



(12) **United States Patent**  
**Amatucci et al.**

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(54) **POSITIONING STAGE**

(56) **References Cited**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(57) **ABSTRACT**

**Related U.S. Application Data**

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(51) **Int. Cl.**<sup>7</sup> ..... **B23Q 3/18**; G02B 21/26

(52) **U.S. Cl.** ..... **269/58**; 269/71; 269/318; 29/281.4; 359/392; 359/393; 248/593; 248/419; 248/424; 33/1 M; 33/568

(58) **Field of Search** ..... 359/391, 392, 359/393; 29/407.1, 466, 720, 721, 281.1, 281.4; 248/576, 591, 604, 573, 574, 592, 593, 602, 419, 424, 425; 269/58, 79, 73, 71, 318; 33/1 M, 568

A positioning device and method for positioning objects is provided. The device includes a movable stage and a pair of levers. The pair of levers is symmetric about a first axis of the movable stage. Additionally, the pair of levers is parallel to a second axis of the movable stage. This second axis is perpendicular to the first axis. Each of the pair of levers applies a force to the movable stage. Each of the pair of levers moves in an arc. The two levers move in opposite directions along their respective arc. The two arcs are symmetrical about an axis of the movable stage.

**13 Claims, 23 Drawing Sheets**

