

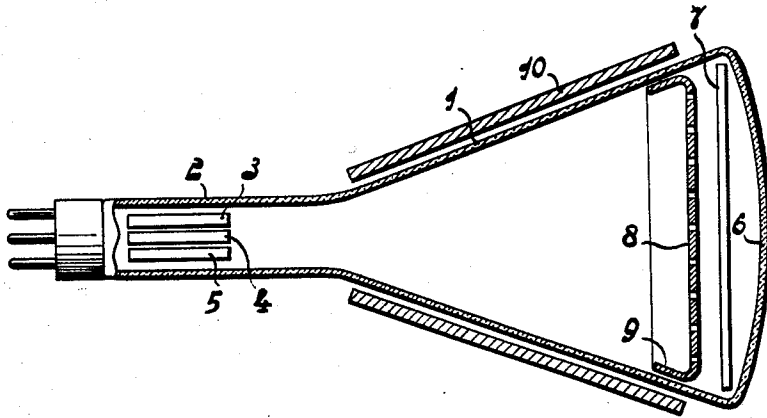
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J. C. FRANCKEN

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CATHODE-RAY TUBE FOR THE REPRODUCTION OF COLOUR TELEVISION IMAGES

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INVENTOR
JAN CAREL FRANCKEN

BY *John M. V. ...*
AGENT

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CATHODE-RAY TUBE FOR THE REPRODUCTION OF COLOUR TELEVISION IMAGES

Jan Carel Francken, Eindhoven, Netherlands, assignor, by mesne assignments, to North American Philips Company, Inc., New York, N.Y., a corporation of Delaware

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3 Claims. (Cl. 313—85)

The invention relates to a cathode-ray tube for the reproduction of colour television images and to a device comprising such a tube.

For the reproduction of colour television images use is nowadays frequently made of a cathode-ray tube comprising a phosphor screen having discrete, regularly-distributed surfaces, which emit light of different colours upon being struck by electrons. These regularly distributed surfaces are scanned by one or more electron beams produced by one or more electron guns. The invention relates only to such cathode-ray tubes in which in front of the phosphor screen provision is made of a plate-shaped electrode having a large number of apertures, by means of which the colour selection takes place. These apertures correspond to the discrete surfaces of the phosphor screen luminescing in different colours.

The tubes described above have a great disadvantage in that they are very sensitive to magnetic fields to an extent such that even the earth's magnetic field may interfere with the course of the electrons. It has therefore been suggested to surround the tubes by an envelope of soft magnetic material. Such an envelope provides a very useful screening from fields at right angles to the axis of the tube. However, there remains a very large plane, i.e. the window of the tube, which is not screened especially from unwanted fields parallel to the axis of the tube. It is, of course, impossible to provide a metal sheet in front of the window.

The invention is based on the recognition of the fact that a magnetic field acts especially upon the electron paths in front of the perforated electrode, i.e. on the cathode side thereof. With a cathode ray tube according to the invention the interference or degradation of the image owing to magnetic fields penetrating through the window is avoided to the greater extent.

A cathode-ray tube for the reproduction of colour television images in accordance with the invention comprises at least one electron gun and a phosphor screen having discrete, regularly distributed surfaces of at least two substances which emit light of different colours upon being struck by electrons and a plate-shaped electrode provided on the cathode-side in front of this screen and provided with apertures, by means of which the colour selection is carried out, and is characterized in that the perforated electrode is made of soft magnetic material.

The thickness of the perforated electrode is furthermore chosen to be preferably larger than 0.2 mm.

Very suitable materials for the perforated electrode are alloys of the Permalloy type, i.e. alloys having about

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67% by weight of Ni and 33% of Fe, and, if necessary, a few percent by weight of Cu, Cr or Mo.

In a particular embodiment of a cathode-ray tube according to the invention the perforated electrode has an upright or flanged edge. This has the advantage that a magnetic screening outside the tube may be provided to overlap this upright edge. Thus a fairly complete magnetic screening of the interior of the tube is guaranteed.

The invention will now be described with reference to a drawing, in which a section of the cathode-ray tube according to the invention is shown diagrammatically. In the drawing the envelope of the tube is constituted by a conical part 1 and a cylindrical part 2, which is connected to the former and which encloses three electron guns 3, 4 and 5. The conical part 1 is closed by a transparent window 6 and comprises a flat phosphor screen 7, on which the discrete, regularly distributed surfaces of luminescent substances are provided. In front of this phosphor screen 7 provision is made of the perforated, plate-shaped electrode 8, which is provided at the sides with an upright edge 9. The parts 8 and 9 are manufactured, in accordance with the invention, from a soft magnetic material. The tube is surrounded by a screening sheath 10, which is also made of such a material. As is clearly evident from the drawing, the upright edge 9 and the screening sheath 10 overlap one another over a certain distance.

In order to simplify the drawing the means for deflecting the beam, which are not necessary for a good understanding of the invention, are omitted.

What is claimed is:

1. A cathode-ray tube adapted for color television comprising an electron gun at one end and a phosphor screen at the opposite end capable of producing a color image upon excitation by an electron beam, and an apertured, plate-like electrode extending substantially in the same direction as said phosphor screen and disposed adjacent to the latter and between it and the electron gun and adapted to cooperate with the electron gun and phosphor screen to ensure that the electron beam excites the desired color image, said color image being subject to degradation by the presence of unwanted magnetic fields within the tube, said apertured electrode being constituted of iron-containing soft magnetic material, whereby the electron beam, at least in the vicinity of the apertured electrode, is shielded from said unwanted magnetic fields which extend in the direction of the axis of the tube.

2. A tube as set forth in claim 1, wherein the apertured electrode is a nickel-iron alloy and has a thickness exceeding 0.2 millimeter.

3. A tube as set forth in claim 1, wherein the apertured electrode has a flanged portion at its outer edge, and wherein a magnetic shield surrounds the tube with its edge adjacent the screen overlapping the flanged portion of the apertured electrode.

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