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Paper No. 7
Filed: December 4, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NITTO DENKO CORP.,
Petitioner,

v.

HUTCHINSON TECHNOLOGY INC.,
Patent Owner.

IPR2018-00956
Patent 6,965,499 B1

Before SHEILA F. McSHANE, STACY B. MARGOLIES, and ALEX S. YAP, *Administrative Patent Judges.*

McSHANE, *Administrative Patent Judge.*

DECISION
Institution of *Inter Partes* Review
35 U.S.C. § 314(a)

I. INTRODUCTION

A. Background

Nitto Denko Corp. ("Petitioner")[1] filed a Petition requesting *inter partes* review of claims 1, 4–14, 17–24, and 26 ("the challenged claims") of U.S. Patent No. 6,965,499 B1 (Ex. 1101, "the '499 patent"). Paper 1 ("Pet."). Hutchinson Technology Inc. ("Patent Owner") filed a Preliminary Response to the Petition. Paper 6 ("Prelim. Resp.").

We have authority under 35 U.S.C. § 314(a), 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 [P]etitioner would prevail with respect to at least 1 of the claims challenged in the petition."

We determine that Petitioner has demonstrated that there is a reasonable likelihood that it would prevail with respect to at least one of the challenged claims. For the reasons described below, we institute an *inter partes* review of claims 1, 4–14, 17–21, and 26 of the '499 patent.

B. Related Proceedings

Petitioner and Patent Owner indicate that the '499 patent is at issue in the district court proceeding *Hutchinson Tech. Inc. v. Nitto Denkom Corp.*, Case No. 17-cv-01992 (D. Minn.). Pet. 4; Paper 4, 2. The parties also indicate that the '499 patent is at issue in IPR2018–00955. *See* Pet. 4; Paper 4, 3.

C. The '499 Patent

The '499 patent is titled "Head Suspension Configured For Improved Thermal Performance During Solder Ball Bonding To Head Slider," and

[1] Petitioner also identifies other real parties-in-interest. Pet. 4.

issued on November 15, 2005, from an application filed on April 23, 2003. Ex. 1101, [22], [45], [54]. The '499 patent claims priority to U.S. Provisional Application No. 60/375,596, filed on April 25, 2002. *Id*. at [60].

The '499 patent is directed to the head suspension for a hard disk drive. *See* Ex. 1101, 1:14–20, 2:15–28. The head suspension includes a supporting arm and a flexure, which includes a stainless steel support layer and conductive traces that transmit signals to and from the head slider, where the head slider is aerodynamically designed to "fly" on an air bearing generated by a spinning hard drive disk. *Id*. at 1:28–32, 3:28–36. Figure 3, which is a top view of a head suspension, is reproduced below. *Id*. at 2:63–65.

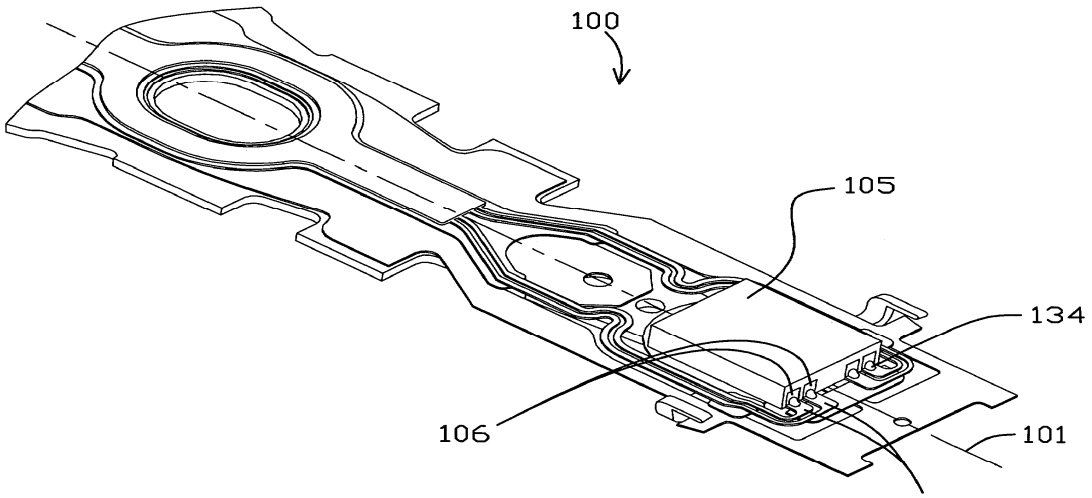

FIG. 3

Figure 3, reproduced above, depicts head suspension 100, head slider 105, head slider bonding pads 106, trace bonding pads 132, and solder balls 134. Ex. 1101, 3:28–43. Solder balls 134 are applied at the juncture of head slider bonding pads 106 and trace bonding pads 132 to electrically connect head slider 105 to traces 130. *Id*. at 3:43–45. More specifically, the

structure of the head suspension is directed "to reduce the mechanical and thermal effects of a solder ball bonding process on the head suspension or head suspension component during solder ball bonding of the head slider to the electric traces." *Id*. at 2:27–31.

Claims 1, 12, 19, and 26, reproduced below, are the challenged independent claims of the '499 patent.

> 1. A head suspension or head suspension component configured for solder ball bonding of a head slider to electrical traces on the head suspension or head suspension component, the head suspension or head suspension component comprising:
>
> electrical traces formed from electrically conductive material, the electrical traces including a bonding region being generally planar with other portions of the electrical traces and adapted for solder ball bonding to a head slider; and
>
> a support structure including a generally planar layer of spring metal providing support for at least portions of the electrical traces, the planar layer of suspension material including a head slider mounting region adapted to receive the head slider, with the spring metal configured not to extend in an area beneath the bonding region to reduce mechanical and thermal effects on the head suspension or head suspension component during solder ball bonding of the head slider to the electrical traces.
>
> 12. A flexure comprising:
>
> a slider bonding region on a stainless steel layer that is in a plane with other portions of the flexure adapted to receive a head slider;
>
> electrical traces including bonding pads located adjacent to the slider bonding region that are generally planar to other portions of the traces; and
>
> a support structure for supporting the bonding pads to reduce mechanical and thermal effects of a solder ball bonding

process on the flexure during solder ball bonding of a head slider to the electrical traces.

19. A wireless head suspension assembly including:

a generally planar spring metal layer including a slider mounting region having an edge;

a head slider having bond pads mounted to the slider mounting region with the bond pads beyond the edge of the slider mounting region and non-planar with the spring metal layer;

conductive traces having spring metal layer-free ends of sufficient length to provide mechanical and thermal solder ball bonding isolation extending from the spring metal layer and terminating at planar bond pads in a plane generally parallel to the spring metal layer and adjacent to the head slider bond pads; and

solder ball bonds between the conductive trace bond pads and the head slider bond pads.

26. A wireless head suspension assembly, including:

a generally planar spring metal layer including:

a slider mounting region having an edge;

lead mounting tabs adjacent to the edge of the mounting region; and

gaps separating the tabs from the edges of the slider mounting region for providing mechanical and thermal solder ball bonding isolation;

a head slider having bond pads mounted to the slider mounting region with the bond pads over the gaps and non-planar with the spring metal layer;

conductive traces having ends extending over the tabs and terminating at planar bond pads in a plane generally parallel to the spring metal layer and adjacent to the head slider bond pads; and

solder ball bonds between the conductive trace bond pads and the head slider bond pads.

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