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ELECTRON DISCHARGE TUBE HAVING AN ANODE WITH CAVITIES

Filed May 26, 1961

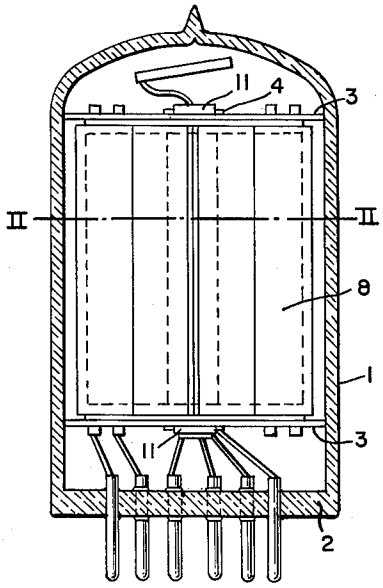


FIG. 1

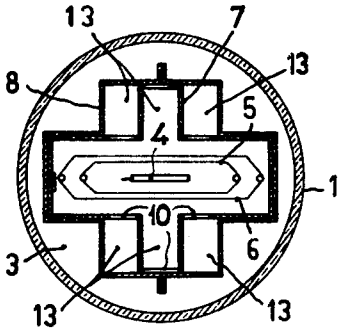


FIG. 2

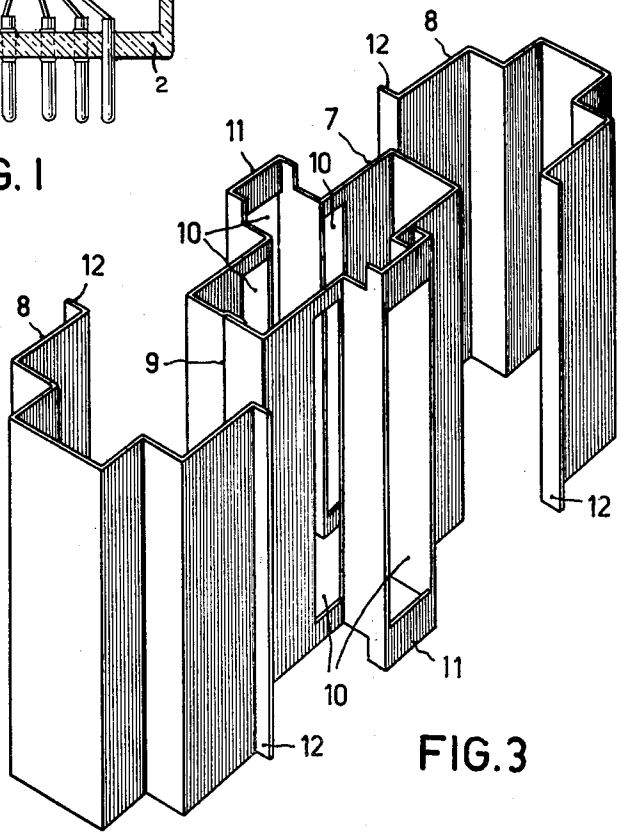


FIG. 3

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ELECTRON DISCHARGE TUBE HAVING AN ANODE WITH CAVITIES

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4 Claims. (Cl. 313—296)

The invention relates to an electric discharge tube comprising a cathode, at least two grids the wires of which, viewed in the direction of travel of the electrons, are located behind each other, and an anode which is provided with a plurality of partitions facing the cathode, so that a number of cavities are formed which prevent secondary electrons liberated from the anode from travelling towards the grids. Such valves are known per se.

However, it is difficult to mount the electrode system of such a tube. In order to ascertain whether the grid wires, after mounting of the system, are arranged correctly behind each other, it has been suggested to provide the anode with apertures which are sealed afterwards by means of plates slipped on them or soldered to them.

Furthermore, it is known to manufacture an anode having partitions by arranging a plurality of rectangularly bent strips in a frame. However, it was then difficult to check the relative positions of the grid wires after the mounting of the anode. Moreover, the mounting of the strips in the frame was complicated.

The invention renders it possible to obtain the advantages of the known embodiments and nevertheless to check in a very simple manner the grid wires and to mount the anode. For this purpose, the anode consists of two box-shaped parts of cross-shaped section which are arranged so as to surround each other, the faces of the inner part which are at right angles to the electron paths being provided with apertures, while the end surfaces of the arms of the cross-shaped section of the outer box-shaped part, which are at right angles to the electron paths, are wider than the end surfaces of the corresponding arms of the cross-shaped section of the inner box-shaped part.

Preferably, the outer box-shaped part consists of two halves which are slipped on the non-perforated parts of the inner box-shaped part and the connecting edges of which lie in the plane of symmetry of the electrode system which is at right angles to the emissive cathode surface.

The inner box-shaped part serves as a supporting member for the outer parts and for this purpose, it is provided with tags which are arranged in mica members.

Preferably, the inner box-shaped part is manufactured from one piece on a special bending machine having four slides. This embodiment has the advantage that the whole electrode system can be mounted, except the outer parts of the anode, the apertures in the faces of the inner box-shaped part permitting a satisfactory checking of the positions of the grid wires. Subsequently, the two halves of the outer part of the anode are slipped on the closed parts of the inner anode part and welded to each other, without the slightest change in the arrangement of the remaining anode parts being necessary. The outer anode parts together with the inner box-shaped part constitute an anode having cavities.

The invention will now be described more fully with reference to the drawing in which:

FIGURE 1 shows a tube according to the invention, whilst

FIGURE 2 illustrates a cross-sectional view of this tube;

FIGURE 3 is a perspective view of the anode according to the invention.

Referring now to FIGURE 1, reference numeral **1** denotes the bulb of the tube, **2** a glass bottom part having contact pins, while **3** indicates mica centering members. As shown in FIGURE 2, the electrode system comprises a cathode **4**, a control grid **5**, a screen grid **6** and an anode which is constituted by an inner part **7** and an outer part **8** consisting of two parts. As shown in FIGURE 3, the inner part **7** is manufactured from one piece on a bending machine having four slides, so that only a single seam **9** is present. The part **7** comprises six large rectangular apertures **10**. After mounting the cathode **4**, the grids **5** and **6** and the inner part **7**, the relative position of the wires of the grids **5** and **6** may be checked through the apertures **10** throughout the length of the grid, also after the mica members **3** are connected to these electrodes and are arranged by means of the tags **11**. The whole packet of electrodes is now ready, except the outer parts **8** of the anode. These parts **8** are now slipped on the non-perforated arms of the cross-shaped section of the box-shaped inner part **7** and their edges **12** are welded to each other, without the arrangement of the remaining electrodes being affected. The parts **8** together with the part **7** constitute an anode having cavities **13** which prevent secondary electrons liberated from the electrode from escaping to the grid space. The embodiment according to the invention has made it possible to check accurately and in a very simple way the mounting of the grid wires and an anode having partitions and cavities is obtained without complicated operations.

What is claimed is:

1. An electric discharge tube comprising an electrode system including a cathode having an emissive surface, at least two grid electrodes, and an anode having partitions facing the cathode and defining electron paths with the cathode electron emissive surface, said anode comprising a first box-shaped inner part of cross-shaped cross-section, the faces of the inner part at right angles to the electron paths being provided with apertures therein, a second box-shaped outer part supported by and surrounding the inner part, said outer part comprising two halves joined together with connecting edges lying in a plane of symmetry of the electrode system at right angles to the cathode electron emissive surface, the end surfaces of the cross of the cross-shaped section of the outer part at right angles to the electron paths being wider than the end surfaces of the corresponding arms of the cross-shaped section of the inner part.

2. An electric discharge tube as defined in claim 1 in which the inner part is a unitary assembly with only one seam joining abutting edges.

3. An electric discharge tube as defined in claim 1 in which the inner part is provided with tags secured to a centering member of insulating material.

4. An electric discharge tube as defined in claim 3 in which the centering member is mica.

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