(No Model.)

J. E. WATSON.

ELECTRIC ARC LAMP.

No. 262,164. Patented Aug. 1, 1882.

Fig. 1.

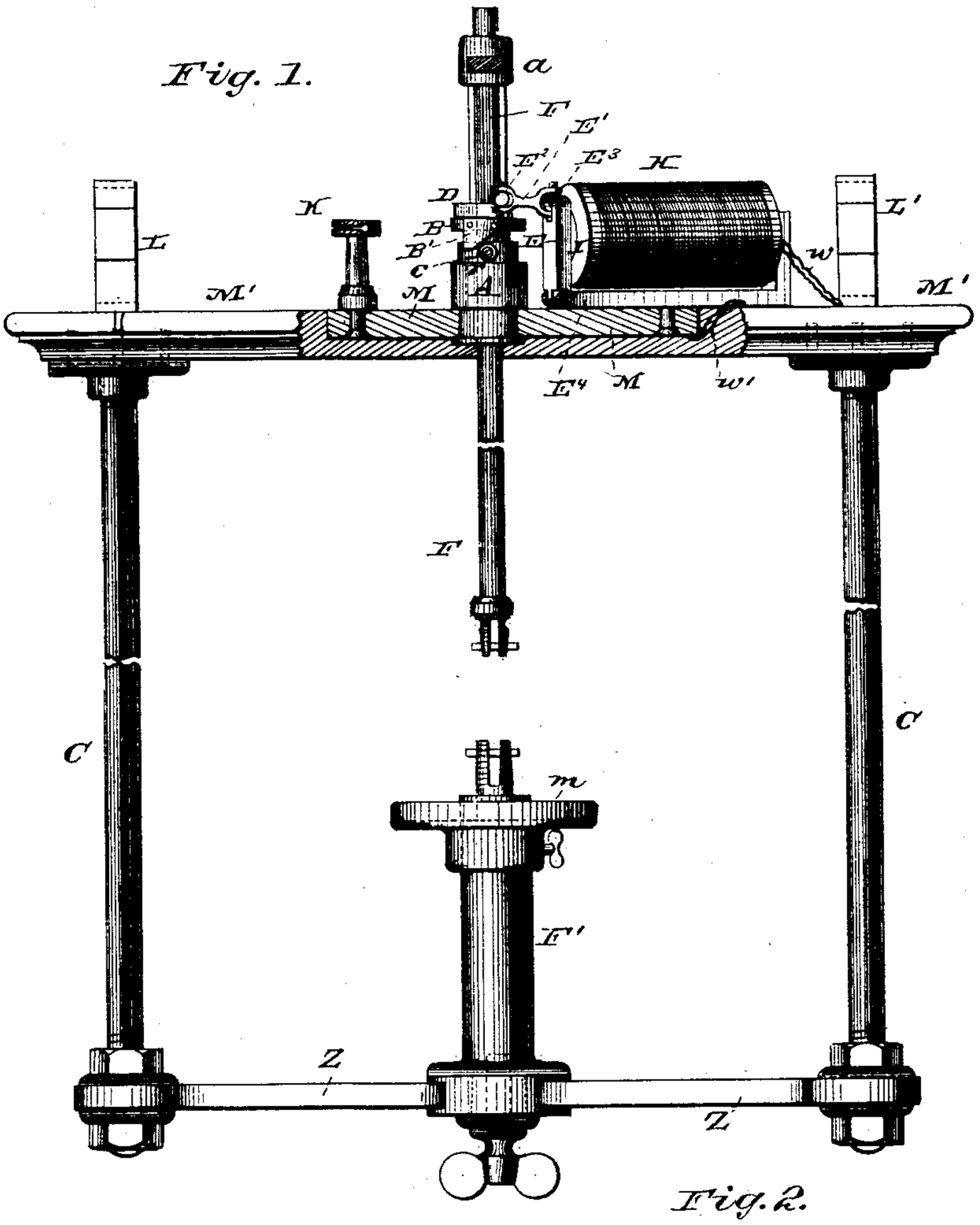
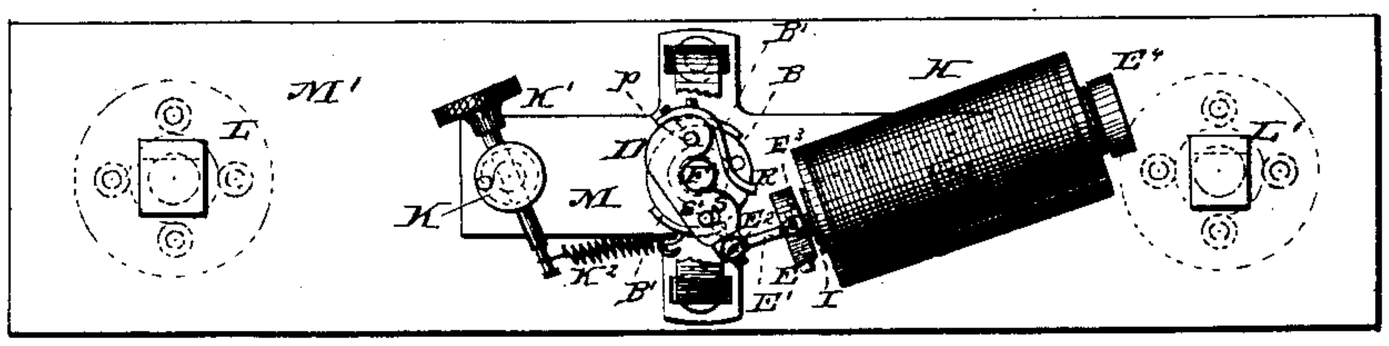


Fig. 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN E. WATSON, OF LOUISVILLE, KENTUCKY.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 262,164, dated August 1, 1882.

Application filed April 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. WATSON, a citizen of the United States, and a resident of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and valuable Improvement in Electric-Arc Lamps; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view, part sectional, of my device; and Fig. 2 is a top view of the same.

This inventiom has relation to means for automatically feeding the carbon pencils of electric lamps and regulating the electric arc according to the strength of the current; and it consists in the interposition between the electro-magnet or helix and the carbon-holder of a clamping device and inclined planes governing the vertical movements thereof; in the circularly-moving governing-clamp operated on inclined planes having a circular or screw-like motion through the medium of an armature, to regulate and avoid variations in the power of the current which the electric arc tends to produce; and in the combination, with a gravitating carbon-holder and a pivoted or sliding armature, of a cam-socket, its bearing, a clamping-lever, and springs, all as hereinafter set forth.

In the accompanying drawings, the letter Z designates the base-plate, which carries the stand F′, which holds the lower carbon and supports the shade gland or bearing *m*. To the base-plate columns or connections C extend upward and support the base M′, which is usually made of wood, and serves to carry the plate M, which is formed with a central opening to receive the socket-bearing A. To the plate M is secured the yoke-piece or frame-bar E^4 of the helix H at one side of the socket-bearing A and the spring-rest or attachment-stand K on the other side thereof. A transverse guide-bearing, *a*, is also secured by its arms or supports to the plate M, its position being above the socket-bearing A, to serve as a guide for the carbon holder or rod F, to the lower end of which the upper carbon is attached.

E represents the armature, which is pivoted to the yoke-piece E^4 of the helix, and is provided at its upper extremity with a link attachment, connecting it to a clamping-lever, D. The attachment E′ is designed to be provided with universal joints or couplings E^2 E^3, so that it will accommodate itself readily to the motions of the clamping-lever and armature.

B represents the cam-socket or socket piece or guide, which is provided with inclined planes or cam-flanges B′ on its sides, these flanges being horizontally curved. The socket-piece B is formed with a hollow journal portion, which extends downward into the bearing A, in which it is designed to have a circular motion. Below the inclined planes of the socket-piece are the rollers or bearings *c* on which they move, these rollers or bearings being connected to the upper portion of the socket-bearing A above a shoulder or rest, *r*, with which the socket-bearing is provided. Through the socket-piece B the carbon-rod F extends and feeds downward by gravitation. The clamping-lever D is pivoted to the socket-piece at *p*, and, extending across the same, is attached by its end to the connection E′ with the armature. The lever is provided with a short guide-slot, *s*, which engages a stud or pin, *s′*, of the socket-piece, so that the movement of the lever with reference to the socket-piece is limited, but sufficient to enable it, when drawn forward by the movement of the armature, to clamp the carbon-rod against the wall of the socket-piece B and hold said rod firmly while moving said socket-piece circularly and upward on its inclined-plane bearings. By this motion of the socket-piece the carbons are separated.

To the socket-piece B is connected a spring, K^2, which is designed to act in opposition to the force of the current applied through the armature. The outer end of this spring is connected to an adjustable arm, K′, which is arranged in a bearing on the stand K.

R indicates a small spring connected to the clamping-lever D and bearing against a pin or projection of the socket-piece, the object of which is to free the clamping-lever from the

carbon-rod when the armature is farthest from its pole-piece I. When the armature is moving from its pole-piece the socket-piece is allowed, by means of its inclined planes, to move downward on the rollers of the socket-bearing, bringing the carbons closer together and decreasing the resistance of the arc. When the lower edges of the inclined planes reach the shoulder or bearing *r* the small spring R, attached to the clamping-lever, continues to operate, releasing the lever from the carbon-rod and allowing it to feed down by gravity; but should the points of the carbons approach too closely together it will decrease the resistance of the circuit and allow the electro-magnet to attract the armature E more powerfully, causing the clamping-lever D to clamp the rod F and turn the socket-piece B, so that it will rise upon the inclined planes and rollers, and thereby draw the upper carbon upward, forming an arc in proportion to the current passing through the electro-magnet. The current, entering the lamp through the hook or binding-post L′, passes thence by the wire *w* into the electro-magnet H, and thence out by the wire *w′* to the base-plate M, whence it passes down through the carbon-rod F, the carbons, the stand F′, base-plate, and side column or connection, C, and out through the binding-post L.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. In an electric lamp, the combination, with the carbon-holder, of a clamping device and inclined planes governing the vertical movements thereof, substantially as specified.

2. In an electric lamp, the combination, with a circularly-moving governing-clamp operated on inclined planes having a circular or screw-like action, of a carbon-holder and the armature of an electro-magnet or helix, substantially as specified.

3. In an electric lamp, the combination, with a gravitating carbon-holder and the armature of a helix or electro-magnet, of a cam-socket through which the carbon-holder passes, a socket-bearing, a clamping-lever and springs, and a connection between said clamping-lever and armature, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN EDWARD WATSON.

Witnesses:
AL. AINSLIE,
GEO. S. ALLISON.