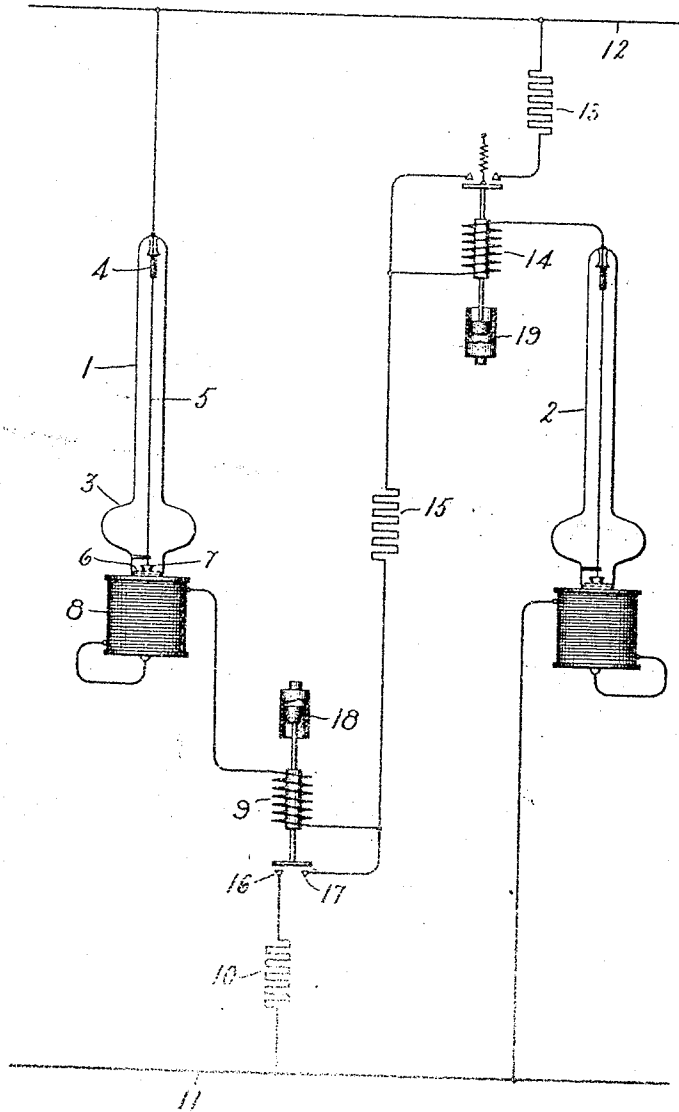


E. THOMSON.
SYSTEM OF ELECTRICAL DISTRIBUTION.
APPLICATION FILED MAR. 11, 1905.

1,001,710.

Patented Aug. 29, 1911.



Witnesses:

George H. Pilden.
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Inventor:

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by *Albert H. Davis*
Att'y.

UNITED STATES PATENT OFFICE.

ELIHU THOMSON, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO GENERAL
ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

SYSTEM OF ELECTRICAL DISTRIBUTION.

1,001,710.

Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed March 11, 1905. Serial No. 249,520.

To all whom it may concern:

Be it known that I, ELIHU THOMSON, a citizen of the United States, residing at Swampscott, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Systems of Electrical Distribution, of which the following is a specification.

This invention relates to a system of electrical distribution in which mercury vapor devices, such as lamps, are operated in series on constant potential mains. Heretofore it has been found difficult to start series connected lamps on constant potential circuits because of the initial resistance of the lamps, and also because of the disturbing influence of one lamp on another.

To overcome these difficulties I have devised the system hereinafter described in which the lamps are connected in parallel at starting, but in which means are provided for automatically changing over to a series connection as soon as the lamps reach a normal condition of operation.

The details of the invention will be better understood by reference to the following description taken in connection with the accompanying drawing.

The two mercury lamps 1 and 2 shown in the figure are of ordinary construction comprising an exhausted envelop 3, a carbon anode 4, a high-resistance starting filament 5, a mercury cathode 6, an iron plunger 7 floating in the mercury, and a solenoid 8 connected in series, with the lamp for drawing down the iron plunger 7 to produce an incipient spark at the end of filament 5 and thereby start the lamp in the manner well-known to persons skilled in the art.

In series with solenoid 8 is an automatic cut-out 9, which, when but partly energized, allows current to flow from the lamp through a resistance 10 to the main 11. During the starting operation the resistance 10 acts as a steadying resistance for lamp 1. Lamp 2 is similarly connected across the mains 11 and 12 through a steadying resistance 13 and automatic cut-out 14. A third resistance 15 connects the windings of the two cut-outs 9 and 14 and serves as a steadying resistance for the lamps after they have been connected in series as hereinafter described. At starting, the cut-out 9 short-circuits the contacts 16 and 17 so that the starting current from lamp 1 passes through

resistance 10 to the main 11. As soon, however, as the lamp reaches its normal condition of operation, cut-out 9 is lifted, simultaneously the current in lamp 2 opens the cut-out 14 so that the lamps are then connected in series across the mains through resistance 15, in which condition they will continue to operate in the ordinary manner. To increase the steadiness of the cut-outs 9 and 14, I provide them with dash-pots 18 and 19 of ordinary construction.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. The combination of a source of current, a plurality of mercury vapor devices, means for starting said lamps in parallel, and automatic means for subsequently disposing said devices in series with respect to said source.

2. The combination of a constant potential circuit, a plurality of mercury vapor devices, means for connecting said devices in parallel on said circuit, and means for subsequently arranging said devices in series on said circuit while maintaining current flow through both devices.

3. The combination of a source of current, a plurality of vapor devices, separate means for simultaneously starting said devices, and means for subsequently disposing said devices in series with each other on said source.

4. The combination of a source of current, a mercury vapor device, connections for supplying current to the arc path of said device, a steadying resistance in circuit with said arc path at starting, a second vapor electric device, means for starting the same, and automatic means for opening the circuit through said steadying resistance and maintaining current flow from the first device through the second device.

5. The combination of a source of current, a plurality of mercury vapor devices, steadying resistances for said devices, means for connecting said devices through their respective steadying resistances to said source at starting, and automatic means for subsequently disposing said devices in series on said source.

6. The combination of a source of current, a plurality of mercury vapor lamps with filaments and means cooperating therewith to start said lamps, separate paths for the starting currents of said lamps, and means for throwing said lamps in series after starting.

7. The combination of a source of current, a plurality of mercury vapor devices having a high initial resistance, means receiving current from said source for starting each
5 of said devices while the voltage impressed on each device is higher than the normal operating voltage but lower than the full voltage of said source, and means for connecting said device in series on said source.
10 8. The combination of a source of current, a plurality of mercury vapor devices,

means for impressing a relatively high voltage on each of said devices to start the same and automatic means for subsequently disposing said devices in series on said source.

In witness whereof I have hereunto set my hand this eighth day of March, 1905.

ELIHU THOMSON.

Witnesses:

JOHN A. McMANUS, Jr.,

HENRY O. WESTENDARP.