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571-272-7822

Paper No. 6
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PRECISELEY MICROTECHNOLOGY CORP.,
Petitioner,

v.

DICON FIBEROPTICS, INC.,
Patent Owner.

Case IPR2015-01728
Patent 6,838,738 B1

Before LORA M. GREEN, JONI Y. CHANG, and JACQUELINE T. HARLOW, *Administrative Patent Judges.*

HARLOW, *Administrative Patent Judge.*

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Petitioner, Preciseley Microtechnology Corp. ("Preciseley"), filed a Petition requesting an *inter partes* review of claims 1–50 of U.S. Patent No. 6,838,738 B1 (Ex. 1001, "the '738 patent"). Paper 1 ("Pet."). In response, Patent Owner, DiCon Fiberoptics, Inc. ("DiCon"), filed a Preliminary Response. Paper 5 ("Prelim. Resp."). We have jurisdiction under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted unless the information presented in the petition "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition."

For the reasons set forth below, we institute an *inter partes* review of claims 1–50 of the '738 patent.

A. Related Matter

The '738 patent is asserted in *DiCon Fiberoptics, Inc. v. Preciseley Microtechnology Corp.*, No. 3:15-cv-01362 (N.D. Cal.). Pet. 2.

B. The '738 Patent

The '738 patent, titled "Electrostatic Control of Micro-Optical Components," issued January 4, 2005, from U.S. Patent Application No. 10/081,496, filed February 20, 2002. Ex. 1001, at [54], [45], [21], [22]. The '738 patent claims priority to U.S. Provisional Patent Application No. 60/324,245, filed September 21, 2001. *Id*. at [60].

As the title suggests, the '738 patent relates to electrostatic actuators for driving micro-electro-mechanical ("MEMS") components. *Id*. at 1:22–

24. The ’738 patent purports to overcome disadvantages associated with prior art parallel plate electrostatic actuators, including high voltage requirements, limited range of motion, and instability when moved beyond a critical point, as well as the high power dissipation, slow response, and increased manufacturing complexity associated with electromagnetic or thermal actuators, through the use of vertical comb drive actuators. *Id*. at 1:32–46.

The vertical comb drive actuators disclosed in the ’738 patent each include a stator, i.e., a stationary element, and a rotor, i.e., a moving element, which are patterned into an array of inter-digital fingers, or combs. *Id*. at 2:45–54. The ’738 patent describes several actuator varieties, differing in range of motion, complexity of manufacture, and starting material; however, each of the disclosed actuators uses an electrostatic force between the stator and the rotor that is normal to the plane in which the stator and rotor were fabricated, to move the rotor. *Id*.

Figure 3 of the ’738 patent is reproduced below.

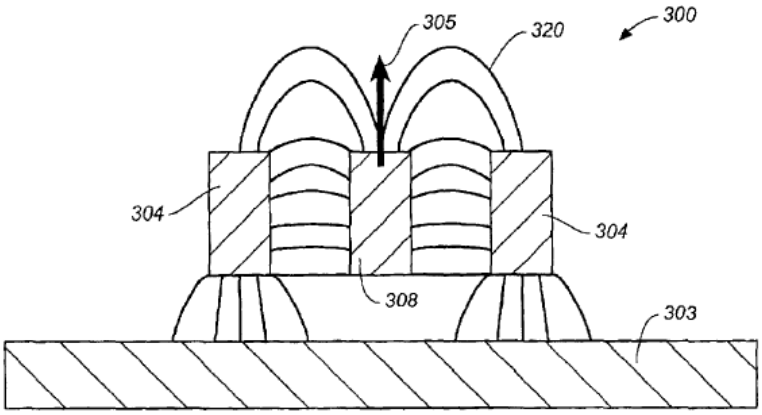

FIG._3

Figure 3 depicts a simplified cross sectional view of an actuator for use in a micro-optical component. *Id*. at 2:25–26. The application of a voltage to the stator, including stator fingers 304, relative to the rotor and conducting plane 303, produces electrical field 320 between adjacent stator fingers 304 and rotor finger 308, as well as between the stator fingers 304 and conducting plane 303, but not between rotor finger 308 and conducting plane 303. *Id*. at 6:17–28. This asymmetry in electric field 320 generates a vertical force 305 on rotor finger 308, causing displacement in a direction normal to and away from conducting plane 303. *Id*. at 6:29–35.

C. Illustrative Claim

Of the challenged claims, claims 1, 19, 26, 32, and 35 are independent. Independent claims 1, 19, 26, and 35 are directed to electrostatic actuators, and independent claim 32 is directed to a MEMS actuator. Claims 2–18 depend, directly or indirectly from claim 1; claims 20–25 depend, directly or indirectly, from claim 19; claims 27–31 depend, directly or indirectly, from claim 26; claims 33 and 34 depend directly from claim 32; and claims 36–50 depend, directly or indirectly, from claim 35. Claim 1, reproduced below, is illustrative of the claimed subject matter.

> 1. An electrostatic actuator formed in a single layer comprising:
>
> a stator formed in the layer comprising a first plurality of fingers;
>
> a rotor formed in the layer comprising a second plurality of fingers, wherein:

> one or more of the fingers of the second plurality is between the fingers of the first plurality, and
>
> one or more fingers of the stator and rotor are positioned above a conducting plane having the same potential as the rotor, each of said stator and rotor comprising electrically conducting layers, and
>
> one or more fingers of the rotor has a height less than or equal to one or more fingers of the stator such that a vertical force is exerted upon the rotor, the height measured from the bottom of the finger to the top of the finger, wherein the first and second plurality of fingers are substantially in a plane when no voltage is applied to the actuator, such plane being transverse to direction of the vertical force, said rotor being pivoted about an axis, so that when a voltage is applied to a conducting layer of the stator, a vertical force is exerted upon one or more fingers of the rotor, causing the rotor to rotate about the axis, wherein the rotor further comprises a central portion, the central portion forming part of a micro-optical component that attenuates or switches an input signal be rotation of the central portion of the rotor.

Ex. 1001, 9:34–62.

D. Prior Art Relied Upon

Preciseley relies upon the following prior art references (Pet. 4–6):

Behin ’677	US 6,593,677 B2	July 15, 2003	(Ex. 1002)
Miller	US 6,000,280	Dec. 14, 1999	(Ex. 1003)
Conant	US 7,079,299 B1	July 18, 2006	(Ex. 1004)
Hagelin	US 6,386,716 B2	May 14, 2002	(Ex. 1005)
Behin ’173	US 6,744,173 B2	June 1, 2004	(Ex. 1006)

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