

(No Model.)

H. O. SWOBODA.
ELECTRIC ARC LAMP.

No. 534,677.

Patented Feb. 26, 1895.

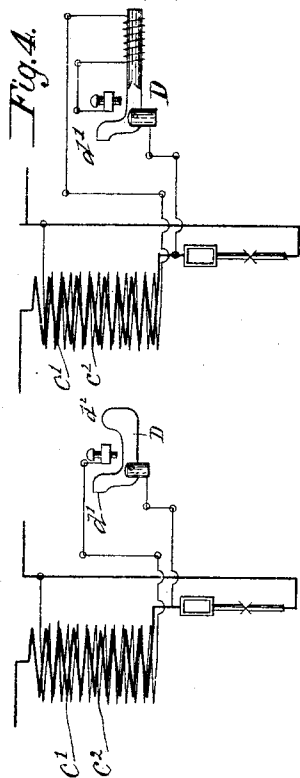
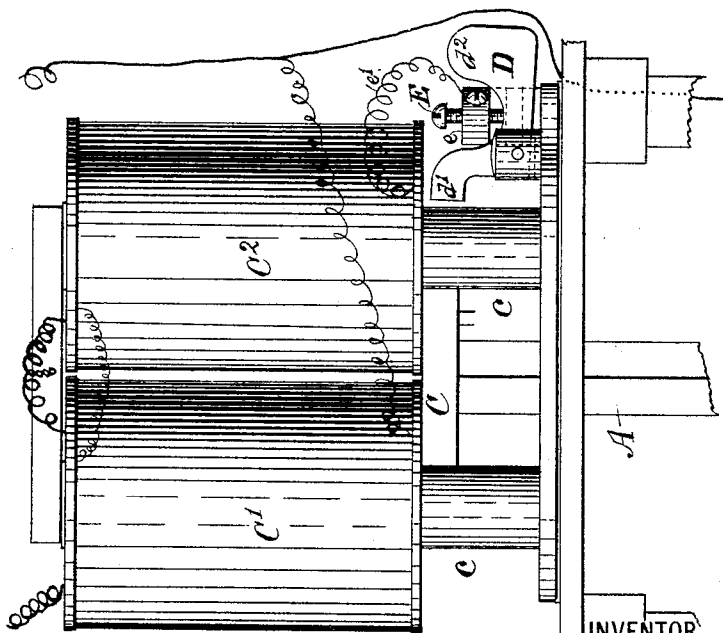
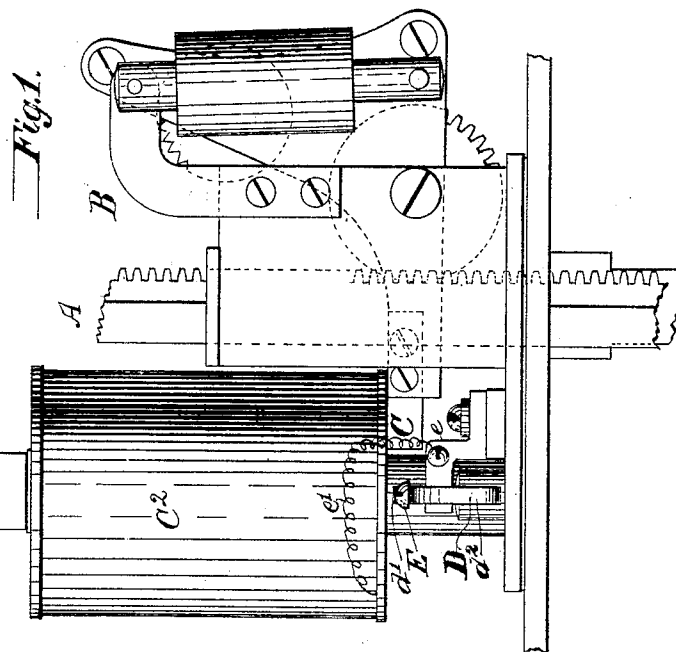


Fig. 3.

Fig. 2.



WITNESSES:

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HANS OTTO SWOBODA, OF NEW YORK, N. Y., ASSIGNOR TO THE GENERAL INCANDESCENT ARC LIGHT COMPANY, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 534,677, dated February 26, 1895.

Application filed April 6, 1894. Serial No. 506,599. (No model.)

To all whom it may concern:

Be it known that I, HANS OTTO SWOBODA, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Electric-Arc Lamps, of which the following is a specification.

The object of my improvement is to produce a simple and efficient cut-out for an arc lamp, and it is particularly applicable to a differential lamp.

I will describe a cut-out embodying my improvement, and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a side view of a portion of a lamp embodying my improvement. Fig. 2 is another side view of the same, but this view is taken at right angles to the former. Fig. 3 is a diagrammatic view illustrating the winding of the magnets and the circuit, so far as necessary to an understanding of my improvement. Fig. 4 is a diagrammatic view illustrating a modification.

Similar letters of reference designate corresponding parts in all the figures.

A designates a support for the upper carbon of the lamp. It may be of any construction, although in the present instance it is shown as made in the form of a rod provided with a toothed rack.

B designates mechanism for controlling the descent of the carbon support. It comprises a magnet armature C.

C', C² designate magnet spools for governing the mechanism B. Each of the magnet spools C', C² has a series winding c', which in the present instance happens to be the inside winding, and a shunt winding c².

To avoid any misunderstanding, I will add that the so-called series winding is in series with the arc of the lamp, and that the shunt winding is a shunt circuit around the arc. These windings are to act in opposition, and, hence, must either be reversely wound, or, if similarly wound, must be connected so as to oppose each other.

The connections between the windings of the two spools may be made in the way which is usual in connecting two spools of an ordinary horse-shoe magnet, or in other words, the series windings of the two spools may be

connected in series, and the shunt windings may be connected in series. Of course the connections may be made in parallel if desired.

The armature C is pulled up by the spools when they are sufficiently magnetized, said armature being acted upon by pole pieces c which extend below the spools C', C².

D designates a lever, which is here shown as fulcrumed between its ends d', d² and over-balanced at the end d². The end d' is shown as extending upwardly toward the bottom of the spool C². The lever D is made as a permanent magnet.

When the pole piece c of the spool C² is sufficiently magnetized by current, passing through the series winding, to attract the lever D, the latter will rock toward said pole piece and thus will be brought into contact with a contact piece E, which is here shown as made in the form of a screw fitted to a metal block e, which is fastened to and insulated from the frame of the lamp. This block e is connected by a wire e' with the shunt coil or winding of the spool C². When the lamp is started and always while it is burning, the lever D will be attracted by the pole piece c of the spool C² in the manner described, but whenever the lamp goes out or its arc becomes too much elongated, the magnetism of the said pole piece will change its polarity so that the lever will be released. The release of the lever will break the shunt circuit and protect the latter, besides avoiding a waste of current.

Obviously, instead of over-balancing the lever D, a spring might be employed to oppose the action of the pole piece c of the spool C². The lever D instead of being a permanent magnet may be an electro-magnet by making it of soft iron and surrounding it by a winding placed either in series or in shunt with the arc of the lamp, as illustrated by Fig. 4.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an arc lamp, the combination of a magnet for controlling the carbon support of said lamp, a main circuit and a derived circuit winding surrounding the magnet, a movable piece in the form of an armature in circuit with one of the windings, independent from and adapted to be moved toward and away

from the pole piece of the controlling magnet, and a contact piece coacting with the movable magnet piece, substantially as specified.

2. In an arelamp, the combination of a magnet for controlling the carbon support of said lamp, windings or coils for energizing the magnet, and a movable piece consisting of an armature independent from and actuated by the pole piece or pieces of the carbon support
10 controlling magnet to make or break the circuits of one of said windings or coils, substantially as specified.

3. In an arelamp, the combination of a magnet for controlling the carbon support of said

lamp, windings or coils surrounding said magnet, a movable piece consisting of a polarized armature independent from and actuated by the pole piece or pieces of the carbon support controlling magnet to make or break the circuit of one of said windings or coils, substantially as specified. 15 20

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HANS OTTO SWOBODA.

Witnesses:

O. D. STEWART,
I. WERTHEMIER.