



US006148149A

United States Patent [19]
Kagle

[11] **Patent Number:** **6,148,149**
[45] **Date of Patent:** **Nov. 14, 2000**

[54] **AUTOMATIC IMAGE ROTATION IN DIGITAL CAMERAS** 5,576,759 11/1996 Kawamura et al. 348/231
5,900,909 5/1999 Parulski et al. 348/232

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[57] **ABSTRACT**

[21] Appl. No.: **09/085,144**

A digital camera comprises a controller and an image sensor that digitally captures an image. The camera also includes an orientation sensor, such as a mercury switch, that that indicates orientation of the image sensor whenever an image is captured. When capturing an image, the controller is configured to format the image in a way that it will be correctly oriented when displayed. In one embodiment, the camera automatically rotates the digital image to correct for different orientations of the camera.

[22] Filed: **May 26, 1998**

[51] **Int. Cl.**⁷ **G03B 17/00**

[52] **U.S. Cl.** **396/50**; 358/909.1; 348/231

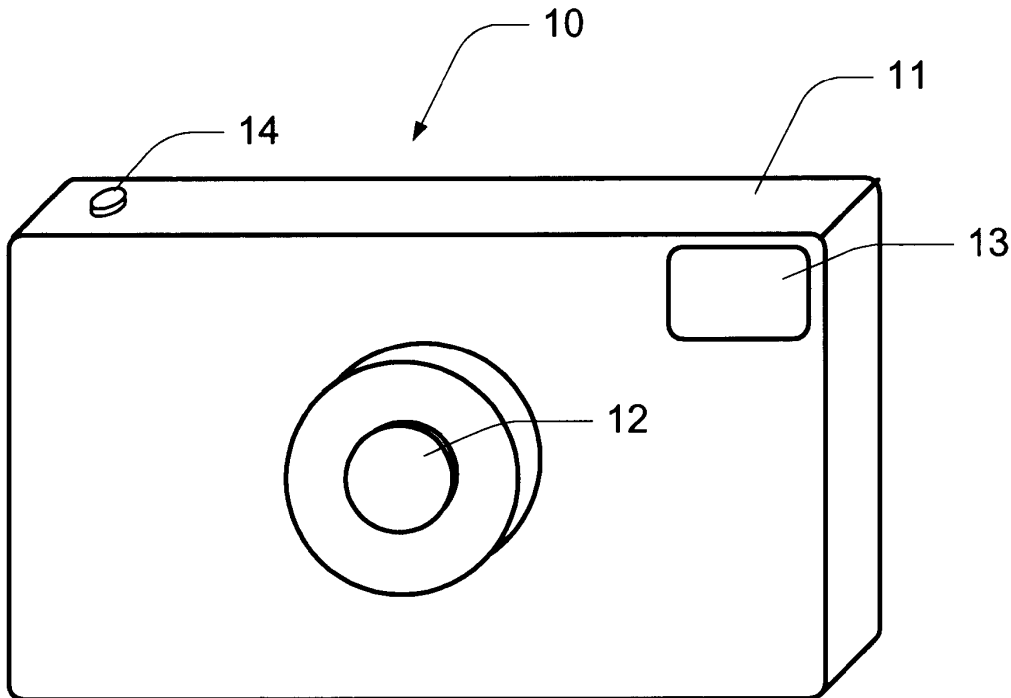
[58] **Field of Search** 396/50, 311, 321, 396/374, 543, 13; 358/906, 909.1; 348/333, 239, 240, 231, 232

[56] **References Cited**

U.S. PATENT DOCUMENTS

5,262,867 11/1993 Kojima 358/909.1 X

15 Claims, 4 Drawing Sheets



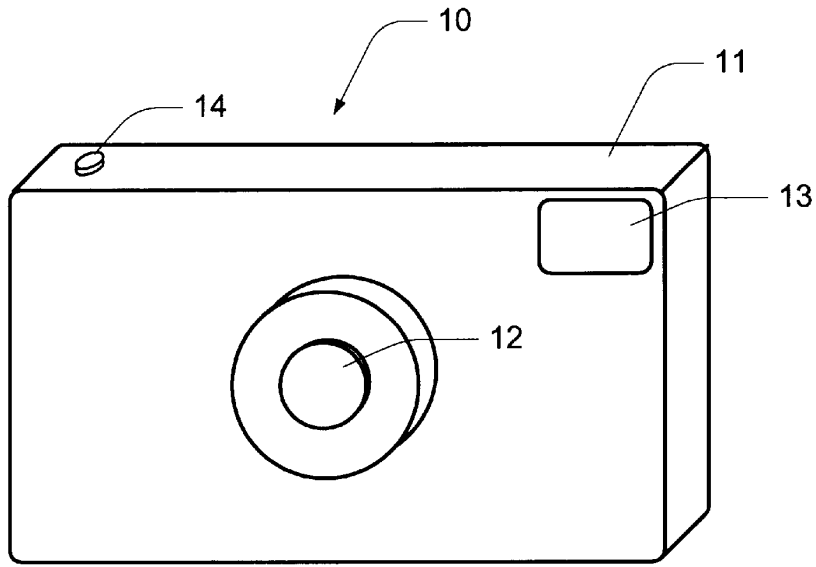


Fig. 1

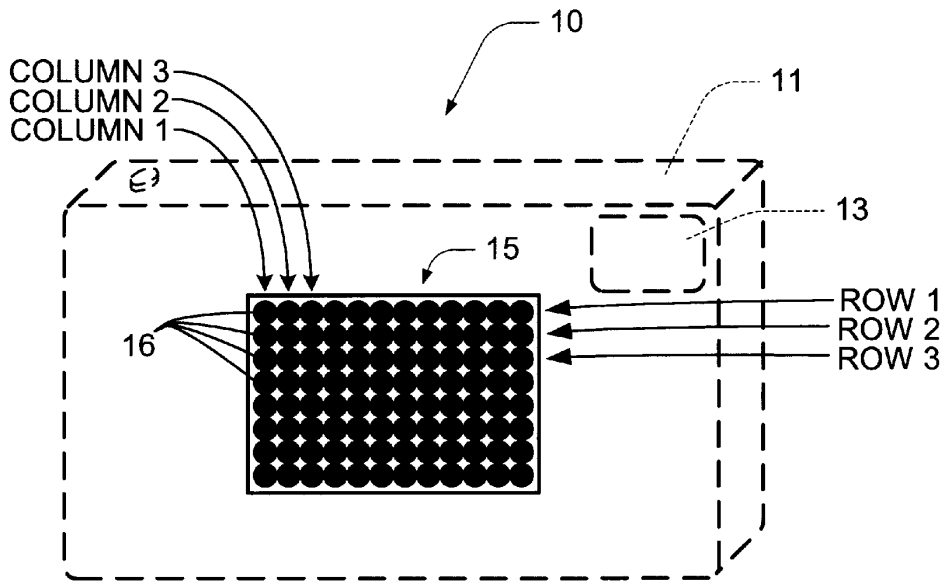


Fig. 2

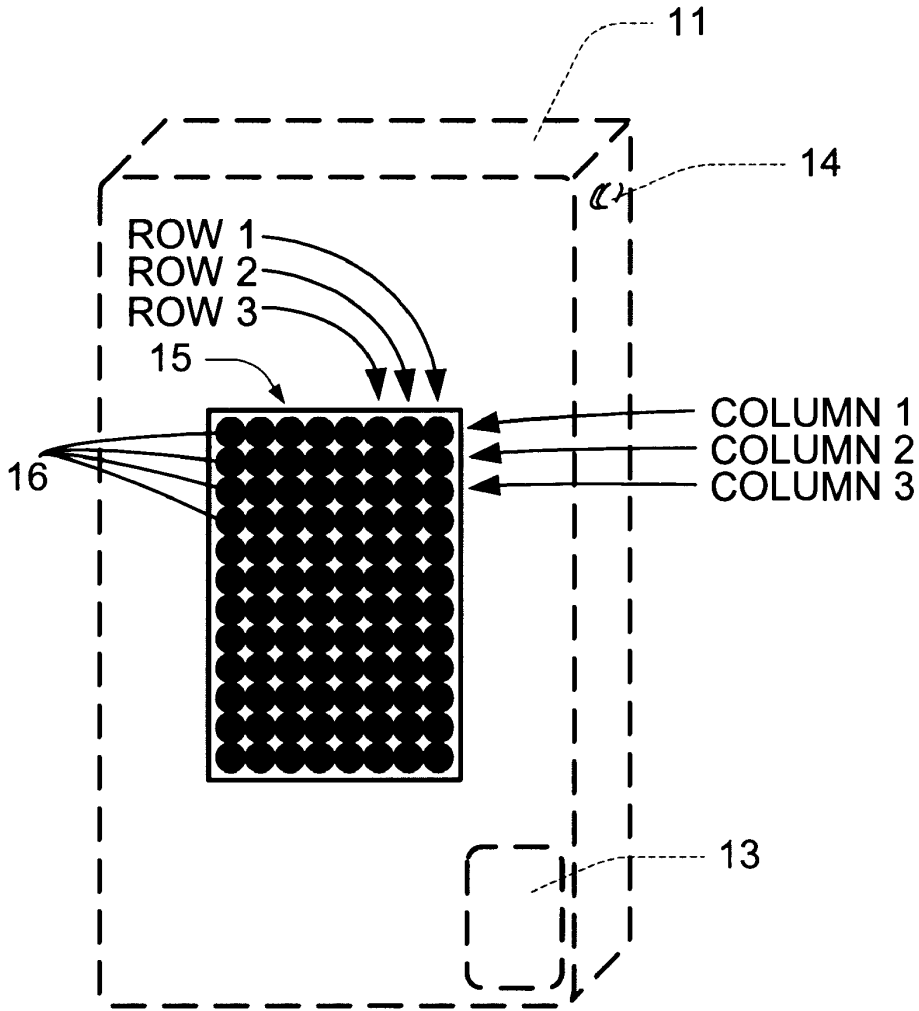


Fig. 3

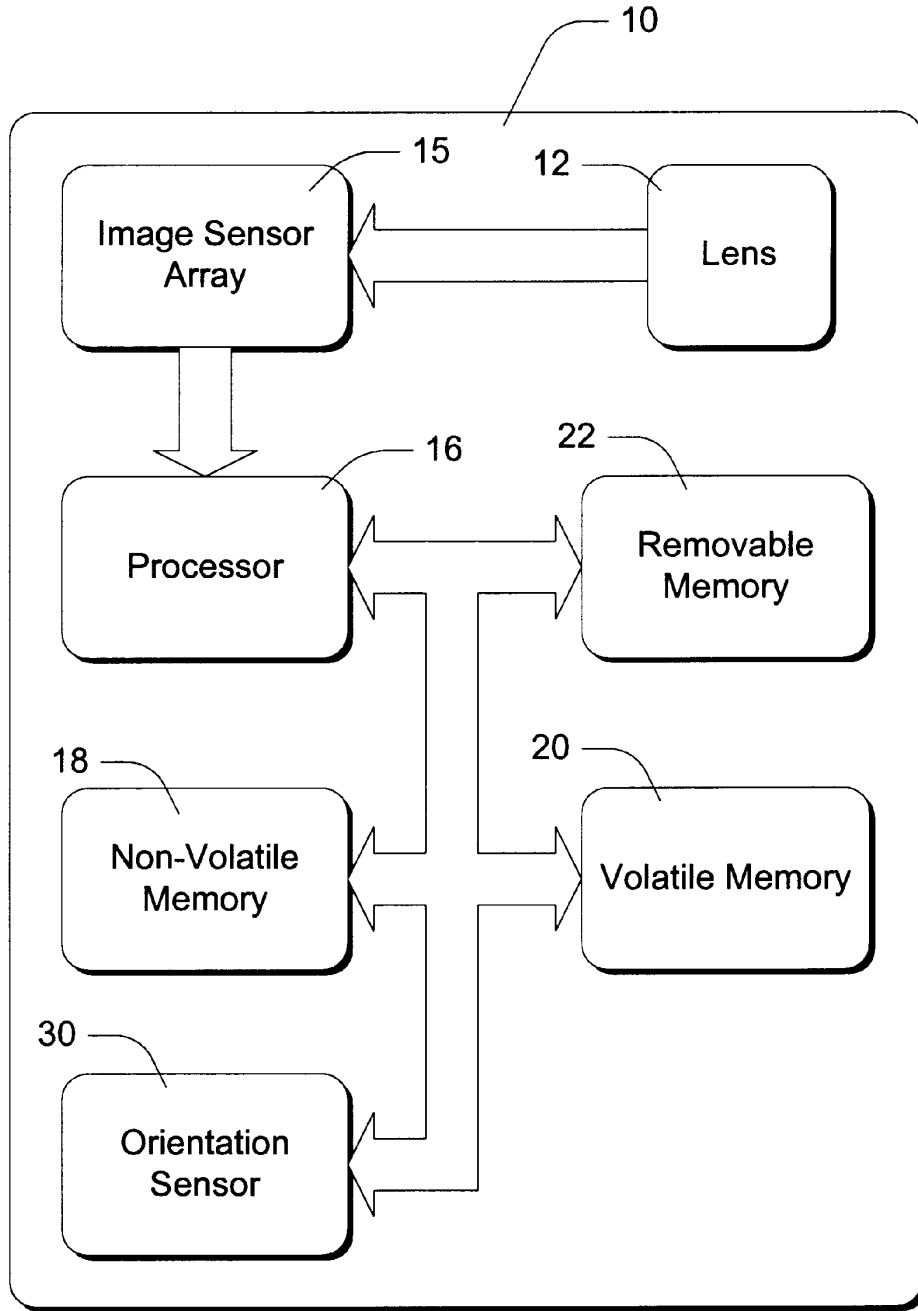


Fig. 4

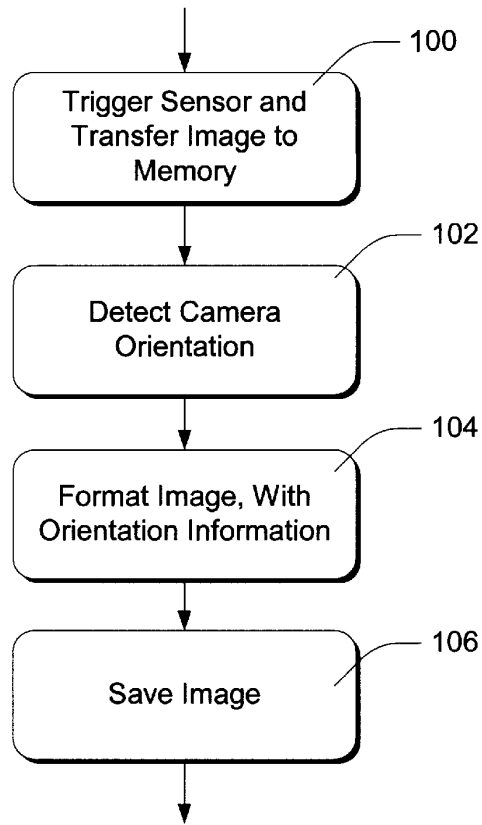


Fig. 5

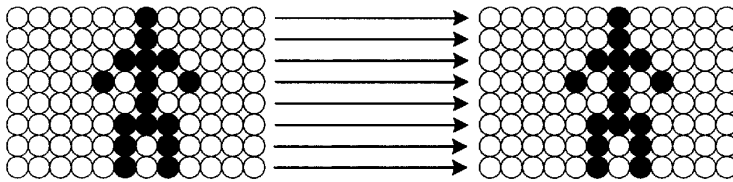


Fig. 6

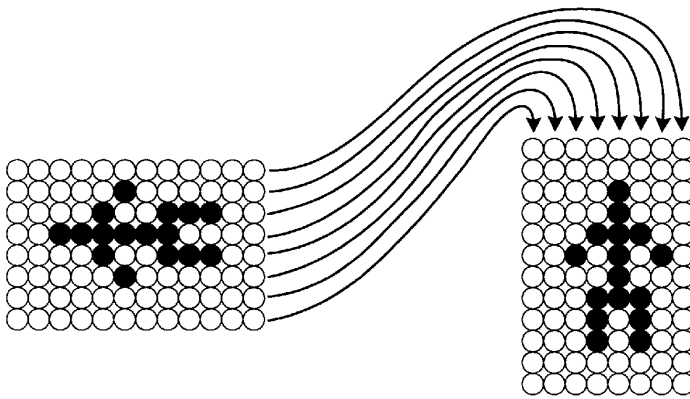


Fig. 7

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