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Isaacs et al.

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[54] **METHOD AND APPARATUS FOR COLOR SPECTROPHOTOMETRY**

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[51] **Int. Cl.**..... **G01j 3/46**, G01j 3/34

[58] **Field of Search**..... 250/228, 226; 356/43, 97, 356/173, 178, 179, 195, 210, 218, 236

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[57] **ABSTRACT**

Reflectance measurements of a color sample are made by employing a diffusing sphere having target ports for a color sample, a white standard and a black body. A mirror is mounted within the sphere for pivotal motion about the axis of an exit port to sequentially reflect light from the several targets along a common optical path into a polychormeter which disperses the received light into its spectrum and projects the spectra upon a sensor surface. The sensor may be in the form of an array of light-sensitive elements or the face of an image tube that is scanned or sampled at selected wave lengths of points of the spectrum to be employed in the reflectance measurement. For each sample point, the intensity of light reflected from the black body is substracted from the intensity of light reflected from the sample and is also subtracted from the intensity of light reflected from the white standard to thereby correct both the sample and white standard measurement for both electrical and other noise of the system, and for stray light within the optical path that impinges upon the sensor surface. The ratios of intensities of the sample to the standard provide reflectance values that may be employed in various color measurements, including calculations of tristimulus values and chromaticity coordinates.

45 Claims, 7 Drawing Figures