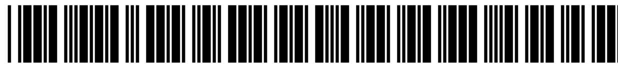

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(54) **APPARATUS FOR CRITICAL-DIMENSION LOCALIZATION MICROSCOPY**

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CPC ***G01B 11/022*** (2013.01); ***G06T 7/62*** (2017.01); *G06T 2207/10056* (2013.01)

(58) **Field of Classification Search**
CPC G01B 11/022; G01B 9/04; G01B 21/042; G01B 2210/56; G03F 9/7019; G06T 2207/10056; G06T 7/62
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(57) **ABSTRACT**

Performing critical-dimension localization microscopy includes: subjecting a first dimensional member and a second dimensional member of a reference artifact to critical-dimension metrology, the first and second dimensional members, in combination, including a critical dimension and each independently providing optical contrast; determining a primary length of the critical dimension to be traceable to International System of Units meter; imaging in a calibrant optical field, by optical microscopy, the first dimensional member and the second dimensional member, the calibrant optical field disposed in an ocular optical field; determining, from the optical microscopy of the first dimensional member and the second dimensional member, a secondary length and a secondary length uncertainty of the critical dimension subjected to the critical-dimension metrology; and calibrating the calibrant optical field and the secondary length, to the primary length to establish traceability of the secondary length to the International System of Units meter to perform critical-dimension localization microscopy.

14 Claims, 38 Drawing Sheets

200