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Cerrina et al.

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[54] **METHOD AND APPARATUS FOR X-RAY AND EXTREME ULTRAVIOLET INSPECTION OF LITHOGRAPHY MASKS AND OTHER OBJECTS**

OTHER PUBLICATIONS

Photo Emission Electron Microscope (PEEM) from Staib Instruments, Inc., publication date unknown, but prior to Nov. 1995.

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[57] ABSTRACT

[21] Appl. No.: **08/942,757**

Inspection of objects such as X-ray lithography masks is carried out by passing X-rays or extreme ultraviolet light through an object which absorbs in a pattern to provide a patterned X-ray or ultraviolet image which is then directed to a converter. The converter converts the image incident upon it to an image formed by electrons emitted from the converter. The emitted electrons are magnified in an electron microscope and the magnified electron image is displayed by the electron microscope. The visible image may be further digitized and processed by a computer, including long-term storage or display on a computer monitor. X-ray lithography masks may be inspected by passing X-rays through masks of the same type that will be used for lithography so that the magnified image of the X-rays passed through the masks corresponds to the pattern of X-rays that will be incident on a photoresist, allowing accurate inspection of X-ray masks before use.

[22] Filed: **Oct. 2, 1997**

Related U.S. Application Data

[60] Provisional application No. 60/027,808, Oct. 4, 1996.

[51] **Int. Cl.⁶** **G01B 15/06**

[52] **U.S. Cl.** **378/43; 378/35; 378/58**

[58] **Field of Search** 378/43, 34, 35, 378/58, 62; 250/306, 423 P; 382/144, 149

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17 Claims, 2 Drawing Sheets

