



(12) **United States Patent**
Guo

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(54) **MASK**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,308,586 A * 12/1981 Coates G01B 11/0625 356/504
2006/0105250 A1* 5/2006 Liu G03F 1/14 430/5
2008/0076037 A1* 3/2008 Yang G03F 9/7076 430/5

* cited by examiner

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(57) **ABSTRACT**

The present invention provides a mask, on which a preset pattern is provided. First test patterns for determining an amount of a position offset of the mask during its movement are provided on the mask at a first side of the preset pattern and a second side of the preset pattern opposite to the first side, respectively. When being moved in a direction from the first side to the second side by a standard distance, the mask can determine whether a position offset occurs to the mask during its movement, and determine an amount of the position offset if a position offset occurs. Thus, the position offset of the mask can be corrected, thereby obtaining an accurate predetermined pattern on a glass substrate.

9 Claims, 8 Drawing Sheets

