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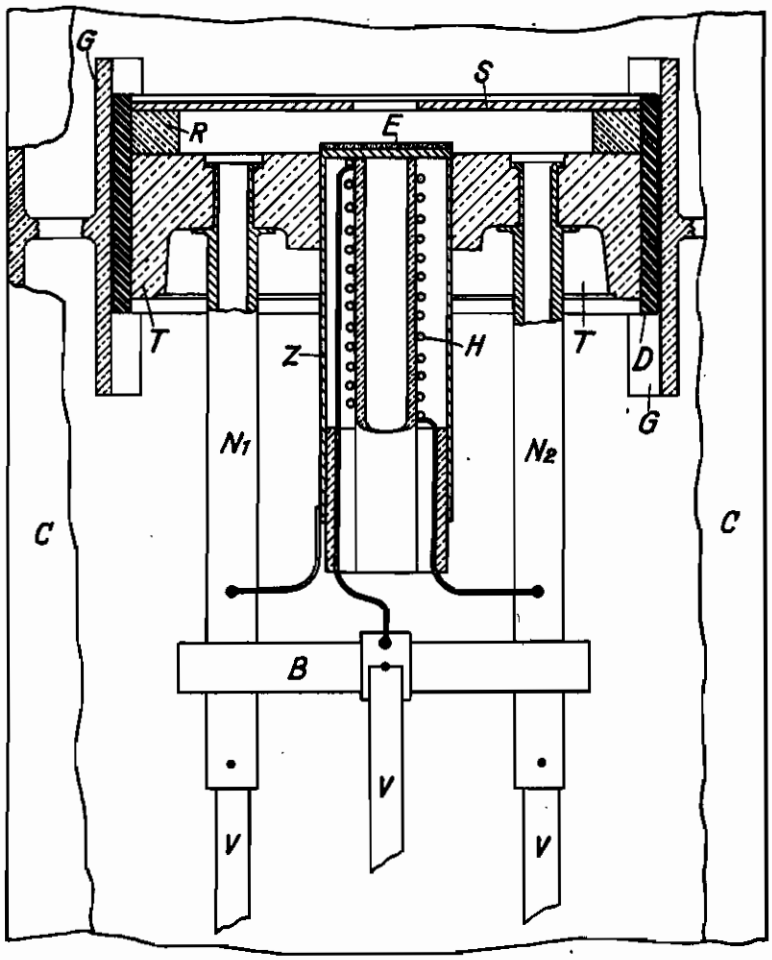

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CATHODE RAY TUBES

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In cathode ray tubes or so-called Braun tubes the distance between the emissive layer and the control electrode should be the same at any temperature, in order to render the characteristic control line invariable in position. In many cases the cathode is a metal cylinder in which a heating coil is arranged and which at its front end carries the emissive layer. This cylinder expands in accordance with the temperature the cathode acquires. The practice has been to fix the cylinder at the end remote from the emissive layer. As a result, with rising temperature the cylinder expands toward the control electrode and thus brings the emissive layer nearer to this electrode. Therefore, it has been proposed to mount the cylinder by means of a device arranged to withdraw from the control electrode whenever the temperature rises. Such device, however, is complicated and its operation does not give the desired result.

The present invention therefore proposes that the cathode cylinder, that is, the metal cylinder which at one end carries the emissive layer, be held in position with the aid of supporting means by which it is engaged at a zone located in close proximity of the emissive layer. In this way, the cylinder is prevented from expanding toward the control electrode. It will expand instead in the opposite direction, that is, in the direction of its free end.

The accompanying drawing is a fragmentary sectional view of a cathode ray tube as provided by the invention.

The emissive layer E is fitted to one end of a tubular metal cylinder Z, which is closed at this end while its other end is open. Fixed within this cylinder is a heating coil H, inserted through the open end thereof. Cylinder Z is pressed into a ceramic disc T. A disc-shaped control electrode S is spaced from the layer E by a desired distance afforded by an insulating ring R that rests against disc T or is formed integral therewith. The parts T, R, S may be held together by a tubular body D of moulded insulating material. In addition, a suitable clamping device, not shown for simplicity, may be used to press the parts T, R, S together.

The disc T carrying the cylinder Z is fitted to it at a zone adjacent to the emissive layer E. The cylinder thus has a portion that projects from disc T and on the side thereof remote from the layer E. This portion is free to expand during the operation of the cathode ray tube, while the portion on which the disc T is seated does not expand and hence does not vary the distance between layer E and electrode S.

The disc T also carries metal rods N_1, N_2 and an insulating bridge B fastened to these rods. In the case shown by way of example the rods N_1, N_2 are hollow, being fixed to disc T in the manner of tubular rivets. The structure N_1, N_2, B serves to join the three connecting wires of the cathode arrangement H. Z to three sufficiently strong connectors V and thereby to protect them from injury. The connectors V may be wires or tapes and are secured in the stem of the bulb C in a well-known manner not represented here.

It will be seen that the arrangement Z, E, H, T, R, D, N_1, N_2, B may be added as a whole to the electrode system of a cathode ray tube, a guide G for the cathode structure being arranged in the bulb C. The cathode structure is hence exchangeable, and as it is a separate body, the act of arranging the cathode structure may be the last step in the manufacture of such a tube, namely, a step effected with the avoidance of an unduly high sealing temperature.

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