

(No Model.)

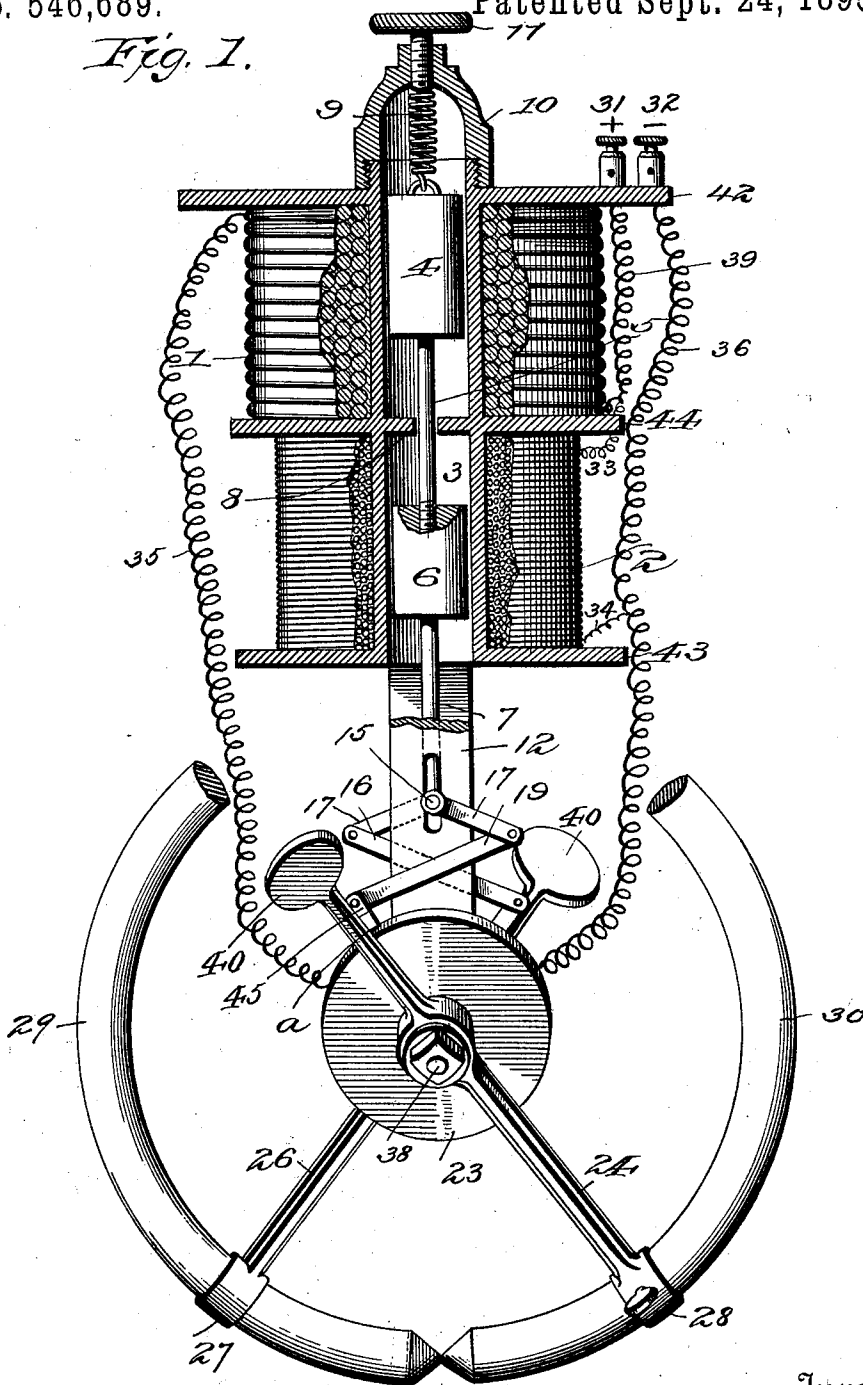
2 Sheets—Sheet 1.

C. WEBER, F. GOELLNER & A. SCHWEITZER.
ELECTRIC ARC LAMP.

No. 546,689.

Patented Sept. 24, 1895.

Fig. 1.



Witnesses
Wm. H. H. H. H.
Geo. R. H. H.

Inventors
Alb. Schweitzer,
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(No Model.)

2 Sheets—Sheet 2.

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ELECTRIC ARC LAMP.

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Fig. 2.

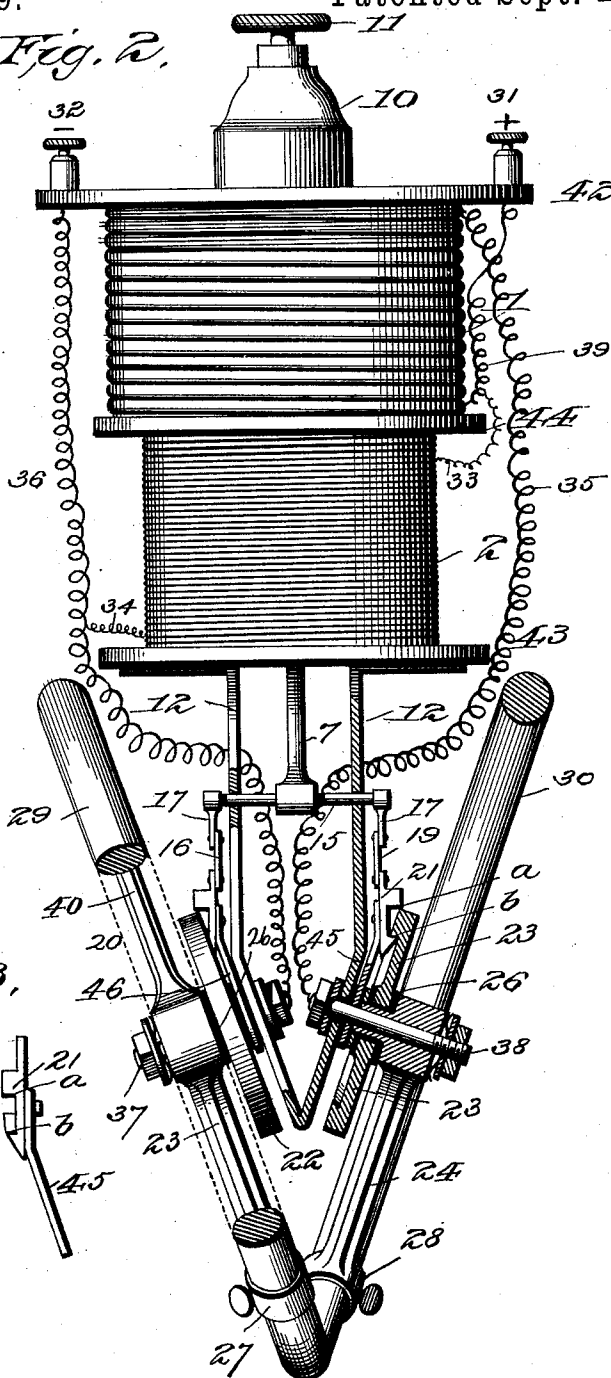
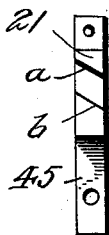


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

CONRAD WEBER, FRIEDRICH GOELLNER, AND ALBERT SCHWEITZER, OF
ALLEGHENY, PENNSYLVANIA.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 546,689, dated September 24, 1895.

Application filed November 19, 1894. Serial No. 529,337. (No model.)

To all whom it may concern:

Be it known that we, CONRAD WEBER, a citizen of the United States, FRIEDRICH GOELLNER, a citizen of Germany, and ALBERT SCHWEITZER, a citizen of France, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Arc Lamps; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to electric-arc lamps, and aims to provide the same with a positive and simple feeding mechanism for controlling the movements of the carbons, whereby a practically-continuous feed is attained and a uniform arc maintained.

For a full understanding of the invention reference is to be had to the accompanying drawings, in conjunction with the following description.

Figure 1 is a front elevation, partly in section and having parts broken away, of an arc lamp embodying the invention. Fig. 2 is a side elevation of the lamp, partly in section and parts being broken away; and Fig. 3 is a front and side view, respectively, of the gripping-lever.

The frame comprises a centrally-disposed tube 3, having end and middle flanges 42, 43, and 44, respectively, and pendent brackets 12. A coil 1 of heavy wire is sustained between the flanges 42 and 44, and a coil 2 of fine wire is located between the flanges 44 and 43, the two coils surrounding the tube 3 and being in axial alignment. A cap 10 screws upon the projected threaded end of the tube and has a threaded opening in its upper end to receive a set-screw 11, to which the upper end of the coil-spring 9 is attached and has its tension regulated thereby. Two soft-iron cores 4 and 6 are located within the tube 3 and are connected by a rod 5, of brass or other non-magnetic material. The core 4 is suspended from the coil-spring, which returns it to a

normal position when the coils of wire 1 and 2 are not energized.

A centrally-disposed partition 8 is perforated at a middle point for the rod 5 to work freely therethrough, and divides the tube 3 into an upper and lower core-chamber.

Oppositely-inclined journals or spindles 37 and 38 are attached to the lower ends of the brackets 12 and are electrically insulated therefrom by insulation 26. An arm 24 is mounted on the outer end of the journal 38, and has a carbon-holder 28 at its free end to receive the carbon, which is clamped therein by a binding-screw. A disk 23, having a rim on its inner face, is mounted on the journal, and has connection with the arm 24, so as to turn therewith. A link 45 is mounted loosely at its inner end upon the journal 38, and to its outer end is pivoted a gripping-lever 21, having jaws *a* and *b*, between which the rim of the disk 23 enters. Toggle-levers 17 and 19 connect the opposite or outer end of the gripping-lever with one end of the cross-bar 15, held in the lower end of the rod 7 pendent from the core 6. The disk 23 and the link 45 are electrically insulated from the journal 38 and from the arm 24.

On the journal 37 are mounted in a similar manner parts corresponding to those on the journal 38 and comprise arm 23, having holder 27, rimmed disk 22, and link 46. The gripping-lever 20 is connected at one end to the link 46 and at the other end with the cross-bar 15 by toggle-levers 16 and 18. Each of the carbon-carrying arms will be counter-balanced by a weight 40, which will be of sufficient mass to bring the points or ends of the carbons 29 and 30 together when the coils 1 and 2 are not energized.

The carbons are approximately or nearly circular, and with their carrying-arms and feed-controlling disks occur at such an angle that the upper portion will not interfere with each other and with the feed-controlling mechanism, and yet have the ends between which the arc is fed come opposite each other in proper relation to establish and maintain the arc under the proper working of the lamp.

The direction of the circuit is as follows: The electric current enters by way of binding-

post 31 to coil 1 through wire 39, from coil 1 to journal 38 through wire 35, thence through journal 38, arm 24, carbons 30 and 29, arm 23, journal 37, and wire 36 to binding-post 32.

5 The coil 2 is shunted by wires 33 and 34 into a main circuit. The lamp is shown trimmed in Fig. 1, and on establishing the circuit the coil 1 will be energized and attract the core 4, and through the connections herein set forth
10 will actuate the gripping-levers 20 and 21 and cause them to bind upon and turn the disks 22 and 23 and their attached carbon-carrying arms and separate the carbons sufficiently to establish the arc. When the arc lengthens
15 abnormally, the current will energize the coil 2 to such an extent as to lift the core 6, and through the hereinbefore-specified connections release the gripping-levers and permit the carbon points to approach and again es-
20 tablish the proper arc. The variation in the strength of the current between the coils 1 and 2 results through the mechanism shown and described in a proper feed of the carbons.

It is contemplated to make use of any well-
25 known form of connection between the gripping-levers and the disk which will result in a positive gripping action, and the carbon-carrying arms may be suitably counterbalanced to secure a responsive action on the
30 part of the carbons in the variation of strength of the two coils, due to the lengthening and the shortening of the arc.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an electric arc lamp, the combination of two substantially circular carbons mounted to lie in diverging planes, disks mounted in planes parallel thereto, and connected to rotate with the said carbons, gripping levers
40 adapted to engage with the said disks, and actuating mechanism for the said gripping levers, substantially as described.

2. In an electric arc lamp, the combination
45 with a carbon controlling disk, a gripping lever co-operating with the said disk, and an electrically controlled rod, of toggle levers connecting the said rod and the gripping lever, substantially as described.

50 3. In an electric arc lamp, the combination with a solenoid and an armature adapted to pulsate therein, of a carbon controlling flanged disk, a gripping lever having a notch therein for the reception of the said flange, and toggle-

levers connecting the said armature and the gripping lever, substantially as described.

4. In an electric arc lamp, the combination of a counter-balanced carbon holder, a disk, and a link mounted on the same journal, a gripping lever pivoted to the link, and actuating
60 mechanism having connection with the free or outer end of the gripping lever, substantially as described.

5. In an electric arc lamp, the combination of a carbon holder, a disk, and a link mounted
65 on the same spindle with the disk, a gripping lever pivoted to the link, and toggle levers connecting the said disk with an electrically controlled actuating rod, substantially as described.

6. In an electric arc lamp, the combination of solenoids of different electrical resistance in axial alignment and one being in shunt with the other, a rod carrying an armature and which is adapted to pulsate within the solenoids, a carbon controlling disk, a lever adapted
75 to cooperate with the disk to actuate the same, and toggle-levers connecting the said lever with the armature carrying rod, substantially as described.

7. In an electric arc lamp, the combination with a solenoid, and armature adapted to pulsate therein, of a carbon controlling disk, a gripping lever adapted to cooperate there-
80 with, and toggle-levers connecting the said lever and the armature, substantially as described.

8. An electric arc lamp comprising the combination of solenoids of wire of different electrical resistances in axial alignment one with the other, a non-magnetic spring-retracted armature-carrying rod adapted to pulsate within the said solenoids, curved counterbalanced carbons lying in diverging planes, carbon controlling revolving disks mounted on
90 spindles, links loosely mounted on the disk spindles, levers adapted to grip the disks, and toggle-levers connecting the said gripping levers with the armature rod, substantially as described.

In witness whereof we affix our signatures in presence of two witnesses.

CONRAD WEBER.
FRIEDRICH GOELLNER.
ALBERT SCHWEITZER.

Witnesses:

FRED WALDSCHMIDT,
J. H. DAVIS.