No. 738,802. PATENTED SEPT. 15, 1903.

P. C. HEWITT.

ELECTRIC TRANSLATING APPARATUS.

APPLICATION FILED APR. 5, 1900.

NO MODEL.

Fig. 1

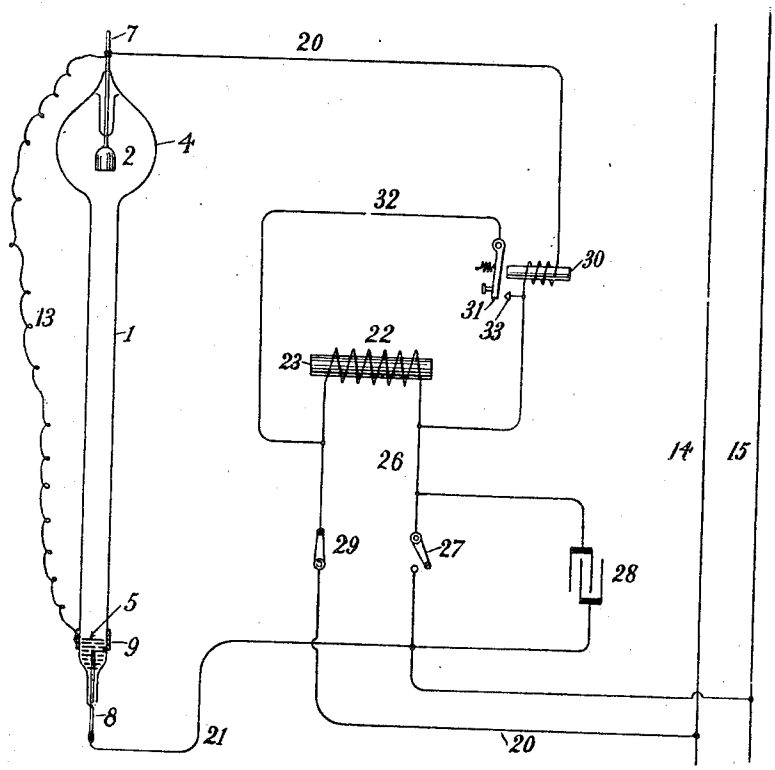
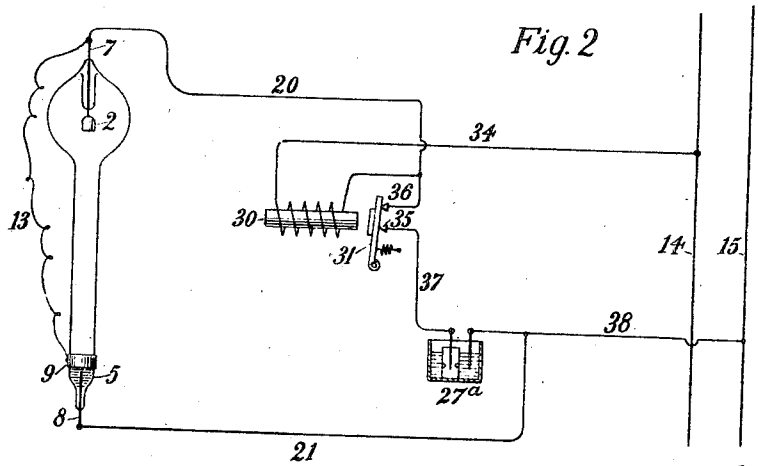


Fig. 2



Witnesses:

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No. 738,802. Patented September 15, 1903.

UNITED STATES PATENT OFFICE.

PETER COOPER HEWITT, OF NEW YORK, N. Y, ASSIGNOR, BY MESNE ASSIGNMENTS, TO COOPER HEWITT ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC TRANSLATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 738,802, dated September 15, 1903.

Application filed April 5, 1900. Serial No. 11,609. (No model.)

To all whom it may concern:

Be it known that I, PETER COOPER HEWITT, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Translating Apparatus, of which the following is a specification.

My invention relates generally to a system of circuits and apparatus for operating electric lamps in which a vapor or gas is used as the light-emitting material.

In another application filed by me April 5, 1900, Serial No. 11,605, I have described and claimed a lamp which is suited for use upon ordinary commercial circuits and has a conducting path formed of a gas or vapor properly organized and proportioned.

My present invention relates particularly to a system of circuits for and method of starting certain forms of such lamp by first impressing upon the terminals thereof an electromotive force higher than that with which the lamp is intended to operate.

In the accompanying drawings, Figure 1 illustrates, partly in diagram, the arrangement of circuits and apparatus. Fig. 2 illustrates a modification.

Referring to the drawings, the lamp is represented as consisting of a tube 1, having an enlargement 4 at one end and provided with two electrodes 2 and 5, located within the lamp. The electrodes are respectively connected with leading-in wires 7 and 8. In the present instance the electrode 2 is shown as being of solid material suspended within the chamber 4 and the electrode 5 as consisting of a small quantity of mercury. For the purposes of the present description it will be assumed that the vapor within the lamp is a mercury vapor.

I have found that by adding certain other materials—such, for instance, as red sulfid of mercury—during the process of manufacturing the lamp a compound or condition is produced within the lamp which facilitates the starting of the lamp and renders it possible to start it with currents of much lower potential than appear to be requisite if such material is not present. I have further found that by placing a conductor—such, for instance, as a band 9, of foil or other suitable material—near the electrode 5 and connecting it by a conductor 13 with the leading-in wire 7 the starting currents are more effective.

The lamp starts readily when a current of the proper potential is applied to the terminals of the lamp, and I usually at the same time connect the lamp upon a circuit having the same or a somewhat greater potential than that upon which the lamp is intended to run after it has been started. After the starting higher potential current has been used to set the lamp in operation it is sometimes desirable to cut it out of circuit or remove it from operation.

In the drawings I have shown the lamp as being connected with a suitable source of electric currents of, say, one hundred and ten volts, or other suitable electromotive force, this circuit being represented by the conductors 14 and 15. A conductor 20 leads from the conductor 14 to the leading-in wire 7 and includes in its length a coil 22, surrounding a core 23, this coil and core constituting what is technically known as a "spark-coil." The conductor 15 is connected by a conductor 21 with the leading-in wire 8. A conductor 26 leads from the terminal of the coil 22, which is remote from the conductor 14, to the conductor 21, a circuit-interrupter 27 being interposed in the conductor 26. A condenser 28 may shunt the switch 27. By closing the switch 27 a current from the main circuit 14 and 15 may be caused to traverse the coil 22, thus magnetizing the core 23. By quickly breaking this circuit by a sudden movement of the circuit-interrupter 27, which may be accomplished in any well-known manner, a high electromotive force is set up in the coil 22, which acting upon the lamp produces such a condition therein as to permit the current supplied by the main conductors 14 and 15 to traverse the lamp. The action of the spark-coil may be assisted by the presence of the condenser 28, if this is present. A switch 29 may be included in the conductor 20 for opening the circuit when it is desired to extinguish the lamp.

In some instances it may be desired to cut the coil 22 out of circuit while the lamp is in

operation, and for this purpose a magnet 30 may also be included in the conductor 20. The armature 31 of the magnet is shown as being connected by a conductor 32 with one terminal of the coil 22, and a contact-point 33 is connected with the other terminal of the coil 22, so that when the magnet 30 is vitalized by an operating-current traversing the conductor 20 and the lamp the armature will be drawn forward and the shunt-circuit closed around the coil 22.

The circuit-interrupter 27 may be any suitable form of circuit-interrupter. In Fig. 2 I have illustrated a modification in which a modified form of the well-known Wehnelt device is represented at 27^a.

This device possesses within itself a large amount of resistance which serves to prevent an undue flow of current through the coils of the magnet 30 should the self-induction of this device itself be insufficient for that purpose, it being a well-known principle that the variation in current caused by the Wehnelt is dependent on the self-induction of the coil. The self-induction of the coil further serves when it is left in series with the lamp to temporarily augment the pressure upon the terminals of the lamp in case of a sudden decrease of current. It thereby serves to lessen the liability of the lamp to be extinguished by any change in the current. The circuit connections are as follows: The conductor 14 is connected by conductor 34 through the coils of the magnet 30 with a contact-point 36, against which the armature 31 of the magnet 30 rests when the magnet is not energized. A second contact-point 35, with which the point 36 is connected through the armature when the latter is in its backward position, is connected by a conductor 37 with one terminal of the circuit-interrupter 27^a, the other terminal of which is connected by a conductor 38 with the main conductor 15. The conductor 38 is also connected by a conductor 21 with the electrode 5, while the electrode 2 is connected by the conductor 20 with the contact-point 36. When the lamp is started by means of this device, the armature 31 will be drawn forward, thus interrupting the circuit through the interrupter 27^a and cutting it out of circuit.

The invention claimed is—

1. The combination with a translating device and means for supplying electric current thereto, of a coil forming a part of the circuit of the source of supply, means for closing a circuit through the coil independent of the translating device, and means for interrupting the connections of the independent circuit and causing a single impulse of higher potential in the circuit of the translating device.

2. The combination with a translating device and a source of electric current for operating the same, of means for applying a higher potential to the terminals of the translating device, consisting of a core and single coil included in the circuit of the translating device, and means for interrupting the circuit of the said coil without interrupting the circuit of the translating device, whereby an impulse of high potential is applied to the terminals of the translating device.

3. The combination with an electric translating device consisting of two electrodes and a vapor or gas path between them, said translating device being adapted to be operated by current of a given potential, of means for creating from the given potential an impulse of a higher potential for starting the translating device, said means comprising a coil and core, the coil being connected in the circuit of the translating device and forming a portion of the path for the operating-current of the translating device.

4. The combination with a translating device consisting of two electrodes and a vapor or gas path between them, of a circuit leading to the terminals of the translating device, a coil included in said circuit, a core acted upon by said coil, when traversed by electric currents, and a switch for breaking said circuit, the translating device being in shunt around such break, whereby a single impulse is caused to be impressed upon the translating device, substantially as described.

5. The combination of a lamp consisting of a containing vessel, two electrodes and a conducting vapor or gas between the electrodes, a source of electric currents connected with the terminals of the lamp, a coil included in the circuit, a switch for closing a circuit through the coil and shunting the lamp, and a condenser around the terminals of said switch.

6. The combination with a translating device, of a source of current, a core of magnetic material, a coil in inductive relation thereto, connections from the terminals thereof with a terminal of the translating device and with a source of supply, and means for causing a discharge impulse from said core and coil to be applied to the terminals of the translating device for starting the flow of current through the translating device, said coil forming a part of the translating-device circuit.

7. The combination with a translating device, of a source of electric current, means for connecting the poles of the said source with the terminals of the translating device, a coil in the circuit of the translating device and a core in inductive relation to the coil, means for temporarily causing a current to traverse the said coil independently of the translating device, and means for interrupting the independent current through the coil.

Signed at New York, in the county of New York and State of New York, this 23d day of March, A. D. 1900.

PETER COOPER HEWITT.

Witnesses:

HENRY NOEL POTTER,

WM. H. CAPEL.