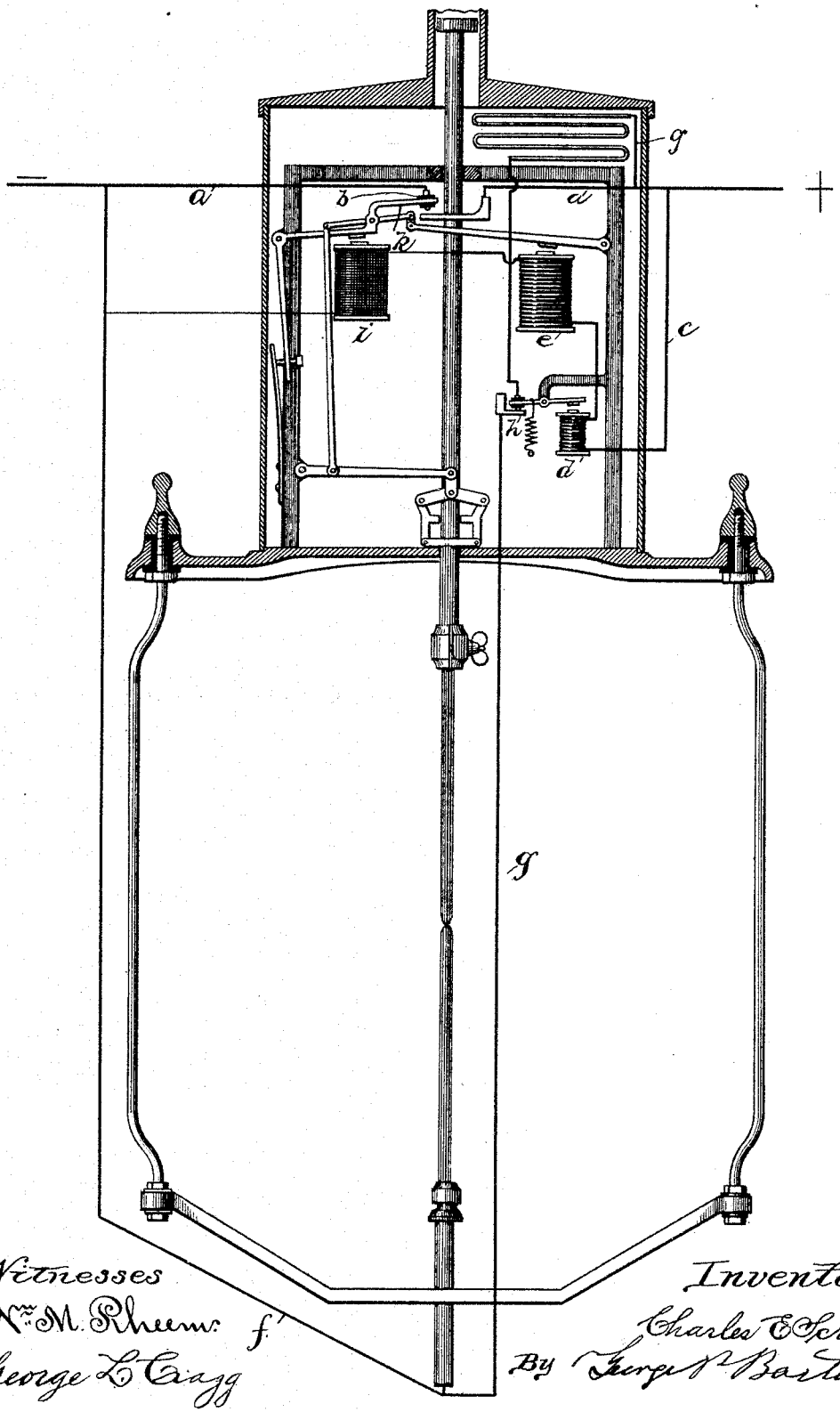
(No Model.)

# C. E. SCRIBNER.

## CUT-OUT FOR ARC LAMPS.

No. 491,605. Patented Feb. 14, 1893.




Witnesses
Wm. M. Rheems
George L. Craig

Inventor.
Charles E. Scribner
By George P. Barton
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

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

## CUT-OUT FOR ARC LAMPS.

SPECIFICATION forming part of Letters Patent No. 491,605, dated February 14, 1893.

Application filed December 1, 1890. Serial No. 373,137. (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 Automatic Cut-Outs for Arc Lamps, (Case No. 234,) 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.

The object of my invention is to provide automatic means for closing a circuit around an electric lamp when for any reason the carbons cease to feed or are consumed. Various devices have heretofore been employed for this purpose, one of the most common forms being what is known as the Siemens cut out.

My invention herein may be considered as an improvement upon the Siemens device, and speaking generally, my invention consists in adding to the Siemens cut out a direct circuit or shunt around the lamp adapted to be momentarily closed on the formation of an abnormal arc to cause the cut out proper to be closed.

My invention will be more readily understood by reference to the accompanying drawing, in which I have shown a single carbon lamp of the general type illustrated and described in my patent No. 415,571, granted November 19, 1889, for electric lamps, in connection with my invention herein.

The special shunt circuit *a* which I have invented contains a circuit closer *b* controlled by the feeding mechanism of the lamp. Whenever an abnormal arc is formed the feeding mechanism is lowered or brought into position to automatically close this shunt *a* at the circuit closer *b*. The closing of a direct shunt entirely around the lamp will necessarily shunt out the arc and de-energize all the electro magnetic devices thereof. It is this momentary shunting of the current from the lamp which brings the cut out proper into action as I will proceed to explain.

The circuit through the lamp may be traced by wire *c* through the cut out magnet *d*, the lifting magnet *e* and thence through the carbons and to line *f* leading out to wire —. Thus cut out magnet *d*, lifting magnet *e* and the carbons of the lamp are placed in series and around them is placed, after the manner of the Siemens device, a shunt circuit *g* containing resistance, said shunt circuit *g* having in its circuit a circuit closer *h* controlled by cut out magnet *d*. Speaking generally, the magnet *d*, its armature and armature lever operating the cut out *h* may be considered as an electro magnetic cut out device, its action being practically the same as the well known Siemens cut out.

The feeding magnet *i* is included in a shunt around the arc in a well known way. The lamp is shown in its normal position before the current is established. That is to say, the electro magnetic cut out is closed, the circuit closer *b* in direct shunt *a* is opened and the carbons are in contact. Now when current is directed over line + it will find circuit through magnet *d*, thus immediately opening the contacts *h* in the shunt circuit *g*. Thus the whole current will be directed through lifting magnet *e* and the carbons, the arc will be established and the feeding magnet *i* will perform its normal function of operating the clutch to permit the carbon rod to descend as the carbons are consumed. The excitation of the magnet *i* while performing its normal feeding functions will not lower the armature lever *k* thereof far enough to close circuit closer *b*. This circuit closer *b* is, however, adjusted so that an abnormal arc will cause feeding magnet *i* to be excited sufficiently to close the circuit closer *b* and shunt out the lamp. This closing of the shunt *a*, however, will be only momentary because the magnet *i* will be immediately de-energized to permit armature lever *k* to recede so as to again open the shunt circuit *a*. The momentary closing of the contacts shunts the arc, causing it to break, thus interrupting the circuit through cut out magnet *d*, thereby closing the cut out shunt circuit. The descent of the rod being arrested by its stop *l* coming upon the frame of the lamp, or otherwise, the carbons will be held separated; therefore the circuit through magnet *d*, lifting magnet *e* and the carbons will be permanently opened at the carbons; the entire current will thereupon be directed through the cut out shunt *g*.

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

1. The combination in an electric arc lamp, of an electro magnetic cut out device, the lifting magnet and carbons connected in series with a magnet controlling cut out in a shunt placed around said electro magnetic cut out, said lifting magnet and said carbons, said electro magnetic cut out being adapted to hold said cut out shunt open while the lamp is burning and closed when the arc is extinguished and a direct shunt around the lamp containing a circuit closer controlled by the feeding mechanism of the lamp to momentarily close the circuit around the lamp on the formation of an abnormal arc to bring the electro magnetic cut out device into action, substantially as and for the purpose specified.

2. The combination with a shunt circuit *a* around the lamp containing a circuit closer *b* brought into action upon the formation of an abnormal arc to momentarily shunt out the lamp and extinguish the arc, of an electro magnetic cut out device adapted to close a permanent shunt about said lamp when actuated brought into action by such momentary closing of the shunt circuit *a*, substantially as and for the purpose specified.

3. The direct shunt *a* around an electric arc lamp including the circuit closer *b* in combination with the feeding mechanism for closing said circuit closer upon the formation of an abnormal arc, substantially as and for the purpose specified.

In witness whereof I hereunto subscribe my name this 11th day of November, A. D. 1890.

CHARLES E. SCRIBNER.

Witnesses:

ELLA EDLER,

GEORGE L. CRAGG.