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CATHODE FOR USE IN ELECTRON DISCHARGE TUBES

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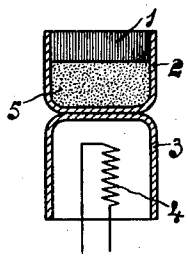


Fig. 1

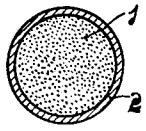


Fig. 2

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CATHODE FOR USE IN ELECTRON DISCHARGE TUBES

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2 Claims. (Cl. 313—337)

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This invention relates to cathodes for use in electron discharge tubes and containing a supply of alkaline earth metal compounds in a supply chamber, the wall of the supply chamber consisting at least partly of a structure of fine wires.

The wall of known chambers consists of plaited strands of fine wires (so-called stranded wires). Owing to this, the known cathodes suffer from the disadvantage that the apertures in the wall of the cathode body are of a comparatively irregular size and mass production of cathodes with uniform apertures is in practice not possible. Due to this, the rate at which the alkaline earth metal compounds reach the surface of the cathode is not exactly determined, whereby both the electron emission and the life of the cathode may be adversely affected.

According to the invention, a cathode which contains a supply of alkaline earth metal compounds and the wall of which consists at least partly of a structure of fine wires, is characterised in that the wires extend at right angles to the electron-emitting surface. For a cathode having a flat electron-emitting surface, a slice may be cut from a strand of wires drawn out to the desired size and this slice may subsequently be fitted in the wall of the cathode body.

When the wires are drawn out they are compacted to a high degree and only very small interstices remain between them.

In order that the invention may be more clearly understood and readily carried into effect, it will now be described more fully with reference to the accompanying diagrammatic drawing, given by way of example, wherein Figs. 1 and 2 are an axial cross-section and a plan view, respectively, of a flat cathode according to the invention.

The wires may consist of tungsten, molybdenum or tantalum.

In Figs. 1 and 2, the reference numeral 1 designates a slice which is cut from a strand of fine wires drawn out together. For example,

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about 800 tungsten wires of 200 μ are placed in a molybdenum tube, inner and outer diameter 6 and 10 mm. respectively, and drawn out to a diameter of 3 mm. This slice 1 is welded in a molybdenum bush 2, with the aid of a spot-welding apparatus, to the bottom of which a second molybdenum bush 3 is welded. Within the bush 3, a helical filament 4 is provided. The supply of alkaline earth metal compounds is designated 5. Instead of the molybdenum bushes 2 and 3 and tube surrounding the wires, tantalum fittings may be used.

What we claim is:

1. A cathode comprising a structure forming an internal cavity containing a supply of alkaline earth metal compounds, one wall portion of said structure comprising a plurality of wires each about one-tenth of a millimeter in diameter and extending at right-angles to the surface of the alkaline earth metal compounds in the cavity, said wires consisting of a metal selected from the group consisting of tungsten, molybdenum and tantalum.

2. A cathode comprising a structure of molybdenum forming an internal cavity containing a supply of alkaline earth metal compounds, one wall of said structure comprising a plurality of tungsten wires each about one-tenth of a millimeter in diameter extending at right angles to the surface of the alkaline earth metal compounds.

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