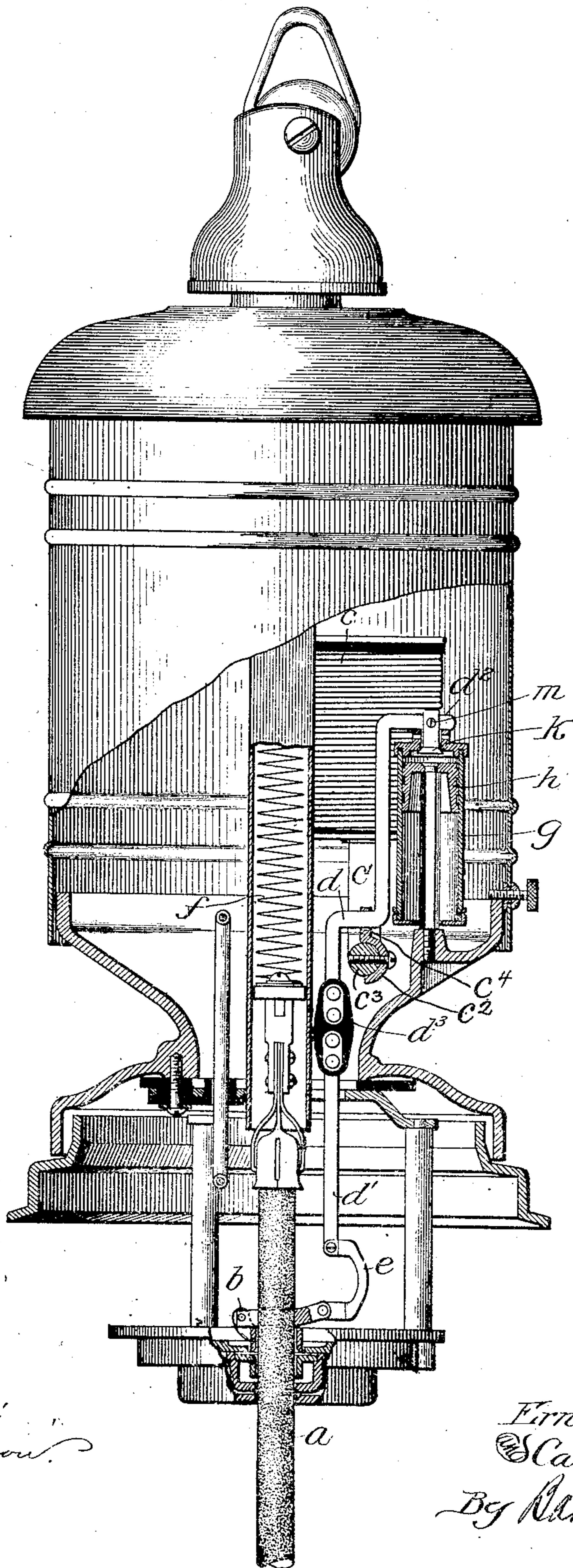


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PATENTED JULY 7, 1908.

E. P. WARNER & C. WILER.
ARC LAMP REGULATING MECHANISM.

APPLICATION FILED JAN. 15, 1906.



Witnesses:
Geo. C. Brown
J. H. Folk

Inventors,
Ernest P. Warner,
Carl Wiler,
By *Norton & Skinner*
Attys

UNITED STATES PATENT OFFICE

ERNEST P. WARNER AND CARL WILER, OF CHICAGO, ILLINOIS, ASSIGNORS TO WESTERN ELECTRIC COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ARC-LAMP REGULATING MECHANISM.

No. 892,475.

Specification of Letters Patent.

Patented July 7, 1908.

Application filed January 15, 1906. Serial No. 296,073.

To all whom it may concern:

Be it known that we, ERNEST P. WARNER and CARL WILER, citizens 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-Lamp Regulating Mechanism, of which the following is a full, clear, concise, and exact description.

10 Our invention relates to an electric arc lamp, and its object is to provide an improved regulating mechanism which will be simple, compact and reliable in operation.

15 The invention further contemplates an improved device for retarding the lifting movement of the movable carbon.

20 The accompanying drawing is a sectional elevation of the regulating mechanism of an arc lamp constructed in accordance with our invention. The upper or movable carbon *a* is arranged to slide vertically, as usual, in the framework of the lamp, and a ring clutch *b* is provided for engaging said carbon and adjusting the position thereof, said clutch being
25 arranged to be reciprocated by means of an electromagnet which in the lamp shown is a solenoid *c*. In accordance with our invention, the armature *c'* of the solenoid is connected with the horizontal portion *d* of a
30 lever. Such connection may be made, as indicated in the drawings, by securing a vertically projecting connecting member *c''* to an angular extension *c'''* of the armature or plunger *c'* of the solenoid, said connecting
35 member being provided with an opening *c''''* through which the lever *d* loosely passes. Said lever has a downward extension *d'* alongside the carbon rod, which extension is connected at its lower end with said clutch *b*.
40 A retarding device such as the dash pot, illustrated is connected with the opposite end of said lever, which may be provided with an upward extension *d''* so that the parts may be arranged compactly. The feed clutch and
45 the carbon held thereby are thus hung from one arm of the lever *d* while the retarding device or dash pot is hung from the other end thereof, the lifting force of the magnet being applied in the middle. The moving system
50 is thus balanced and permits great ease and freedom of movement of the parts without danger of sticking, each part adjusting itself to the others. The freedom of movement is increased by interposing a link *e* between the
55 lever arm *d'* and the clutch *b*, so that the end

of said lever arm may swing slightly toward or from the carbon rod without causing lateral movement of said carbon rod or any tendency either to undue sticking or undue looseness of the clutch, said clutch being only
60 moved vertically in response to the magnet. The lever arm *d'* may be divided by an insulating coupling *d'''* to prevent passage of current to the carbon by way of the clutch. It is intended that the movable carbon shall re-
65 ceive current only through the flat spiral feed ribbon *f*.

It should be noted that the plunger or armature of the solenoid is not rigidly connected with the operating lever *d*, but is ca-
70 pable of slight movement sidewise along the same, so that said armature will act merely to lift said lever, and any tendency to sticking will thus be lessened.

75 The retarding mechanism is connected to the upward extension or arm *d''* of the operating lever, and is arranged to oppose the lifting movement of said lever. As shown, said retarding mechanism comprises a movable cylinder *g* and a fixed piston *h* inside
80 said cylinder and adapted to slide therein as the cylinder is moved up or down. A valve *K* is provided for controlling the admission of air to the cylinder, said valve being connected to the regulating mechanism in such
85 a way as to be closed by any movement thereof in a direction to lift the carbon, and to be opened by opposite movement. In the form shown, the valve is seated inside
90 the end of the cylinder, and has a stem extending out through a hole in said end and connected by a pin *m* with the end of the lever arm *d''*. The cylinder is thus sus-
95 pended from said lever arm by said valve stem, and its weight serves to seat the valve firmly, so that any lifting movement of said lever arm in response to the pull of the solenoid is resisted by the pressure of the external air upon the piston *h*. Downward
100 movement of the carbon, however, should be accomplished quickly, and it will be noted that in the retarding mechanism of my invention any downward movement of the lever arm *d''* results first in opening the valve
105 *K*, after which the further downward movement is opposed only by the slight friction of the cylinder and piston, so that the movement is made quickly and easily.

We claim:

1. In regulating mechanism for an arc 110

lamp, a lever comprising a horizontal portion and an extension from each end of said horizontal portion, said extension projecting vertically in opposite directions, a feed
5 clutch connected with one of said extensions, a retarding device connected to said other extension, and an electromagnet provided with an armature connected to said horizontal portion of the lever.

10 2. In an electric arc lamp, the combination with a movable carbon, of a solenoid provided with an armature, a retarding device, the paths of movement of said carbon, armature and retarding device being parallel,
15 and a lever connected at one end with said carbon, at the other end with said retarding device and intermediate its ends with said armature.

20 3. In an electric arc lamp, a regulating mechanism comprising a feed clutch, an electromagnet having an armature movable in a vertical direction, a retarding device, and a lever extending generally in a vertical
25 end with said feed clutch, at its other end

with said retarding device and intermediate its ends with said armature.

4. In an electric arc lamp, the combination with a clutch for engaging a movable carbon, of a lever extending as a whole in a
30 vertical direction and provided with a short horizontal portion intermediate its ends, said lever being connected at its lower end to said clutch, a retarding device connected to the upper end of said lever, an electro-
35 magnet having an armature movable in a vertical direction, and means for connecting said armature to said horizontal portion of the lever, said connecting means being constructed and arranged to permit of a slight
40 lateral movement of said connecting means relative to said lever.

In witness whereof, we hereunto subscribe our names this 11th day of January, A. D. 1906.

ERNEST P. WARNER.
CARL WILER.

Witnesses:

BERT STARR YORK,
ROY T. ALLOWAY.