

EXHIBIT 3

US008339493B2

(12) **United States Patent**
Nakano et al.(10) **Patent No.:** **US 8,339,493 B2**
(45) **Date of Patent:** ***Dec. 25, 2012**(54) **ELECTRIC CAMERA**(75) Inventors: **Takahiro Nakano**, Hitachinaka (JP);
Ryuji Nishimura, Yokohama (JP);
Toshiro Kinugasa, Hiratsuka (JP)(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 136 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **12/845,266**(22) Filed: **Jul. 28, 2010**(65) **Prior Publication Data**

US 2010/0289907 A1 Nov. 18, 2010

Related U.S. Application Data

(60) Continuation of application No. 10/660,710, filed on Sep. 12, 2003, now Pat. No. 8,059,177, which is a division of application No. 09/520,836, filed on Mar. 8, 2000, now Pat. No. 6,765,616.

(30) **Foreign Application Priority Data**

Jan. 11, 2000 (JP) 2000-006064

(51) **Int. Cl.****H04N 5/335** (2011.01)(52) **U.S. Cl.** 348/294; 348/322; 348/312; 348/273(58) **Field of Classification Search** None
See application file for complete search history.(56) **References Cited****U.S. PATENT DOCUMENTS**4,054,915 A 10/1977 Sugihara
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Primary Examiner — Luong T Nguyen(74) *Attorney, Agent, or Firm* — Antonelli, Terry, Stout & Kraus, LLP.(57) **ABSTRACT**

An electric camera includes an image sensing device with a light receiving surface having N vertically arranged pixels and an arbitrary number of pixels arranged horizontally, N being equal to or more than three times the number of effective scanning lines M of a display screen of a television system, a driver to drive the image sensing device to vertically mix or cull signal charges accumulated in individual pixels of K pixels to produce, during a vertical effective scanning period of the television system, a number of lines of output signals which corresponds to 1/K the number of vertically arranged pixels N of the image sensing device, K being an integer equal to or less than an integral part of a quotient of N divided by M, and a signal processing unit having a function of generating image signals by using the output signals of the image sensing device.

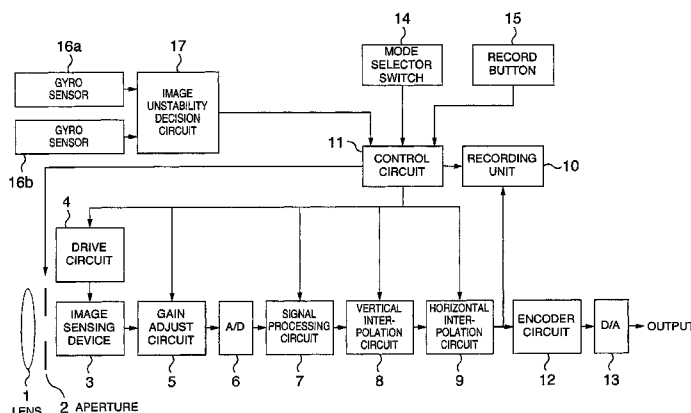
14 Claims, 8 Drawing Sheets

FIG. 1

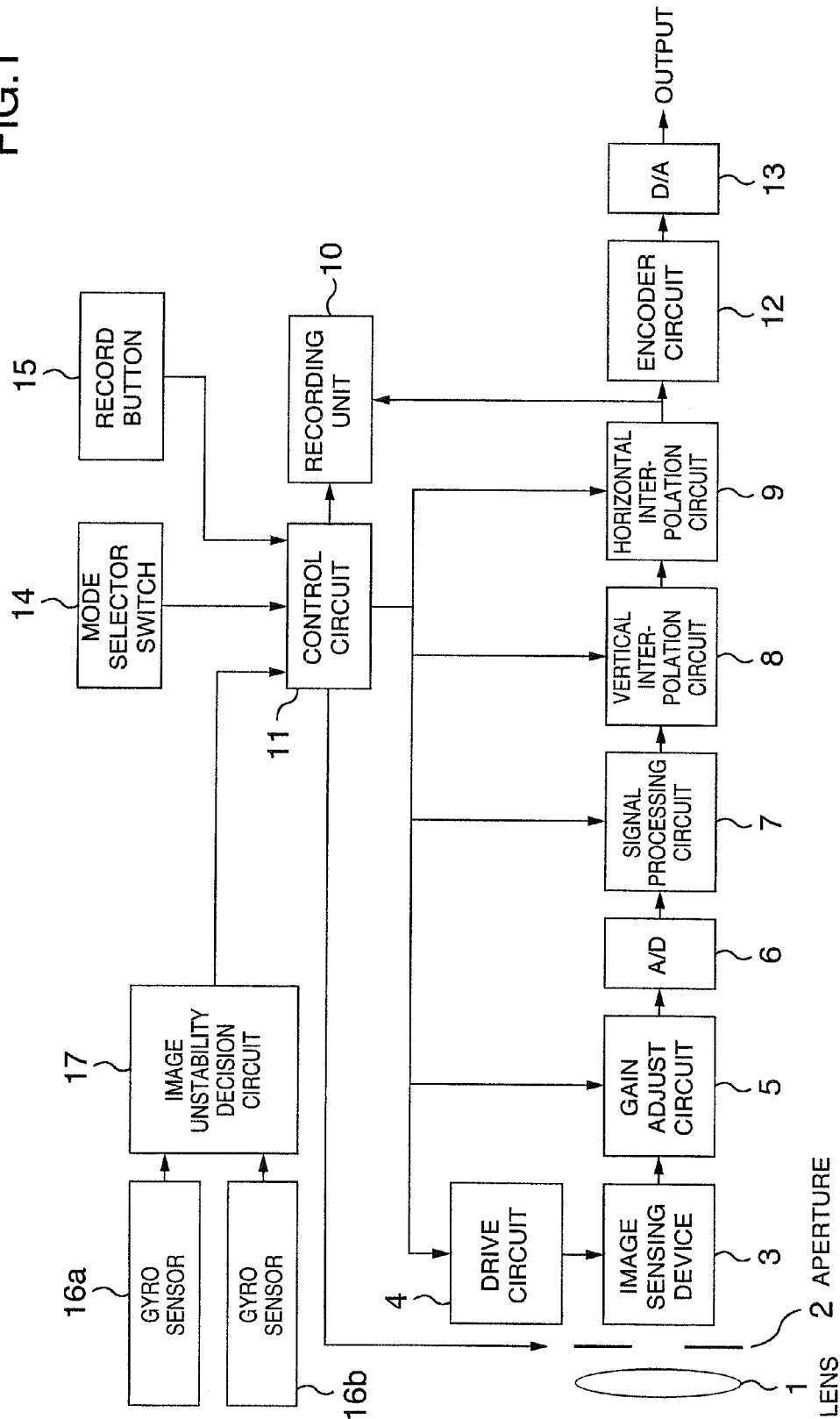


FIG.2

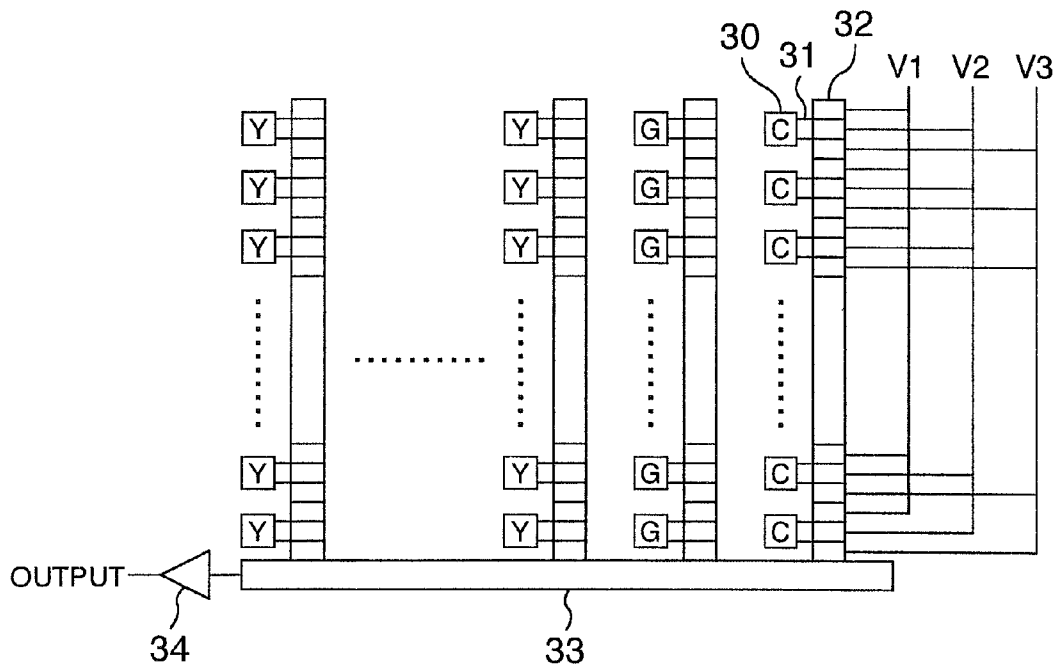


FIG.4

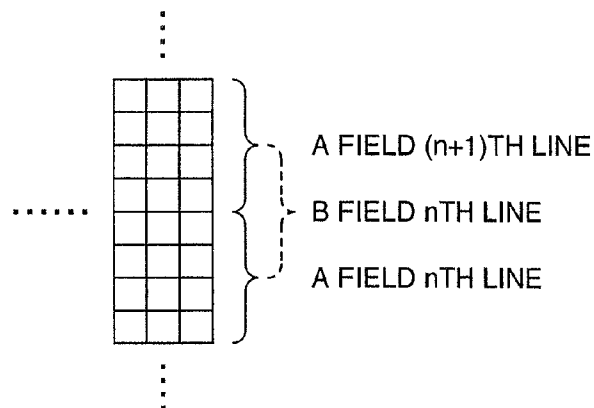
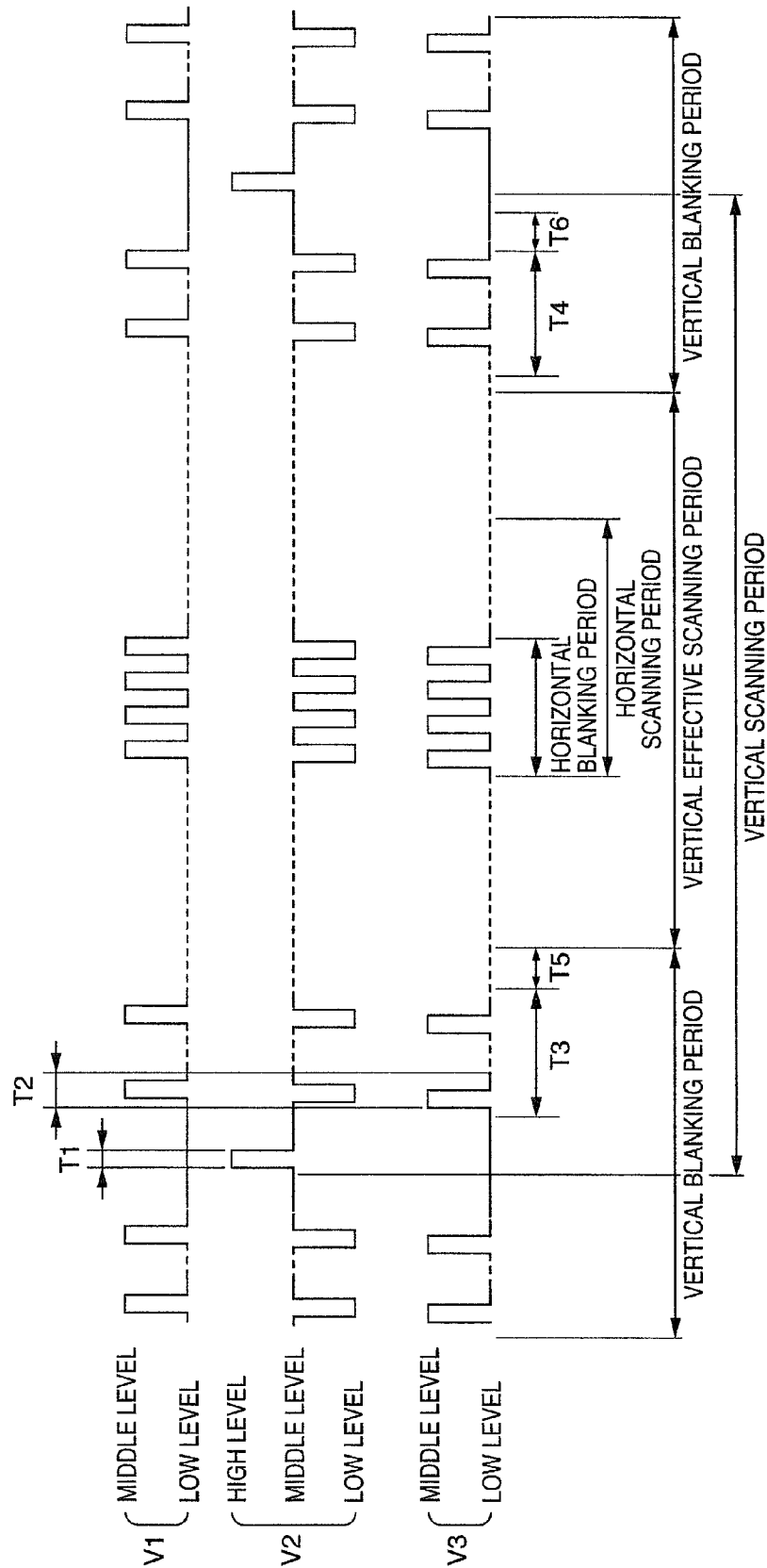


FIG. 3



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