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ELECTRIC DISCHARGE TUBE

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Fig. 1

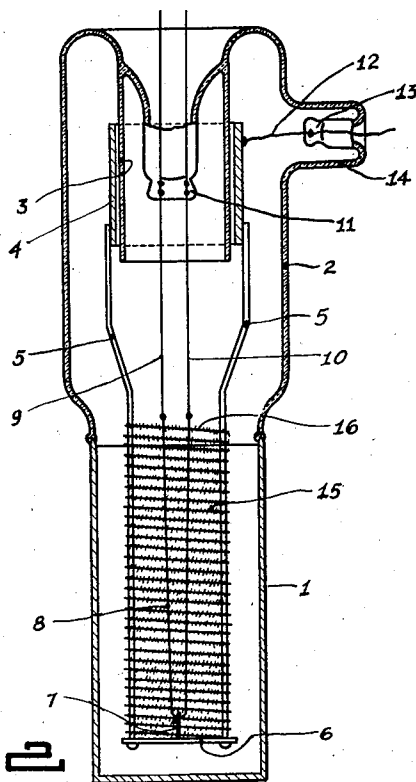
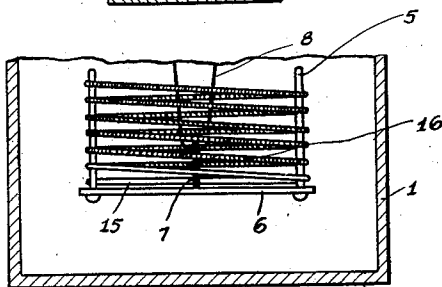


Fig. 2



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ELECTRIC DISCHARGE TUBE

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5 Claims. (Cl. 250—27.5)

The invention relates to electric discharge tubes, more particularly to those comprising a grid.

It is well known that with electric discharge tubes comprising a grid the inconvenience is often encountered that the grid emits electrons, due to which the current of electrons flowing from the cathode to the anode is influenced in an undesirable and uncontrollable manner.

The invention has for its object to eliminate this inconvenience and to provide a construction of the grid whereby this emission is prevented, and also to make the grid sufficiently strong to avoid the disadvantage of deformation of the grid which is encountered with grids made of certain metals, resulting in short circuits between the electrodes.

In accordance with my invention the grid is made with a core which consists wholly or partially of a metal having a high melting point, such as tungsten or molybdenum. This core is covered, either partly or entirely, with another metal, such as nickel or zirconium. To this end the core may be covered with a coating of the other metal, or a wire of the other metal may be helically wound on the core. This construction with a nickel wire helically wound on the core affords the advantage of enlarging the heat radiating surface of the grid, whereby the temperature attained by the grid during operation of the discharge tube remains low, with the result that the electron emission of the grid is suppressed or at any rate considerably decreased. It is also advantageous to helically wind a zirconium wire on at least part of the core, thus increasing the heat radiating surface of the grid, and reducing the risk of emission of electrons from the grid and of deformation of the grid. By covering the core with zirconium the secondary electron emission of the grid is greatly reduced, while the zirconium tends to bind or fix gases or gaseous impurities when heated during the operation of the tube.

The invention will be explained more fully with reference to the accompanying drawing in which, by way of example,

Figure 1 represents a discharge tube such as a transmitting tube, constructed in accordance with the invention while

Figure 2 represents a detail of the grid of this tube.

The wall of the discharge tube shown in Figure 1, which may serve as a transmitting valve, has a metallic portion 1 made for example, of

chrome-iron, which constitutes the anode of the tube, and a portion 2 made, for example, of glass, and connected to the metal anode. This glass portion is provided with a tubular re-entrant portion 3 around which is clamped a metal tube 4 to which are secured the supporting wires 5 of the grid. At the lower ends these wires are connected by an insulating member 6 provided with a hook 7 which supports an incandescent cathode 8, to the two ends of which are secured supply wires 9 and 10 which pass through a press 11. The tube further comprises an arm 14 provided with a stem 13 through which passes the current supply wire 12 of the grid.

The grid consists of a compound grid wire wound around the supporting wires 5. This compound grid wire is, in accordance with the invention, composed of a core wire 15 of molybdenum or tungsten on which a fine metal wire 16, which may, for example, be a nickel or a zirconium wire, is helically wound.

The invention may be applied to discharge tubes of high power for example, transmitting tubes, but it may also be applied to all exhausted or gas filled discharge tubes comprising one or more grids. If the tubes contain a gas filling the zirconium serves for binding impurities which may be present in the gas filling.

I claim:

1. A grid electrode for an electric discharge tube comprising a helically wound conductive core member, supporting means extending transversely of and attached to the core member turns, and a metal wire helically wound on said core member surface.

2. A grid electrode for an electric discharge tube comprising a support, a conductive core wound around said support, and a zirconium wire helically wound on said core.

3. A grid electrode for an electric discharge tube comprising a support, a molybdenum core wound around said support, and a zirconium wire helically wound on said core.

4. A grid electrode for an electric discharge tube comprising a compound grid wire having a core of metal of high melting point and a zirconium wire helically wound on said core.

5. A grid electrode for an electric discharge tube comprising a compound grid wire having a core of metal of high melting point and a fine zirconium wire closely wound on the surface of said core and in electrical contact therewith.

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