

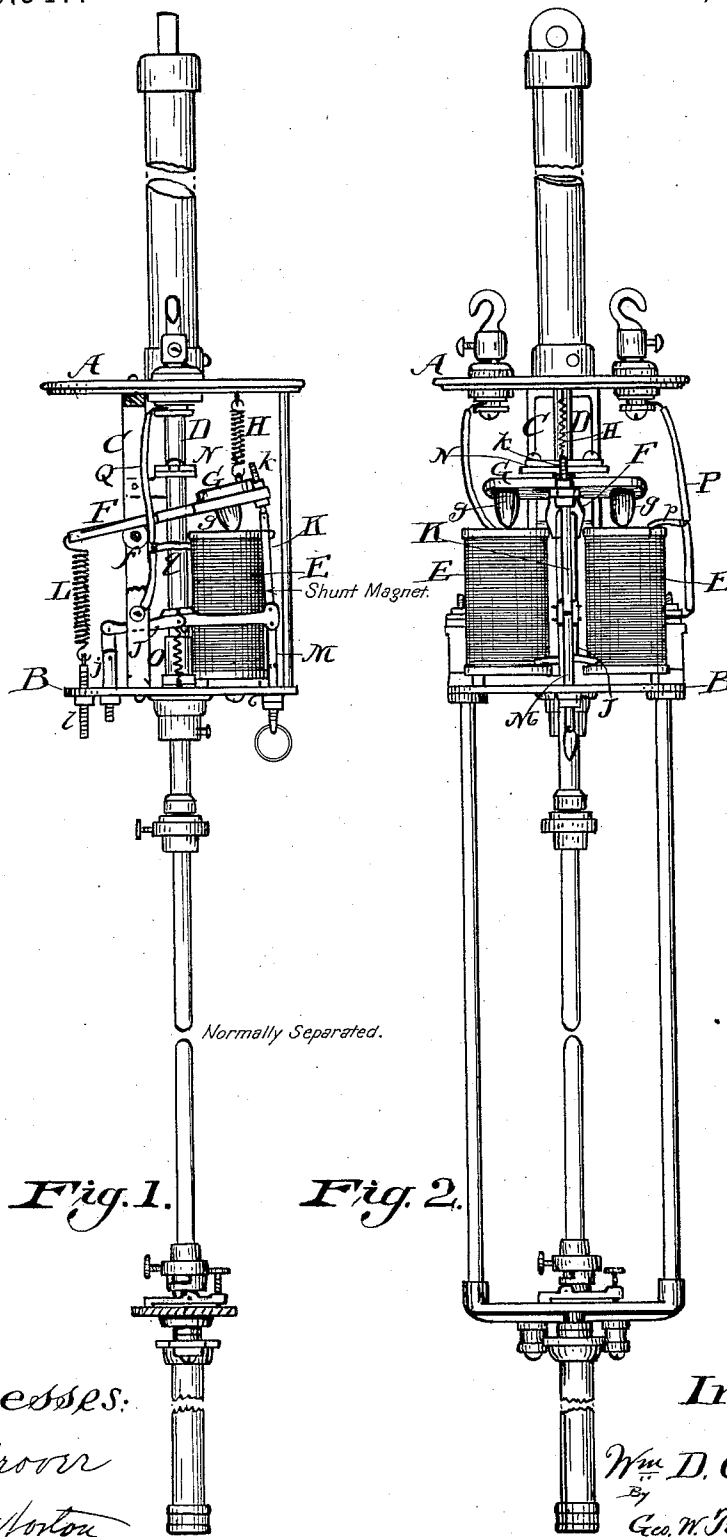
(No Model.)

2 Sheets—Sheet 1.

W. D. GRAVES.
ELECTRIC ARC LAMP.

No. 469,347.

Patented Feb. 23, 1892.



(No Model.)

W. D. GRAVES.
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2 Sheets—Sheet 2.

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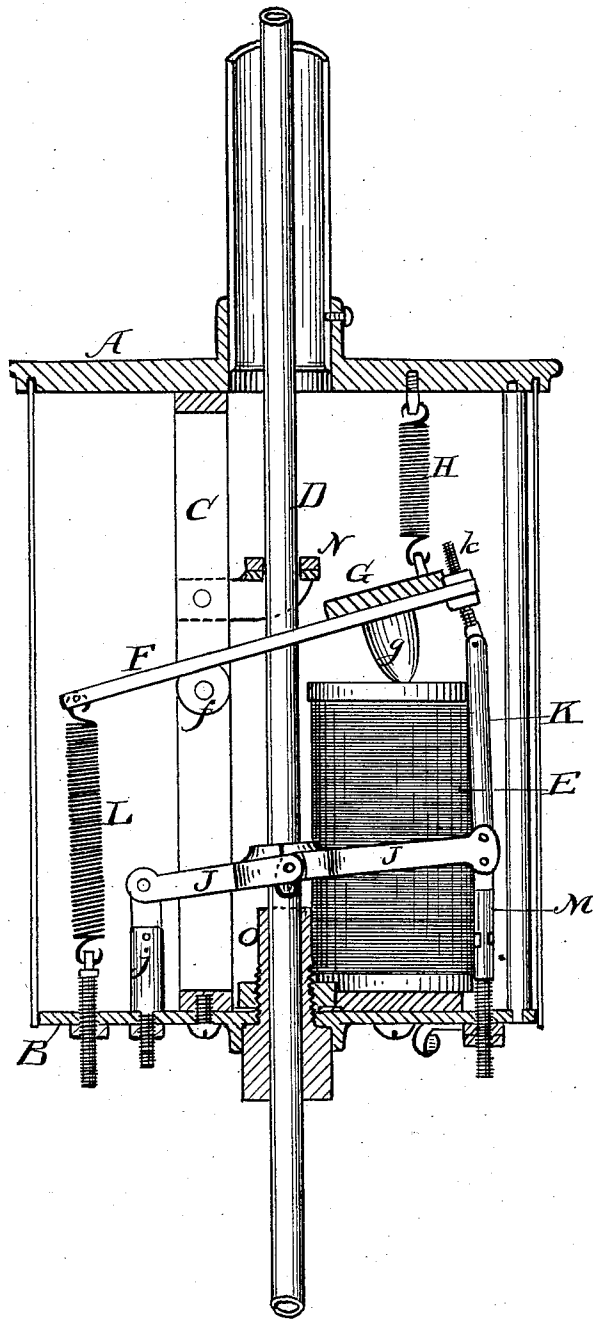


Fig. 3.

Witnesses
D. Grover
H. B. Norton

Inventor,
Wm. D. Graves,
by Geo. W. Tibbitts Atty.

UNITED STATES PATENT OFFICE.

WILLIAM D. GRAVES, OF CLEVELAND, OHIO.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 469,347, dated February 23, 1892.

Application filed November 9, 1891. Serial No. 411,400. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. GRAVES, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Electric-Arc Lamps, of which the following is a specification.

This invention relates to electric-arc lamps, the nature and objects of which will fully appear from the subjoined description when considered in connection with the accompanying drawings, in which—

Figure 1, Sheet 1, is a side elevation of an arc lamp embodying my improvements. Fig. 2 is a transverse side elevation of the same. Fig. 3, Sheet 2, is an enlarged vertical section showing my new mechanism.

A and B represent the upper and lower heads of a case for containing the operative mechanism.

C is a narrow frame or double post secured between the heads near the center. D is the upper carbon-holding rod, which works through the said heads and is fed and controlled by the new mechanism as follows:

E E are the helices of an electro-magnet, having a current derived from the main current.

F is a lever fulcrumed at *f* to the posts C, having a hole through which the carbon-holder passes, and it carries on its upper end the armature-bar G, to which are attached two acorn-shaped projections *g g*, hanging over the poles of the magnet E E. To the armature-bar is attached one end of a spring H, connecting it with the upper head A, and to lower end or short arm of the lever is attached one end of a stronger spring L, the lower end of which is attached to the lower head B by means of a screw *l* passing through the head and having a nut by which the tension of the spring may be regulated.

J is a second lever pivoted to a short post *j*, fixed to the head B. This lever has a ring at its middle part, through which the carbon-holder passes. The ring is divided and the two parts are hinged together, so that it grips the carbon-holder for holding it. To the moving end of lever J is pivotally attached a rod K, whose upper end has a screw-threaded arm *k*, pivotally attached and passed through the end of lever F, said screw having nuts above and below the lever for adjustment of the rod with the lever. To the lever J is also pivotally attached

a rod M, extending down through the head B, its lower end being screw-threaded and provided with nuts. The purpose of the rods K and M is for limiting the upward movements of the levers F and J.

N is a cross-bar attached to the post or frame C, through which the holder D passes, and is provided as a guide for retaining the holder in the exact center line, and O is a sleeve fixed in the lower head, through which the holder also slides easily.

P is the wire conveying the direct current to the carbons, from which a branch wire *p* connects with the helices E E, and Q *q* are the return wires.

The working of this mechanism is as follows: The current when turned onto the lamp and the carbons being widely separated, the current is shunted through the helices E E. This draws the armature down together with the lever J, and as the lever J moves down a projection on the sides of the ring comes in contact with the sleeve O and the said lever is bent, which opens, the ring letting go its grip on the holder D, which now being free falls and brings the carbons together. The current is then immediately diverted to the direct line through the carbons and the current, being weakened through the helices E E, lets the armature rise, straightening out the lever J. The ring again grips the carbon-holder and opens the arc. When the arc becomes too great, the current again finds its way through the helices and the armature is again drawn down and the grip of the ring relaxed on the holder, allowing the holder to slide down, reducing the arc and reducing the shunt-current.

Having described my invention, I claim—

In an arc-lamp, the combination, with the upper carbon holder, of a magnet E in a shunt-circuit, a lever F, fulcrumed to a frame or post C and carrying the armature-bar G, having acorn projections *g g*, springs H and L, connected to said lever, lever J, pivoted to post *j* and having an open hinged ring gripping the carbon-holder, rod K, attached to lever J and connecting it with lever F, and a rod M, also connecting it with head B by a screw, operating substantially as described.

WILLIAM D. GRAVES.

Witnesses:

GEO. W. TIBBITTS,
E. JAY PINNEY.