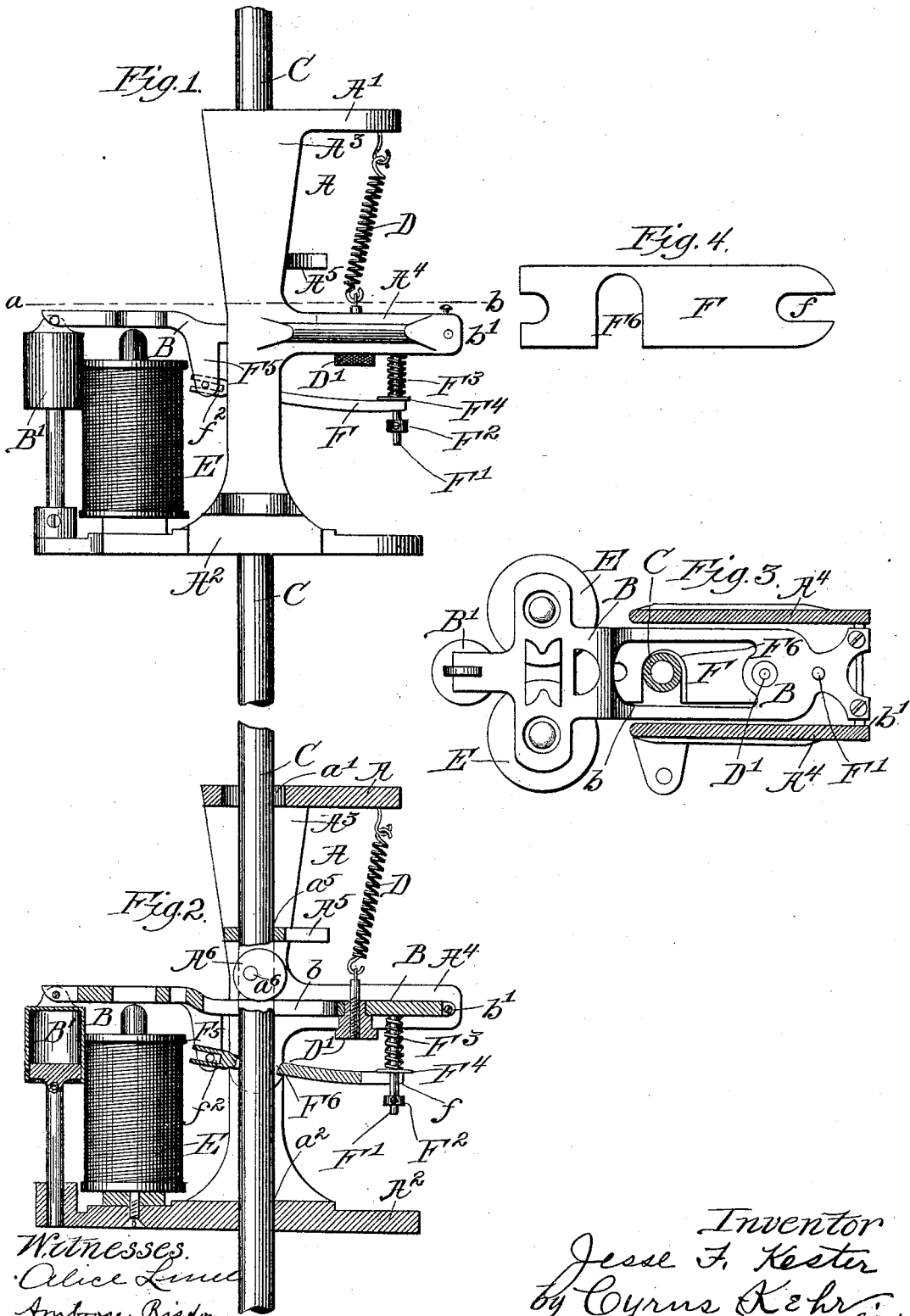


(No Model.)

J. F. KESTER.
ELECTRIC ARC LAMP.

No. 519,912.

Patented May 15, 1894.



Witnesses.
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UNITED STATES PATENT OFFICE.

JESSE F. KESTER, OF BUFFALO, NEW YORK, ASSIGNOR TO THE F. P. LITTLE ELECTRICAL CONSTRUCTION AND SUPPLY COMPANY, OF NEW YORK.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 519,912, dated May 15, 1894.

Application filed October 23, 1893. Serial No. 488,891. (No model.)

To all whom it may concern:

Be it known that I, JESSE F. KESTER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Electric-Arc Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates particularly to the carbon feeding mechanism and the carbon holders for electric arc-lamps. The kind of feed mechanism employed by me is ordinarily termed gravity feed mechanism.

The object of the invention is to produce feed mechanism which may be constructed economically and which will control the upper carbon in such manner as to maintain a substantially constant arc, whereby there shall be the least possible variation in the light.

The object of the invention is, further, to provide a magazine carbon holder which is adapted to consume fragments of carbon sticks and afford a continuous light for a long number of hours.

In the accompanying drawings: Figure 1 is a side elevation of a portion of an arc-lamp embodying my improvement. Fig. 2 is a vertical section of the mechanism shown in Fig. 1. Fig. 3 is a horizontal section in the line *a-b* of Fig. 1. Fig. 4 is a plan of the gripping plate.

It is deemed unnecessary to show and describe a lamp which is complete in all details, for these details are familiar to all who are engaged in this art, and it will be readily understood how my improvement may be applied to various forms of arc-lamps.

A is the frame of the lamp. This consists of a top-plate, A', a bottom plate, A², and the vertical side pieces, A³, extending from the top-plate to the bottom plate and separated from each other sufficiently to make room for the armature lever, B. About midway be-

tween the top and bottom plates, arms, A⁴, extend horizontally away from the side piece, A³, at the same side of the carbon rod, C, the outer ends of said arms being separated sufficiently to make room for the armature lever, B. A little above the armature lever, B, a web, A⁵, extends from one side piece, A³, to the other and has an opening, *a*⁵, only a trifle larger diametrically than the diameter of the carbon rod. The upper plate, A', is shown as having an opening, *a*', of greater diameter than the diameter of the carbon rod, while the lower plate, A², is shown as having an opening, *a*², which is only a trifle larger diametrically than the diameter of the carbon rod. Said carbon rod extends through said openings and the opening, *b*, in the middle of the armature lever, B. The latter opening is so much larger than the diameter of the carbon rod as to prevent contact between said armature lever and said carbon rod. One end of the armature lever, B, is supported on a horizontal hinge as at *b*'. At the opposite end, said armature lever is hinged, to the cylinder of the well known *da h-pot* B'. A contracting spring, D, extends from the armature lever to the top-plate, A', and normally holds the armature lever at the upper limit of movement. An adjusting nut, D', is preferably combined with said spring in such manner as to permit variation of the tension of said spring. This spring, D, may be varied in form and may be located otherwise than shown in the drawings. It might, for example, be an expansion spring located between the armature lever and the bottom plate, A². A ribbon spring might also be combined with said armature lever to effect the elevation of the latter when the magnet beneath said lever is not energized to the degree at which it is designed to have the carbon rod descend.

E is the well known electro-magnet so connected as to become energized when the arc has become too long. Since the manner of connecting this magnet is well known, I deem it unnecessary to illustrate and describe it.

F is the gripping plate.

At the side of the carbon rod, C, at which

the hinge, b' , is located, an arm, F' , extends downward from the armature lever, B , and is provided near its lower end with an adjustable collar, F^2 . The plate, F , is slotted vertically at one end as indicated at f , and the arms at each side of said slot extend over said collar and one along each side of said arm. Above said plate, an expansion spring, F^3 , surrounds the arm, F' , and tends to hold the plate, F , down upon the collar, F^2 . A washer, F^4 , may intervene between said spring and said plate. At the opposite side of the carbon rod, C , a stirrup, F^5 , extends downward from the armature lever, B , in a plane to which the axis of the gripping plate is perpendicular. The adjacent end of said plate is slotted horizontally as at f^2 , and the arms at each side of said slot extend one above and the other below the horizontal portion of the stirrup. The stirrup, F^5 , and the arm, F' , are the only supports for said gripping plate. The slots, f and f^2 , are long enough to allow said plate to be shifted end-wise far enough to clear said arm, F' , or the stirrup, F^5 , when it is desired to remove the plate. For this purpose, the distance between the inner end of one of the slots and the opposite end of the plate must be less than the distance between the stirrup, F^5 , and the arm, F' .

In line with the carbon rod, C , an opening, F^6 , extends from one side of the plate, F , toward the other side thereof a sufficient distance to make room for said rod. The sides of said opening toward the ends of said plate are so near each other as to allow the carbon rod to slip between them when said rod is substantially perpendicular to said plate and yet so near each other as to cause them to grasp said rod when the rod is inclined from the perpendicular to said plate. By extending the opening, F^6 , from the side of the plate, F , said opening may be made with a milling machine. If said opening were made centrally through said plate without opening to either side, it would have to be made with a drill or a punch. The required accuracy cannot be attained with either of these tools; but with the milling machine said opening can be made in a large number of plates with not more than a thousandth of an inch variation. This extreme precision is necessary for a highly successful operation of the lamps. Without this precision considerable attention must be given to the adjustment of the movable parts of the lamp in order to secure correct feeding.

Immediately above the armature lever, B , a cam-stop, A^6 , is rotatably secured upon a suitable post, a^6 , extending inward from one of the side pieces, A^3 . By means of this stop the elevation of the armature lever is limited. By turning the extended portion of said cam downward, the maximum-elevation of said armature lever is decreased and by turning said extended portion upward said maximum-elevation is increased. The maximum length

of the arc between the carbons is in proportion to the maximum-elevation of said armature lever. Consequently, if it be desired to limit the arc to a certain length, the cam-stop, A^6 , is turned accordingly. This may be regarded as a gross or primary adjustment. Subsequently the exact adjustment which is desired is made by changing the elevation of the collar, F^2 , upon the arm, F' , whereby the clamping plate, F , is made to grasp the carbon rod more or less promptly or, in other words, at a greater or less depression of the armature lever.

I claim as my invention—

1. In an electric arc-lamp, the combination with the frame and magnet, E , of a carbon rod suitably guided in said frame, an armature lever hinged to said frame, a spring arranged to elevate said lever, a stirrup and arm depending from said frame, a gripping plate slotted at its ends and applied to said stirrup and arm as described, and a spring applied to said gripping plate in such manner as to cause it to tend to depress said plate, substantially as described.

2. In an electric arc-lamp, the combination with the frame and magnet, E , of a carbon rod suitably guided in said frame, an armature lever hinged to said frame, a spring arranged to elevate said lever, a gripping plate slotted at its ends and suspended from said lever in such manner as to permit one end to rise and descend and having a vertical opening extending from one of its lateral edges of proper size to receive the carbon rod, the sides of said opening forming gripping jaws at opposite sides of said rod, substantially as described.

3. In an electric arc-lamp, the combination with the frame and magnet, E , of a carbon rod suitably guided in said frame, an armature lever hinged to said frame, a spring arranged to elevate said lever, a stirrup and arm depending from said lever, a gripping plate slotted at its ends and having an opening from its side and applied to said stirrup and arm as described, and a spring applied to said gripping plate in such manner as to cause it to tend to depress said plate, substantially as described.

4. In an electric arc-lamp, the combination with the frame and magnet, E , of a carbon rod suitably guided in said frame, an armature lever hinged to said frame, a spring arranged to elevate said lever, a gripping plate suspended from said armature lever in such manner as to permit one end thereof to rise and descend, and a cam-stop, A^6 , rotatably secured upon a post, a^6 , for limiting the elevation of said armature lever, substantially as described.

5. In an electric arc-lamp, the combination with the frame and magnet, E , of a carbon rod suitably guided in said frame, an armature lever hinged to said frame, a spring arranged to elevate said lever, an adjustable stop to

limit the elevation of said lever, a stirrup and
an arm depending from said lever, a gripping
plate slotted at its ends and applied to said
stirrup and arm as described, and a spring
5 applied to said gripping plate in such man-
ner as to cause it to tend to depress said plate,
all substantially as described.

In testimony whereof I affix my signature, in
presence of two witnesses, this 6th day of
July, in the year 1893.

JESSE F. KESTER.

Witnesses:

FRED RUSCHER,
CAROLINE OHLMER.