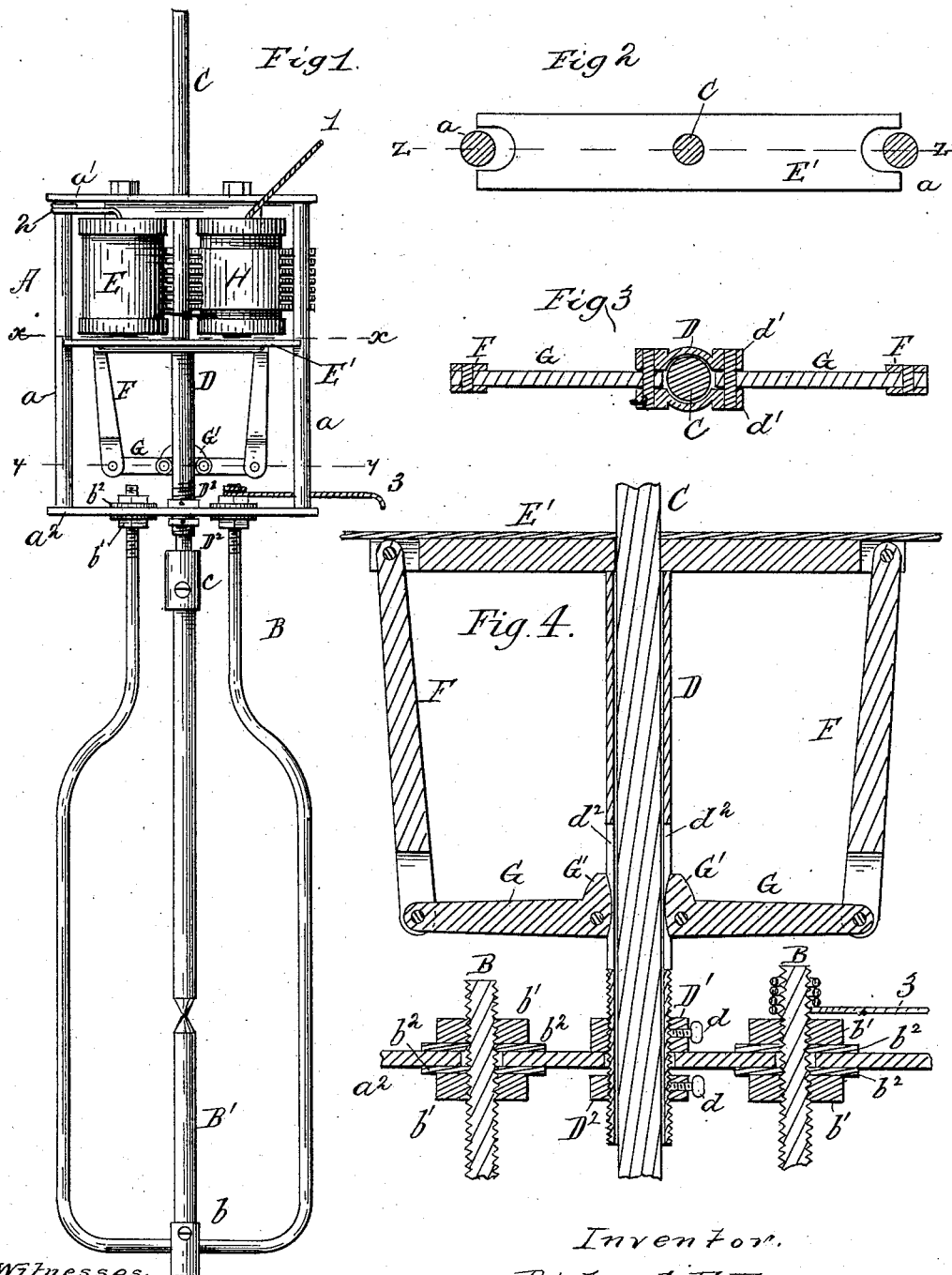


(No Model.)

R. E. FENNER.
ELECTRIC ARC LAMP.

No. 382,421.

Patented May 8, 1888.



Witnesses.
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UNITED STATES PATENT OFFICE.

RICHARD E. FENNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES K. GILES, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 382,421, dated May 8, 1888.

Application filed February 17, 1886. Serial No. 193,305. (No model.)

To all whom it may concern:

Be it known that I, RICHARD E. FENNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric-Arc Lamps, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of a lamp embodying my invention; Fig. 2, a detail plan section of the same, taken on the line *x x* of Fig. 1; Fig. 3, a detail plan section taken on the line *y y* of Fig. 1, and Fig. 4 a central vertical sectional view taken on a plane corresponding to the line *z z* of Fig. 2.

Like letters refer to like parts in all the figures of the drawings.

My invention relates to electric-arc lamps, its object being to provide a lamp which shall be simple in construction and effective in operation, and which may be produced at a minimum cost; and to these ends my invention consists in certain novel features, which I will now proceed to describe, and will then particularly point out in the claim.

In the drawings, A represents the upper part of the frame, which consists, essentially, of the uprights or posts *a*, and of the top cross-bar, *a'*, and bottom cross-bar, *a''*. The lower portion of this frame consists of a yoke, B, provided with a clamping device, *b*, to receive the lower carbon, B'. This yoke is connected to the upper portion, A, of the frame, but is insulated therefrom, this connection being preferably effected in the manner shown in Fig. 4 of the drawings, in which the upper threaded ends of the yoke are shown as passing through suitable enlarged apertures in the cross-bar *a''*, being held in position by nuts *b'*, between which and the cross-bar washers or gaskets *b''*, of hard rubber or other suitable insulating material, are inserted. The upper carbon, B², is secured by means of a clamping device, *c*, of suitable construction, to the lower end of a rod, C, of any desired length.

D indicates a sleeve or tube, through which the rod C passes loosely. This sleeve extends down through a suitable aperture in the lower cross-bar, *a''*, its lower extremity being

threaded at this point to receive two collars, D' and D'', arranged the former above and the latter below the said cross bar to limit the motion of the sleeve, for the purposes hereinafter stated. These collars may be supplied with set-screws *d*, if desired, in order to secure the same rigidly in position on the sleeve and prevent any accidental displacement of the same after adjustment.

It will be observed that the sleeve D is of considerable length, extending, as it does, from the armature of the magnet down through the cross-bar *a'*, whereby an elongated bearing and support is provided for the carbon-supporting rod C.

E indicates an electro-magnet secured to the upper cross-bar, *a'*, of the upper portion, A, of the frame.

E' represents the armature or keeper of this magnet, the said armature being so mounted as to move freely in a vertical direction, being supported and guided by means of the rod C, which passes freely through it, and by means of the uprights *a*, as shown in detail in Fig. 2 of the drawings. To the outer ends of this armature are pivoted arms F, the lower ends of which are in turn pivoted to the gripping-levers G. These gripping-levers are pivoted between lugs *d'* on the sleeve D, which latter is provided at these points with slots *d''*, in which the inner ends of the gripping-levers G are arranged. The said inner ends of these levers are formed by means of a toe or projection, G', as shown in detail in Fig. 4 of the drawings, the said projection being capable of being projected inward through the slots *d''* to bear against and grip the rod C when the outer ends of the gripping-levers are raised.

The operation of the mechanism is as follows: The current passes by means of the wire 1 through the coils of the electro-magnet E, which, it will be thus seen, is arranged in the circuit. From the coils of the magnet the current passes by means of the wire 2 to one of the uprights *a* of the upper portion, A, of the frame, and thence through the rod C, carbon B², carbon B', yoke B, and out by means of the wire 3. The current being thus established, the electro-magnet E attracts the armature E', which latter, by means of the arms or

links F, raises the outer ends of the gripping-levers G. The inner ends of these levers are thereby caused to grip the rod C and lift the same along with the carbon B², thus establishing the arc. The upward motion of the rod C and the carbon which it carries is limited by means of the lower collar, D², on the sleeve D, which is of course carried upward by the upward movement of the armature E'. It is obvious that as the carbons burn away the magnetic action of the electro-magnet diminishes and the armature moves downward in a corresponding degree, thus loosening the grip on the rod and allowing this latter and the carbon to descend by their own weight, maintaining a proper separation of the carbons. This sliding of the rod does not, of course, take place, however, until the upper collar, D', on the sleeve D rests upon the lower bar, a². In continued operation this is the normal position of the clamp, the office of the electro-magnet being to regulate the sliding of the rod through the gripping-levers. If, however, the rod accidentally slides too far, it will be automatically raised again and the carbon points maintained in proper relation.

H represents a metallic plate bent around one of the arms of the electro-magnet, and

bearing with one end against one of the uprights a and with the other end against the rod C, for the purpose of forming a more complete electrical communication between the frame and the rod. This plate may be omitted, however, if desired, although I prefer to employ it.

It is obvious that various modifications in the details of construction may be made without departing from the principle of my invention, and I therefore do not wish to be understood as limiting myself strictly to the precise details hereinbefore described, and shown in the drawings.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with the carbon-supporting rod C, of the sleeve D, provided with adjustable stops or collars D' D², the gripping-levers G, pivoted to the said sleeve, the links F, pivoted to the gripping-lever, the armature, and the electro-magnet E, substantially as and for the purposes specified.

RICHARD E. FENNER.

Witnesses:

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