



US005546236A

# United States Patent [19]

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Ogata et al.

[45] Date of Patent: **Aug. 13, 1996**

[54] **WIDE-ANGLE PHOTOGRAPHIC LENS SYSTEM**

- 56-91206 7/1981 Japan .
- 57-116313 7/1982 Japan .
- 59-147312 8/1984 Japan .
- 60-176011 9/1985 Japan .
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[21] Appl. No.: **208,836**

[22] Filed: **Mar. 11, 1994**

[30] **Foreign Application Priority Data**

- Mar. 12, 1993 [JP] Japan ..... 5-077420
- Mar. 12, 1993 [JP] Japan ..... 5-077456
- Jul. 16, 1993 [JP] Japan ..... 5-197704

[51] Int. Cl.<sup>6</sup> ..... **G02B 15/02**

[52] U.S. Cl. .... **359/794; 359/795; 359/784; 359/785; 359/793**

[58] Field of Search ..... 359/794, 690, 359/795, 793, 691, 692, 689, 784, 785

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

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[57] **ABSTRACT**

A wide-angle photographic lens system comprising a front lens unit having a positive refractive power, an aperture stop and a rear lens unit having a positive refractive power or a negative refractive power; the front lens unit comprising at least one positive lens component and at least one negative lens component, whereas said rear lens unit consisting of a positive lens component having a convex surface on the image side. This photographic lens system has a short total length (a length as measured from a first surface to an image side surface of the lens system and a small value of  $\Sigma d$  (a distance as measured from the first surface to a final surface thereof), and is suited for use with collapsible mount type cameras.

**28 Claims, 11 Drawing Sheets**

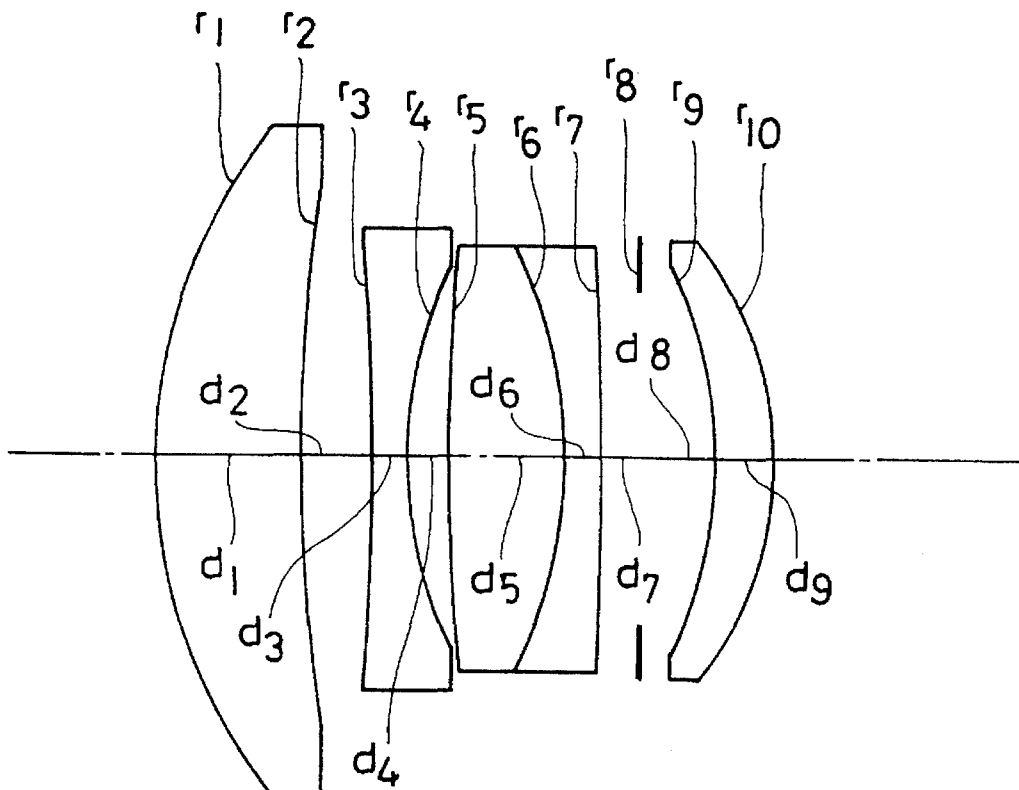


FIG. 1

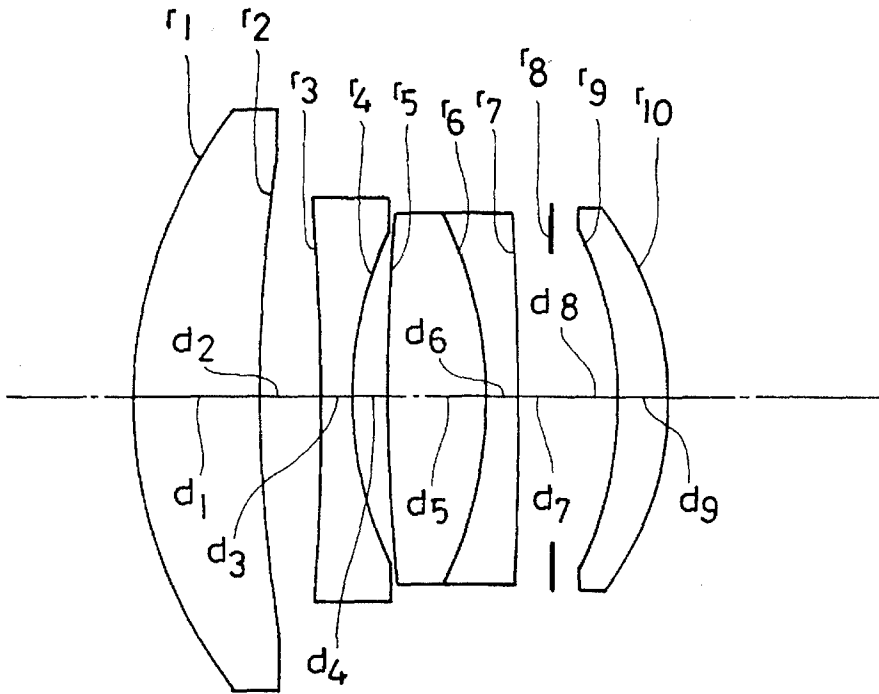


FIG. 2

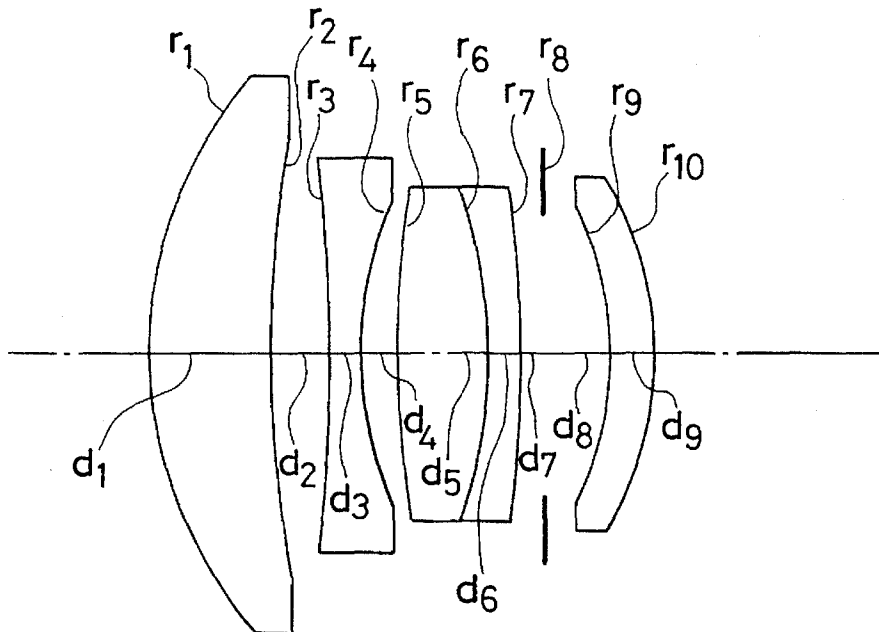


FIG. 3

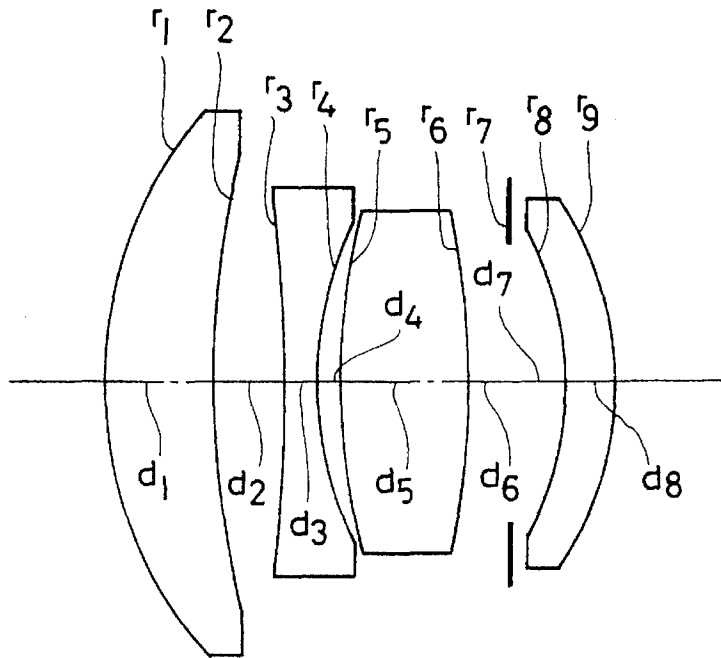


FIG. 4

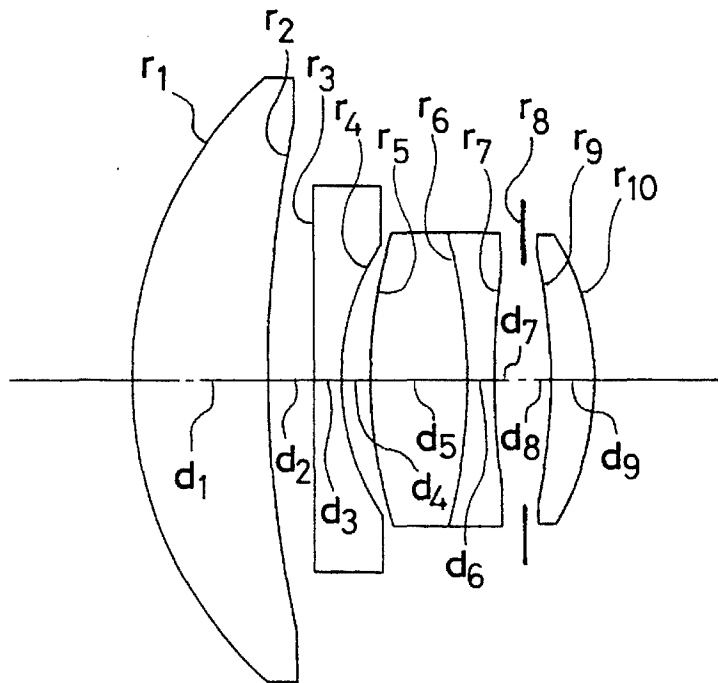


FIG. 5

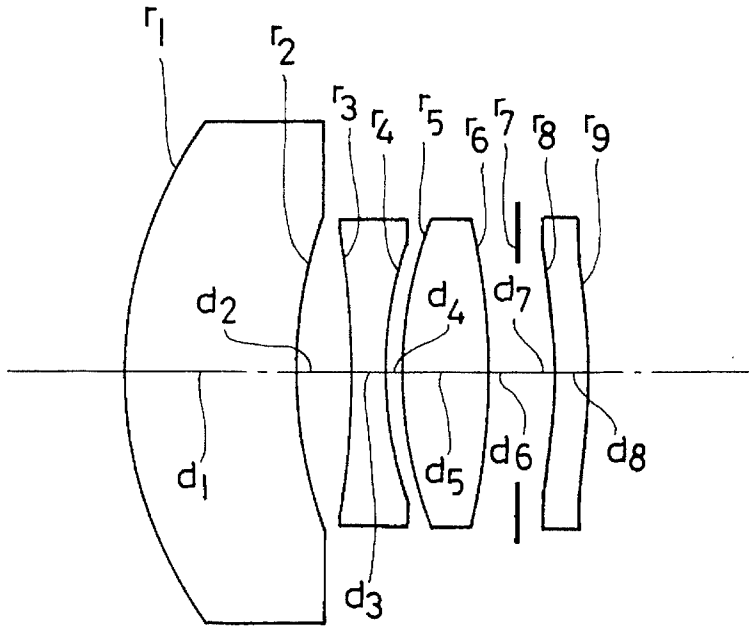


FIG. 6

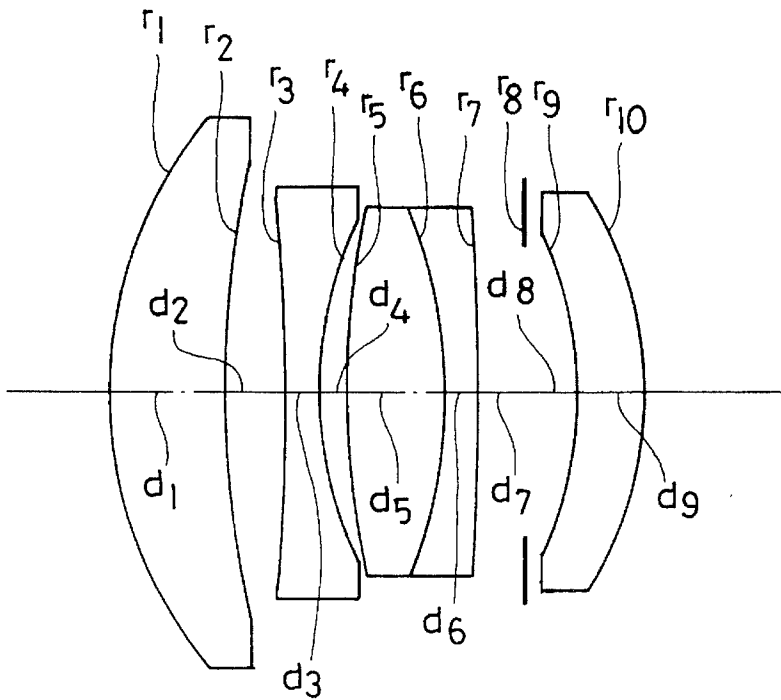


FIG. 7

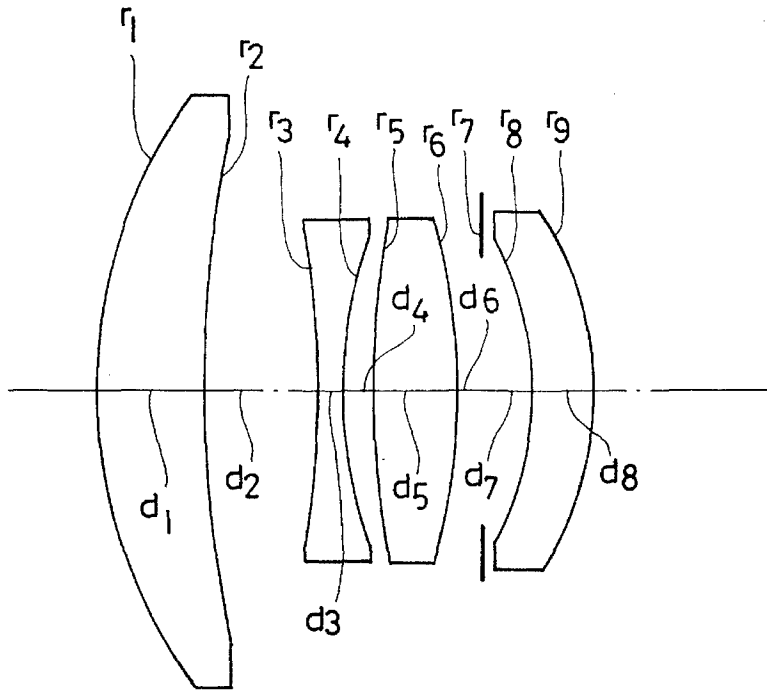
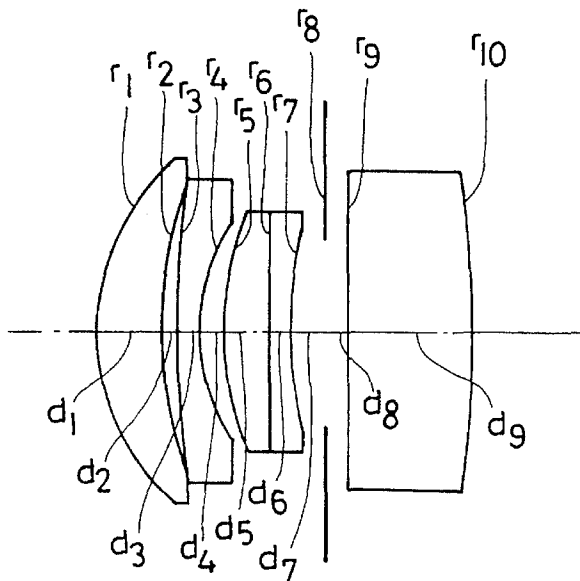


FIG. 8



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