

## United States Patent [19]

[11] 3,971,065

Bayer

[45] July 20, 1976

## [54] COLOR IMAGING ARRAY

[75] Inventor: Bryce E. Bayer, Rochester, N.Y.

[73] Assignee: Eastman Kodak Company,  
Rochester, N.Y.

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[52] U.S. Cl. .... 358/41; 350/162 SF;  
350/317; 358/44[51] Int. Cl.<sup>2</sup> ..... H04N 9/24[58] Field of Search ..... 358/44, 45, 46, 47,  
358/48; 350/317, 162 SF; 315/169 TV

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Primary Examiner—George H. Libman

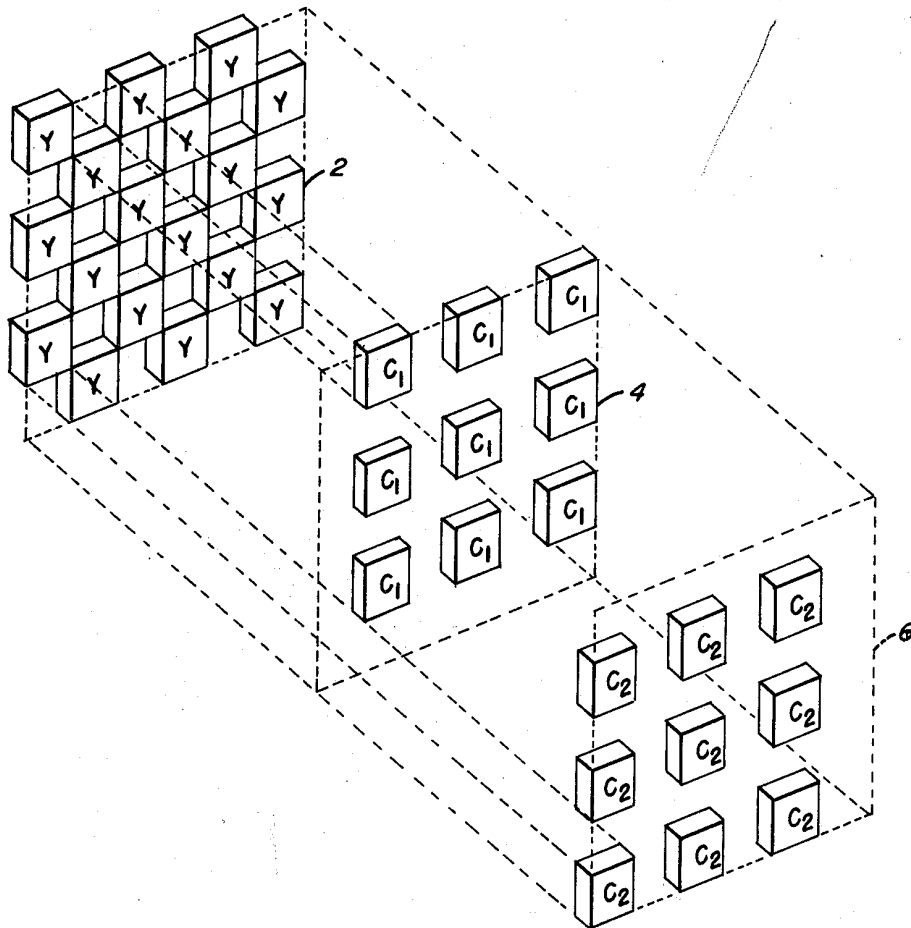
Attorney, Agent, or Firm—George E. Grosser

## [57] ABSTRACT

A sensing array for color imaging includes individual luminance- and chrominance-sensitive elements that are so intermixed that each type of element (i.e., according to sensitivity characteristics) occurs in a repeated pattern with luminance elements dominating the array. Preferably, luminance elements occur at every other element position to provide a relatively high frequency sampling pattern which is uniform in two perpendicular directions (e.g., horizontal and vertical). The chrominance patterns are interlaid therewith and fill the remaining element positions to provide relatively lower frequencies of sampling.

In a presently preferred implementation, a mosaic of selectively transmissive filters is superposed in registration with a solid state imaging array having a broad range of light sensitivity, the distribution of filter types in the mosaic being in accordance with the above-described patterns.

11 Claims, 10 Drawing Figures



Y	C <sub>2</sub>	Y	C <sub>2</sub>	Y	C <sub>2</sub>
C <sub>1</sub>	Y	C <sub>1</sub>	Y	C <sub>1</sub>	Y
Y	C <sub>2</sub>	Y	C <sub>2</sub>	Y	C <sub>2</sub>
C <sub>1</sub>	Y	C <sub>1</sub>	Y	C <sub>1</sub>	Y
Y	C <sub>2</sub>	Y	C <sub>2</sub>	Y	C <sub>2</sub>
C <sub>1</sub>	Y	C <sub>1</sub>	Y	C <sub>1</sub>	Y
Y	C <sub>2</sub>	Y	C <sub>2</sub>	Y	C <sub>2</sub>
C <sub>1</sub>	Y	C <sub>1</sub>	Y	C <sub>1</sub>	Y

8

FIG. 1B

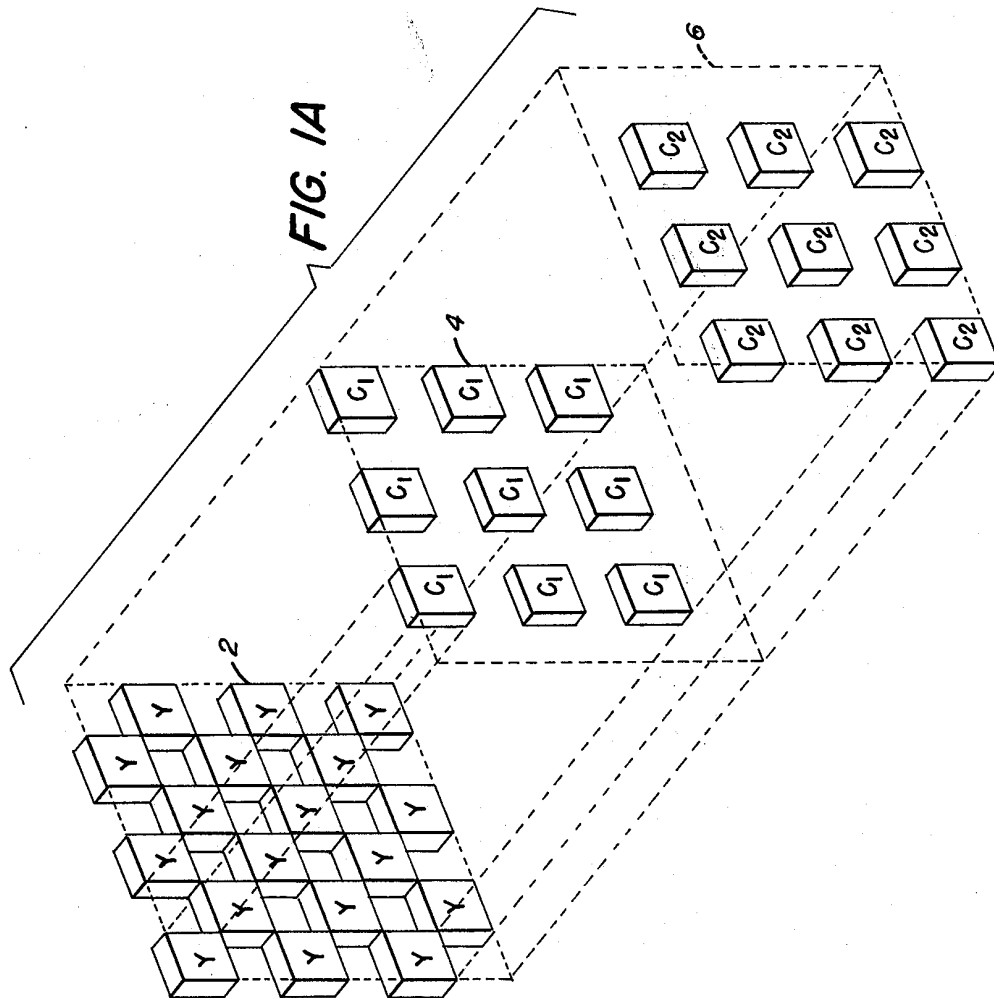


FIG. 1A

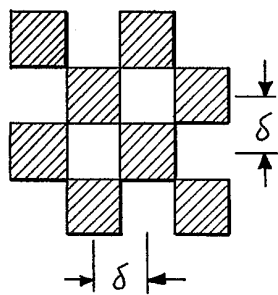


FIG. 2A

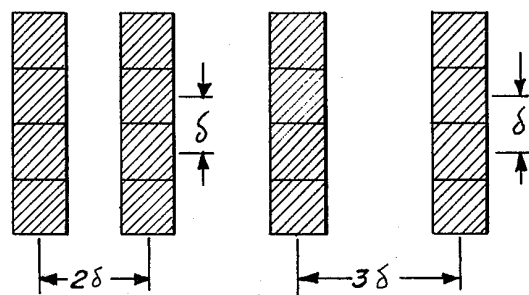


FIG. 2B

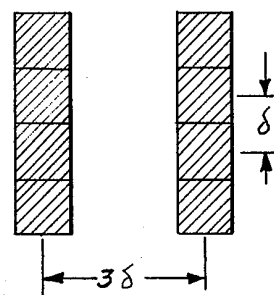


FIG. 2C

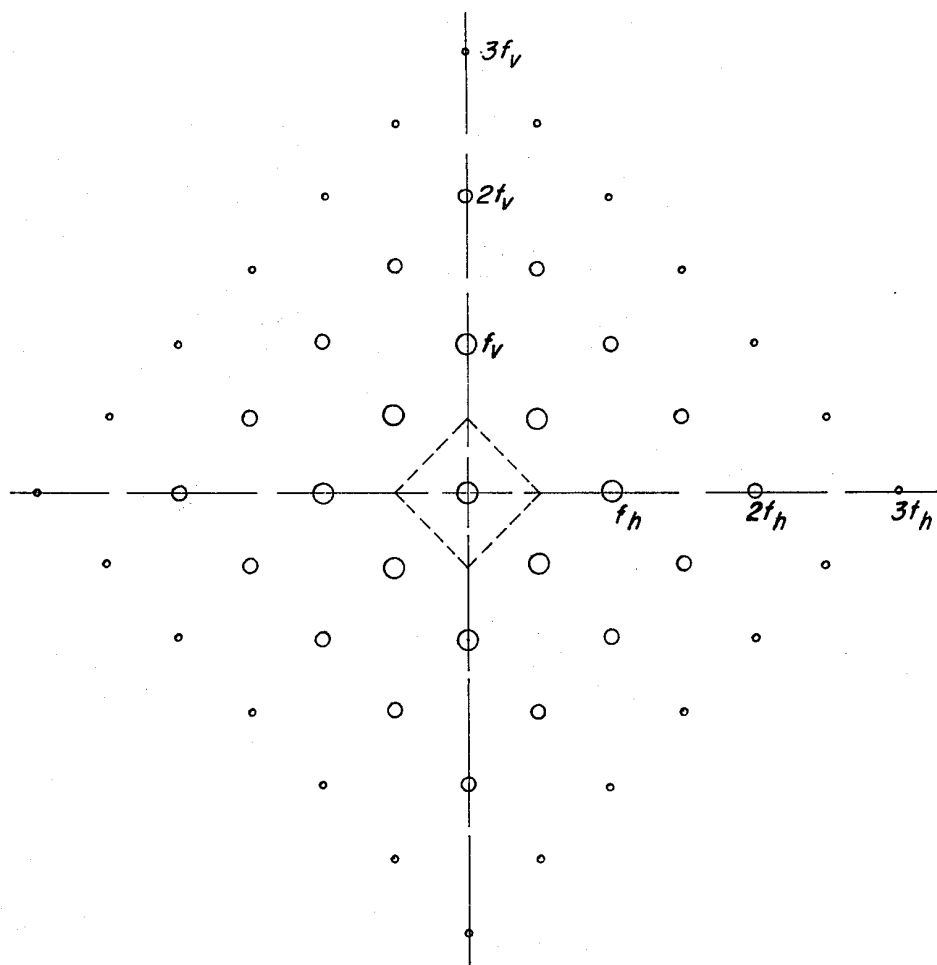
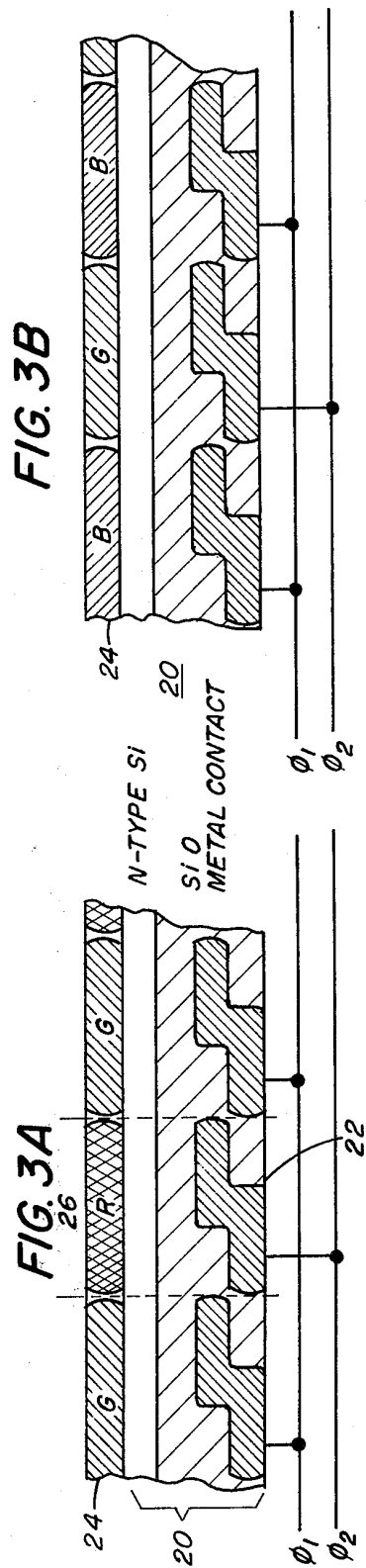
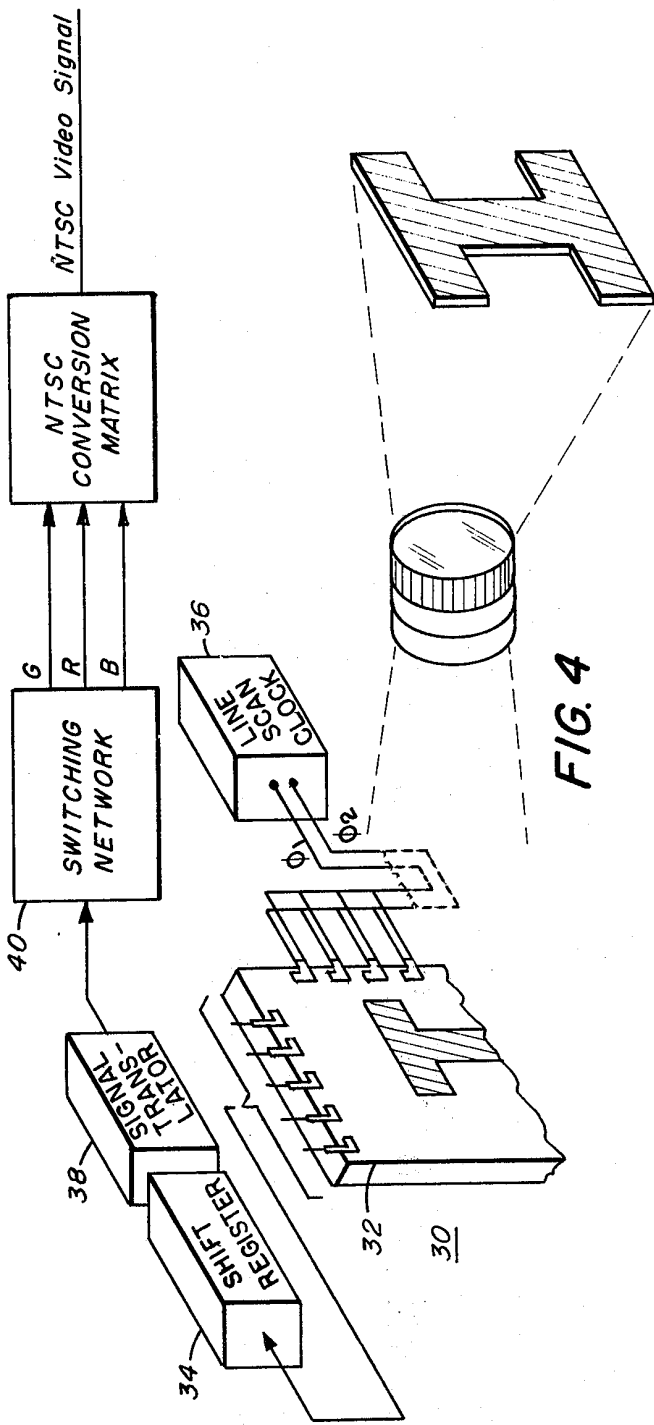


FIG. 2D



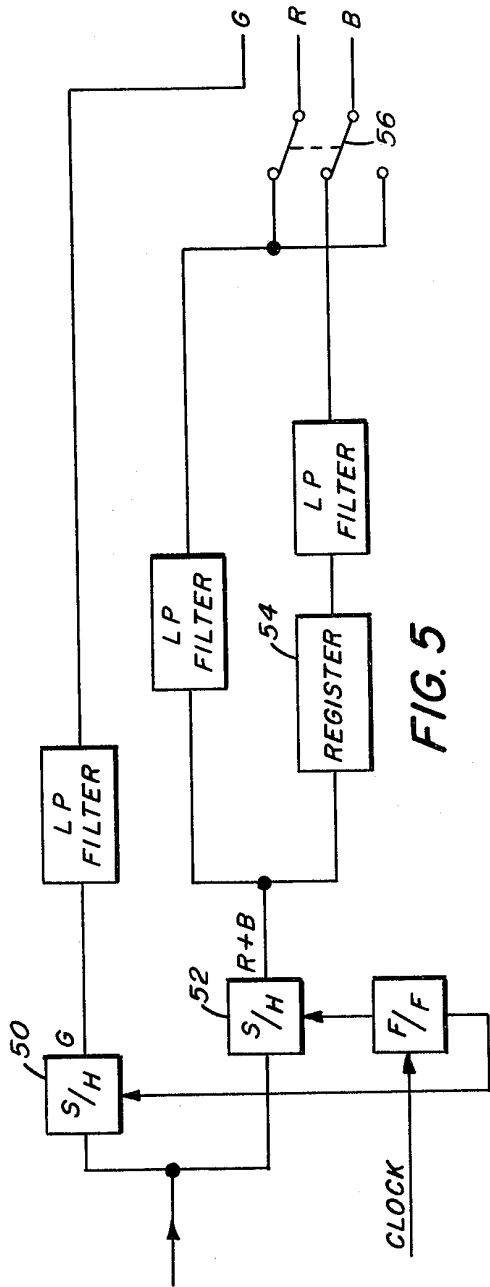


FIG. 5

G	R	G	R	G	R
B	G	R	G	B	G
G	R	G	R	G	R
R	G	B	G	R	G
G	R	G	R	G	R
B	G	R	G	B	G

FIG. 6

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