

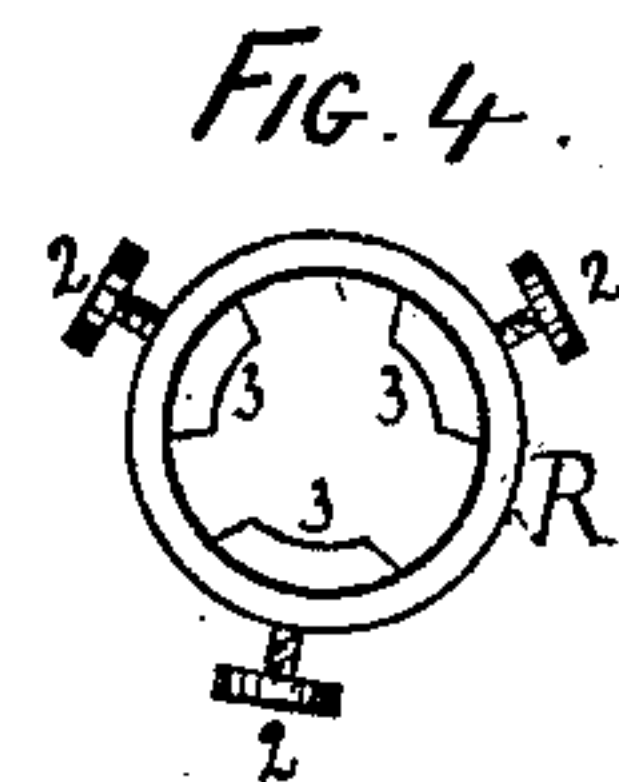
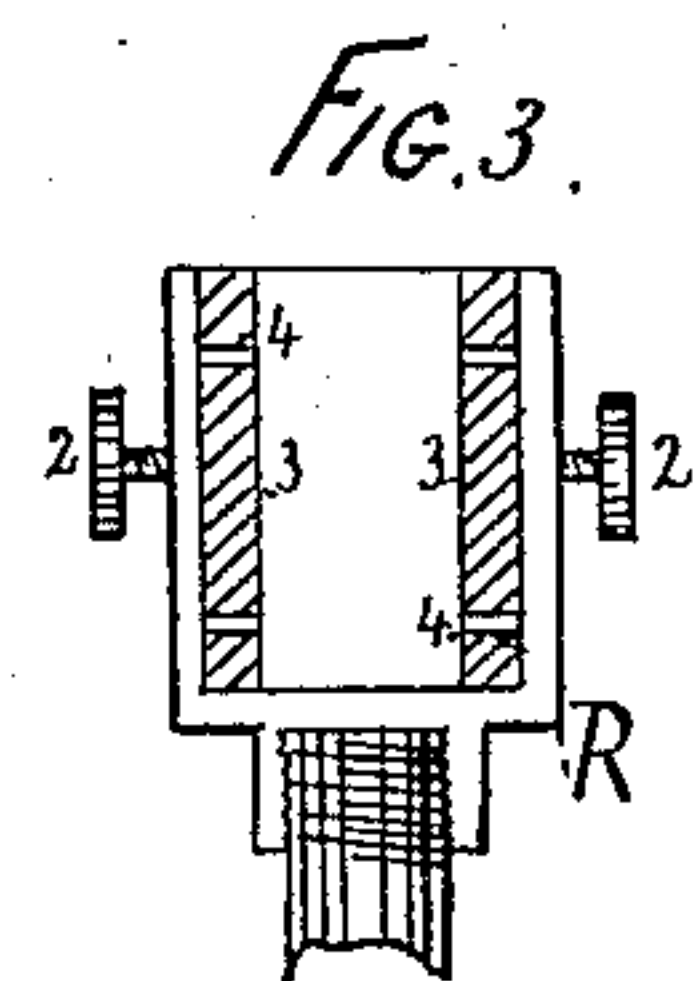
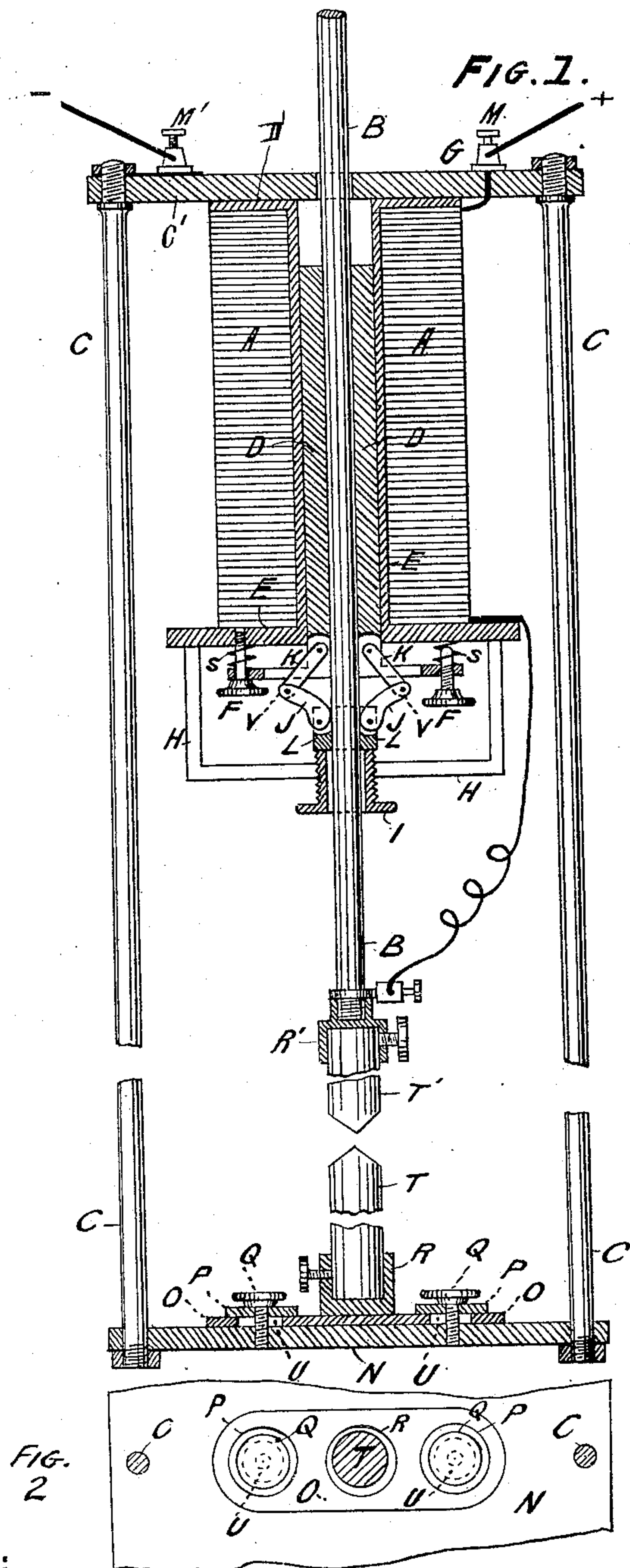
(No Model.)

E. R. KNOWLES.

ELECTRIC LIGHT.

No. 246,957.

Patented Sept. 13, 1881.



WITNESSES:

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ELECTRIC LIGHT.

SPECIFICATION forming part of Letters Patent No. 246,957, dated September 13, 1881.

Application filed June 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, EDWARD R. KNOWLES, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electric Lights; 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 or figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of electric lights known as "arc lights;" and it consists, first, in a hollow armature-core having secured thereto two compound levers, which form a clutch or holding device for the upper carbon.

It consists, second, in two compound levers secured to a hollow armature-core and a sleeve vertically adjustable.

It consists, third, in a lower-carbon holder adjustably secured to the base of the lamp.

It lastly consists in details of construction, that will be more fully described in the specification and claims, and pointed out in the accompanying drawings, in which—

Figure 1 is a section of my improved light; Fig. 2, a plan view of the lower-carbon adjusting-plate and holder; Figs. 3 and 4, a section and plan view, respectively, of the carbon holder or clamp.

Like letters of reference refer to like parts in the several figures.

It is well known that in arc lights the "feed" of the carbons is irregular, and that as the carbons approach to contact a flash occurs, and a whirring, boiling sound is given out.

Now, the object of my device is to prevent this flash, or at least to reduce it to a minimum. Again, the majority of arc lights are complex in their mechanism, and consequently expensive to manufacture. Another object, then, of my improved light is to avoid all complexity, and present a simple, compact, and cheap light.

Referring more particularly to the drawings for a description of the parts and their operation, A is a spool or magnetized helix, through which passes a hollow armature-core, D.

B represents the upper-carbon-holding rod; C, the rods securing the upper piece, *c'*, and lower plate, N.

J and K are two compound levers, one on each side of the rod B, and secured to the core D and sleeve L. The lower arms of the levers are cone-shaped in form, and act as a clutch for grasping and holding the rod B. The movement of the core D is limited by the adjusting-screws F F, which pass through the horizontal extension of the core, and are encircled by two springs, S S, which act to force the core downward. The levers are pivoted at V and at the points of attachment to the core B and sleeve L.

H is a frame, through which passes the adjusting-screw I, supporting the collar or sleeve L. The carbon-holding rod passes through this screw.

T and T' represent the carbons, secured in the clamps R R' by means of the three binding-pieces, 3 3, each of which is provided with a set-screw, 2 2. I am thus enabled to secure the carbon to the clamp firmly and evenly and centrally.

The lower-carbon holder R is attached to a movable plate, O, through which are made two holes or openings, U U', on opposite sides and equidistant from the holder R. These openings are covered by washers P, through which pass fastening-screws Q, entering the bottom plate, N. The openings in plate O are of sufficient size to permit a free motion of translation of said plate on plate N and around screws Q. The object of this is to obtain a correct vertical adjustment of the lower carbon with reference to the upper carbon, and is accomplished as follows: The upper carbon is allowed to fall until it touches, or very nearly touches, the lower one. If it is found that the carbons center, the plate O is fastened in place by the screws Q Q. If they do not "center," the plate is moved back and forth or from side to side until the carbons are vertically adjusted, and the screws then tightened, as before explained. There is an advantage in these double slots or openings in plate O, in that the lower carbon may be given a large or slight adjustment, as may be necessary. For if it is found after the carbons have been brought opposite each other that they are very nearly centered, it is only necessary to loosen one of the screws and give the plate a slight motion from the side of the loosened screw.

The operation of the device is as follows: When a current of electricity is passed through

the magnetizing-helix A the core D becomes magnetized, and is drawn into the interior of the coil A, and as the levers J K grasp and hold the rod B it, too, is drawn upward, thus
 5 separating the carbon points forming the electric arc. As the carbons burn away and the arc becomes longer, the magnetization of the coil A becomes weaker, and consequently its hold on core D, which therefore gradually de-
 10 scends until the sleeve L bottoms on the adjusting-screw I, when the levers K J are bent outwardly and release rod B, allowing it to fall, and thus again adjust the length of the arc, when the coil A is strengthened by the increased
 15 flow of current and lifts the rod, as before described. The lower ends of the double levers J K are curved at their inward sides, as shown, so as to form eccentrics or cams.

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

1. In an electric light, a magnet connected with a generator of electricity, in combination with a hollow armature-core surrounding the
 25 upper carbon-holding rod, and two compound levers, the upper arms of which are secured to the armature-core, the lower arms having inner

cam-shaped ends to form a clutch, being secured to a sleeve passing around the carbon-holding rod, said levers being alternately tightened and
 30 loosened by the rising and falling of the armature-core, substantially as set forth.

2. In an electric light, the combination, with a magnet, a hollow armature-core, carbon-holding rod, and collar L, of the levers J K, actuated by the armature-core, whereby the hold-
 35 ing-rod is alternately clamped and unclamped as the levers are straightened or bent by the rising and falling of the armature-core, substantially as set forth. 40

3. In an electric light, the combination of a magnet, a hollow armature-core, collar L, hollow adjusting-screw surrounding the carbon-holding rod, and two compound levers, sub-
 45 stantially as and for the purpose set forth. 45

4. The combination of the magnet A, hollow core D, rod B, collar L, and compound levers J K, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD RICHARDSON KNOWLES.

Witnesses:

WM. H. BROADNAX,
 SAM'L. R. TAYLOR.