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GASEOUS ELECTRIC DISCHARGE DEVICE

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Fig. 1.

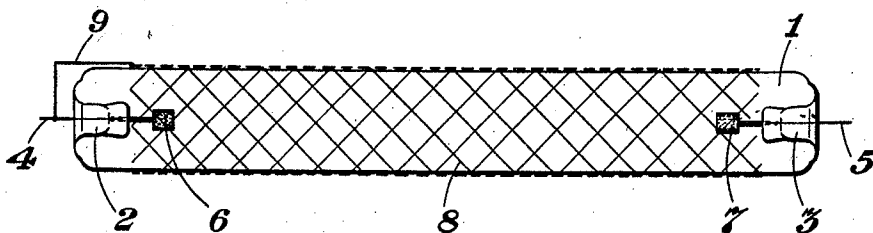
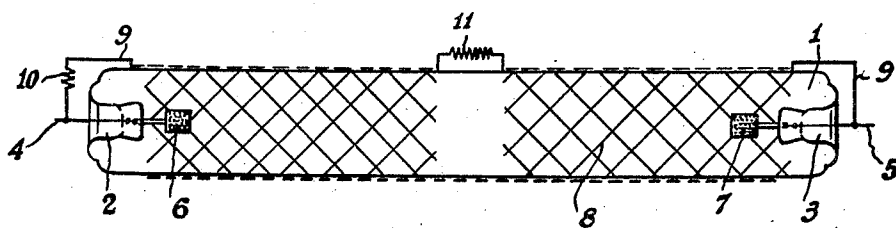


Fig. 2.

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GASEOUS ELECTRIC DISCHARGE DEVICE

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In Germany December 24, 1931

3 Claims. (Cl. 176—122)

The present invention relates to gaseous electric discharge devices generally and more particularly the invention relates to methods and means for starting such devices into operation.

5 It is now known in the art that the starting of gaseous electric discharge devices is facilitated by an electrically conducting member extending along the discharge path and electrically connected to one of the electrodes. An auxiliary
10 electric discharge takes place between the electrically conducting member and the electrode opposite that to which said member is connected and said auxiliary discharge extends along the main discharge path heavily ionizing the latter
15 to facilitate the starting of the main electric discharge in the device. In prior devices the electrically conducting member has been a thin strip, or wire of metal applied to the wall of the container of the device. Where the container is at a temperature of approximately
20 100° C. or more during the operation of the device, as is frequently the case in high intensity electric lamp devices, particularly those containing a metal vapor, such as sodium or
25 magnesium, the thin, electrically conducting member on said container is frequently burned through which renders it ineffective for starting purposes. Further, where the electrically conducting member is a metal strip attached to the
30 glass container the difference in the coefficients of expansion of the metal strip and the glass container results in physical strain on the metal strip which either loosens it on the container or causes a break therein, either of which reduces
35 or destroys its usefulness in starting the electric discharge device.

The object of the present invention is to provide an electric discharge device having an electrically conducting member on the walls of the
40 container thereof to facilitate the starting of the electric discharge therein in which the above mentioned difficulties are entirely avoided. A further object of the invention is to provide a conducting member which is easily attached to the container of an electric discharge device.
45 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 particular description and from the appended claims.

50 The invention attains its object by using a wide mesh net of thin metal wires as the electrically conducting member. Said net is made to conform in shape to that of the container
55 of the electric discharge device, but due to the

wide mesh thereof and the thinness of the wires said net offers little obstruction to the light emitted by the luminous electric discharge in the device. The danger of rupturing the metal
5 net by physical strains due to the disparity in expansion between the metal of said net and said glass container is reduced to a minimum by the flexibility of said net. As the heat radiating surface of the metal wire net is large
10 in comparison to its bulk the danger of a rupture thereof by heat is reduced to a minimum. Even though the net should be broken in one or more places there would still remain a number of electrically conducting wires in any cross
15 section of the device so that the electric discharge in the device is quickly and positively started into operation throughout the life of the device.

In the drawing accompanying and forming part of this specification two embodiments of
20 the invention are shown in a side elevational view.

Referring to the drawing (Fig. 1) the new and novel gaseous electric discharge device comprises a tubular container 1 having stems 2 and 3 one
25 at each end thereof. Electrode leads 4 and 5 are sealed into the stems 2 and 3 respectively. Electrodes 6 and 7 are mounted on said leads 4 and 5 respectively. Said electrodes 6 and 7 are of the sintered, mixed metal and oxide type
30 known in the art as Pirani electrodes and are electron emitting when heated. Said container 1 has a gaseous atmosphere therein comprising a rare gas, such as neon, or a metal vapor, such as mercury, or a mixture of gas and metal vapor,
35 such as neon and sodium vapor. A metal wire net 8 of wide mesh and tubular shape is stretched tightly over the external wall of said container 1. Said net 8 extends the length of said container 1 between said electrodes 6 and 7 and
40 overlaps said electrodes 6 and 7. Said net 8 is applied to said container 1 by slipping said net 8 over one end of said container 1 which simplifies the manufacture of the electric discharge lamp device and said net 8 is maintained in position
45 on said container 1 by the friction resulting from the tight fit between these two members of the device.

Said net 8 is electrically connected to the lead 4 of said electrode 6 and when current is
50 applied across the terminals of the device an auxiliary electric discharge takes place between said net 8 and said electrode 7. This auxiliary discharge extends along the discharge path between said electrodes 6 and 7 and heavily ionizes
55

said discharge path to facilitate the starting of the main discharge between said electrodes 6 and 7.

It will, of course, be understood that, as shown in Fig. 2, said net 8 is connected to both of said electrode leads 4 and 5, where desired, and that an electrical resistance 10 is connected into the lead 9 where the electrical resistance of net 8 is not sufficient. Said net 8 is made up of electrically separate sections and said sections are connected to each other through a resistance 11, where desired.

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

1. An electric discharge device comprising a container, electrodes sealed therein, a gaseous atmosphere therein, a flexible wide mesh net of thin wires having large heat radiating surface and small bulk of conducting material applied to the wall of said container and extending along that part of said container between said electrodes, said net being connected to at least one of said electrodes.

2. An electric discharge device comprising a container, electrodes sealed therein, a gaseous atmosphere therein, a flexible wide mesh net of thin wires having large heat radiating surface and small bulk of conducting material applied to the wall of said container and extending along that part of said container between said electrodes, said net being connected to at least one of said electrodes and overlapping both of said electrodes.

3. An electric discharge device comprising a container, electrodes sealed therein, a gaseous atmosphere therein, a wide mesh net of thin wires of conducting material applied to the wall of said container and extending along that part of said container between said electrodes, said net being connected to both of said electrodes through a resistance and being in sections connected to each other through a resistance.

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