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Bachar et al.

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(54) **ROTATIONAL BALL-GUIDED VOICE COIL MOTOR**

(58) **Field of Classification Search**
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G02B 23/18; G02B 27/644; G02B 13/009;

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(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
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G02B 7/00 (2021.01)
G02B 13/00 (2006.01)

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(57) **ABSTRACT**

Actuators for rotating or tilting an optical element, for
example an optical path folding element, comprising a voice
coil motor (VCM) and a curved ball-guided mechanism
operative to create a rotation or tilt movement of the optical
element around a rotation axis upon actuation by the VCM.
In some embodiments, an actuator includes two, first and
second VCMs, and two curved ball-guided mechanisms
operative to create rotation or tilt around respective first and
second rotation axes.

(52) **U.S. Cl.**
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(2013.01); **G02B 7/182** (2013.01);
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19 Claims, 13 Drawing Sheets

