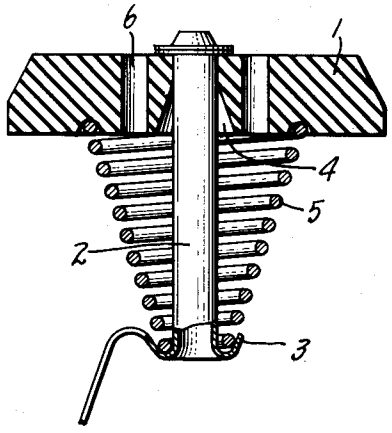
Sept. 6, 1955 K. GOSSLAR 2,717,325

INDIRECTLY HEATED CATHODE, FOR CATHODE RAY TUBES IN PARTICULAR

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INDIRECTLY HEATED CATHODE, FOR CATHODE RAY TUBES IN PARTICULAR

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4 Claims. (Cl. 313—270)

In a previously proposed structure a device has been described for insuring the mutual spacing between a rod-shaped indirectly heated cathode and the first electrode, immediately neighboured to the latter, of an electron-optic system for cathode ray tubes. According to this structure the cathode, near its emitting surface, is fastened in an insulating body and between the other end of the cathode and the insulating body there is an arrangement of springs or a spring preventing variation of the spacing between the edge of the insulating body which contacts the first electrode of the electron-optic system and the point or the emitting surface of the cathode, due to thermal expansion of the elements.

The present invention presents a particularly simple and inexpensive design example of a device for securing of the mutual spacing between a cathode and the nearest electrode. This is accomplished in such a manner that the cathode arranged in an insulating body is provided at its lower end with a flanged rim wherein is fitted the one end of a conically wound spring whose other end presses against the insulating body wherein the cathode is seated. This arrangement offers the advantage that through a simple structure firm fitting of the cathode is attained with only slight heat leakage.

The invention will now be explained in greater detail with reference to the attached drawings illustrating a structural example of a cathode assembly incorporating this invention.

Numeral **1** designates the insulating body, within which the cathode **2** is seated, with its upper part resting on the front face of this insulating body. Numeral **3** signifies the flanged rim of the cathode **2**. The cathode **2** extends through the hole **4** in the insulating body. A conical helix spring is represented by **5**. To reduce heat leakage, the hole **4**, provided for receiving the cathode, may be surrounded by further holes **6**, in the insulating body.

These holes increase the thermal resistance of the insulating body in the vicinity of the cathode. Heat leakage is further reduced by making the contact surfaces between the cathode and the insulating body as small as possible. This may be achieved by making the hole in the insulating body triangular, square shaped or polygonal. Thus the supporting rim of the cathode will not be in contact with the insulating body throughout its entire circumference. The hole **4** in the insulating body may also be designed as a triangular, square shaped or polygonal truncated pyramid, in order to keep down temperature drain as much as possible while securing good fitting of the cathode. In order to secure proper fitting of the helical spring, the insulating body may be provided on its underside with a groove to receive the outer coil of the spring.

What is claimed is:

1. A structure for securing a cathode electrode in fixed position regardless of thermal expansion effects, comprising a rod shaped cathode having a first rim at one end near the emitting surface, and a flanged second rim provided with an upturned groove at its other end, said second rim being integral with and turned up from said rod-shaped cathode, an insulating support member provided with an opening larger than the body of said rod but smaller than said first rim on one surface thereof, said cathode being seated in said opening with said first rim resting on said one surface, and a conically wound spring mounted in comparison with its smaller end in the groove on said second rim, and its other end pressing against the other surface of said insulating support.

2. A structure according to claim 1, wherein said insulating support is provided with a groove on said other surface to receive said other end of said spring.

3. A structure according to claim 1, wherein the opening at said one surface of said support is polygonal in shape, with some of its cross dimensions being greater than the diameter of said first rim, whereby contact between said rim and said support is not continuous throughout the periphery of said rim.

4. A structure according to claim 3, wherein the remainder of said opening between said first and second surfaces is in the form of a truncated polygonal pyramid.

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