

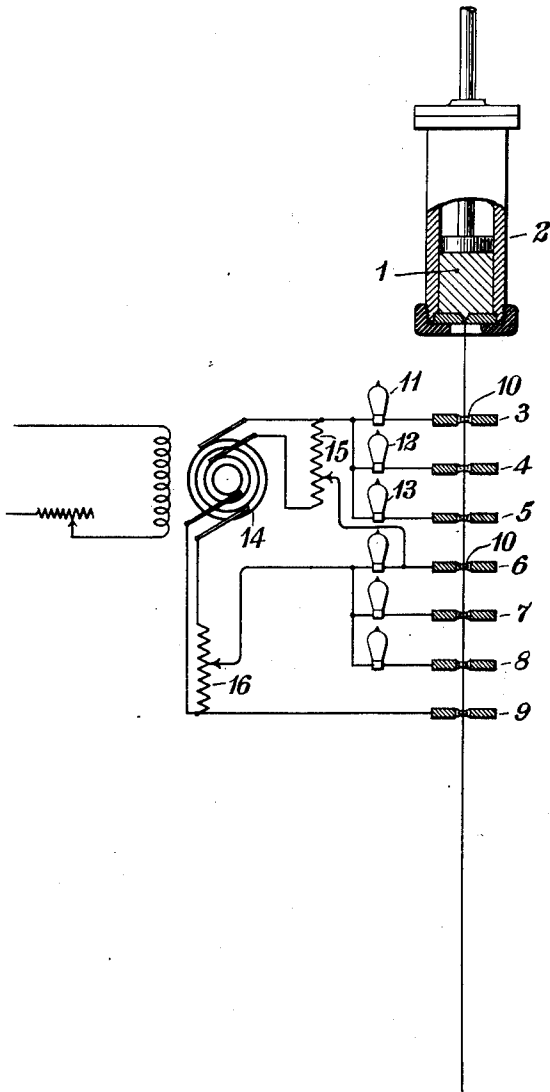
W. G. HOUSKEEPER.

PROCESS OF PREPARING FILAMENTS FOR INCANDESCENT LAMPS.

APPLICATION FILED AUG. 6, 1910. RENEWED SEPT. 13, 1912.

1,059,366.

Patented Apr. 22, 1913.



WITNESSES:

C. L. Belcher
Otto S. Schairer

INVENTOR

William G. Houskeeper

BY

Kiley & Co.
ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM G. HOUSKEEPER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE LAMP COMPANY, A CORPORATION OF PENNSYLVANIA.

PROCESS OF PREPARING FILAMENTS FOR INCANDESCENT LAMPS.

1,059,366.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed August 8, 1910, Serial No. 575,997. Renewed September 13, 1912. Serial No. 720,278.

To all whom it may concern:

Be it known that I, WILLIAM G. HOUSKEEPER, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Processes of Preparing Filaments for Incandescent Lamps, of which the following is a specification.

My invention relates to processes of treating filamentary material for the purpose of rendering the same suitable for filaments of electric incandescent lamps, and it has for its object to provide a process whereby alternating current may be employed instead of direct current for the purpose of heating the filaments and sintering its particles together.

In an application, Serial No. 486,925, filed March 31, 1909, by Harry D. Madden and myself, and assigned to the Westinghouse Lamp Company, is set forth a process of treating filamentary material which consists in applying different amounts of electric current to different portions thereof, the object of such treatment being to gradually heat the filament in order to carbonize the binder for the main ingredients of the filamentary material, and to thereafter sinter together the particles of said ingredients.

It has been found that, if single-phase alternating current is applied to the filamentary material, in practising this process, the filament is alternately heated and cooled, and, consequently, it alternately expands and contracts, with the result that it is frequently broken during treatment. According to the present invention, I propose to so apply polyphase currents to the different sections of the filament that the total length of the portion of the filament under treatment will remain substantially uniform, in order that there may be substantially no greater strain upon the filament than when direct current is employed in practising the process.

The single figure of the accompanying drawing illustrates, diagrammatically, suitable apparatus for practising my invention.

As set forth in the above-mentioned application, the untreated filamentary material 1, after leaving the press 2, passes through a series of terminal devices, 3, 4, 5, 6, 7, 8 and 9, that preferably consist of apertured plates or members, the portions of which adjacent to the apertures therein are amalga-

mated, and across the apertures in which extend bodies of mercury 10, that are maintained in the apertures by capillary action and surface tension, and the surfaces of which are preferably of concave form. The terminal devices 3, 4 and 5 are connected, in series with lamps 11, 12 and 13, respectively, or with other suitable current-regulating devices, to one terminal of a two-phase source 14, the other terminal of the same phase of which is connected to the terminal device 6, an auto-transformer 15, or other suitable current regulating device, being provided for adjusting the total amount of current supplied to the filament through the terminal devices 3 to 6, inclusive. The other phase of the source 14 is connected between terminal devices 6 and 9, lamps being placed in series with the devices 6, 7 and 8 for the purpose of regulating the amounts of current supplied to the filament therethrough. Another auto-transformer 16, or other suitable current-regulating device, is connected in series with the terminal device 9, for the purpose of regulating the total amount of current supplied to the filament through the terminal devices 6 to 9, inclusive. While certain kinds of filaments may be treated in air, as shown, others are preferably treated in a non-oxidizing atmosphere, the process being otherwise the same.

As the currents traversing the portions of the filamentary material above and below the terminal device 6 are 90° different in phase, the one portion will be hottest when the other is coolest. The result is that when the upper portion is contracting, the lower portion is expanding, and vice versa, and the total length of the portion of the filament under treatment remains substantially uniform. There is, consequently, little or no strain upon the filament resulting from its expansion and contraction, and but little liability of its breakage.

Of course, the invention is not limited to the use of two-phase currents, but the circuits may obviously be arranged so that three or any other suitable number of phases or current may be applied to the filament.

I claim as my invention:

1. The method of treating filamentary material which consists in simultaneously passing differently phased electric currents through different portions thereof.

2. The method of treating filamentary

material which consists in simultaneously passing different amounts of electric current through different portions thereof, the current traversing certain portions of the filamentary material being of a different phase from that traversing other portions thereof.

5 3. Apparatus of the character described, comprising a plurality of alined terminal members, a source of polyphase alternating
10 currents and connections between the said source and the said terminal members whereby a conductor engaging the said terminal members will have differently phased currents applied to different portions thereof.

15 4. Apparatus of the character described, comprising a plurality of alined terminal members, a source of polyphase alternating

currents and connections between the said source and the said terminal members whereby a conductor engaging the said terminal 20 members will have differently phased currents applied to different portions thereof, and means included in said connections whereby different amounts of current are supplied to different portions of the said 25 conductor.

In testimony whereof, I have hereunto subscribed my name this 21st day of July, 1910.

WILLIAM G. HOUSKEEPER.

Witnesses:

CHARLES E. KELLY,
C. W. YOUNGHOLM.