



US008854432B2

(12) **United States Patent**
Orimoto

(10) **Patent No.:** **US 8,854,432 B2**
(45) **Date of Patent:** **Oct. 7, 2014**

(54) **MULTI-LENS CAMERA AND CONTROL METHOD**

(75) Inventor: **Masaaki Orimoto**, Saitama (JP)
(73) Assignee: **FUJIFILM Corporation**, Tokyo (JP)
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1052 days.

FOREIGN PATENT DOCUMENTS

JP	06-054349	A	2/1994
JP	11-355624	A	12/1995
JP	11027703	A	1/1999
JP	2003-052058	A	2/2003
JP	2004354257	A	12/2004
JP	2006121229	A	5/2006
JP	2006162991	A	6/2006
JP	2006165894	A	6/2006
JP	2007052060	A	3/2007

(21) Appl. No.: **12/887,134**
(22) Filed: **Sep. 21, 2010**

(65) **Prior Publication Data**
US 2011/0069151 A1 Mar. 24, 2011

(30) **Foreign Application Priority Data**
Sep. 24, 2009 (JP) 2009-218771

(51) **Int. Cl.**
H04N 13/02 (2006.01)
G03B 35/00 (2006.01)
(52) **U.S. Cl.**
CPC **H04N 13/0239** (2013.01); **G03B 35/00** (2013.01); **H04N 13/0246** (2013.01)
USPC **348/47**
(58) **Field of Classification Search**
USPC 348/42, 47
IPC H04N 13/02
See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS

7,102,686	B1	9/2006	Orimoto et al.
7,667,768	B2	2/2010	Orimoto et al.
2006/0268159	A1	11/2006	Orimoto et al.

OTHER PUBLICATIONS

Notification of Reasons for Refusal, dated Nov. 28, 2012, issued in corresponding JP Application No. 2009-218771, 6 pages in English and Japanese.

Primary Examiner — Young Lee

(74) Attorney, Agent, or Firm — Sughrue Mion, PLLC

(57) **ABSTRACT**

A dual lens camera for producing a three-dimensional image includes plural lens systems and a zoom mechanism. Initial correction data is constituted by a displacement vector of an amount and a direction of misalignment between plural images according to a superimposed state thereof for each of zoom positions of the lens systems. A vector detector, if a calibration mode is set, obtains a current displacement vector related to one first zoom position. A data processor outputs current correction data by adjusting the initial correction data according to the initial correction data and current displacement vector. If the current correction data is stored, a displacement vector is obtained from the current correction data according to a zoom position of the lens systems upon forming the plural images, to carry out image registration between the images according to the obtained displacement vector for producing the three-dimensional image.

11 Claims, 10 Drawing Sheets

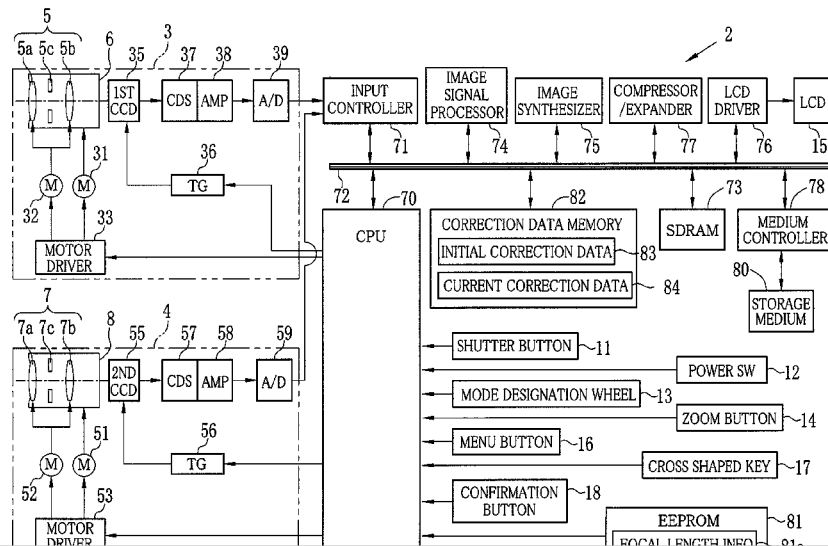


FIG. 1

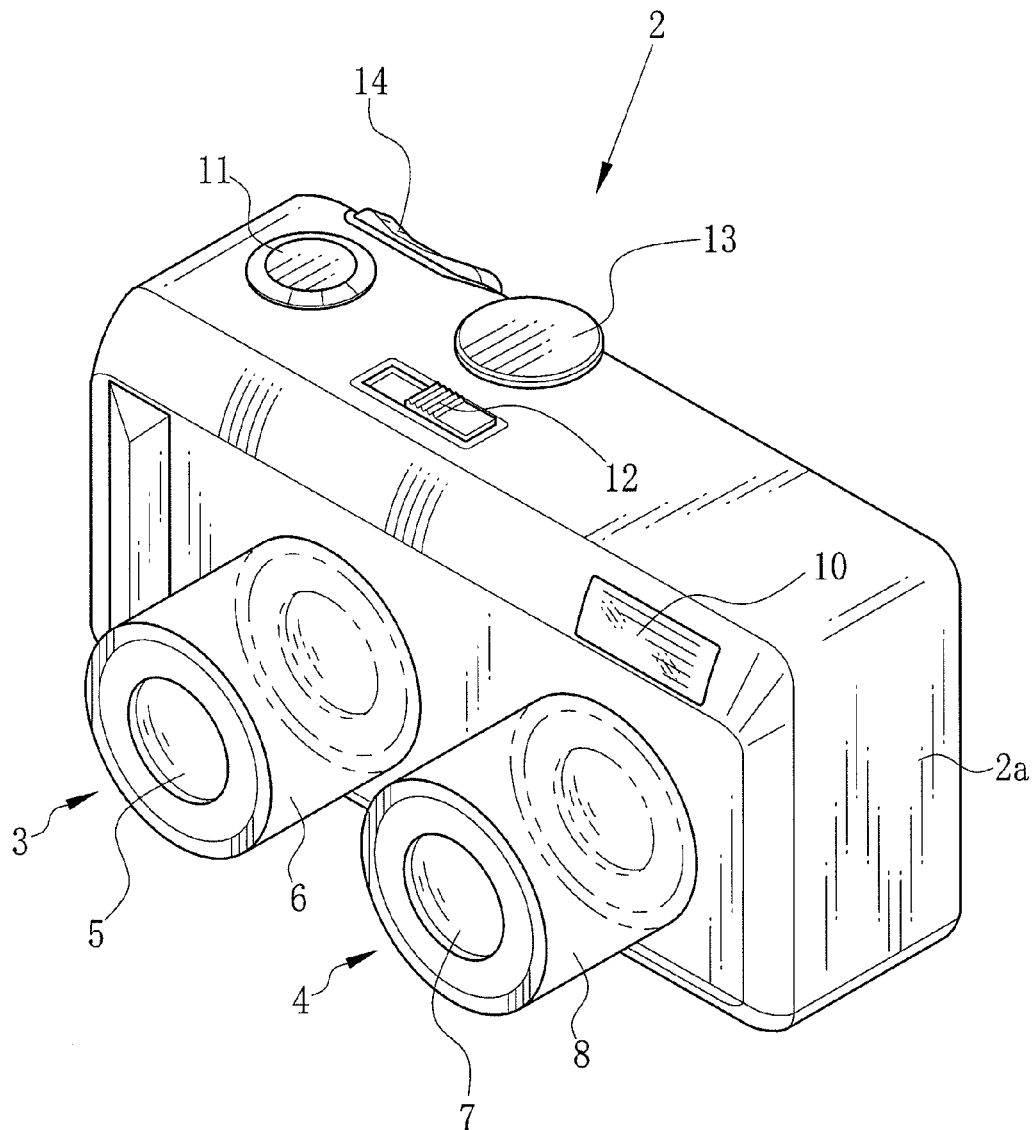
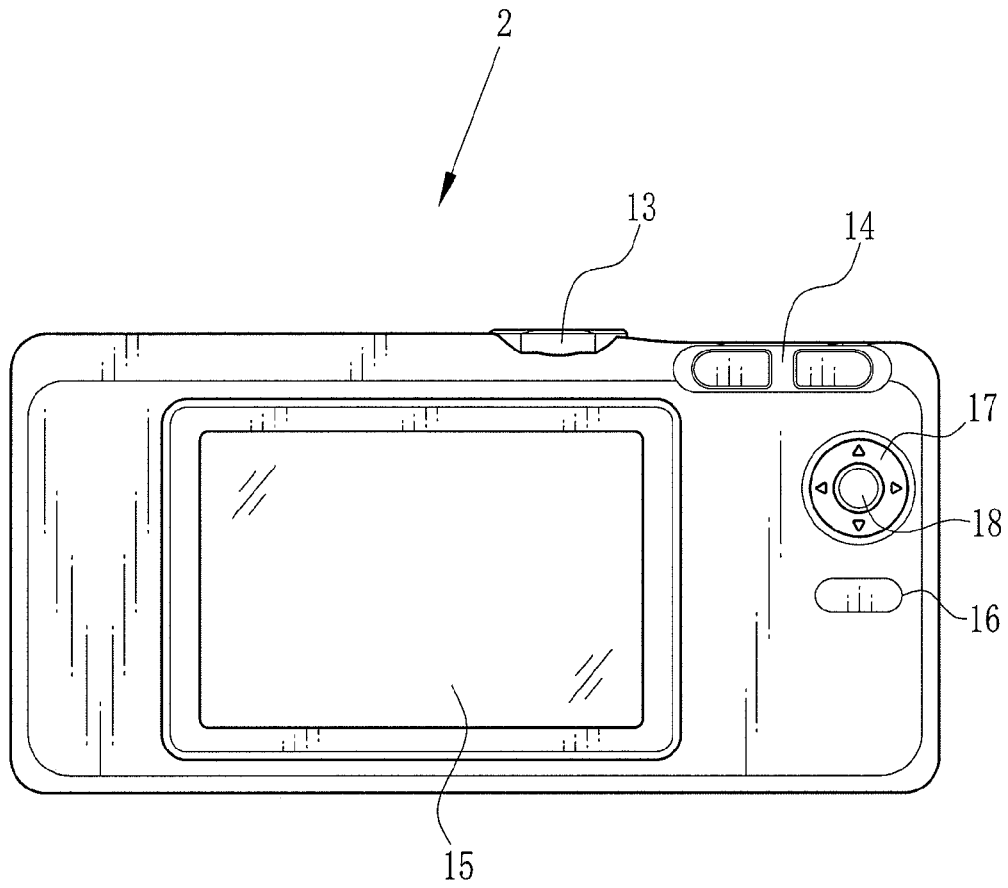


FIG. 2



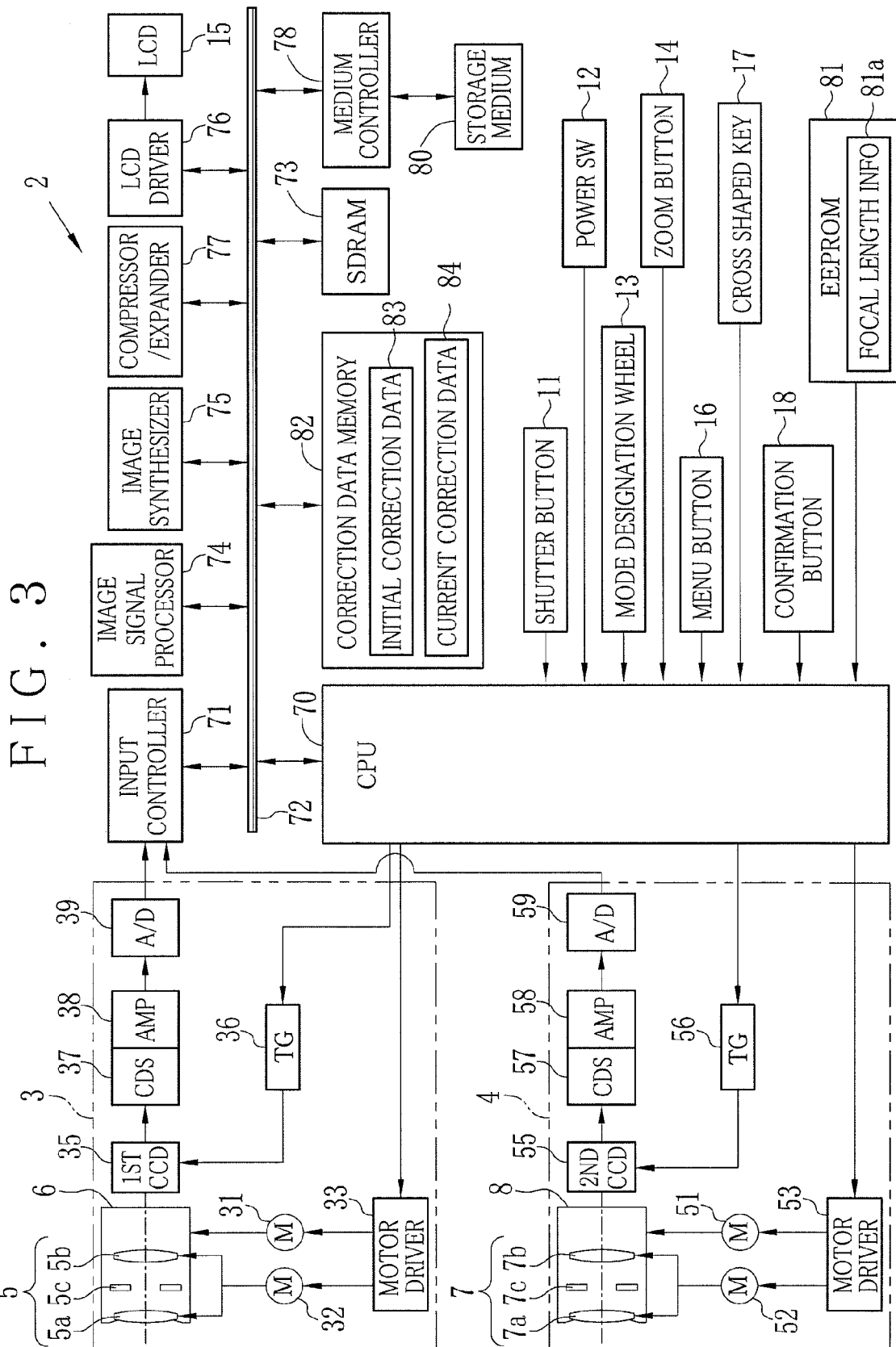


FIG. 3

FIG. 4

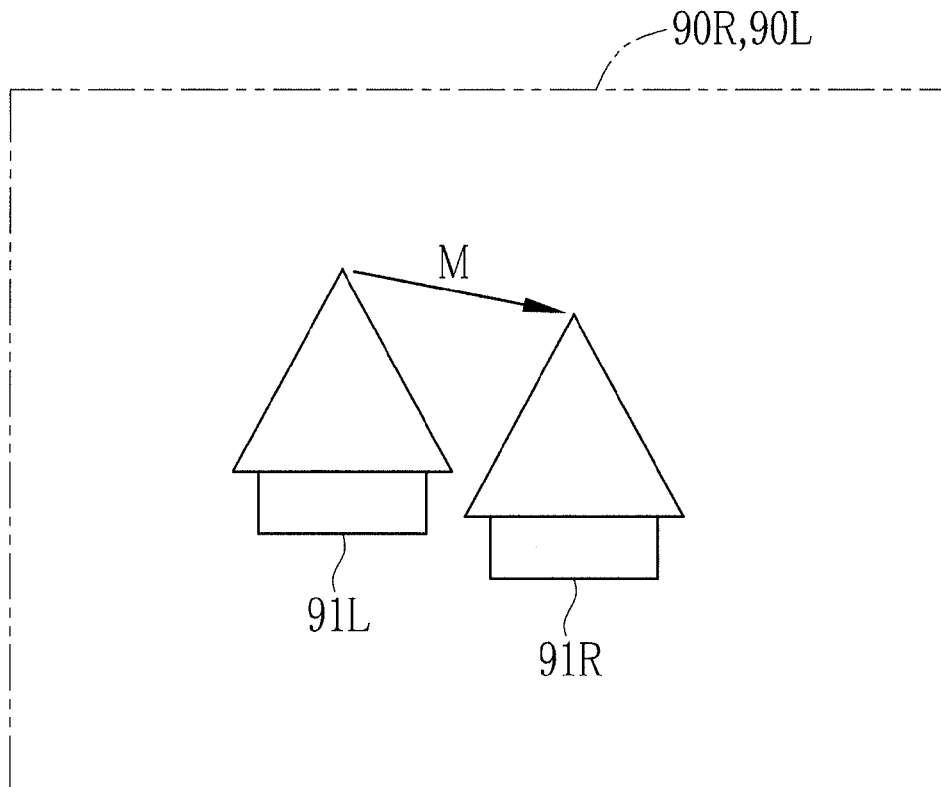


FIG. 5

83,84

CORRECTION DATA	
W END	DISPLACEMENT VECTOR M_w
ZOOM POSITION 1	DISPLACEMENT VECTOR M_1
ZOOM POSITION 2	DISPLACEMENT VECTOR M_2
ZOOM POSITION 3	DISPLACEMENT VECTOR M_3
⋮	⋮
ZOOM POSITION n	DISPLACEMENT VECTOR M_n
T END	DISPLACEMENT VECTOR M_t

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.