

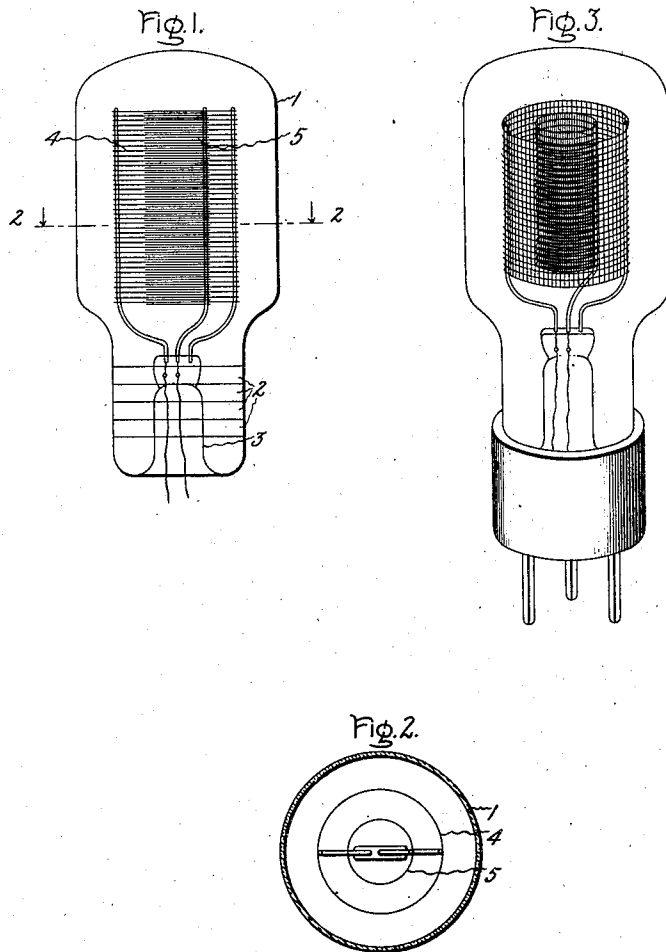
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GLOW DISCHARGE TUBE FOR EMITTING ULTRAVIOLET RAYS

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GLOW DISCHARGE TUBE FOR EMITTING
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to General Electric Company, a corporation of
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3 Claims. (Cl. 176—122)

The invention concerns glow-discharge tubes for the emission of ultraviolet rays. The wall of such tubes is made, at least partially, of a material transparent to ultra-violet rays, for example of quartz and as a rule the tubes are provided with a filling of vapour, for example of mercury vapour. Some gas, for example a rare gas, is frequently added to the said filling of vapour. The ultraviolet rays generated by an electric discharge established in this vapour may pass through the wall to the outside and be utilized for different purposes.

According to the invention, such a glow-discharge tube comprises one or more electrodes consisting of gauze so that the rays generated in the tube can easily pass to the outside. Besides, the metal, for example, the mercury, in the vapour of which the discharge has to be established is retained in small drops in the meshes of the gauze-shaped electrodes. When the tube starts operating, the metal is consequently rapidly heated so that very soon a vapour pressure of sufficient value is obtained within the tube.

A very favourable arrangement is obtained when the electrodes have the shape of concentric cylinders. Owing to this construction the distribution of the electric field between the electrodes becomes very uniform, which is conducive to a uniform light distribution. The rays generated may emerge from the tube in this case through the meshes of the electrodes so that no trouble is experienced from these electrodes.

In order that the invention may be clearly understood and readily carried into effect, it will be explained more fully with reference to the accompanying drawing which represents, by way of example, a glow-discharge tube according to the invention. In this drawing:

Figure 1 represents an elevation of this tube, Figure 2 shows a section taken on the line 2—2, and Figure 3 is a perspective view of the tube.

The discharge tube represented in the drawing comprises a bulb 1 consisting of quartz and sealed by means of some intermediary rings 2 to a stem or foot 3 of ordinary glass. The composition of the intermediary rings has so been chosen, that the coefficient of expansion of the ring sealed to the quartz bulb 1 is only slightly greater than that of the quartz utilized whereas the coefficients of expansion of the other rings increase according as they are farther remote from the quartz.

The foot 3 carries two electrodes 4 and 5 consisting of concentric cylinders made of gauze. The tube contains some liquid mercury and, in addition, some argon, for example, at a pressure of some millimetres has been introduced into the tube. For operating the discharge tube represented, a suitable tension is applied to the electrodes. The stabilizing resistance which has to be connected in series with the discharge path, may be housed, if desired, in the discharge tube or in the cap with which the tube may be provided. The cathode glow-discharge established between the electrodes 4 and 5 generates ultraviolet rays and which may pass to the outside through the quartz wall 1. It has been found that part of the mercury is caught in the meshes of the gauze-shaped electrodes, which facilitates the production of a sufficiently high pressure of the mercury vapour. The discharge tube represented is, for example, suitable for the production of ozone which is formed from the surrounding air by the ultra-violet rays of short wave-length.

What I claim is:

1. A gaseous electric glow discharge tube comprising an envelope, a gas filling therein comprising a vaporizable metal, a pair of electrodes therein so spaced as to have a cathode glow discharge passed therebetween, said electrodes consisting of concentric gauze cylinders to trap particles of the vaporizable metal and to facilitate the production of a high metal vapor pressure in said tube.

2. A gaseous electric glow discharge tube comprising an envelope, a gas filling therein comprising a rare gas and mercury vapor, a pair of electrodes therein so spaced as to have a cathode glow discharge passed therebetween, at least one of said electrodes consisting of gauze to trap mercury particles and to facilitate the production of a high mercury vapor pressure in said tube.

3. An ultraviolet generator comprising an envelope transparent to desired ultraviolet radiations, a gas filling comprising a vaporizable metal, a pair of concentric gauze electrodes therein so spaced as to have a cathode glow discharge passed therebetween, the mesh of the said gauze electrodes being of a small size to trap drops of the vaporizable metal therein to facilitate the production of a high pressure of the metal vapor in the device.

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