Aug. 17, 1926. 1,596,278

A. LEDERER

ELECTRIC GAS LAMP

Filed August 30, 1921

FIG. 1.

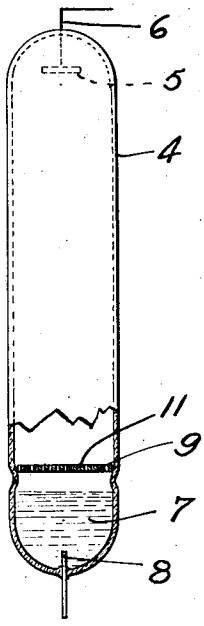


FIG. 2.

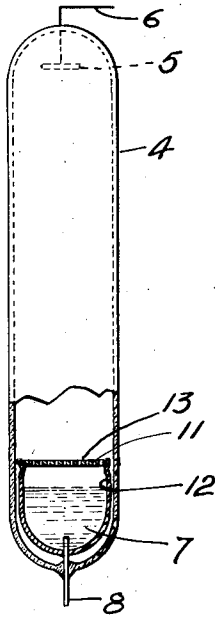
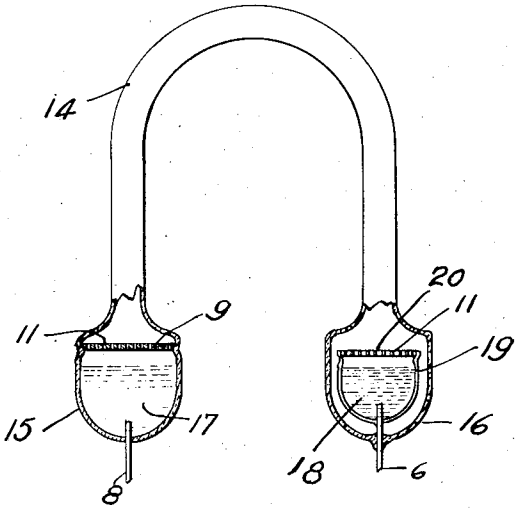


FIG. 3.



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Patented Aug. 17, 1926. 1,596,278

UNITED STATES PATENT OFFICE.

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ELECTRIC GAS LAMP.

Application filed August 30, 1921, Serial No. 497,022, and in Austria September 16, 1913.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

This invention relates to electrical gas lamps, that is, to electrical lamps in which liquid electrodes, such as alkaline metals or their alloys, are employed.

An object of the invention is to prevent an electrode of the character indicated flowing from a vessel in which it may be contained upon disturbance of the lamp either by tilting or overturning.

Other objects will be apparent from the following description.

In the operation of certain electrical lamps, particularly of the gas type, electrodes have been provided in the form of liquids. Materials which have been found useful for that purpose are the alkaline metals or their alloys, especially an alloy of potassium and sodium. Such electrodes are ordinarily contained in suitable vessels in the lamp and by reason of the fact that heretofore no means have been provided to prevent the contents of these vessels from flowing or spilling out when the lamp is inclined or overturned, the efficiency and life of the lamp is considerably impaired when such accidents occur.

It is the purpose of the present invention to prevent the escape of the electrodes from their containing vessels regardless of the position the lamp may occupy or the manner in which it may be handled.

Referring to the drawings:

Figs. 1 and 2 are elevational views, partly broken away, of conventional types of gas lamps to which applicant's invention has been applied; and.

Fig. 3 is an elevational view, partly in section, of another conventional type of gas lamp in which both electrodes are made of a liquid material and to which also, the applicant's invention has been applied.

In the type of lamp illustrated in Fig. 1, a tubular vessel 4 has both its ends closed. Sealed in one of the ends of the vessel is an electrode or anode 5 which may be connected to a suitable source of current by means of a leading-in wire 6. At the other end of the vessel, another electrode or the cathode 7 is usually placed. This electrode in gas lamps, is frequently formed of an alkaline metal, such as potassium and the like, or an alloy of such metals, especially an alloy of potassium and sodium. The alloys are usually in the liquid state. The current is conducted to the electrode 7 by means of a leading-in wire 8.

The type of lamp thus far described is well known in the art. An objection which has been found with this construction of lamp is that, unless the lamp is maintained in a fixed position, the electrode material will overflow or come in contact with the anode and thus short-circuit the lamp. In order to prevent this short-circuiting, the applicant has provided a structure which will prevent the liquid from leaving the container in which it may be placed.

A convenient form of structure which will accomplish the ends sought may consist of a perforated lid or cover 9 for each of the vessels or containers employed. The perforations 11 in the lid or cover are of such size that the liquid electrode is prevented from flowing therethrough because of the capillary attraction between the liquid electrode and the walls of the openings. In other words, the openings are capillary perforations.

The vessel or container for the electrode material may be closed on all sides, as illustrated in Fig. 2 at 12, but the side 13 facing the luminous tube, which side may be provided with capillary perforations 11. By reason of this location of the perforations with respect to the luminous tube, it will be observed that the passage of an electrical current through the tube impressed from an outside source of electrical energy will not be interfered with and the current will be permitted to flow through the perforated cover.

By providing a cover of the nature described above, excessive disintegration of the electrode material is prevented.

In Fig. 3 the lamp may be provided with a U-shaped tube 14 having enlarged ends 15 and 16. These ends may be provided with liquid electrodes 17 and 18 which may be connected, as indicated above, by means of leading-in wires to a suitable source of current. The electrode 17 is disposed in the lower portion of the enlarged end 15 and is provided with a cover 9, supported in any desirable manner and having capillary perforations 11 therein. The other liquid electrode 18 is contained within a receptacle or

vessel 19 which may be provided on one of its sides 20 with a plurality of capillary perforations 11. The member 20 may constitute a separate cover.

The design of lamp described, is one which is well known in the art with the exception that the electrode containers have been provided with means for preventing the escape of the electrode material therefrom, this feature being in accordance with the present invention.

In lamps of the character described above, it is customary to employ an atmosphere of a rare gas such as neon or the like, a suitable pressure of such gas being employed.

Many modifications may suggest themselves for securing the desired ends, as for instance, the capillary perforations may assume the nature of a grid juxtaposed to the electrode material.

Such modifications, as coming within the scope of the appended claims, are contemplated by the present invention.

What is claimed is:

1. In an electric gas lamp having a liquid electrode comprising an alkaline metal, a container for said electrode and means for preventing said electrode material from flowing from said container upon inclination or overturning of said lamp.

2. In an electric gas lamp having a liquid electrode comprising an alkaline metal, a container for said electrode and a cover therefor having capillary perforations, whereby the electrode material within said container is prevented from flowing therefrom upon inversion or inclination of said lamp.

In testimony whereof, I have hereunto subscribed my name this 11th day of August, 1921.

ANTON LEDERER.