United States Patent [19]

Nagaoka

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[54] **IMAGE PICK-UP DEVICE, IMAGE DISPLAY DEVICE AND INFORMATION RECORDING MEDIUM COMPRISING A FISHEYE LENS**

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[22] Filed: **Apr. 28, 1999**

[30] **Foreign Application Priority Data**

Nov. 25, 1998 [JP] Japan 10-350751

[51] **Int. Cl.^{7}** **G02B 13/04**

[52] **U.S. Cl.** **359/749**; 359/672

[58] **Field of Search** 359/749, 750–753, 359/680–682, 672–675

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[57] **ABSTRACT**

An image is picked up by a camera comprising a fisheye lens having a relationship of h=n·f·tan(θ/m), wherein h is the height of an image of a subject at a certain point, f is the focal distance of the fisheye lens, θ is a field angle, m has a value of $1.6 \leqq m \leqq 3$, and n has a value of $m-0.4 \leqq n \leqq m+0.4$, and the image data of which is output from the camera, is converted into a plane image by an image data processing unit, and this converted image is then output to a monitor unit. Preferably, n and m both equal 2.
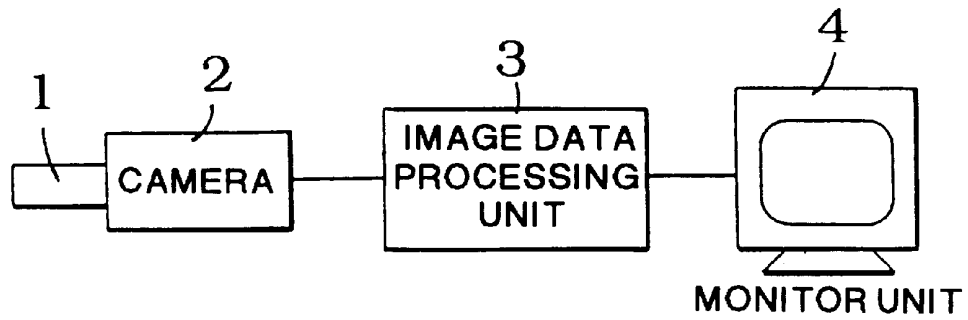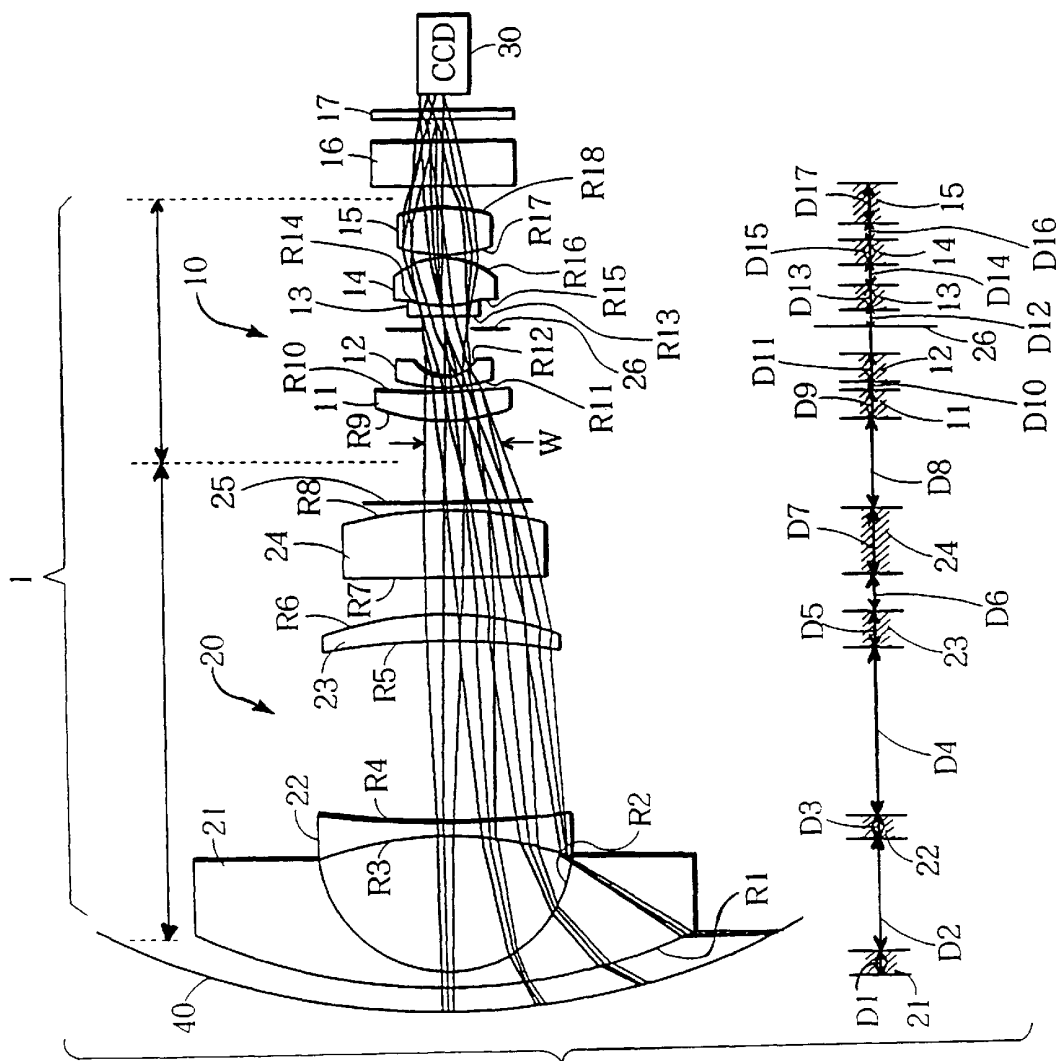
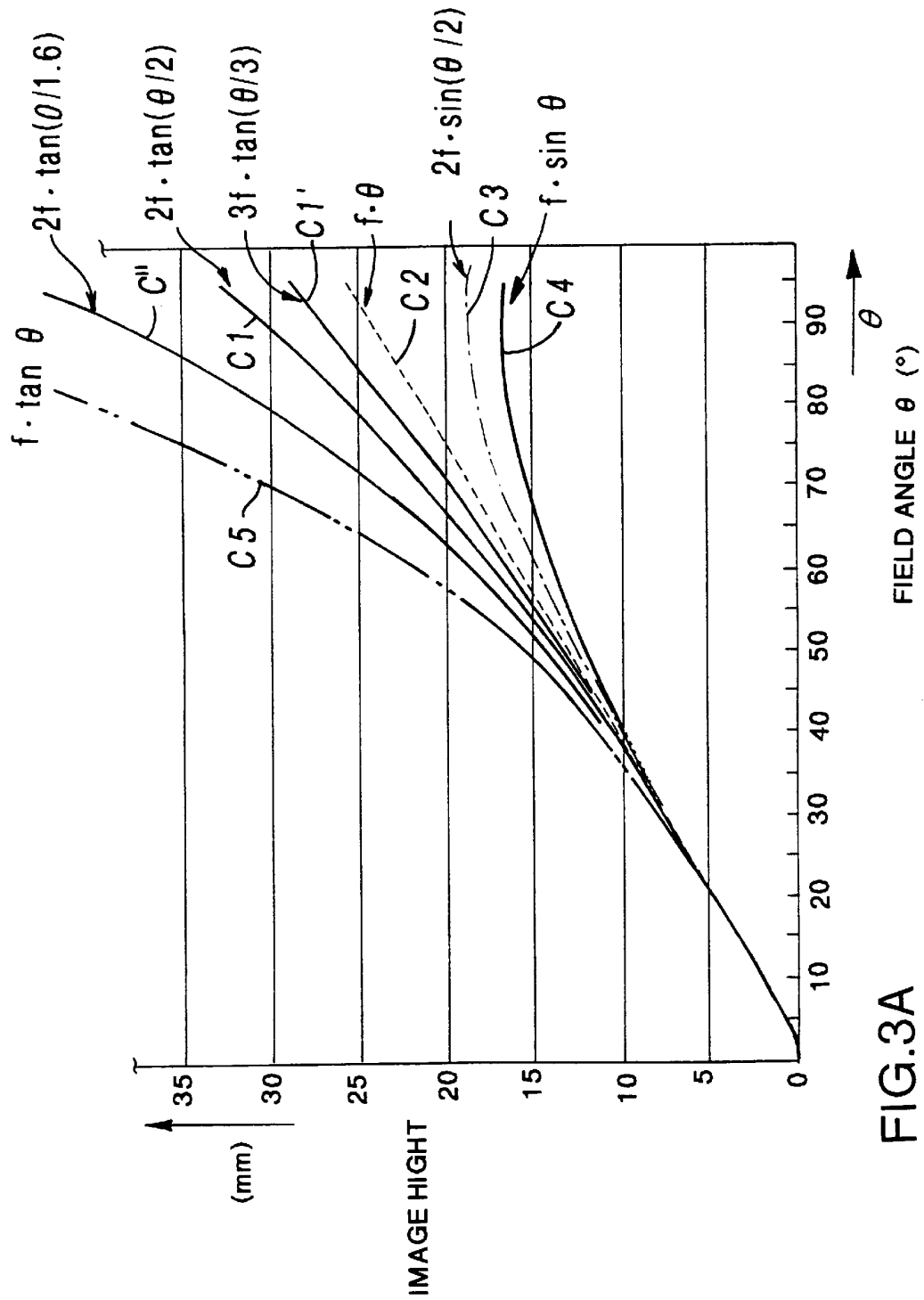**14 Claims, 9 Drawing Sheets**
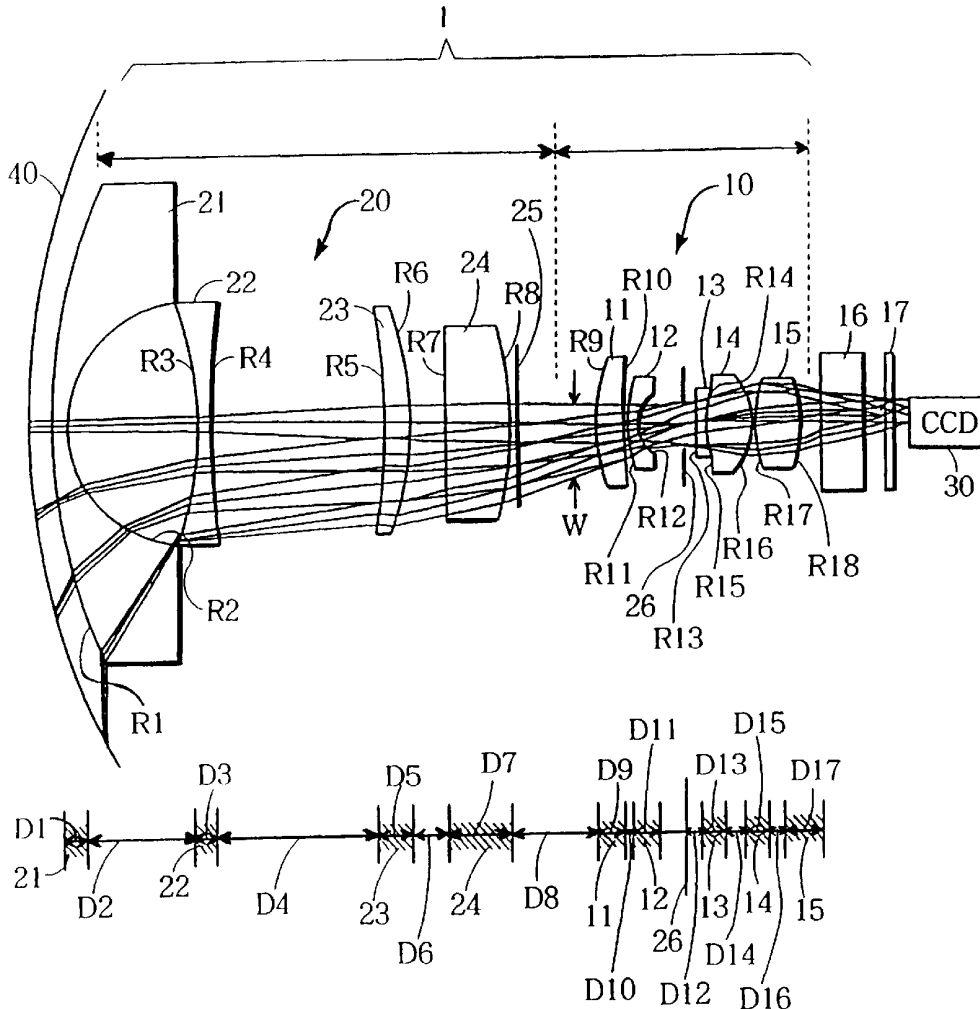
FIG.1

FIG.2

FIG.3A

FIG.3B

DOCKET ALARM
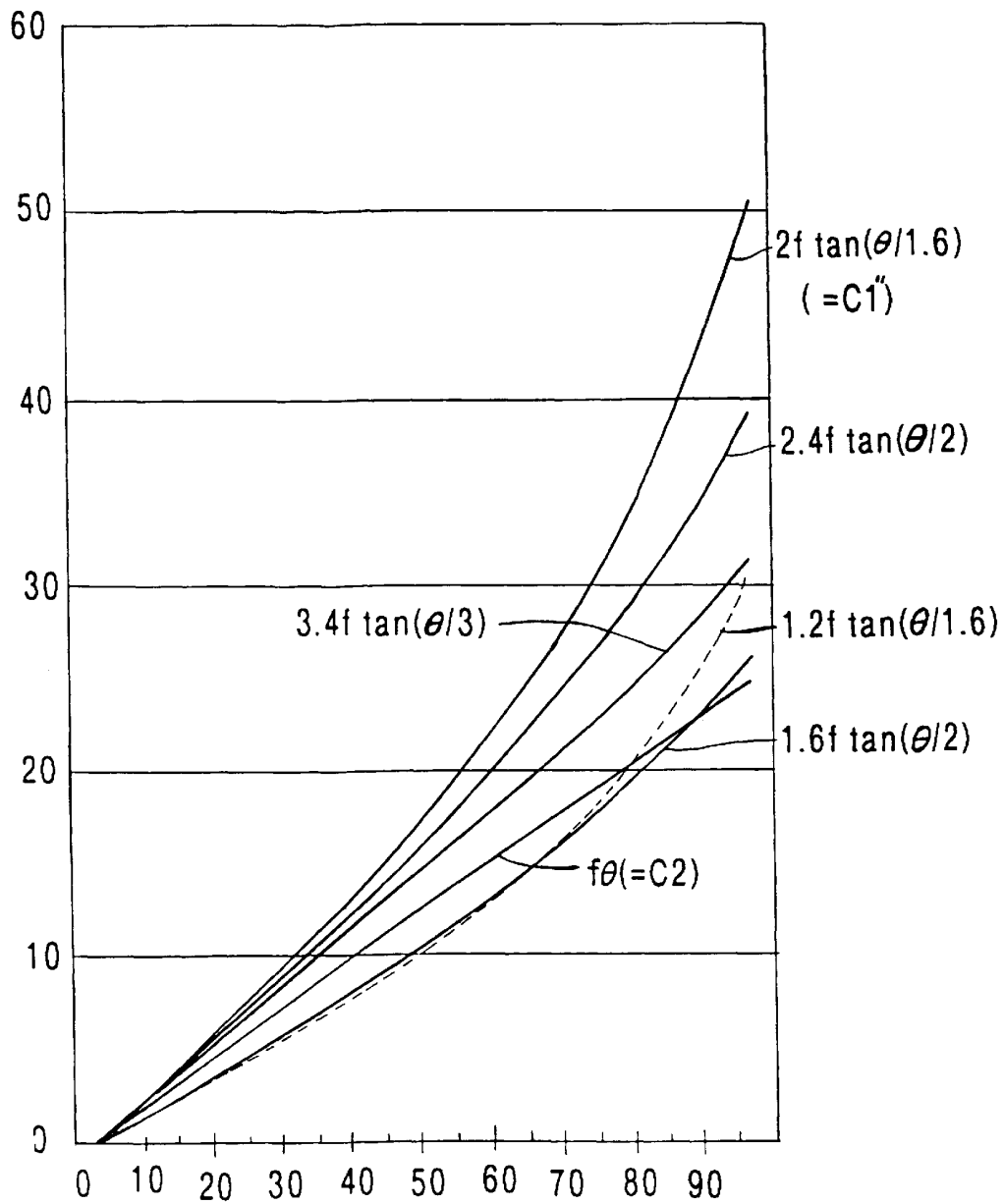
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