

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NHK SPRING CO., LTD.,
Petitioner,

v.

INTRI-PLEX TECHNOLOGIES, INC.,
Patent Owner.

Case IPR2018-00752
Patent 6,183,841 B1

Before CHRISTOPHER M. KAISER, ELIZABETH M. ROESEL, and
MICHELLE N. ANKENBRAND, *Administrative Patent Judges*.

ANKENBRAND, *Administrative Patent Judge*.

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

I. INTRODUCTION

NHK Spring Co., Ltd. (“Petitioner”) requests an *inter partes* review of claims 1, 4, 7, and 10 of U.S. Patent No. 6,183,841 B1 (“the ’841 patent,” Ex. 1001). Paper 1 (“Pet.”). Intri-Plex Technologies, Inc. (“Patent Owner”) timely filed a Preliminary Response. Paper 7 (“Prelim. Resp.”).

Based upon the particular circumstances of this case, we exercise our discretion under 35 U.S.C. §§ 314(a) and 325(d) and do not institute an *inter partes* review of the challenged claims.

II. BACKGROUND

A. Related Matters

The parties identify *Intri-Plex Technologies, Inc. v. NHK International Corp.*, 3:17-cv-01097-EMC (N.D. Cal.) as a related matter under 37 C.F.R. § 42.8(b)(2). Pet. 2; Paper 4, 2.

B. The ’841 patent

The ’841 patent, titled “Optimized Low Profile Swage Mount Base Plate Attachment of Suspension Assembly for Hard Disk Drive,” issued on February 6, 2001, based on an application filed April 21, 1998. Ex. 1001, [22], [45], [54]. The ’841 patent relates to a base plate for attaching a suspension assembly to an actuator arm in a hard disk drive. *Id.* at Abstract. The base plate includes a flat flange portion and a cylindrical hub portion. *Id.* at 3:41–42. The base plate has several parameters, including a base plate thickness (T_{BP}), hub overall height (H_H), hub inner diameter (D_{ID}), base plate length (L_{BP}), base plate width (W_{BP}), hub outer diameter (D_{OD}), hub inner surface depth (H_{IS}), base plate opening diameter (D_{BP}), hub radial width (W_H , which is $(D_{OD} - D_{ID})/2$), and a hub counter bore depth (H_{CB}). *Id.* at

3:48–55, 4:3–18. The '841 patent states that “[t]he optimum parameters . . . are such as to satisfy the following equation:”

$$\frac{W_H}{T_{BP}} \cdot \frac{W_H}{(H_{IS} + H_H - H_{CB})/2} \geq 5$$

Id. at 3:56–63. The calculation on the left-hand side results in a Geometry Metric Value (*id.* at 4:18), and the equation is satisfied when the Geometry Metric Value is less than or equal to five (*id.* at 3:60).

The '841 patent provides a table, reproduced below, that compares an exemplary inventive base plate to a prior art base plate.

SYMBOL	NAME	TYP. PRIOR ART DIMEN- SION(MM) PN: 15120-09	TYP. IN- VENTION DIMEN- SION(MM) PN: 15120-05
L _{BP}	Base Plate Length	5.080	5.080
W _{BP}	Base Plate Width	5.080	5.080
T _{BP}	Base Plate Thickness	0.150	0.150
D _{BP}	Base Plate Opening Diameter	2.375	2.510
D _{ID}	Hub Inner Diameter	2.145	1.956
D _{OD}	Hub Outer Diameter	2.731	2.731
H _H	Hub Overall Height	0.270	0.269
H _{IS}	Hub Inner Surface Depth	0.114	0.115
H _{CD}	Hub Counterbore Height	0.038	0.127
W _H	Hub Radial Width	0.293	0.3875
	Geometry Metric Value	3.308	7.810

Id. at 4:3–18. The table above sets forth the dimensions of the parameters that form the prior art and inventive base plates, and the Geometry Metric Value that results for each after applying the values for W_H, T_{BP}, H_{IS}, H_H, and H_{CB} to the equation. According to the table, the dimensions of the prior

art base plate result in a Geometry Metric value of 3.308, which does not satisfy the equation, whereas the dimensions of the exemplary inventive base plate result in a Geometry Metric Value of 7.810, which satisfies the equation. *Id.*

According to the '841 patent, a base plate with parameters that satisfy the equation has several advantages, including that it reduces gram load change inherent in swaging and allows a large retention torque in “low hub height configurations that offer limited retention torque in a standard hub geometry.” *Id.* at 2:27–30. The '841 patent also states that such a base plate eliminates the neck region associated with prior art base plates that was known to result in bending moment decoupling of the hub and flange. *Id.* at 4:23–65, Figs. 3, 4.

C. Illustrative Claim

Claim 1 is independent and illustrative of the claimed subject matter.

Claim 1 recites:

1. An optimized low profile base plate for attachment of a suspension assembly to an actuator arm in a hard disk drive comprising:

a flange having a flange thickness (T_{BP}); and,

a hub having, a hub height (H_H), a hub radial width W_H , a land height hub inner surface depth (H_{IS}), and a lead in shoulder hub counter bore height (H_{CB});

wherein:

$$\frac{W_H}{T_{BP}} \cdot \frac{W_H}{(H_{IS} + H_H - H_{CB})/2} \geq 5$$

Ex. 1001, 5:41–53.

D. The Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1, 4, 7, and 10 of the '841 patent based on the following grounds:

Reference(s)	Statutory Basis	Claims Challenged
Braunheim ¹	§ 102(e)	1, 4, 7, 10
Braunheim	§ 103	1, 4, 7, 10
Braunheim and Applicant Admitted Prior Art (AAPA) ²	§ 103	1, 4, 7, 10

Pet. 4. Petitioner relies on the Declaration of David B. Bogy, Ph.D. (Ex. 1002) to support its asserted grounds of unpatentability. Patent Owner disputes that Petitioner's asserted grounds renders any of the challenged claims unpatentable. *See generally* Prelim. Resp.

III. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner, citing Dr. Bogy's testimony, asserts that a person of ordinary skill in the art at the time of the invention of the '841 patent "would have had at least a Bachelor's degree in mechanical engineering, with at least two years of work and/or academic experience in the design and/or study of disk drive components." Pet. 4 (citing Ex. 1002 ¶ 13).

At this stage of the proceeding, Patent Owner does not dispute Petitioner's assertion regarding the level of ordinary skill in the art, which

¹ U.S. Patent No. 5,689,389, filed Jan. 22, 1996, and issued Nov. 18, 1997 (Ex. 1003).

² Petitioner relies on the dimensional values set forth for the parameters of the base plate in the '841 patent's table that are described as typical prior art dimensions. *See, e.g.*, Pet. 15 ("Ground 3 (Braunheim in view of AAPA) is non-cumulative [to Grounds 1 and 2] because AAPA expressly specifies a 'typical' prior art value for the flange thickness (T_{BP}).").

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