

# EXHIBIT 4



US007199821B2

(12) **United States Patent**  
**Miyao et al.**

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(45) **Date of Patent:** **Apr. 3, 2007**

(54) **IMAGING APPARATUS AND METHOD FOR CONTROLLING WHITE BALANCE**

5,550,587 A \* 8/1996 Miyadera ..... 348/223.1  
6,693,673 B1 \* 2/2004 Tanaka et al. .... 348/371

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FOREIGN PATENT DOCUMENTS

JP	4-10887	1/1992
JP	5-344530	12/1993
JP	9-9136	1/1997
JP	11-205806	7/1999

(73) Assignee: **Hitachi, Ltd.**, Tokyo (JP)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 736 days.

\* cited by examiner

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(30) **Foreign Application Priority Data**

Feb. 27, 2002 (JP) ..... 2002-051841

(51) **Int. Cl.**  
**H04N 9/73** (2006.01)

(52) **U.S. Cl.** ..... 348/223.1; 348/348

(58) **Field of Classification Search** ..... 348/223.1, 348/224.1, 227.1, 228.1, 348; 358/516

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,283,632 A \* 2/1994 Suzuki et al. .... 348/223.1

(57) **ABSTRACT**

An imaging apparatus has: a white balance control circuit for detecting an achromatic portion of an image of an object and controlling gains of the chrominance; an object distance detecting circuit for detecting a distance to the object; and a zoom value detecting circuit for detecting a zoom value of the optical system. The imaging apparatus further has: an object brightness detecting circuit for detecting brightness of the object; and a white balance control amount adjustment value setting circuit for forming a white balance control amount adjustment value to adjust a control amount in the white balance control circuit on the basis of object brightness information, object distance detection information, and zoom value information, wherein the white balance control amount is adjusted on the basis of the white balance control amount adjustment value.

7 Claims, 6 Drawing Sheets

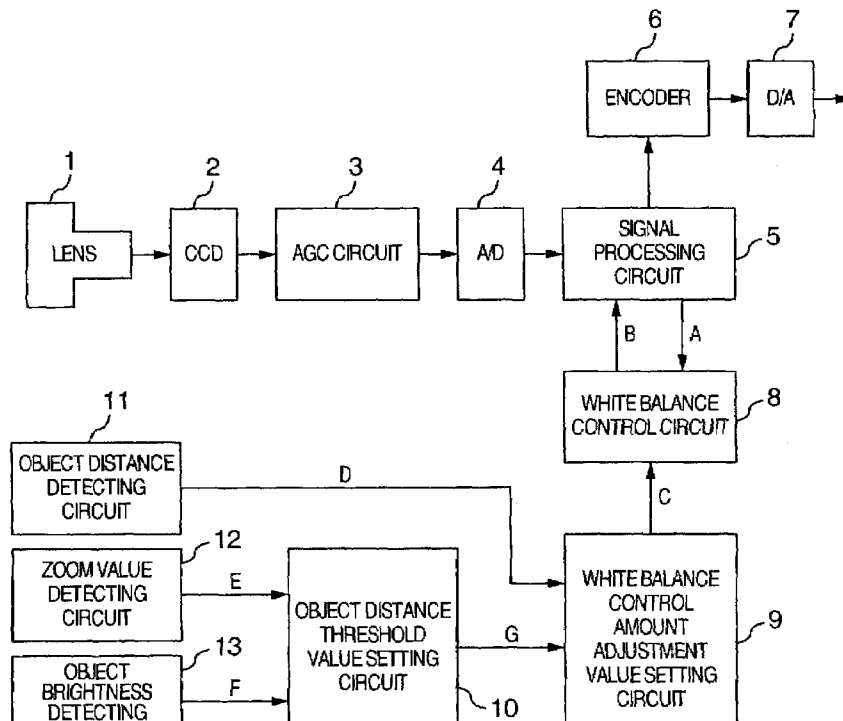


FIG. 1

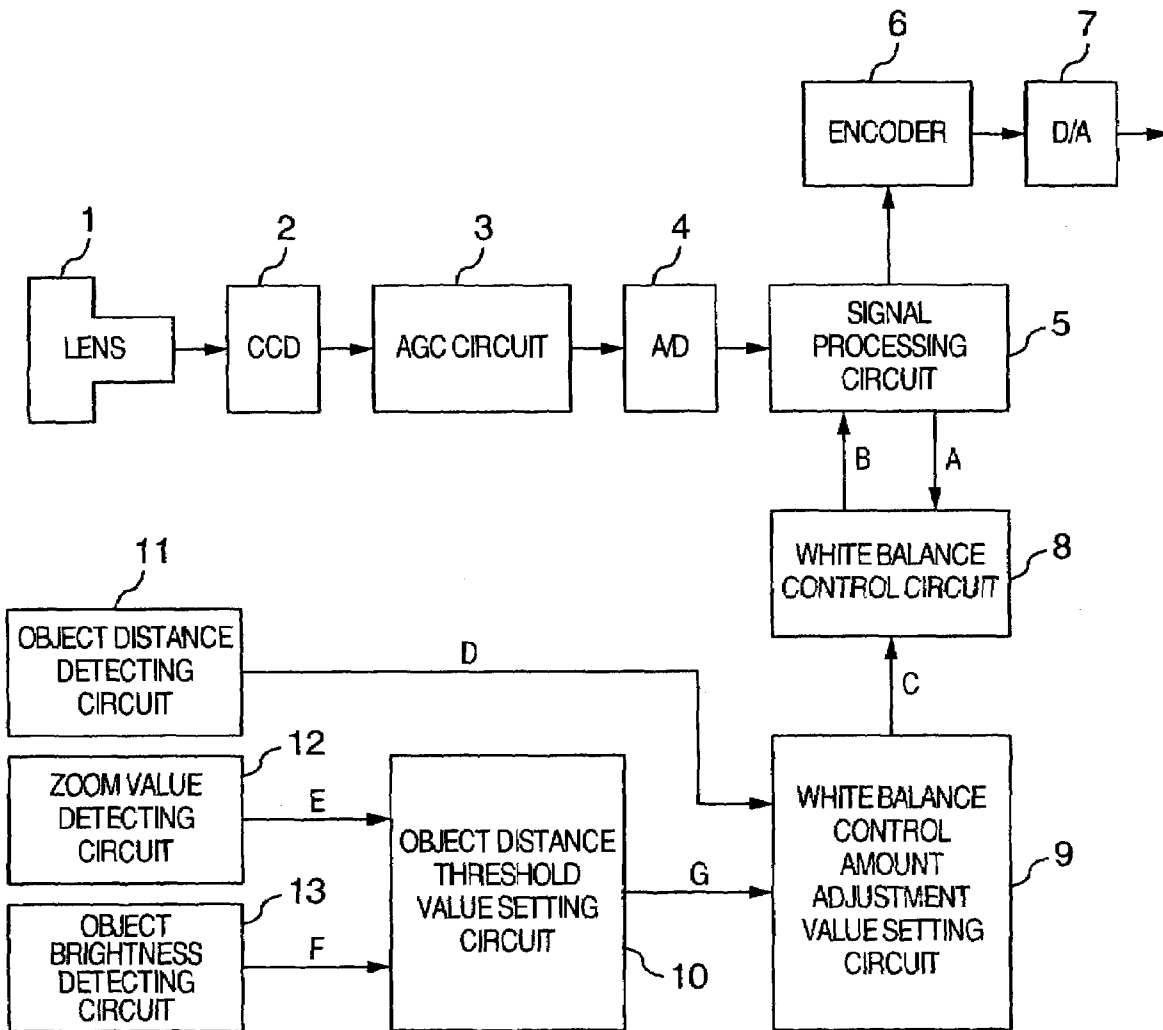


FIG. 2A

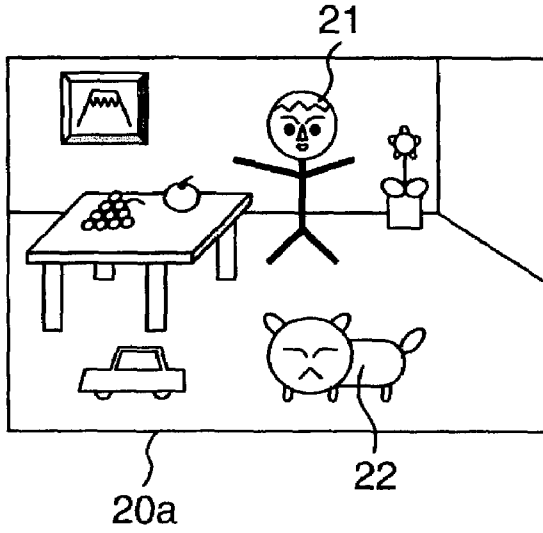


FIG. 2B

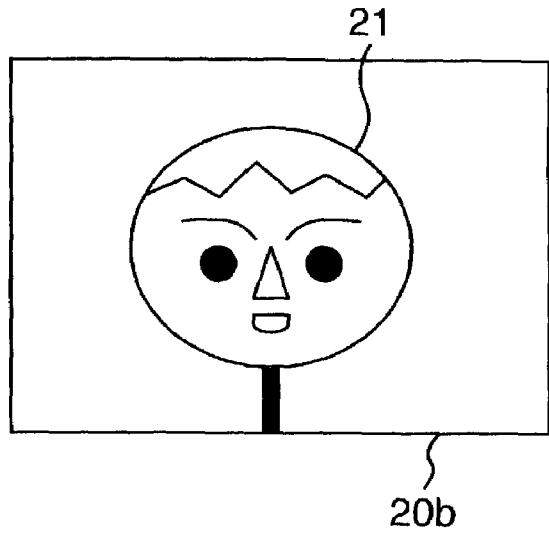


FIG. 2C

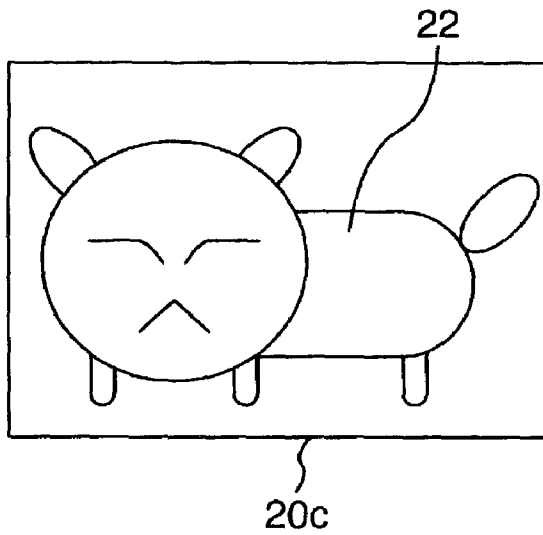
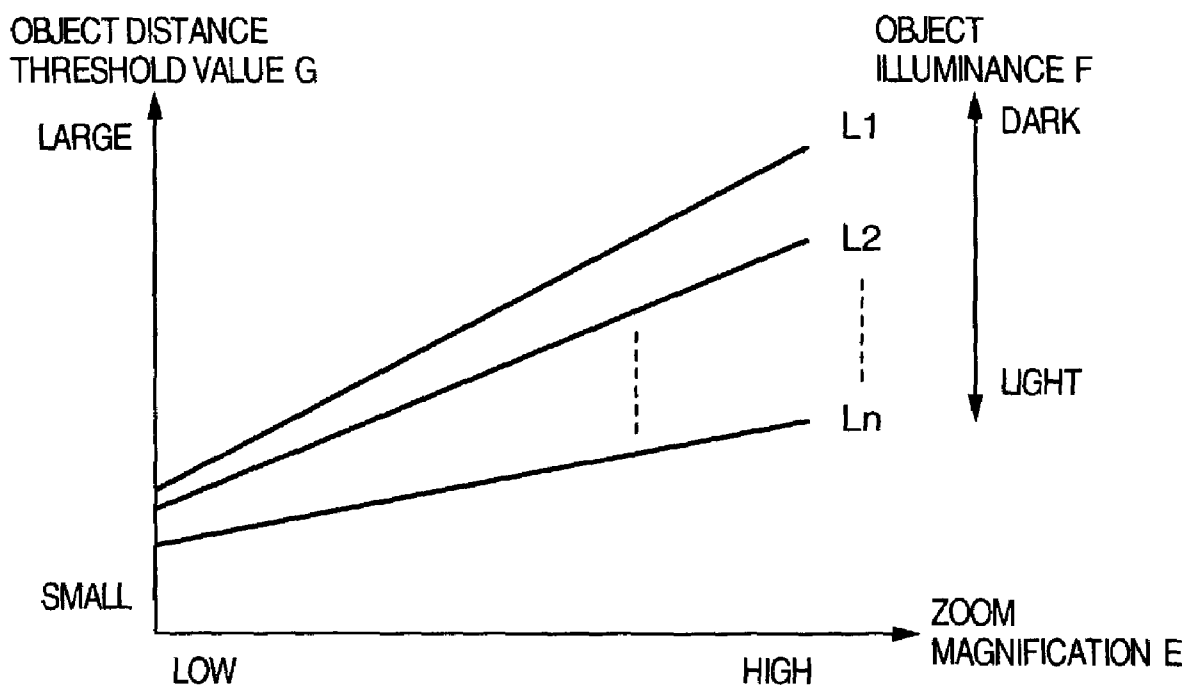


FIG. 3



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