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C. BOL

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GASEOUS ELECTRIC DISCHARGE LAMP DEVICE

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Fig. 1

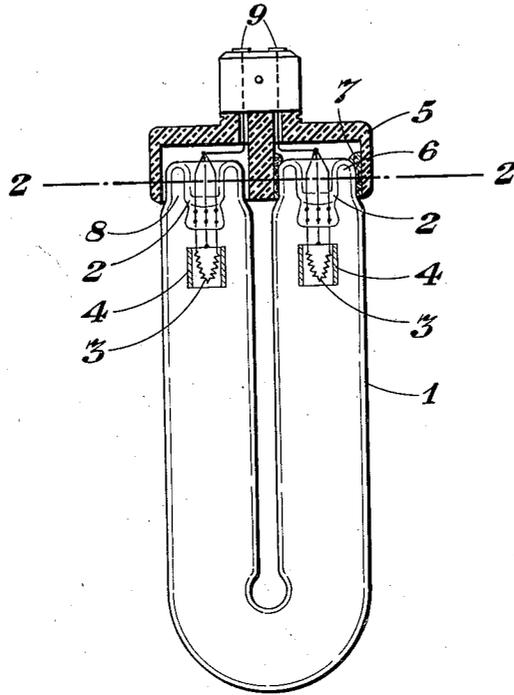
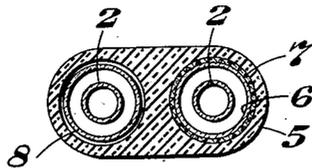


Fig. 2



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GASEOUS ELECTRIC DISCHARGE LAMP DEVICE

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5 Claims. (Cl. 176—122)

The present invention relates to gaseous electric discharge lamp devices generally and more particularly the invention relates to bases for such devices.

I have observed that the curved tubular container of a gaseous electric discharge device having its ends in adjacent positions, a U-shaped container for example, frequently breaks during the operation of the device when both ends of the container are attached to the same base. This is caused by the expansion and contraction of the container under service conditions of the device. The breaking of such curved containers takes place frequently in gaseous electric discharge devices the gaseous atmosphere of which consists of, or comprises, the vapor of a difficultly vaporizable metal, such as sodium, lithium magnesium, cadmium or zinc, that is, those metals the vapor pressure of which is but a fraction of a millimeter at 200 degrees C. The containers of such devices are heated to a high temperature during the operation of the device in order to obtain an effective metal vapor pressure and the glass expands considerably. When the device is shut off the container cools and contracts. This expansion and contraction of the container causes the container to break when both ends thereof are immovably fixed in the same base.

The object of the present invention is to provide a base for curved, tubular containers of gaseous electric discharge devices having the ends thereof in adjacent positions wherein the above difficulties are avoided. Still further objects and advantages attaching to the device will be apparent to those skilled in the art from the following particular description thereof and from the appended claims.

In accordance with this object the invention comprises a base for the adjacent ends of a curved, tubular container of a gaseous electric discharge lamp device, which base is cemented rigidly to one end of said container, the other end of said container being movable in said base. The container can thus expand and contract freely without breaking. That part of the current lead between the base and the end of the container movable with respect to the base is flexible to avoid mechanical stress and strain caused by the movement of said end in said base.

In the drawing accompanying and forming part of this specification an embodiment of my invention is shown, in which

Fig. 1 is a front elevational view of a gaseous

electric discharge device, the new and novel base being shown in section, and

Fig. 2 is a sectional view along the line 2—2 of Fig. 1.

Referring to the drawing the gaseous electric discharge device comprises a U-shaped container 1 having a stem 2 at each end 6 and 8 thereof and a pair of electrodes consisting of a cathode 3 and an anode 4 sealed into said stems 2. The cathodes 3 are electron emitting when heated and consist of a metal filament, such as a tungsten or a nickel filament coated with an electron emitting material, such as barium oxide. The anodes 4 are of sheet metal, such as molybdenum, and are open ended cylinders surrounding said cathodes 3. Said container 1 has a gaseous atmosphere therein consisting of a rare gas, such as neon, at a few mm. pressure and vapor of a difficultly vaporizable material, such as sodium. The device emits an intensive yellow light and operates with a positive column discharge. A base 5 of heat resisting, insulation material, such as asbestos cement, and having two cylindrical depressions therein to accommodate the tubular ends 6 and 8 of said container 1 is attached to the end 6 of said container 1 by a body 7 of heat resisting, insulating basing cement. Between the end 8 and the base 5 there is a space of approximately 1 mm. to allow free expansion and contraction of said container 1 under service conditions of the lamp device. The current lead between said base 5 and the end 8 is of sufficient length to permit movement of said end 8 without setting up physical strains.

The base 5 is a bayonet base and the two contacts 9 thereof are each connected to one of the pairs of electrodes 3 and 4. The cathode 3 of each pair of electrodes is electrically connected to the anode 4 of the pair. As each pair of electrodes is provided with but one current lead the cathodes 3 are not heated by a heating current but are heated to and maintained at an electron emitting temperature by the discharge current. When desired the base 5 is provided with a sufficient number of contacts to permit the use of a special heating current for said cathodes 3. The lamp device is mounted in a heat conservator, such as a double walled jacket having the space between said walls evacuated or filled with a gas having poor heat conductivity characteristics, when desired.

While I have shown and described and have pointed out in the annexed claims certain novel features of the invention, it will be understood that various omissions, substitutions and changes

in the forms and details of the device illustrated and in its use and operation may be made by those skilled in the art without departing from the broad spirit and scope of the invention, for example, said container † has mercury vapor therein, when desired.

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

1. A base for a gaseous electric discharge device having a curved, tubular container the ends of which are in adjacent positions, said base accommodating both ends of said container and being attached to one end of said container, the other end of said container being movable in said base to prevent breaking of said container due to the expansion and contraction thereof under the service conditions of said device.

2. A base for a gaseous electric discharge lamp device having a curved, tubular container the ends of which are in adjacent positions and having a gaseous atmosphere therein comprising the vapor of a vaporizable material, said base accommodating both ends of said container and being attached to one end of said container, the other end of said container being movable in said base to prevent breaking of said container due to the expansion and contraction thereof under the service conditions of said device.

3. A base for a gaseous electric discharge lamp device having a curved, tubular container the ends of which are in adjacent positions and hav-

ing a gaseous atmosphere therein comprising the vapor of a difficultly vaporizable material, said base accommodating both ends of said container and being attached to one end of said container, the other end of said container being movable in said base to prevent breaking of said container due to the expansion and contraction thereof under the service conditions of said device.

4. A base for a gaseous electric discharge device having a curved, tubular container the ends of which are in adjacent positions and a gaseous atmosphere therein comprising mercury vapor, said base accommodating both ends of said container and being attached to one end of said container, the other end of said container being movable in said base to prevent breaking of said container due to the expansion and contraction thereof under the service conditions of said device.

5. A base for a gaseous electric discharge device having a curved, tubular container the ends of which are in adjacent positions and a gaseous atmosphere therein comprising sodium vapor, said base accommodating both ends of said container and being attached to one end of said container, the other end of said container being movable in said base to prevent breaking of said container due to the expansion and contraction thereof under the service conditions of said device.

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