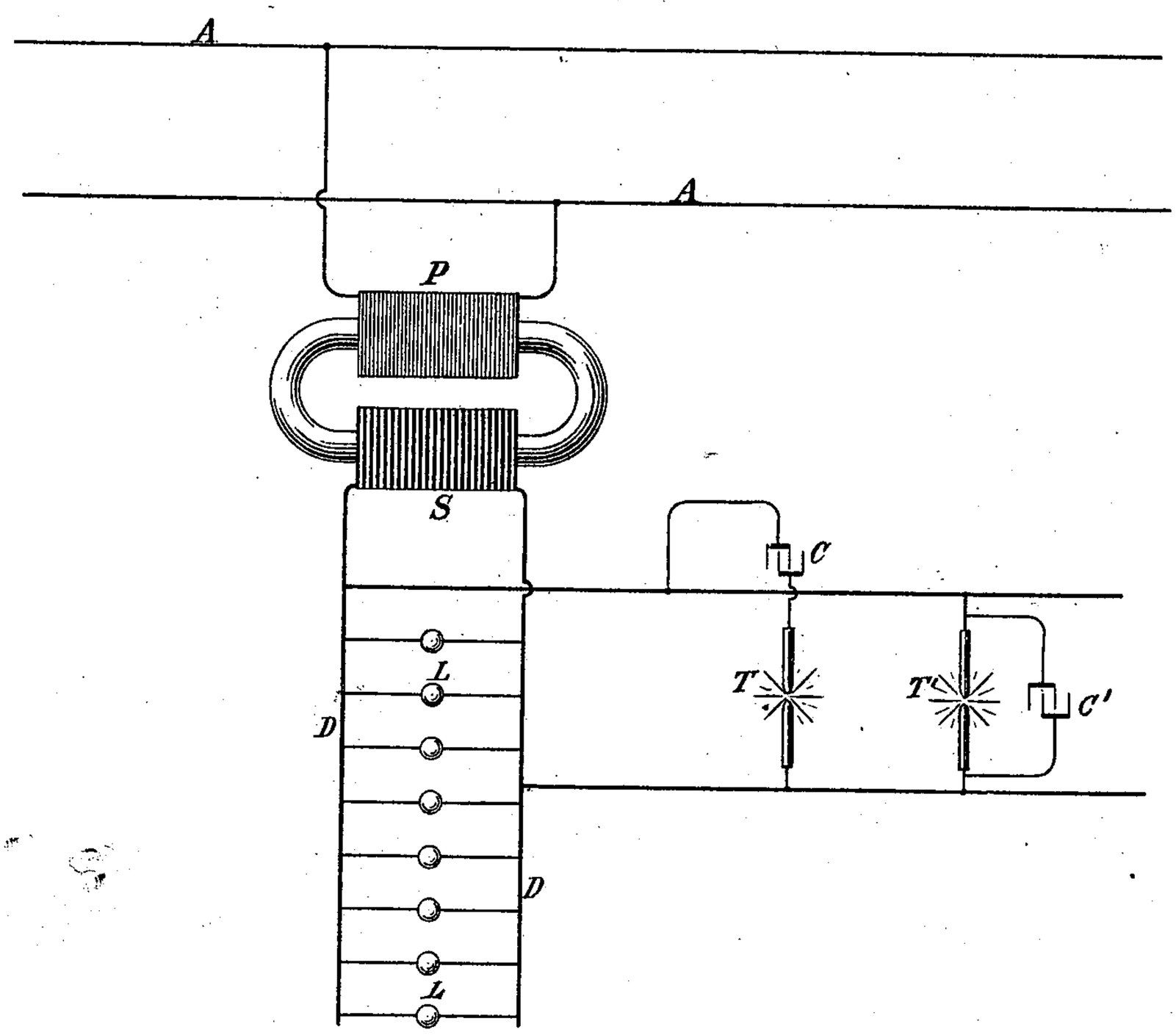
(No Model.)

C. C. CHESNEY.

ELECTRIC LIGHTING SYSTEM.

No. 502,702. Patented Aug. 8, 1893.



Witnesses
Raphaël Netter
James Catlow

Inventor
Cummings C. Chesney.
By his Attorneys
Duncan & Page

UNITED STATES PATENT OFFICE.

CUMMINGS C. CHESNEY, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR TO THE STANLEY LABORATORY COMPANY, OF SAME PLACE.

ELECTRIC-LIGHTING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 502,702, dated August 8, 1893.

Application filed April 3, 1893. Serial No. 468,825. (No model.)

To all whom it may concern:

Be it known that I, CUMMINGS C. CHESNEY, a citizen of the United States, residing at Pittsfield, in the county of Berkshire and State of Massachusetts, have invented certain new and useful Improvements in Electric-Lighting Systems, of which the following is a specification, reference being had to the drawing accompanying and forming a part of the same.

In the operation of alternate current arc lamps, particularly in the same circuit with incandescent lamps or from the same source of current, serious difficulties are met with that have to be avoided by the use of special generators or other appliances. It has also been found impracticable to operate in the same secondary circuit of a transformer of alternating currents, incandescent and arc lamps, the reason being that there is an abnormal drop of the secondary electro-motive force due to the shifting of the phase of the secondary current. I have found this to be due to a counter-electro-motive force in the coils of the arc lamps and in the arc itself. I have found, however, that this objection may be remedied by combining with the arc lamp or with each of a number of arc lamps used in such circuit a condenser of a definite value that will neutralize the self-induction in such lamp or lamps, and in this my present invention resides.

Referring to the accompanying drawing, which illustrates diagrammatically a part of a system of electric lighting that embodies my improvements, A A designate the conductors from any source of alternating currents. At any point in the line of said conductors is placed a transformer of which P is the primary and S the secondary coil. The latter supplies a circuit containing in multiple arc a number of incandescent lamps L and one or more alternating current arc lamps T T′ of ordinary construction and adapted in well-known ways for use with such systems. Without some special devices to prevent it these lamps would produce a drop in the electro-motive force in the circuit D D that may seriously interfere with the proper running of the incandescent lamps and cause them to burn at less than their proper candle power, but this I prevent by associating with each arc lamp a condenser that is so adjusted with reference to the conditions of the circuit and the character of the lamp in well-known ways as to neutralize the effects of the self-induction of the lamp. When this is done no effect upon the incandescent lamps will be produced by the introduction into the circuit of one or more arc lamps. The condensers may be in series with the arc lamps, as the condenser C is shown, or in shunt to a lamp, as C′ is shown. If the condenser be connected in series with the lamp, more current will flow, the arc burns with more intensity, and the extra drop due to the shifting of the current phase will be prevented. If the condenser be connected in parallel, the lagging component of the current is furnished by the condenser and there is no extra drop, but the arc will burn with the same intensity because there will be, under such circumstances, no increase of current through the carbons, but less current will be drawn from the transformer.

Having now described my invention, what I claim is—

1. In a system of electric lighting the combination with a source of alternating currents of one or more arc lamps and a condenser associated with each of said lamps and of a capacity of value to neutralize the self-induction of said lamps and prevent the extra drop in the electro-motive force due thereto.

2. In a system of electric lighting the combination with a generator of alternating currents, of incandescent lamps in parallel in the circuit of the generator, one or more arc lamps also connected with such circuit and a condenser associated with each of said arc lamps and of a capacity or value to neutralize the self-induction of such lamp and prevent the extra drop in the electro-motive force due thereto.

3. In a system of electric lighting, the combination with the secondary circuit of a transformer, of incandescent lamps, one or more alternating current arc lamps, and a condenser associated with each of said arc lamps and of

a capacity or value to neutralize the self-induction of such lamp and prevent the extra drop in the electro-motive force due thereto.

4. In combination, a circuit from or including the secondary of an alternating current transformer, incandescent lamps in parallel in said circuit, one or more alternating current arc lamps also included in said circuit, and a condenser associated, as described, with each arc lamp and adapted to prevent the extra drop in the electro-motive force in the circuit produced by said lamp, as set forth.

CUMMINGS C. CHESNEY.

Witnesses:
JAS. E. CUTLER,
ANNIE M. THURBER.