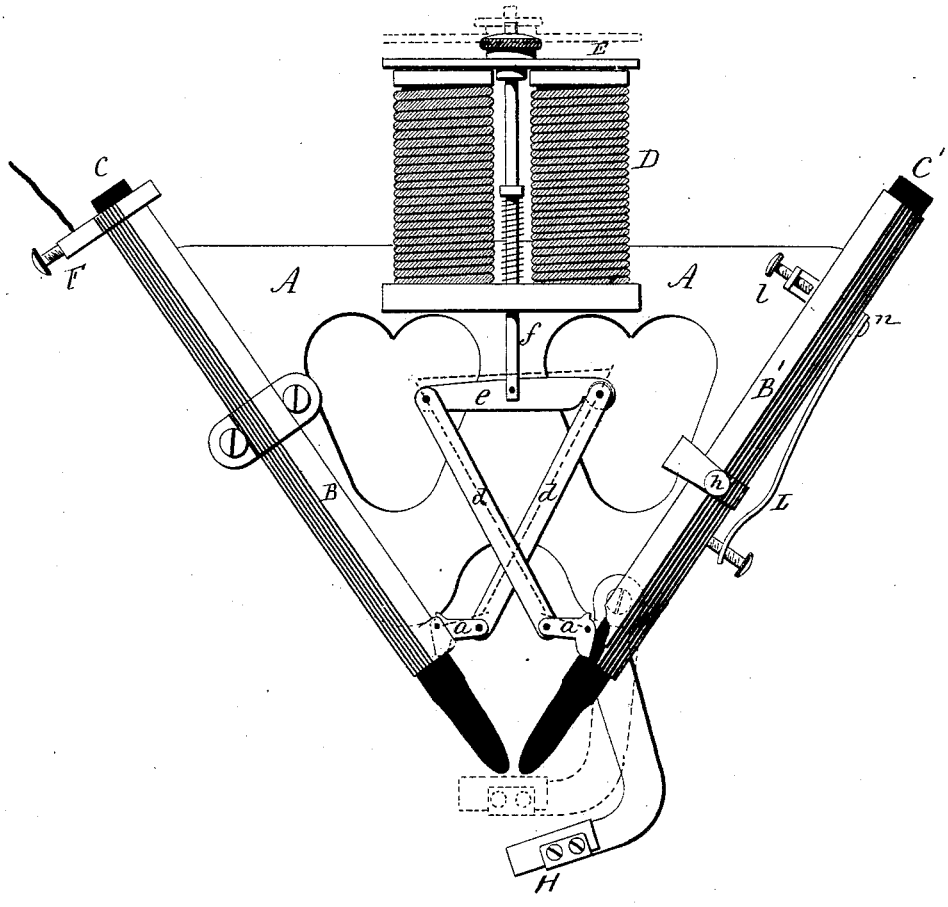
J. KING.

Electric Lighting-Apparatus.

No. 200,545. Patented Feb. 19, 1878.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN KING, OF ANSONIA, CONNECTICUT, ASSIGNOR OF ONE-HALF HIS RIGHT TO WALLACE & SONS, OF SAME PLACE.

IMPROVEMENT IN ELECTRIC LIGHTING APPARATUS.

Specification forming part of Letters Patent No. **200,545**, dated February 19, 1878; application filed January 3, 1878.

To all whom it may concern:

Be it known that I, JOHN KING, of Ansonia, in the county of New Haven and State of Connecticut, have invented a new Improvement in Electric Light; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents a front view.

This invention relates to an improvement in electric lamps—that is to say, in devices for supporting the two carbons necessary to produce the light; and the invention consists in the arrangement and combination of the parts, as hereinafter described, and more particularly recited in the several claims.

A represents the frame on which the mechanism is arranged, which may be of any desirable form. At two points, and at an angle of from thirty to forty degrees to each other, the two holders B and B′ are arranged. These holders are simple metallic tubes, slightly larger than the carbons C C′, and so that the carbons may be introduced and lie loosely therein—that is to say, in certain conditions are free to fall of their own gravity, the lower ends or points approaching each other as they thus fall. D is the magnet, of common construction; E, the armature. One wire connects with the magnet, and the other is in connection with the holders at any convenient point, as at F. In each holder is hung a clamp or cam, *a*, which are respectively connected by levers *d* to a cross-head, *e*, on the rod *f*, which is attached to the armature, and so that, as shown, when the circuit is closed and the armature drawn upon the magnet, the clamps are forced to grasp the two carbons, and hold them firmly in their respective holders; but when the circuit is broken the armature rises, and the clamps *a* are raised from and so as to release the carbons, leaving them free to slide down their respective holders toward each other.

H is the focusing guide, or device which will automatically arrange the working ends of the two carbons in their proper relative position to each other. On the breaking of the circuit and releasing the carbons, this focusing-guide H instantly rises to the focusing-point, as indicated in broken lines, and the two carbons will therefore slide down their respective holders until they strike and rest upon the said guide H. The holder B′ is hung upon a pivot, *h*, so as to oscillate slightly, and the extent of oscillation is governed by the screw *l*. A spring, L, bearing upon the holder B′ below the pivot, forces the upper end outward and against the stop *n*. When the circuit is closed, and the clamps thereby forced downward, the one upon the carbon in the holder B′ forces the lower end of the carbon outward. The relative position of the two holders, therefore, is such that when the circuit is broken and the carbons free the carbons will touch each other on the guide H; but on the closing of the circuit, the two carbons are instantly ignited, and are opened, one from the other, to form the electric arc. The pressure of the spring L being overcome by the force of the magnet drawing the armature to itself, the force thus required may be adjusted by the spring L, and the extent of the arc at the commencement may be adjusted by the said screw *l*—that is to say, turning it from the holder will extend the arc, and vice versa.

As before stated, when the circuit is closed the carbons are properly adjusted, and the focusing-guide H thrown back out of the way. In this condition the carbons will burn until the arc becomes greater than the electric force can maintain. Then the circuit will automatically break, and the armature rise from the magnet. Instantly on such breaking of the circuit the guide H comes to the focusing-point, the released carbons fall to each other, thereby remaking the circuit, and on such making of the circuit the carbons are reclamped and adjusted, the guide H thrown back, and the carbons burn as before.

The guide H is hinged to the frame, and in connection with the holder B′ or its mechanism, so that it moves with it from one position to the other.

By this arrangement the carbons are automatically adjusted until they are almost entirely consumed, whereas in previous constructions generally the carbons are rigidly fixed in

their holders, and can only burn to the holders, the holders themselves moving toward each other by a complicated mechanism.

Again, in this construction, while the carbons are constantly consumed, the focusing-point is constant and not changing as the carbons are consumed, as in the Zablochkoff lamp or candle.

The description thus far indicates the position of the apparatus as vertical, so that gravity may act; but in some cases it may be desirable that the carbons should lie in a horizontal plane. In such case it is only necessary to apply a spring to each carbon, which shall act to force them to a focusing-point.

While it is preferred to arrange the carbons in a vertical plane, this invention is not to be understood as limited to such an arrangement.

I claim—

1. The two carbons of an electric light arranged diagonally to each other, and free in their holders, combined with mechanism, substantially such as described, to grasp the said carbons while the circuit is unbroken, but to release them immediately on the breaking, and force them to the focusing-point independent of their holders, substantially as described.

2. The combination, in an electric light, of two carbons arranged diagonally to each other, and free in their holders, with a hinged focusing-guide and mechanism for operating said guide, to automatically come to the focusing-point when the circuit is broken, and to be turned away so soon as the circuit is made, substantially as described.

JOHN KING.

Witnesses:

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