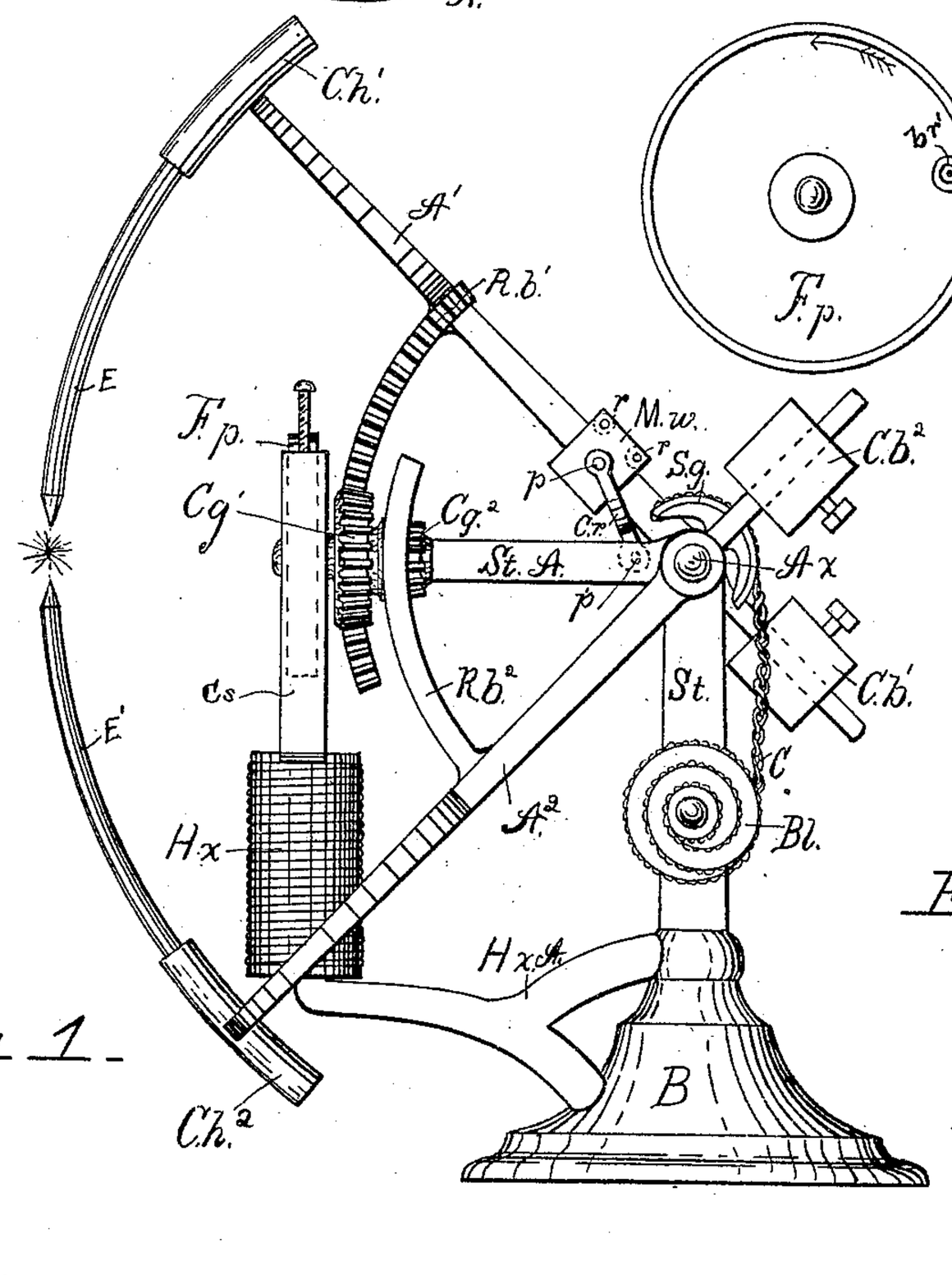


Fig. 1.

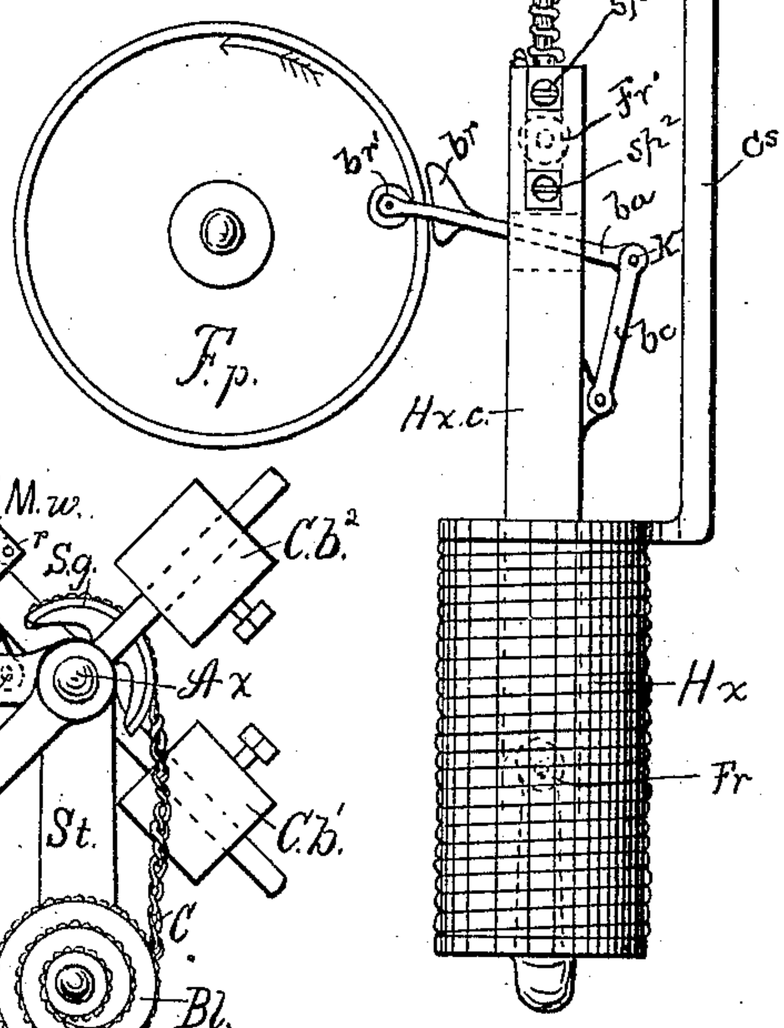


Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

MIRABEAU N. LYNN, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO THE OHIO POWER AND LIGHT COMPANY, OF DAYTON, OHIO.

ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 300,095, dated June 10, 1884.

Application filed August 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, MIRABEAU N. LYNN, a resident of Indianapolis, Indiana, have made certain new and useful Improvements in Electric Lamps for Locomotive-Engines, a description of which is set forth in the following specification, reference being made to the accompanying drawings, in the several figures of which like letters indicate like parts.

My invention is designed to provide a mechanism balanced in all its parts so as to insure steadiness and secure a clear light from the carbons used in arc lamps, and will be understood from the following explanation.

In the drawings, Figure 1 is a side view of my invention; Fig. 2, a top view; and Fig. 3, a detail side view, enlarged, of the helix and brake mechanism.

In detail, B is a base supporting a standard, St, connected with which at the top is an axis, A*x*, on which are mounted the arms A A′ and the standard-arm St.A. To the arm A′ is attached at the outer end the carbon-holder C*h*′, and near its middle the rack-bar R*b*′. On its inner end is a counter-balance, C*b*′.

M*w* is a weight that moves on the arm A′, provided with rollers *r;* and C*r* is a connecting-rod, attached to the movable weight M*w* and the standard-arm St.A by pivots *p*. The arm A^2 has a counter-balance, Cb^2, at one end, and a carbon-holder, Ch^2, at the other, and a rack-bar, Rb^2, is attached midway. Upon the standard-arm St.A is fixed a sleeve, upon which are keyed the differential gears C*g*′ and Cg^2 and a face-plate, F*p*. Rack-bar Rb^2 meshes with gear-wheel Cg^2, and rack-bar R*b*′ meshes with gear-wheel C*g*′. An arm, Hx.A, projecting from near the base B, supports a helix, H*x*, provided with a core, Hx.*c*, Fig. 3; and a standard, C*s*, is fastened to the upper part of the helix to support the core tension-screws *ts*, which pass through the upper arm of the standard C*s*, and a spring, C*s*′, is coiled about the rod in which the core terminates.

sp and sp^2 are set-plates, and F*r* F*r*′ are friction-rollers, which steady the movement of the core in the helix. To the core is attached a brake connecting-rod, *bc*, having a brake-arm pivoted to its upper end, *ba*, this latter carrying the brake-rubber *br*, and a brake-wheel, *br*′, the latter adapted to press against the inner and the brake-rubber *br* adapted to press against the outer face of the face-plate. Upon the axis A*x* is mounted a segment-gear, S*g*, connected by chain C to the barrel B*l*, which contains a spring.

E E′ are curved electrodes or carbons which are inserted into the holders C*h*′ Ch^2, as shown in Fig. 1. The segment S*g* is made integral with the arm A^2.

My device operates as follows: The carbons being placed in the holders, a current is sent through the helix from the dynamo. The core is drawn into the helix by the force of the electric current, and the spring in the barrel B*l*, pulling down upon the chain C, draws the arm A^2 upward. This movement by means of rack-bar Rb^2 transmits the motion, through the differential gears C*g*′ Cg^2 and rack-bar R*b*′, to the arm A′, drawing it downward, bringing the carbon-holders together. The gears are relatively sized, so as to bring down the arm A′ faster than the arm A^2 is moved upward, as the upper carbon consumes faster than the lower, and this arrangement focuses the light at one constant point. The pressure of the spring in the barrel B*l* is so graded that it exerts a constant and uniform strain upon the arms A^2 A′ at any point of their movement. The face-plate F*p*, as before mentioned, is mounted upon the same sleeve with the differential gears, and turns in the direction they turn, actuated by the same force—the spring in the barrel B*l*. As the current passes through the helix, it exerts a force to withdraw the core into the helix—that is, it pulls it down against the force of the coiled spring *cs*′, which is fastened to the top of the core. As the core is pulled down it pulls down the arm *bc*, the joint K is drawn toward the core, and the brake-arm *ba* drops into such a position that the rubber *br* grips the periphery of the face-plate, which is moving in the direction of the arrow, Fig. 3, and arrests its motion and reverses its movement, and this force of the current is transmitted through the gears to the arms A′ A^2, and forces the carbons apart. As the arc lengthens, the current weakens, and

the power of the spring in the barrel B*l* remaining uniform, now greater than that of the current, draws the carbons together again, and these forces, thus acting and counteracting, insure a medium distance for the carbons and the proper arc. The spring *cs'* is simply a tension-spring for pulling up the core. The counter-balances C*b'* C*b*² are fixed upon the shorter ends of the arms A' A² to balance them, so that no concussion or oscillation or movement of the lamp will interfere with the accurate adjustment of the feeding mechanism hereinbefore described.

The movable weight M*w* is allowed a limited movement upon the arm A', to compensate for loss of weight by burning of the carbons. As the carbons are shortened by consumption, the arms A' A² are brought nearer, and the weight M*w* moves slowly out on the arm A'. As the arms separate, the weight M*w* moves backward upon the arm A'. This movement of the weight M*w* is effected by the connecting-rod C*r*, which is pivoted to the arm St. A at a point out of line with the center of the axis A*x*. These stationary and movable weights effect that complete balancing of the mechanism at all points without which the arc-lamp cannot be used on moving machinery.

What I claim, and desire to secure by Letters Patent, is the following:

1. In an electric lamp adapted for using curved carbons, a base supporting an axis, upon which are mounted a pair of arms carrying carbon-holders, the arms rotating in opposite directions, and actuated by suitable mechanism through differential gear-wheels mounted on a sleeve carrying a face-plate, whose movement is adapted to be reversed by a brake actuated by a current of electricity passing through a helix provided with a core connected with the brake mechanism, all combined substantially as described.

2. In an electric lamp, the base B, having vertical and horizontal arms, the helix H*x*, with its core Hx.*c*, axis A*x*, arms A'A², provided with counter-balances C*b'* C*b*², movable weight M*w*, rack-bars R*b'* R*b*², and carbon-holders C*h'* C*h*², the differential gears C*g'* C*g*², face-plate F*p*, tension-spring *cs'*, and the brake mechanism connected with the core and operating upon the face-plate F*p*, all combined substantially as described.

3. In an electric lamp, a feeding mechanism operated by a mechanical force, which exerts a constant and uniform strain at any point of their movement upon a pair of arms mounted on a common axis, adapted to rotate in opposite directions upon such axis, and carrying the carbons, the arms provided with suitable stationary weights, and the upper arm with a movable weight, so that a balance is preserved at all times while the lamp is burning, the mechanical force drawing the arms together, in combination with suitable mechanism actuated by an electric current for separating the arms and reversing the feeding mechanism at the proper point to focus the light at one point, substantially as described.

In witness whereof I have set my hand hereto this 10th day of August, 1883.

MIRABEAU N. LYNN.

Witnesses:
C. P. JACOBS,
E. G. WHEELER.