

(No Model.)

A. G. HOLCOMBE & L. H. COLBORNE.

ELECTRIC LAMP.

No. 255,171.

Patented Mar. 21, 1882.

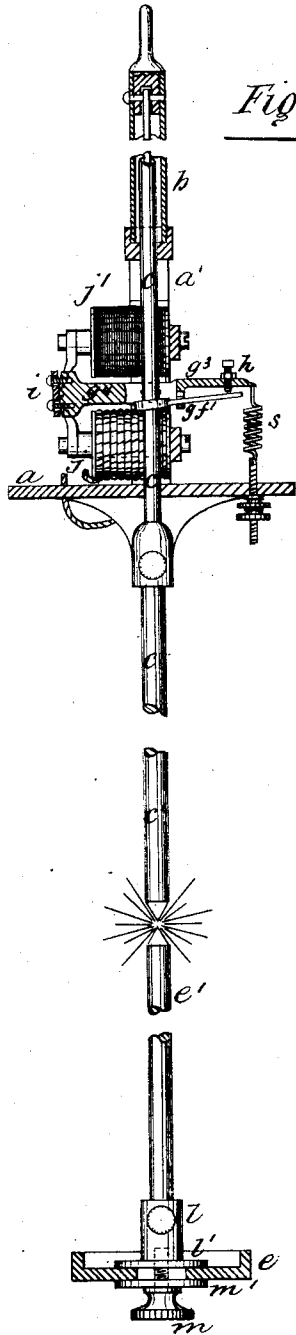


Fig. 2

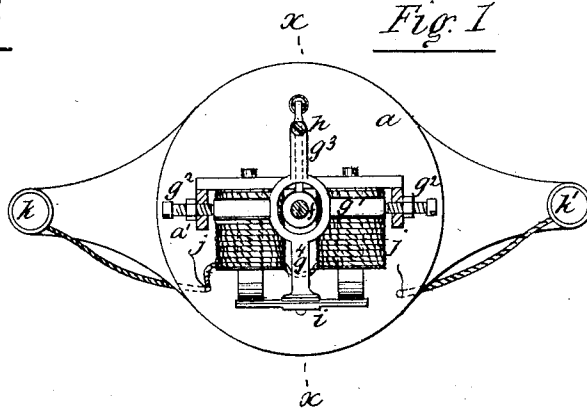


Fig. 1

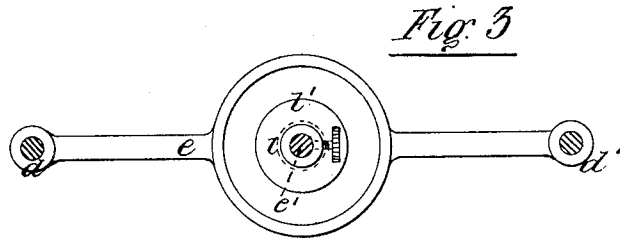


Fig. 3

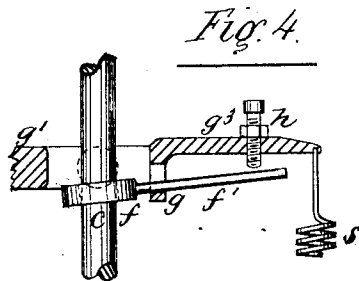


Fig. 4

Witnesses

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Alfred G. Holcombe,
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att'y.

UNITED STATES PATENT OFFICE.

ALFRED G. HOLCOMBE AND LEVI H. COLBORNE, OF NEW YORK, N. Y.,
ASSIGNORS TO THE STANDARD ELECTRIC LIGHT COMPANY, OF SAME
PLACE.

ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 255,171, dated March 21, 1882.

Application filed December 1, 1881. (No model.)

To all whom it may concern:

Be it known that we, ALFRED G. HOLCOMBE and LEVI H. COLBORNE, of New York, county and State of New York, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification.

This invention relates to electric-arc lamps; and it consists of certain improvements in the construction of the clamping device by which the upper-carbon rod is raised to form the arc and allowed to feed down as the carbon consumes, whereby it is very delicate in its operation and positive in its movements.

It further consists of certain improvements in the lower-carbon holder, whereby the lower carbon may be easily and quickly set so as to be directly in line with the upper carbon.

In the accompanying drawings, to which we will now refer to fully describe our improvements in electric lamps, so that any one skilled in the art may make and use the same, Figure 1 is a plan view of the upper part of the lamp with the frame in section. Fig. 2 is a central vertical section cut through the line *xx*. Fig. 3 is a plan view of the lower-carbon holder; and Fig. 4 is an enlarged view of the clamping device.

The frame of the lamp is of the ordinary construction—that is to say, it consists of the upper plate, *a*, suspending-tube *b*, in which and through a hole in the plate *a* passes the upper-carbon holder or rod *c*, the side bars, *d d'*, and the lower cross-bar, *e*, which supports the lower carbon.

The clamp consists of a ring, *f*, and tail-piece *f'*. The ring surrounds the upper-carbon holder or rod *c*, and is somewhat larger than it. The opposite edge of the ring *f* grips the rod *c* when the ring is inclined thereto, as shown at Figs. 2 and 4, in a similar manner to clamping devices of this description heretofore used; but in this invention the annular clamp is operated and controlled in a novel manner, no spring or springs being used therein. The tail-piece *f'* of the clamp passes through a vertically-elongated hole, or over the supporting-edge *g* on the frame or lever *g'*, pivoted to rock

on bearings *g²* in the side frames, *a'*, of the upper plate, *a*. The axis of this frame *g'* is about on line with the crossing-centers of the rod *c* and ring *f*, and the supporting-edge *g* of the frame *g'*, upon which the tail-piece *f'* rests, is about in a horizontal line with said axis of the frame *g'* when this frame is in its normal position. An arm, *g³*, provided with an adjustable set-screw, *h*, extends over the tail-piece *f'* of the clamp, and another arm, *g⁴*, diametrically opposite thereto, carries the armature *i*, arranged to move in front of the curved poles of the differential magnet, the center of these curved poles being the center on which the frame *g'* oscillates. *j* represents the coarse-wire helices, and *j'* the fine-wire helices of the differential magnet. This differential magnet here shown forms the subject-matter of another application filed by Alfred G. Holcombe, bearing even date with this application; so we do not claim anything relating thereto here shown, and only describe the same sufficiently to explain that the clamp *f* is actuated to operate the rod *c* by the rocking of the frame *g'* on its centers *g²*. Any other form of electro-magnetic device may be used to oscillate the frame *g'*, and the frame *g'* may be changed in form to suit the actuating device with which it is combined.

s is an adjustable spring for regulating the action of the electro-magnetic device.

The current enters the lamp by the binding-post *k*, passes through the electro-magnetic device *jj'*, through the upper carbon, *c'*, secured in the end of the rod *c*, down the lower carbon, *c'*, up the side bars, *d'*, and back to the generator from the binding-post *k'*. The first action of the electro-magnetic device is to lower the armature side of the frame *g'* and raise the supporting-edge *g*, and so cause the ring *f* of the clamp to raise the rod *c*, and form the arc between the ends of the carbon-rods, the set-screw *h* now being away from the tail-piece *f'*. As the arc increases the armature is gradually allowed to rise and the supporting-edge *g* to fall until the tail-piece *f'* comes in contact with the set-screw *h*, when the angular position of the clamp in relation to the rod *c* is changed

and the rod *c* and carbon *c'* allowed to slide down to bring the arc to its normal length. It will be observed that the supporting-edge *g* is much nearer the axis of the frame *g'* than is the armature *i* of the magnet, and that the clamp maintains the same angular position as the edge *g* rises and falls. It being supported by the edge *g*, it is evident that the part of the tail-piece *f'* under the set-screw *h* has the same vertical movement as the other parts of the clamp; but the angular velocity of the set-screw *h* being in excess of that of the edge *g* a point arrives when the set-screw comes in contact with the tail-piece, and this point may be regulated as desired by adjusting the set-screw *h*. Consequently we are enabled by this construction to make an arc-lamp so delicate in its operation that there is virtually no fluctuation in the arc, and positive in its action, and the liability of its getting out of order when once set is reduced to a minimum.

The lower-carbon holder consists of a socket, *l*, in which the carbon fits, provided with a large flange, *l'*, resting on the lower bar, *e*, of the frame. A set-screw is also provided with a large flange or washer, *m'*, and passes upwardly through a hole in the bar *e* much larger than the set-screw *m*, thereby permitting the lower carbon, after being secured in the socket *l*, to be set so that its point is directly under the point of the upper carbon, which is firmly held in a socket at the lower end of the rod *c*.

Having now described our invention, what

we jointly claim, and desire to secure by Letters Patent, is—

1. In a clamping and feeding device for electric lamps, a rocking frame or lever provided with a supporting-edge, upon which rests the tail-piece of a ring-clamp embracing the carbon-holding rod, and a contact-point located on the frame or lever, so as to come in contact with the end of the tail-piece of the clamp, for releasing the carbon-rod held by the clamp, in combination, as hereinbefore set forth.

2. In combination, the frame or lever *g'*, provided with the supporting-edge *g* and adjustable screw *h*, the clamp, composed of ring *f'* and tail-piece *f'*, the carbon-rod *c*, and an electro-magnetic actuating device, by means of which the frame or lever *g'* is caused to rock on its bearings, substantially as set forth.

3. The lower-carbon-holding socket *l*, provided with the flange *l'*, the set-screw *m*, and flange or washer *m'*, and the lower bar, *e*, having a large hole through which the set-screw passes, in combination, substantially as set forth.

In witness whereof we have hereunto set our hands at New York, county and State of New York, this 29th day of November, A. D. 1881.

ALFRED G. HOLCOMBE.
LEVI H. COLBORNE.

Witnesses:

ALFRED SHEDLOCK,
THOS. HAMPSHIRE.