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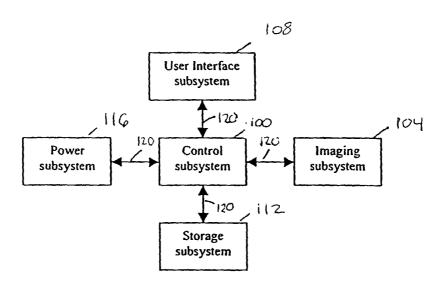
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[Continued on next page]

(54) Title: COMPACT DIGITAL CAMERA SYSTEM



(57) Abstract: A compact digital camera including a control subsystem, which itself includes a microprocessor, and an imaging subsystem and a power management subsystem, each in communication with the control subsystem. The imaging subsystem includes a retractable and extendable lens holder including a lens mount adapted to hold a lens assembly, a camera body surface and a biasing component positioned between the lens mount and the camera body surface. The biasing component is configured to move the lens assembly from a stored position to an operating position. The power management subsystem includes power selection-isolation circuitry, battery charging circuitry in communication with the power selection-isolation circuitry and power arbitration circuitry.



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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

International Application No
PCT/US 01/49414

A. CLASSIFICATION OF SUBJECT MATTER I PC 7 H04N5/232

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 7 H04N

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

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

EPO-Internal, WPI Data

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Х	US 5 828 986 A (HARADA TOSHIMITSU ET AL) 27 October 1998 (1998-10-27) column 7, line 43 -column 8, line 55; figure 9	1-8,38
X	US 5 844 606 A (KOKUBUN KOUZO ET AL) 1 December 1998 (1998-12-01) column 5, line 42 - line 58 column 7, line 29 -column 8, line 54; figures 2,4,5	1-8,38
A	US 4 595 872 A (BALL NEWTON E) 17 June 1986 (1986-06-17) abstract 	1-18,38

X Further documents are listed in the continuation of box C.	X Patent family members are listed in annex.
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" 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 "Y" 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. "&" document member of the same patent family
Date of the actual completion of the international search 3 September 2002	Date of mailing of the international search report 1 2. 12. 02
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo ni, Fax: (+31-70) 340-3016	Authorized officer Schinnerl, A

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		PC1/03 01/49414	
	ation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	
A	US 5 963 255 A (ANDERSON ERIC C ET AL) 5 October 1999 (1999-10-05) column 3, line 52 - line 67 column 5, line 29 -column 6, line 52	1-8,38	
A	US 4 420 773 A (KASUYA ATSUMI ET AL) 13 December 1983 (1983-12-13) column 6, line 48 - line 62; figure 9 column 15, line 42 -column 17, line 25; figures 15-18	1-8,38	

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INTERNATIONAL SEARCH REPORT

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
see additional sheet
As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
A. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-18, 38
Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-18,38

Digital camera defined by electronic components

2. Claims: 19-22

Camera body

3. Claims: 23-24

Rechargeable camera power source

4. Claims: 25-34

Retractable and extendable lens holder

5. Claims: 35-37

Digital camera defined by optical and mechanical components

Information on patent family members

Intermonal Application No
PCT/US 01/49414

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5828986	Α	27-10-1998	JP	8275098 A	18-10-1996
US 5844606	A	01-12-1998	JP US US	6343137 A 6151067 A 6075566 A	13-12-1994 21-11-2000 13-06-2000
US 4595872	Α	17-06-1986	US	4629964 A	16-12-1986
US 5963255	Α	05-10-1999	US	6233016 B1	15-05-2001
US 4420773		13-12-1983	JP JP JP JP JP JP JP	1625558 C 2053994 B 57014824 A 1986908 C 3081347 B 57017272 A 57017275 A 57058468 A 57092981 A	18-11-1991 20-11-1990 26-01-1982 08-11-1995 27-12-1991 28-01-1982 28-01-1982 08-04-1982 09-06-1982