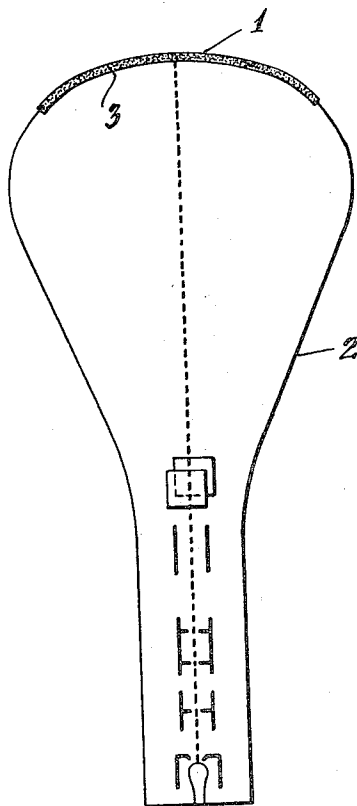


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CATHODE-RAY TUBE COATING
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CATHODE-RAY TUBE COATING

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2 Claims. (Cl. 250—164)

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This invention relates to external coatings for cathode-ray tubes which improve the contrast of the trace of the beam on the face of the tube so that the apparent brightness is increased even in the presence of strong ambient or surrounding light.

The invention may be understood from the following description in which a specific embodiment of the invention is described in connection with a somewhat diagrammatic drawing.

In carrying out the invention a coating 1 of light-transmitting material is applied to the outside surface of the large end of a cathode-ray tube 2. The color of this coating 1 corresponds to the color emitted by the fluorescent or phosphorescent coating 3 on the inside of the tube 2. This coating 1 adheres tenaciously to the outer face of glass tube 2 and will not be damaged by moisture, oil or grease. At the same time such outside coating is made strong and tough enough to withstand abrasion effects which might be encountered during handling or use of the tubes upon the faces of which these coatings are applied. Inert material in finely powdered form, such as a divalent or trivalent metallic soap of the known sorts, is embodied in the coating 1 in amount sufficient to permit the desired degree of light transmission, while at the same time a suitable amount of specular diffusion of the transmitted light is caused to take place due to the presence of such material. Similar results may be obtained by using finely ground opaque solids such as silica, or oxides of tetravalent metals, magnesium or other alkaline earth carbonates, for example.

Nitrocellulose lacquer has been found to be quite suitable for use as the clear coating or vehicle 1, but other materials such as varnishes, solutions of natural or synthetic resin or combinations of the same may be used for this purpose.

In carrying out the invention, the light transmitting material 1 that is used for coating the outside of cathode-ray tubes, such as the tube 2, is so treated or prepared that it also disperses ambient light. This material may be tinted with dyestuffs for improving the contrast and definition of the trace or pattern to be observed. For best results these dyestuffs should be such that solutions thereof have spectral transmissions corresponding as closely as possible to those of the fluorescent or phosphorescent luminosity of the screen material that is used.

The following is given as a specific example of carrying out the invention, but the invention is not limited to this example.

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A luminescent screen 3 of zinc orthosilicate is applied to the inner face of the large end of the cathode-ray tube 2 and the outer face of this tube is coated with inert material 1 described above.

5 This material is tinted to a shade of green so that it passes light between 4750 angstroms and 5600 angstroms. Such a film or layer transmits about 82% of the fluorescent light that is produced by bombarding or scanning the screen 3 of the tube 10 with a cathode-ray or beam. This loss of light is hardly noticeable in darkness, but the increase in contrast produces an increase of apparent brightness in the presence of strong ambient light. Glare is substantially or practically 15 entirely eliminated and no change is noticed in the size of the spot that is caused by the cathode-ray or beam. The coated face 1 of the tube 2 can be easily observed from any angle of observation within practical limits with respect to the 20 plane of its surface.

Such coatings 1 are particularly useful when applied to fluorescent screened tubes that are used in television as receiving tubes. In all cases the coating is tinted in accordance with the fluorescent luminosity of the screen material 3 that is 25 used in such tubes. For example, when a zinc sulphide-zinc cadmium sulphide screen material 3 is used a preponderately white luminescence is produced so that a neutral gray tint is quite suitable for the coating 1 that is used on the face of 30 the tube 2 and has been found to be very effective since it has a practically uniform transmission characteristic over the entire range of the visible spectrum. The light transmission through the coating material 1 has been found to be over 35 80% of the fluorescent luminosity that is produced by bombarding the fluorescent screens of such tubes with cathode-rays or beams. The loss of light is not noticeable in the darkness, while the increase in contrast produces a considerable 40 increase of apparent brightness when the pattern or trace on the fluorescent screen 3 is observed even in the presence of strong ambient light. Glare is also eliminated to a large extent 45 or practically entirely and no apparent increase in the size of the light spot caused by the beam is noticeable. The pattern or picture on the face of the tube can be observed in the usual way.

With this invention cathode-ray tubes can be 50 used without employing shields to exclude ambient light from the faces of the tubes even in surroundings where there is high ambient light.

What is claimed is:

1. A cathode-ray tube having a screen and

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having a layer of light-transmitting material on its face colored to correspond to the light produced by the cathode-ray beam of said tube on the screen thereof, said light-transmitting material having particles of inert material capable of specular diffraction distributed therein.

2. A cathode-ray tube having a screen and having a layer of light-transmitting material on its face colored to correspond to the light produced by the cathode-ray beam of said tube on the screen thereof, said light-transmitting material having particles of inert material distributed therein that produces specular diffusion of light.

ALBERT STEADMAN. 15

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