



US010488631B2

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

(10) **Patent No.: US 10,488,631 B2**  
(45) **Date of Patent: Nov. 26, 2019**

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

5/23258 (2013.01); *H04N 5/23296* (2013.01);  
*H02K 41/0358* (2013.01)

(71) Applicant: **Corephotonics Ltd.**, Tel-Aviv (IL)

(58) **Field of Classification Search**

CPC ..... G02B 27/646; G02B 27/64; G02B 7/102;  
G02B 23/18; G02B 27/644; G02B  
13/009;

(72) Inventors: **Gil Bachar**, Tel-Aviv (IL); **Itay Jerby**,  
Netanya (IL); **Itay Yedid**, Karmel Yosef  
(IL)

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(73) Assignee: **Corephotonics Ltd.**, Tel Aviv (IL)

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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 107 days.

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(21) Appl. No.: **15/559,039**

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(22) PCT Filed: **Apr. 25, 2017**

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(86) PCT No.: **PCT/IB2017/052383**

§ 371 (c)(1),  
(2) Date: **Sep. 16, 2017**

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PCT Pub. Date: **Dec. 7, 2017**

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(65) **Prior Publication Data**

US 2019/0121103 A1 Apr. 25, 2019

**Related U.S. Application Data**

*Primary Examiner* — Collin X Beatty

*Assistant Examiner* — Grant A Gagnon

(60) Provisional application No. 62/353,278, filed on Jun.  
22, 2016, provisional application No. 62/343,011,  
filed on May 30, 2016.

(74) *Attorney, Agent, or Firm* — Nathan & Associates;  
Menachem Nathan

(51) **Int. Cl.**  
**G02B 7/00** (2006.01)  
**G02B 13/00** (2006.01)

(Continued)

(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.**  
CPC ..... **G02B 13/0065** (2013.01); **G02B 7/005**  
(2013.01); **G02B 7/182** (2013.01); **G02B**  
**7/1805** (2013.01); **G02B 27/646** (2013.01);  
**H02K 41/0354** (2013.01); **H04N 5/2254**  
(2013.01); **H04N 5/2328** (2013.01); **H04N**

**27 Claims, 13 Drawing Sheets**

