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### (12) United States Patent

### Chen

### (54) IMAGING LENS SYSTEM

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- (73) Assignee: Largan Precision Co., Ltd., Taichung (TW)
- (\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 288 days.
- (21) Appl. No.: 12/654,912
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### (30) Foreign Application Priority Data

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- (51) Int. Cl. *G02B 9/60* (2006.01) *G02B 13/18* (2006.01)

# (10) Patent No.: US 8,233,224 B2 (45) Date of Patent: Jul. 31, 2012

#### (56) **References Cited**

#### U.S. PATENT DOCUMENTS

2009/0122423 A1	* 5/2009	Yoneyama Park et al Sano	359/764

\* cited by examiner

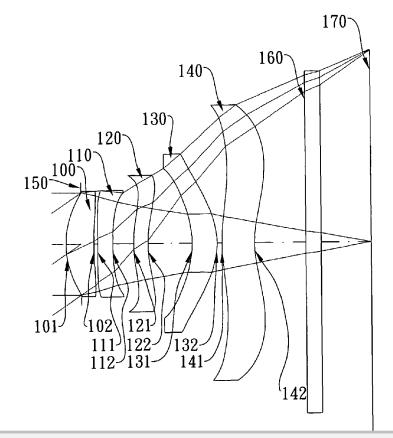
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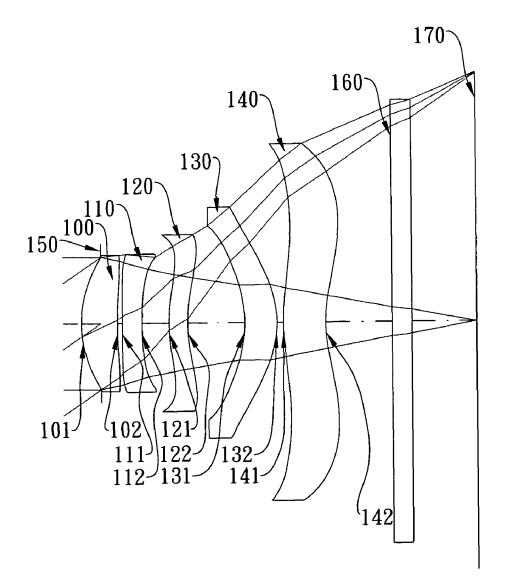
### (57) ABSTRACT

This invention provides an imaging lens system including, in order from an object side to an image side: a first lens with positive refractive power having a convex object-side surface; a second lens with negative refractive power; a third lens having a concave image-side surface; a fourth lens with positive refractive power; a fifth lens with negative refractive power having a concave image-side surface, at least one surface thereof having at least one inflection point; and an aperture stop disposed between an imaged object and the third lens. The on-axis spacing between the first lens and second lens is T12, the focal length of the imaging lens system is f, and they satisfy the relation:  $0.5 < (T12/f) \times 100 < 15$ .

#### 27 Claims, 13 Drawing Sheets



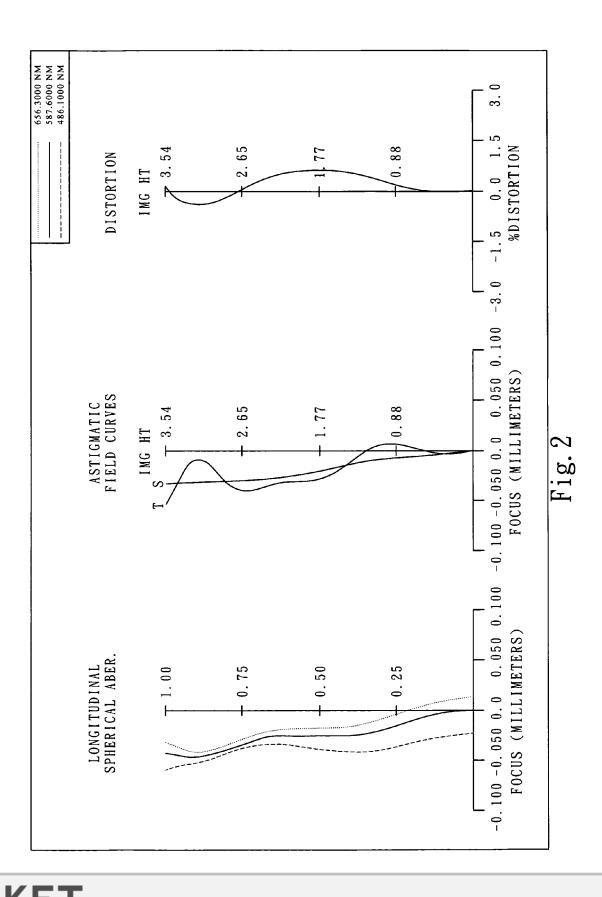
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# Fig.1

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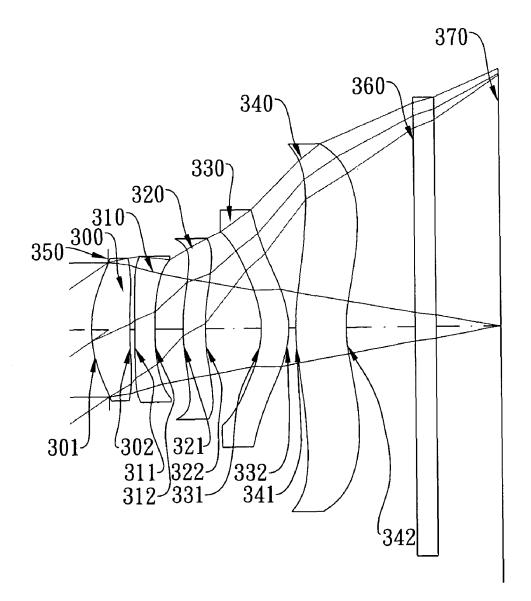
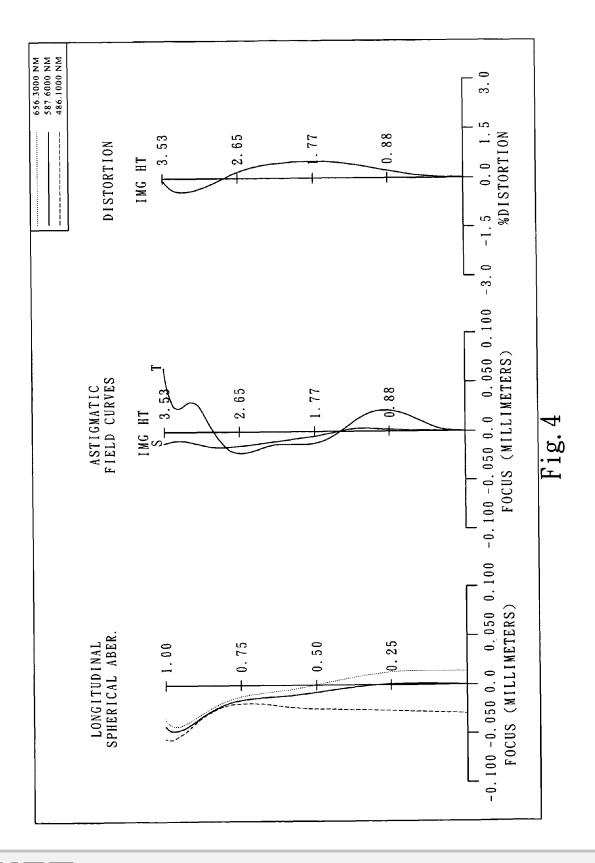


Fig. 3





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