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(72) Inventors; and

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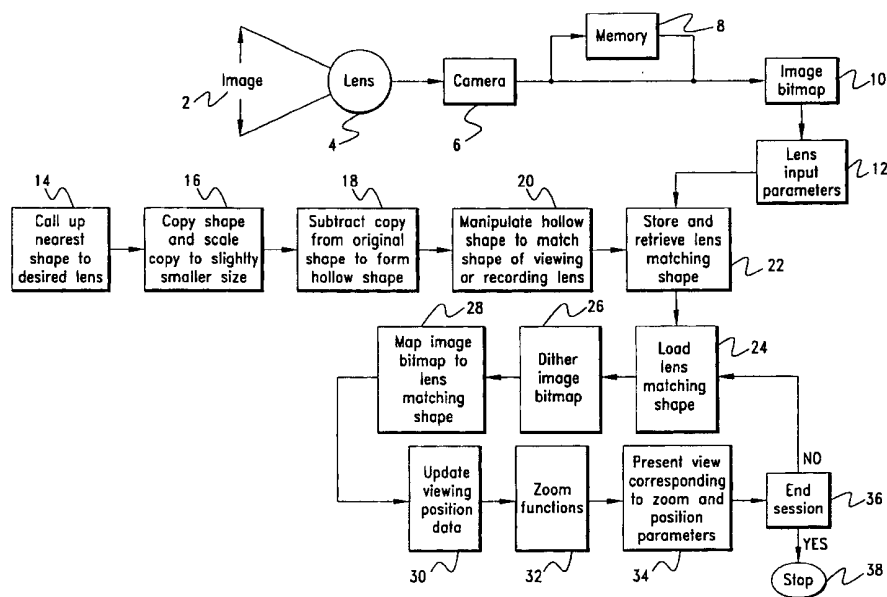
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— with international search report

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27 June 2002

[Continued on next page]

(54) Title: A METHOD AND APPARATUS FOR MAPPING IMAGES AND VIDEO TO CREATE NAVIGABLE, IMMERSIVE VIDEO AND IMAGES



(57) Abstract: The present invention converts a wide-angle lens image (2) into a two-dimensional view with reduced distortion and warping for use in an immersive environment. A program uses lens parameters (12) to call up the desired shape (14) of the wide-angle lens, copies and scales the shape (16), and subtracts a copy of the original shape (18). A user can then manipulate the hollow shape (20) in order to conform to the lens. Then the image is dithered (26) and the image is mapped to the lens matching shape (28). Viewing positions (30) and zoom functions (32) are updated and the image is sent to a viewer to be viewed by the user (34). Portions of the entire image can be viewed at any one time.



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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 SEARCH REPORT

International application No.

PCT/US01/40942

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(7) : H04N 7/00, 5/30, 13/00, 15/00, 13/04, 9/47, 7/18; A01B 1/04; G09B 9/048
 US CL : 348/36, 39, 42, 44, 50, 51, 53, 73, 121, 207, 211, 213, 552, 580, 583
 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)
 U.S. : 348/36, 39, 42, 44, 50, 51, 53, 73, 121, 207, 211, 213, 552, 580, 583

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 practicable, search terms used)
 Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

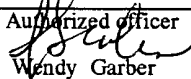
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,990,941 A (JACKSON et al.) 23 November 1999 (23.11.1999), column 6, line 39 - column 7, line 64. Column 8, lines 32 - 63. Column 5, lines 15 - 22 and column 6, lines 8 - 22 and column 10, lines 12-27. Column 9, line 62 - column 10, line 11.	1-3, 11, 13-21 -----
Y	US 5,684,498 A (WELCH et al.) 4 November 1997 (4.11.1997), column 4, lines 31 - 59.	4-10, 12, 22, 24-25
Y	US 5,767,833 A (VANDERWIELE et al.) 16 June 1998 (16.6.1998), column 6, line 56 - column 7, line 7.	4-10, 22, 24-25
Y	US 5,592,286 A (FEDOR) 7 January 1997 (7.1.1997), column 5, line 64 - column 6, line 14.	2, 22, 25
Y		12

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"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	

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INTERNATIONAL SEARCH REPORT

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Continuation of Item 4 of the first sheet:

The title of the invention is exceedingly long. Preferably, the title should be between 2-7 words long.

New Title: METHOD FOR MAPPING AN IMMERSIVE ENVIRONMENT

Continuation of B. FIELDS SEARCHED Item 3:

EAST - search terms: "panaramic camera", "computer", "render or rendering", "fisheye lens", "image processing", "dither or dithering", "bitmap", "camera", "head mounted display", "virtual reality", "toroidal lens"