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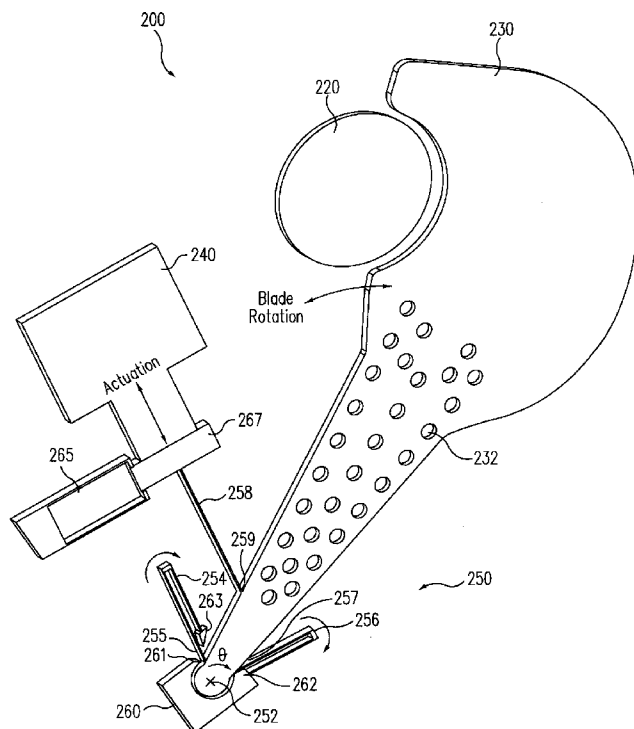
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[Continued on next page]

(54) Title: SHUTTER FOR MINIATURE CAMERA



(57) Abstract: Systems and techniques for using one or more virtual pivots in a shutter system for a miniature camera. A virtual pivot system may comprise one or more flexures, so that a shutter apparatus may be rotated about a center of rotation without a physical rotation element at the center of rotation. The virtual pivot system may provide a number of benefits, including the reduction or elimination of stiction.

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/62506

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G03B 9/08, G03B 7/083 (2007.01)

USPC - 396/452, 396/248

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): G03B 9/08, 7/083 (2007.01)

USPC: 396/452, 396/248

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

IPC(8): G03B 9/08, 7/083 (2007.01) - See search terms below

USPC: 396/452, 396/248 - See search terms below

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWEST(PGPB, USPT, EPAB, JPAB), Google Scholar

Search terms: shutter, MEMS, micro-electromagnetic, virtual pivot, rotate, flexure, snub, inertia, charge coupled, metal oxide, camera,

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,958,777 B1 (PINE) 25 October 2005 (25.10.2005), col 1, ln 29-33, col 3, ln 37-42 and 55-58, col 6, ln 2-5 and 32-36, col 7, ln 22-27; Fig. 1; Col. 1, ln 27-33	14-16
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Y		10-12, 17-22
Y	US 6,205,267 B1 (AKSYUK et al.) 20 March 2001 (20.03.2001), col 1, ln 57-65, col 3, ln 30-50 and col 4, ln 32-34; Col. 2, ln 20-24	1-13, 23- 28
Y	US 6,033,131 A (GHOSH et al.) 07 March 2000 (07.03.2000), col 1, ln 24-26; Fig. 4, Col. 4, ln 44	1-13, 23- 28
Y	US 4,716,432 A (STEPHANY) 29 December 1987 (29.12.1987) Col. 2, ln 57-62; Fig. 1; Col. 2, ln 64-66; Fig. 2, Fig. 3; Col. 2, ln 51; Col. 2, ln 52-53; Col. 3, ln 49-61	4-6, 17-22, 25, 26
Y	US 4,384,778 A (LEE et al.) 24 May 1983 (24.05.1983) Fig. 1, Col. 1, ln 57-62; Col. 1, ln 22-26	6-8, 21, 22, 27

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Further documents are listed in the continuation of Box C.

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\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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document member of the same patent family

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