

[54] VIDICON HAVING MESH ON END OF CYLINDER COAXIAL WITH ANODE

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[58] Field of Search 315/8, 65 A, 65 R, 389, 315/390, 382, 383

[56] References Cited

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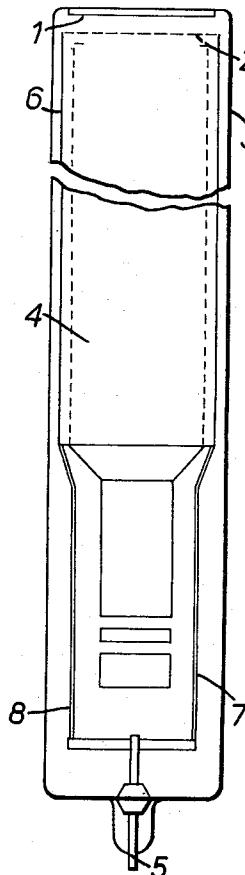
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[57] ABSTRACT

A separate mesh vidicon in which in order to reduce voltage pick-up from the scanning field by the conductor system which makes connection to the mesh and at the same time provide a tube which is relatively insensitive to rotation about its axis when positioned within its scanning yoke, connection to the mesh is made within the area occupied in operation, by the scanning field, by a cylindrical conductor surrounding the usually provided cylindrical anode, the remainder of the connection path being provided by a number of conductors arranged symmetrically about the axis of the tube.

5 Claims, 2 Drawing Figures



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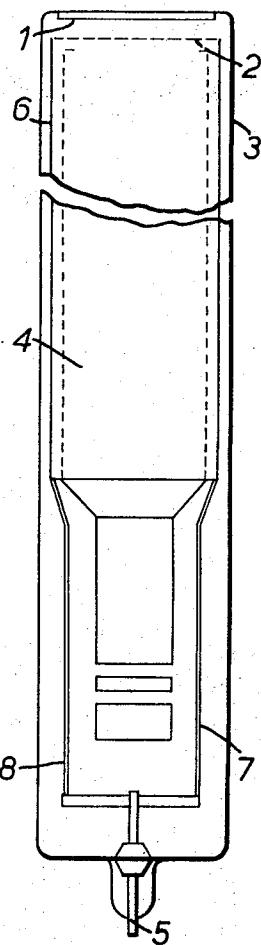


FIG. 1

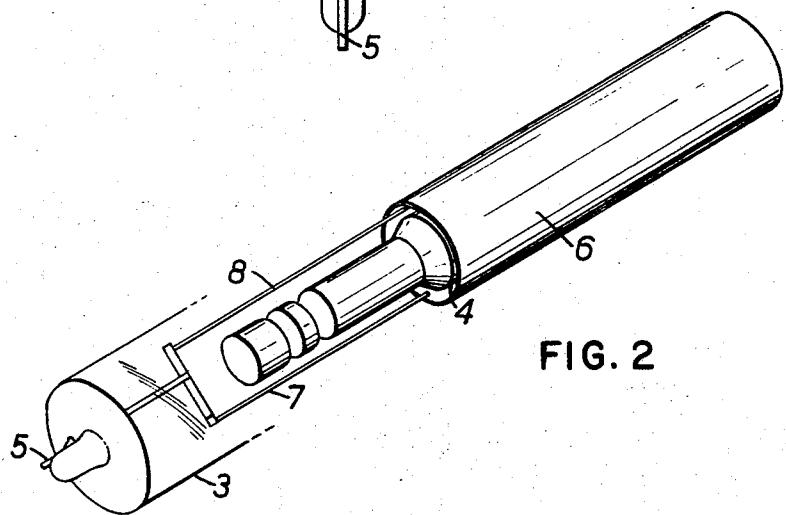


FIG. 2

VIDICON HAVING MESH ON END OF CYLINDER COAXIAL WITH ANODE

This invention relates to camera tubes and more specifically to vidicon tubes of the kind in which there is provided a field mesh between said target and the cylindrical anode of the tube, which mesh is separated from both said target and said anode, connection being made to said mesh from a point outside the envelope of the tube by electrical connection means extending along the interior length of the envelope.

As is well known, if the electrical connection means to the field mesh of a vidicon of the kind referred to consists of a single conductor, false video signals are liable to appear in the tube output caused, it is believed, by voltage pick-up by the field mesh conductor from the scanning fields of the tube. To overcome this difficulty it is known to provide a plurality of current paths from the base of the tube to the field mesh, which paths are symmetrically distributed around the axis of the tube. Commonly two conductors are employed arranged in diametrically opposite fashion. The object of using a plurality of current paths is to achieve what may be termed mutually balancing pick-up, the undesirable effects of pick-up from the scanning fields on one current path being cancelled out or approximately so by opposing effects by another, diametrically opposed, current path.

Whilst such multiple path tubes can be made with satisfactory immunity to the effects of voltage pick-up from the scanning fields of the tube, they are sensitive as regards orientation within the scanning coil yoke. This is a very serious defect indeed where such tubes are used in multiples in a colour camera, since it is quite commonly required to rotate the tubes about their longitudinal axis in order to optimise such parameters as geometry.

The present invention seeks to provide an improved vidicon of the kind referred to, which, whilst providing a satisfactory degree of immunity from the effects of voltage pick-up by the connection means to the field mesh, at the same time are relatively insensitive to their orientation within the scanning yoke.

According to this invention a vidicon tube of the kind referred to is provided wherein said connection means consists of a conductive cylindrical member connected to said mesh and extending part of the length of the tube and a plurality of current paths symmetrically distributed around the axis of the tube and extending from the end of said cylindrical member along the remaining length of said tube to a terminal at the base of the tube.

Preferably there are two current paths each consisting of a wire.

Normally said conductive cylindrical member is coaxial with and surrounding the tubular anode electrode and extends at least approximately to the end of the effective length of said tubular anode electrode. Where, as is normally the case the tubular anode electrode is tapered at the end of its effective length, said conductive cylindrical member extends from the target mesh to the beginning of the taper.

If it is desired to provide a tube in accordance with the present invention which is wholly compatible with existing standard tubes so that direct replacement is possible, the combined wall thickness of the conductive cylindrical member connected to the mesh and the tubular anode electrode should be made equal to the wall

thickness of the tubular anode electrode in the standard tube.

The invention is illustrated in and further described with reference to the accompanying drawing which 5 represents in schematic fashion a vidicon camera tube in accordance with the present invention. In the drawing:

FIG. 1 is an elevational view of a vidicon tube according to the invention; and

FIG. 2 is a perspective view thereof with some parts 10 omitted.

Referring to the drawing, the target electrode of the vidicon camera shown therein is referenced 1, the separate field mesh electrode is referenced 2, the envelope of the tube is referenced 3, the tubular anode electrode, or G3 as it is often called, is referenced 4, whilst the pin which extends through the base glass of the tube to apply voltage to the field mesh 2 is referenced 5. The remaining electrodes of the tube need not be referred to in detail and are represented schematically.

20 In accordance with the present invention a conductive cylindrical member 6 of non-magnetic metal such as nickel-chrome is attached to the field mesh 2 and coaxially surrounds the cylindrical anode electrode 4. Conductive cylindrical member 6 extends from the 25 field mesh over the effective working length of the cylindrical anode electrode 4 to a position at which the anode electrode begins to taper. At this point two diametrically opposed wires 7 and 8 are attached to the cylindrical member 6 and extend towards the base of the 30 tube where they are connected in parallel to the pin 5.

The relative length of the cylindrical member 6 to the 35 insulated wires 7 and 8 is not critical, but it has been found that this may be optimised to provide maximum reduction of line scan pick-up with minimum sensitivity to orientation within the scanning yoke.

If it is desired to provide a tube in accordance with the present invention which is wholly compatible with existing standard tubes so that direct replacement is 40 possible, the combined wall thickness of the conductive cylindrical member connected to the mesh and the tubular anode electrode should be made equal to the wall thickness of the tubular anode electrode in the standard tube. At present the wall thickness of the tubular anode electrode in the known standard tube is 0.004 inch. In the present tube the tubular anode electrode 4 and the conductive cylindrical member 6 each have a wall thickness of 0.002 inch.

I claim:

50 1. A vidicon tube including within an envelope, a target, a target electrode in electrical contact with the target, an anode of which the portion nearest the target is cylindrical, a field mesh electrically isolated from the positioned closely adjacent the target electrode between the target electrode and the cylindrical portion of the anode, terminal means passing through the envelope, and electrical connection means electrically connecting the terminal means to the field mesh; wherein, the electrical connection means includes a conductive 55 cylindrical member coaxial with and surrounding the anode and extending at least approximately to the end of the cylindrical portion of the anode, the opposite end portions of the cylindrical member being electrically connected, respectively, to the perimeter of the field mesh and to a plurality of electrical conductors which are disposed symmetrically about the axis of the tube and extend to the terminal means.

2. A tube as claimed in claim 1, wherein there are two current paths each consisting of a wire.

3. A tube as claimed in claim 1, wherein the tubular anode electrode is tapered at the end of its cylindrical portion, and wherein said conductive cylindrical member extends from the field mesh to the beginning of the taper.

4. A tube as claimed in claim 3, wherein the combined wall thickness of said conductive cylindrical member and said anode is approximately equal to 0.004 inch.

5. In a vidicon tube of the type including an evacuated envelope adapted to be received and adjustably oriented within a scanning yoke, said envelope having a face plate portion at one end and having an externally accessible electrode projecting through the envelope wall at its other end, a vidicon target electrode on the inner surface of said face plate portion, a tubular anode electrode within said envelope extending from adjacent said other end of said envelope to a position spaced from but adjacent said target electrode, and a field

mesh electrode positioned across the space between said tubular anode electrode and said target electrode closely adjacent said target electrode, the improvement comprising:

5 an electrically conductive, non-magnetic cylinder electrically connected at one end thereof to said field mesh electrode and extending therefrom in concentric, surrounding relation to said tubular anode electrode over at least a major portion of the length thereof; and

at least a pair of electrical conductors connecting that end of said cylinder which is remote from said target electrode to said externally accessible electrode, said conductor being arranged symmetrically about the axis of the tube and said cylinder being of sufficient length as to provide maximum reduction of line scan pick-up with minimum sensitivity to orientation of said tube within the scanning yoke.

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