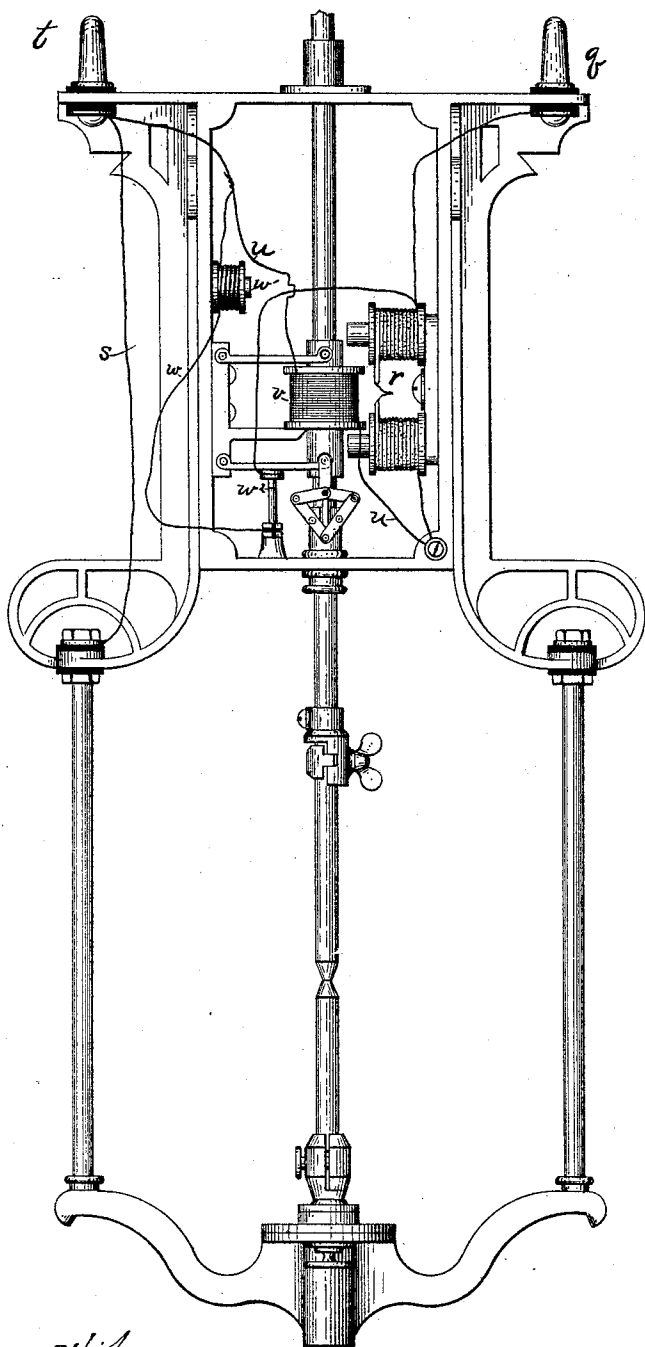


(No Model.)

C. E. SCRIBNER.
ELECTRIC ARC LAMP.

No. 486,958.

Patented Nov. 29, 1892.



Witnesses.

Henry Transfunder.
T. H. McIllock.

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UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 486,958, dated November 29, 1892.

Application filed January 2, 1883. Serial No. 80,753. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Arc Lamps, (Case No. 51,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to automatic cut-outs for electric-arc lamps; and its object is to provide for automatically opening a shunt-circuit around the lamp when the current is first established, this shunt being automatically closed again in case the lamp should be put out, whether accidentally or otherwise.

My cut-out is of special utility where several lamps are burned in one circuit, since by its use failure on the part of one lamp to feed will not interrupt the circuit.

My invention consists in the lifting-magnet included in the main circuit, a fine-wire magnet included in a shunt around the arc, and a shunt around both of these magnets, including resistance and contact points adapted to be controlled by either of said electro-magnets to open or close the said shunt-circuit, including the resistance.

My invention will be readily understood by reference to the accompanying drawing, in which I have shown an electric-arc regulator embodying my invention.

The main circuit may be traced from hook q through the lifting-magnet r to the frame and carbon-rod, thence through the carbons, and thence to the other hook t . The shunt-circuit u may be traced through the fine-wire coil v , as shown. This fine-wire coil when magnetized serves to demagnetize its core, which is the armature of the lifting-magnet, thus causing the carbon to feed. Around this fine-wire coil and the arc I connect the shunt-wire w , in which I include resistance w' . The contact-points w^2 are so arranged in this shunt-circuit that they will be opened before the carbons are separated, and in case the lamp should fail to feed the armature will gradually sink to its lowest point, when the contacts w^2 will be closed, thereby short-circuiting the lamp. In the use of clutches there

is a little lost motion—that is, the armature moves slightly before the clutch can grasp the rod. Suppose, for example, armature k be at its lowest point, in which case the rod may be moved freely through the clutch. On raising the armature the clutch first grasps the rod and then as the armature moves farther up lifts the rod. There is thus a slight upward movement of the armature before the rod is lifted. I arrange the contacts w^2 so that they will be separated by this slight movement or lost motion of the armature. The resistance w' in the resistance shunt-circuit w may be very slight, say one-half an ohm. Until the arc is established the armature of the lifting-magnet r , which said armature forms also the core of the solenoid v , remains in its lowest position, and the clutch suspended thereon is opened, and hence the contacts w^2 will be closed, thus completing the resistance shunt-circuit around the lamp. Now when the current is established the resistance w' is sufficient to cause sufficient current to flow through the lifting-magnet to raise the armature far enough to open the resistance shunt-circuit at w^2 . As soon as this shunt-circuit is opened the whole current is directed through the lifting-magnet, and the lifting-magnet is energized so as to attract its armature with sufficient force to cause the clutch to grasp the rod and separate the carbons. If now while the lamp is burning the carbon-rod should stick in the guides or be arrested by a stop or otherwise so that the arc should increase to great length, or suppose the carbon-point should break or fall out, then whatever might be the occasion of the trouble the armature will at once descend to its lowest position, thus closing the contacts w^2 to complete the circuit around the carbons. This resistance shunt-circuit being closed will remain closed until the circuit through the arc is again established. When this occurs the action of the lamp will be as in the first instance. The lifting-magnet will be sufficiently excited to attract its armature to open contact-points w^2 . The current will then be all directed through the lifting-magnet and the arc will be again established. As before stated, the solenoid v is in a shunt around the arc. Increase in length of arc thus increases the force

of solenoid *v*. This solenoid *v* tends to suck its core—that is to say, the armature of lifting-magnet *r*—down, thus opposing the attractive force of the lifting-magnet *r*.

5 The adjustment of the contact-points *w*³ with relation to the clutch which grasps the carbon-rod is such that they are not closed until after the clutch has entirely released the rod. Thus the armature is permitted to freely feed
10 the carbons together as they are burned away and to keep the arc properly regulated in the ordinary working of the lamp without closing the cut-out or shunt around the arc.

It is evident that any other suitable form
15 of resistance may be used instead of the coil *w*'.

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

20 1. In an electric-arc lamp, the combination, with an electro-magnet in the main circuit thereof, of an electro-magnet in the shunt-circuit of the arc of the lamp, a resistance shunting both the arc and the electro-magnet in the
25 main circuit, and contact-points to open or close the said resistance shunt-circuit, the said contact-points being operated by either of the said electro-magnets

2. In an automatic cut-out for arc lamps, a resistance-shunt with its contact-points, an
30 electro-magnet in the main circuit, an electro-magnet in the shunt of the arc of the lamp, the clutch for engagement with the rod, and said clutch being provided with lost motion to permit the breaking of the contacts to open
35 the resistance-shunt before the carbon-points are separated.

3. The combination, in an electric-arc lamp, of the lifting-magnet placed in the main circuit and a fine-wire magnet included in a
40 shunt around the arc, a shunt around both of these magnets including resistance, the carbon-rod, the clutch therefor, and the pivoted lever of said clutch, said lever controlling contacts *w*², included in the said shunt containing
45 the resistance, whereby on establishing the current through the lamp the contacts *w*² are opened before the rod is lifted by the closing of the clutch, substantially as and for the purpose specified.

In witness whereof I hereunto subscribe my name this 21st day of October, A. D. 1882.

CHARLES E. SCRIBNER.

Witnesses:

GEORGE PRESTON BARTON,
PAUL APPLEBY STALEY.