

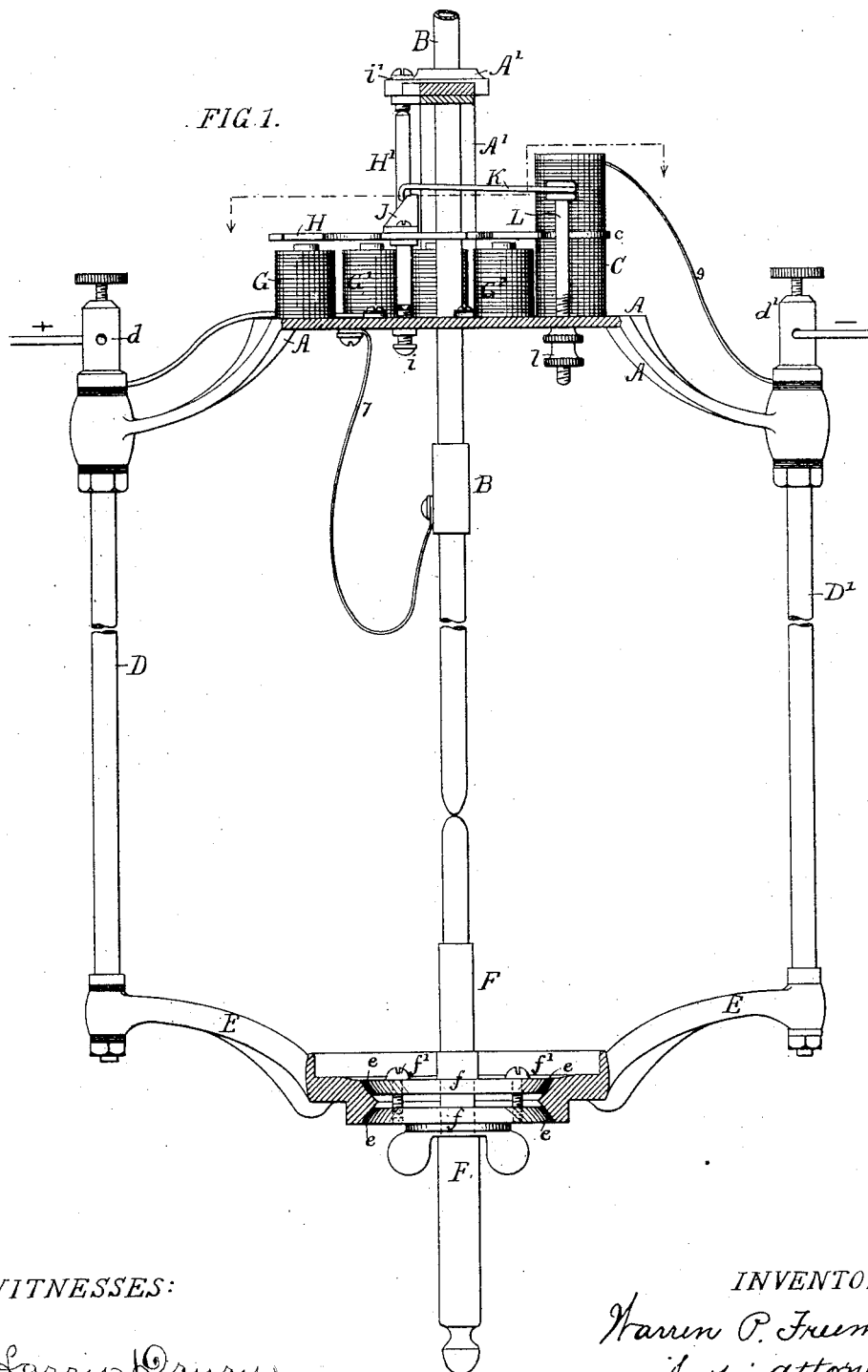
(No Model.)

2 Sheets—Sheet 1.

W. P. FREEMAN.
ELECTRIC ARC LAMP.

No. 266,455.

Patented Oct. 24, 1882.



WITNESSES:

Harry Orury
James F. Tobin

INVENTOR:

Warrin P. Freeman
by his attorneys
Howson and Jones

(No Model.)

2 Sheets—Sheet 2.

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FIG. 2.

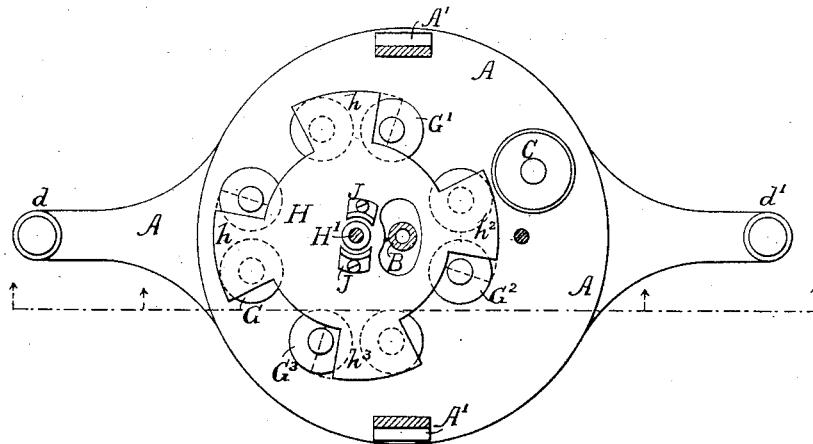


FIG. 4.

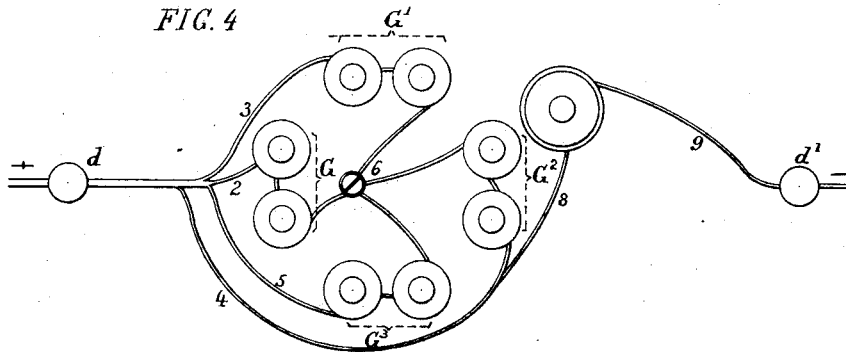
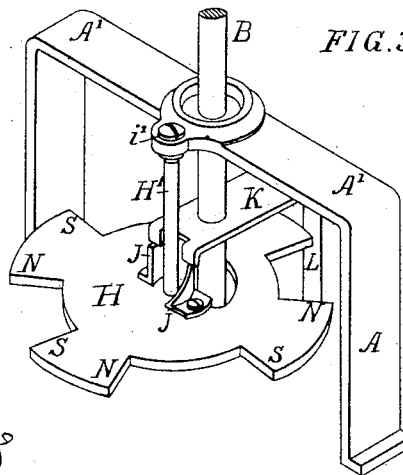


FIG. 3.



WITNESSES:

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INVENTOR:

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Howell and Ford

UNITED STATES PATENT OFFICE.

WARREN P. FREEMAN, OF NEW YORK, N. Y., ASSIGNOR TO WILLIAM F. JOBBINS, OF EAST ORANGE, NEW JERSEY.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 266,455, dated October 24, 1882.

Application filed July 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, WARREN P. FREEMAN, a citizen of the United States, and a resident of the city of New York, State of New York, have
5 invented certain Improvements in Electric-Arc Lamps, of which the following is a specification.

My invention consists of certain improvements in the construction of electric lamps, my invention having more particular reference to
10 the automatic devices for regulating the feed of the carbons and to the construction of the stationary carbon-holder, as more fully described hereinafter.

In the accompanying drawings, Figure 1 is
15 a side view, partly in section, of my improved lamp; Fig. 2, a sectional plan view on the line 1 2, Fig. 1; Fig. 3, a perspective view of a portion of the regulating devices, and Fig. 4 a diagram illustrating the arrangement of the cir-
20 cuits.

The upper cross-piece, A, of the lamp-frame has secured to its outer ends, with insulated connections, as usual, the vertical rods D D', which support the lower cross-piece, E, carry-
25 ing the stationary carbon-holder F, as described hereinafter.

On the circular flat portion of the cross-piece A is mounted an arch, A', in which and in the said cross-piece is guided the movable carbon-
30 holder B in the usual manner.

On the cross-piece A are mounted in a circle a number of electro-magnetic spools, there being in the present instance four pairs, G G' G² G³. In the center of this circle is mounted the
35 axis H' of the disk-like armature H on the adjusting-points i i', passing respectively through the arch A' and cross-piece A. This armature has four radiating pole-pieces, h h' h² h³, corresponding with the numbers of pairs of coils G G' G² G³, each pole-piece having a north and
40 south pole, N. S., Fig. 3, to be acted on by the south and north poles of the corresponding pair of coils. The position of the armature when a current is not passing through the coils is illustrated in Fig. 2; but when a current is
45 caused to pass through the electro-magnets the poles of the armature will be so attracted by the latter as to cause the armature to turn on its axis in the direction of the arrow, Fig. 2,

until it reaches the position shown by dotted 50 lines. On this armature-disk are mounted, near its axis, two inclined projections or wedges, J, Fig. 3, preferably curved from the center of the axis, as shown in Fig. 2. On the acting
55 faces of these wedges rests the inner end of the clamp-lever K, bifurcated in the present instance to embrace the axis H'. The outer end of the clamp, preferably weighted or provided with a spring, rests on the top of an adjustable
60 stop, L, screwed into the cross-piece, and provided with adjusting and jam nuts l to vary the angle of the clamp K.

On the cross-piece A is also mounted a resistance-coil, C, in a shunt-circuit between the
65 two binding posts d d', as shown in the diagram, Fig. 4. The wire 1, leading from the binding-post d, has four branches, 2, 3, 4, and 5, connected to the coils of the four pairs of electro-magnets G G' G² G³, respectively, and
70 the other terminals from these four pairs of coils are electrically connected to the cross-piece A—say at 6—and the current thence passes through the wire 7, Fig. 1, upper-carbon holder B, carbons, lower-carbon holder
75 F, cross-piece E, rod D', and out at d'. One of the terminals, 8, of the resistance-coil C is connected to the post d either direct or through the medium of one of the branches 2, 3, 4, or 5, while the other terminal, 9, is connected to the
80 post d'.

When a current is first passed through the lamp the electro-magnets G G', &c., will cause the armature H to turn and the wedge-projections J to raise the inner end of the clamp-lever K, which consequently raises the upper
85 carbon-holder, separates the carbons, and forms the arc. As the consumption of the carbons increases the resistance in the main working-circuit the current will leak through the shunt-circuit containing the coil C, and the armature
90 will be induced by the weight of the carbon-holder B and clamp K, with or without the aid of a spring, to return to the position shown by full lines in Fig. 2, when the carbon-holder B
95 will be released and move toward the stationary carbon, to be immediately grasped again by the clamp in the usual manner.

I prefer to mount the resistance-coil adjacent

to the armature and form on the core a flange or projection, *c*, close to the edge of the armature, so that when the latter returns to the position shown by full lines the magnetic action of the flange *c* will act in place of a dash-pot to ease the recoil.

The lower carbon holder *F* is carried by two circular disks, *f'f'*, which have beveled or curved edges adapted to correspondingly-curved seats *e e* in the circular portion of the cross-piece *B*, and these two disks are secured together by screws *f'f'*. These disks thus form a universal joint, by which the carbon-holder *F* may be adjusted and brought in line with the upper carbon and secured after adjustment by tightening the screws *f'*.

I claim as my invention—

1. The combination of the movable carbon-holder and clamp-lever of an electric-arc lamp with electro-magnets and a rotary armature carrying wedge-projections to operate on said clamp, substantially as set forth.

2. The combination of the movable carbon-holder and clamp of an electric arc lamp with electro-magnets, armature having radiating pole-pieces mounted on an axis, and provided

with wedge-projections, on which one end of the said clamp rests.

3. The combination of the clamp of an electric-arc lamp with a rotary armature operating said clamp, and having a series of radiating pole-pieces, each with a north and south pole, and a corresponding number of pairs of electro-magnetic coils, substantially as described.

4. The combination of the electro-magnets, rotary armature and clamp operated thereby, with a resistance-coil whose core has a flange or projection adjacent to and adapted to act on said armature.

5. An electric lamp having its stationary carbon-holder secured to a pair of disks, *f'f'*, with curved edges secured together and adapted to corresponding seats in the frame, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WARREN P. FREEMAN.

Witnesses:

FRANKLIN BISCHOFF,
HUBERT HOWSON.