

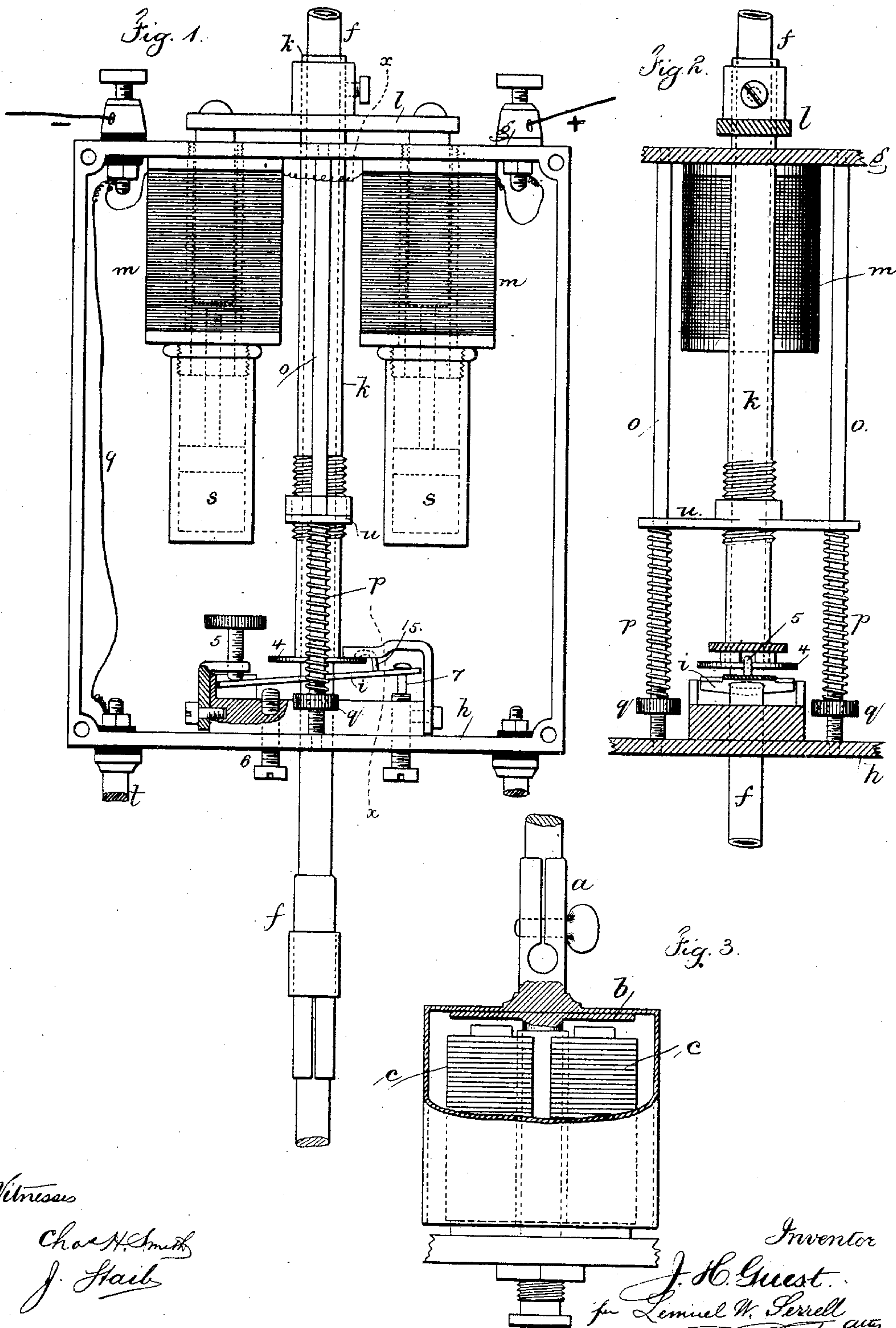
(No Model.)

2 Sheets—Sheet 1.

J. H. GUEST.
ELECTRIC ARC LAMP.

No. 265,670.

Patented Oct. 10, 1882.



(No Model.)

2 Sheets—Sheet 2.

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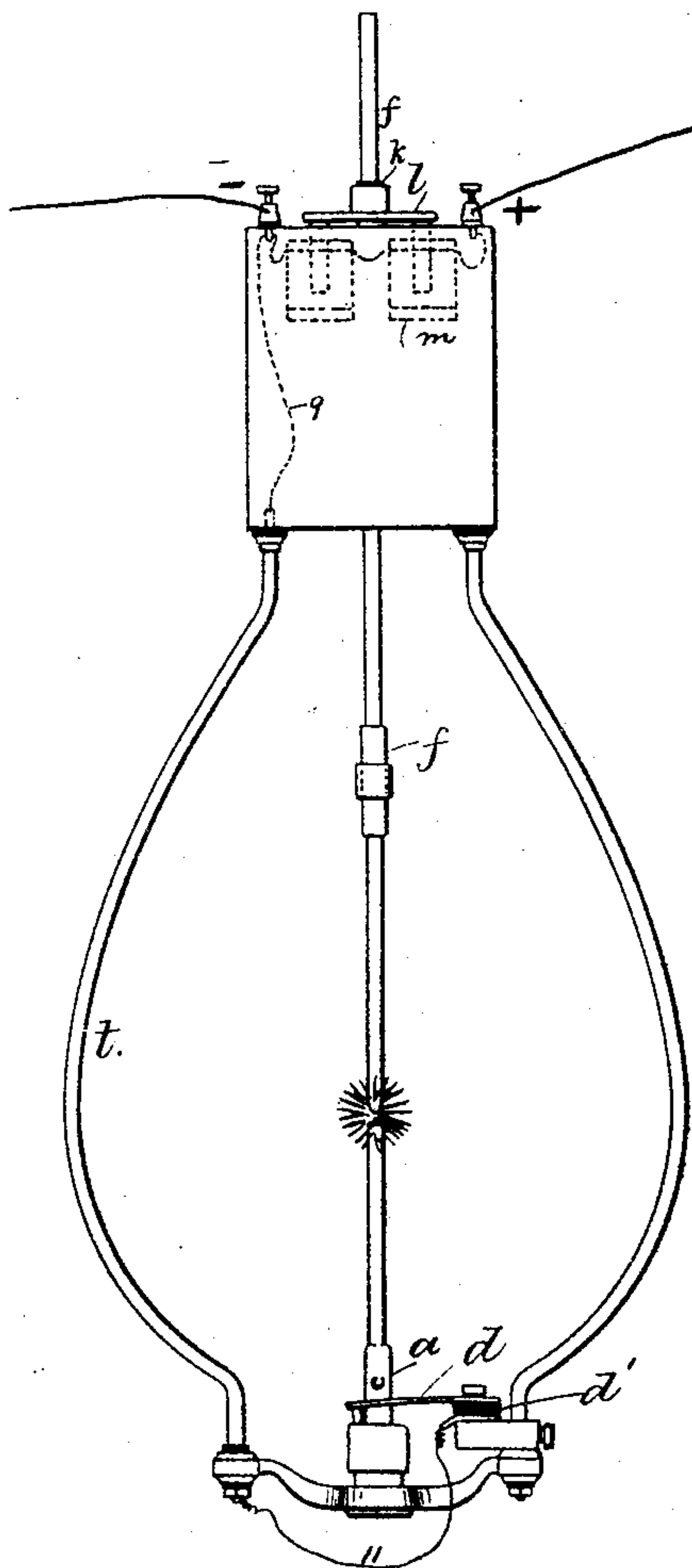


Fig. 4.

Witnesses

Chas. H. Smith
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J. H. Guest
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UNITED STATES PATENT OFFICE.

JOHN H. GUEST, OF BROOKLYN, NEW YORK.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 265,670, dated October 10, 1882.

Application filed June 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. GUEST, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Electric Lamps, of which the following is a specification.

The object of this invention is to regulate the arc between the carbon points and to feed the carbon from time to time by one electromagnet of high resistance placed in a shunt-circuit, and mechanism acting therewith, so that the several costly magnets and appliances heretofore employed may be dispensed with and the operations simplified.

In the drawings, Figure 1 is an elevation of the magnet and mechanism. Fig. 2 is a section at *xx*. Fig. 3 represents the lower carbon holder. Fig. 4 is a diagram view to show the circuit-connections.

The lower-carbon holder *a* may be provided with an armature, *b*, and magnets *c* to draw down the lower carbon and establish the arc, as represented in Fig. 3, and which corresponds generally with the devices for this purpose shown in my Patent No. 259,007; or the lower carbon may be drawn down by the action of a thermostatic spring, *d*, receiving heat from a block of carbon or similar material, *d'*, through which the circuit passes, as seen in Fig. 4. This device corresponds generally to that shown in my Patent No. 254,546.

I do not limit myself to any particular means for separating the carbons by drawing down the lower-carbon holder.

The upper-carbon holder *f* is of any suitable construction. It is preferably a round rod of sufficient length to pass through the plates *g h*, that support the mechanism of the lamp. Around this holder *f* there is a tubular sleeve, *k*, terminating at the upper end in the cross-bar *l* that carries the cores of the solenoid-helices *m*. There is also a cross-head, *u*, connected to the sleeve *k* by an adjusting-screw, and this cross-head *u* slides freely upon the stationary rods *o o*, that are supported at their ends by the plates *g* and *h*.

Around the rods *o* there are helical springs *p* and nuts *q* by means of which the action of the springs *p* upon the cross-head *u* can be adjusted.

Around the lower end of the sleeve *k* there

is an annular flange, 4, and around the rod of the carbon-holder there is a clamp, *i*, having a hook, 15, that passes up over the flange 4. The stop-screws 5 6 7 perform the duty of limiting the movements of the clamp *i*.

The solenoid-helices are of high resistance, and are placed in a shunt between the + binding-post and the - binding-post, and it is preferable to employ dash-pots *s* with plungers connected with the respective solenoid-cores, as indicated by dotted lines, to prevent flickering of the lamp.

The operation is as follows: In a state of rest the two carbon electrodes should be in contact. When the current is turned on it passes by the + binding-post to the plates *g* and *h* and metallic parts, the upper-carbon holder *f* and carbon, thence to the lower carbon and holder, and through the helices *c* or thermostatic spring *d*, according to which one is used, and thence, by the wire 11 and frame *t* and an insulated wire, 9, to the - binding-post. At the same time part of the current passes through the helices *m* in the shunt-circuit. The carbons are separated by the lower carbon being drawn down as aforesaid. The springs *p* are sufficient to resist the power of the solenoid when the arc is of the proper length; but as the carbon is consumed the magnetism in the helices *m* is increased by a larger amount of current passing by the shunt, the cores and cross-bar *l* are drawn down against the action of the springs *p*, and the upper carbon moved toward the lower carbon until the clamp *i* is relieved from the upper-carbon-holder rod by touching upon the screw-stop 6, which allows the upper carbon to drop, and the magnetism in *m* is instantly lessened. The springs *p* raise the upper carbon, re-establish the arc, and the operations are repeated.

It is evident that this lamp can be used without any device for drawing down the lower carbon, for if the carbon electrodes are not in contact when the lamp is started the current passing through the high-resistance helices of the shunt will act upon the solenoid-cores and draw them down and liberate the clamp of the upper-carbon holder, so that the upper carbon will be moved by gravity into contact with the lower carbon, closing the main lamp circuit and lessening the current in the solenoid, so

that the springs will act to lift the upper carbon and establish the arc. This is not always the best mode of procedure, as the helices of the solenoids may become heated.

5 I claim as my invention—

1. The combination, with the upper-carbon holder *f*, of the tubular sleeve *k*, the two solenoid-helices *m*, their cores, and cross-bar *l*, connected to said sleeve *k*, the cross-head *u*, guide-
10 rods *o*, springs *p*, flange 4 upon the sleeve *k*, the clamp *i*, and stops, substantially as set forth.

2. The combination, with the carbons and carbon-holders in an electric lamp, of a clamp, *i*, acting upon the upper-carbon-holding rod,

a sleeve around such rod with a flange acting 15 upon the clamp, springs *p* to raise the carbon-holder and parts therewith connected, a solenoid-magnet of high resistance in a shunt, the cores of which solenoid are connected to the mechanism supporting the upper carbon to 20 feed the carbon as the same is consumed, substantially as set forth.

Signed by me this 21st day of June, A. D. 1882.

J. H. GUEST.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.