Feb. 5, 1935. S. TACHIBANA 1,990,147

GASEOUS ELECTRIC DISCHARGE DEVICE

Filed Dec. 7, 1931

Fig. 1

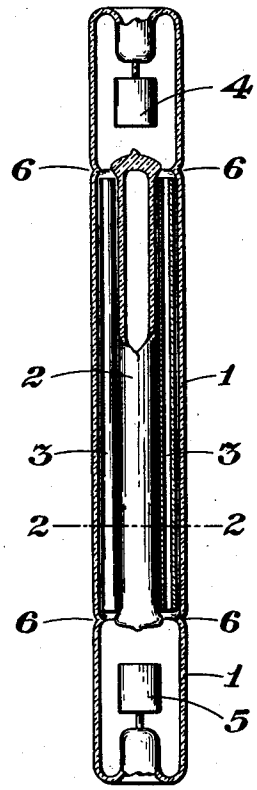
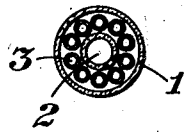


Fig. 2



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GASEOUS ELECTRIC DISCHARGE DEVICE

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Application December 7, 1931, Serial No. 579,619
In Japan December 29, 1930

3 Claims. (Cl. 176—122)

The present invention relates to gaseous electric discharge devices generally and more particularly the invention relates to such devices useful for decorative advertising and display purposes similar to those disclosed in Japanese application 28,886 of 1930, filed in Japan, October 8, 1930.

The object of the invention is to provide an electric discharge device in which the luminous column of the gaseous discharge changes its position in said device suddenly and eccentrically. A further object of the invention is to provide such a device which is simple and rugged in structure. Still further objects and advantages attaching to the device and to its use and operation will be apparent to those skilled in the art from the following detailed description and from the appended claims.

In accordance with these objects the invention comprises a container having a discharge conducting gas therein at a pressure higher than normal to said device and a plurality of discharge paths between the electrodes of the device. Due to the high gas pressure the gaseous discharge assumes the appearance of a thin threadlike luminous stream or column, a so-called "stringy" discharge, said discharge changes its position in said device suddenly and eccentrically from one discharge path to another to give to the device an attractive and interest compelling appearance useful in the arts generally and particularly for advertising or display purposes.

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

Fig. 1 in sectional front elevation and in

Fig. 2 in cross section along the line 2—2 of Fig. 1.

Referring to the drawing the new and novel gaseous electric discharge device comprises a container 1 having electrodes 4 and 5 sealed therein at opposite ends thereof. A plurality of open ended, cylindrical glass tubes 3 of small diameter are located in said container 1 between said electrodes 4 and 5 to furnish a plurality of discharge paths therebetween, the outer wall of said glass tubes 3 being adjacent the inner wall of said container 1. Said tubes 3 are held securely in position in said container 1 by closed tube 2, said tube 2 being flared at both ends beyond the ends of said tubes 3, and by constricted portions 6 in the walls of said container 1 opposite the flared ends of said closed tube 2. Said tubes 3 may be parallel to the axis of container 1 or spiral therearound as desired. Any suitable discharge conducting gaseous atmosphere may be introduced into the container of the device though I have found that neon is most suitable due to the predominance of red in its spectrum. I have found that a pressure slightly greater than normal to said device, say approximately 18 mm. where the normal pressure is 10 mm., is best for obtaining the stringy gaseous discharge desired.

The device is started into operation by any of the methods well known in the art as by applying a current in the order of a few hundred volts across the terminals of the device. The luminous gaseous discharge assumes a stringy appearance and transfers suddenly and eccentrically from one constricted discharge path to the other through said tubes 3 giving to said device an unusual and attention compelling appearance useful for advertising and display purposes.

The above described structure is very simple and inexpensive to manufacture requiring no fusing together of the various glass parts; of tremendous advantage in this type of device. The container is rugged in structure and may be shipped with safety and is not easily broken when being handled.

While I have shown and described and have pointed out various novel features of my invention it will be understood of course that various substitutions, modifications and changes in the forms and details of the device may be made by those skilled in the art without departure from the broad spirit and scope of the invention.

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

1. A gaseous electric discharge lamp device comprising an elongated tubular container, electrodes sealed therein at each end thereof, a gaseous atmosphere therein, an elongated tubular member having closed and flared ends in said container, the longitudinal axis of said tubular member being in the longitudinal axis of said tubular container and the diameter of the outer wall of said tubular member being less than the diameter of the inner wall of said container, and a plurality of open-ended, transparent tubes interposed between the outer wall of said tubular member and the inner wall of said container, said container having a circular recess in the walls thereof opposite each of the flared ends of said tubular member to support said open-ended tubes in said container, the electric discharge between said electrodes being a stringy discharge.

2. A gaseous electric discharge device comprising a tubular container, electrodes sealed therein at each end thereof, a gaseous atmosphere therein, a tubular member interposed between

the electrodes in said container, said tubular member having closed and flared ends, a plurality of open-ended, transparent tubes between said tubular member and said container, said container having a circular recess therein opposite each of the flared ends of said tubular member to support said tubular member and said open-ended tubes in said container.

3. A gaseous electric discharge device comprising a tubular container, electrodes sealed therein at each end thereof, a gaseous atmosphere therein, a tubular member interposed between the electrodes in said container, said tubular member having closed ends and a plurality of open-ended, transparent tubes between said tubular member and said container, said container having a circular recess therein opposite each of the ends of said tubular member to support said tubular member and said open-ended tubes in said container.

SHIRÔ TACHIBANA.