

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SATYA P. ARYA

Appeal No. 2000-0356
Application No. 08/825,424

ON BRIEF

Before BARRETT, DIXON, and BARRY, *Administrative Patent Judges*.
BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

The examiner rejected claims 40-55. The appellant appeals therefrom under 35 U.S.C. § 134(a). We reverse.

BACKGROUND

The invention at issue in this appeal is a suspension for a transducer in a disk drive. A disk drive stores data on and retrieves data from concentric tracks of a rotatable magnetic disk. A transducer is moved from track-to-track to

write or read the desired data. Typically, the transducer is positioned on an air bearing slider that flies above the surface of the disk as the latter rotates. A suspension connects the slider to a rotary or linear actuator.

The appellant asserts that, heretofore, each disk drive manufacturer had to design its own suspension for its own drives. (Spec. at 2.) The reason given by the appellant for this is that if the length of the suspension was varied, the dynamic characteristics of the suspension also changed. (*Id.*) This resulted in the need to redesign each suspension for every change in suspension length. The appellant also asserts that past designs used a large, thick actuator arm that projected toward the disk and to which the suspension was attached. (*Id.* at 2-3.) To obtain a desirable frequency response characteristic in the suspension, the actuator arm was extended as far as possible toward the disk. Because the large actuator arm contributed to the mass of the actuator, it slowed the actuator's speed, thereby slowing the storage and retrieval of data.

Figures 3 and 4 of the appellant's specification show his inventive suspension. The suspension comprises a first rigid beam section 132 connected to an actuator arm 34. The first section 132 has at least one ridge 130 stamped along its length. A flexible spring section 140 is connected to the first section 132. A second rigid section 150 is connected to the spring section 140 on one end and receives a transducer 30 on the other end.

The stamped ridge 130 provides stiffness to the first section 132 and, in effect, extends the stiffness of the actuator arm 34 out through the first section 132 to the beginning of the spring section 140. Consequently, the actuator arm 34 need not be extended as far as in the past. The spring section 140 and the second section 150 may be of a standard length so that the overall length of the suspension may be varied by simply changing the length of the first section 132 without substantially changing the dynamic characteristics of the suspension.

Claim 40, which is representative for present purposes,
follows:

40. A transducer suspension system comprising:

a first rigid beam section having a longitudinal and a lateral axis, a first portion for connection to a support member and a second portion extending beyond the support member, the first rigid beam section having a flat planar base with a stamped ridge rising above the base and extending along an interior portion of its length from the first portion overlying the support member, through the second portion extending beyond the support member, and terminating at a position proximate to, but not inside, a flexible spring section, the stamped ridge providing stiffness to the rigid beam section to resist movement by the rigid beam in a direction perpendicular to a plane containing the longitudinal and lateral axes;

the flexible spring section connected to the second portion of the first rigid beam section at a location a distance beyond an edge of the support member; a second rigid beam section connected to the flexible spring section; and

a transducer assembly receiving section connected to the second rigid beam section for receiving a transducer assembly.

(Appeal Br. at 9.)

The prior art applied by the examiner in rejecting the
claims follows:

NHK Spring Co. ("NHK") NP30-La/Fa ver. 1 Sep. 27, 1993

Karam II	5,408,372	Apr. 18, 1995
Frater et al. ("Frater")	5,353,181	Oct. 4, 1994.

Claims 40-47 stand rejected under 35 U.S.C. § 103(a) as obvious over NHK in view of Karam II. Claims 48-55 stand rejected under § 103(a) as obvious over NHK in view of Karam II further in view of Frater.

OPINION

After considering the record, we are persuaded that the examiner erred in rejecting claims 40-55. Accordingly, we reverse.

Rather than reiterate the positions of the examiner or appellant *in toto*, we address the main point of contention therebetween. Admitting that "NHK does not show the first rigid beam section having at least one stamped ridge extending along an interior portion of its length from the first portion through the second portion and terminating before reaching the

spring section," (Final Rejection at 4), the examiner makes the following assertion.

One of ordinary skill in the art at the time of the invention would have been motivated to provide the suspension of NHK with the ridges as taught by Karam so that they extend over an edge of the support member and terminate prior to the spring section since ridges are taught to increase the rigidity of a suspension.

(*Id.*) The appellant argues, "none of these references teach the use of permanent ridges to extend the spring section a distance beyond the end of the support member." (Appeal Br. at 7.)

In deciding obviousness, "[a]nalysis begins with a key legal question -- *what is the invention claimed?*" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). Here, independent claims 40 and 48 specify in pertinent part the following limitations: "the first rigid beam section having a flat planar base with a stamped ridge rising above the base and extending along an interior portion of its length from the first portion overlying the support member, through the second portion

extending beyond the support member, and terminating at a position proximate to, but not inside, a flexible spring section, the stamped ridge providing stiffness to the rigid beam section to resist movement by the rigid beam in a direction perpendicular to a plane containing the longitudinal and lateral axes. . . ." Accordingly, the claims require *inter alia* a ridge that is **formed by stamping**.

Having determined what subject matter is being claimed, the next inquiry is whether the subject matter is obvious. "'A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art.'" *In re Bell*, 991 F.2d 781, 782, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993)

(quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)).

Here, the examiner cites Figure 8 of Karam II to show "ridges extend[ing] over an edge of a support member (61)." (Final Rejection at 4.) We agree with the appellant, however, that "there are no permanent ridges in the finished suspension of Fig. 8." (Reply Br. at 1.) To the contrary, the ridges 58 shown in the Figure are elastically deformed and leave no permanent contour in the suspension. Specifically, "[t]he metal can also be elastically deformed as shown in FIG. 8. Elastic deformation is effected into the part by external forces that leave no permanent contour in the material when the external forces are removed." Col. 10, ll. 7-10.

The examiner turns to Karam II's "teach[ing]" (Col. 9, lines 63-66) that 'the metal can be plastically, or *irreversibly*, deformed on a small scale' (Emphasis added). . . ." (Examiner's Answer at 4.) The cited teaching does not refer, however, to the embodiment of Figure 8. To the contrary, it refers to the embodiments of "FIGS. 5, 6, and 7. . . ." Col. 9, l. 63. Of those Figures, only the embodiment of Figure 7 is formed by stamping. Specifically, "FIG. 7

shows the formed area micro-stiffened by stamping the metal with a positive mandrel on one side and a negative mandrel on the other to create longitudinal creases 54 along the formed area 50." *Id.* at 11. 46-50.

"[T]o establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant."

In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000)(citing *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984)). "[E]vidence of a suggestion, teaching, or motivation to combine may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. . . ." *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999)(citing

Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996); *Para-Ordinance Mfg. v. SGS Imports Intern., Inc.*, 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995)). "The range of sources available, however, does not diminish the requirement for actual evidence. That is, the showing must be clear and particular. See, e.g., *C.R. Bard*, 157 F.3d at 1352, 48 USPQ2d at 1232. Broad conclusory statements regarding the teaching of multiple references, standing alone, are not 'evidence.'" *Id.*, 50 USPQ2d at 1617(citing *McElmurry v. Arkansas Power & Light Co.*, 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993); *In re Sichert*, 566 F.2d 1154, 1164, 196 USPQ 209, 217 (CCPA 1977)).

Here, the examiner fails to allege, let alone to show clear and particular evidence of, the desirability of using stamped ridges shown in the embodiment of Figure 8. Absent evidence of a benefit of stamped ridges, we are not persuaded that teachings from the prior art would have suggested combining the teachings of the various embodiments. Relying

on Frater merely "for the details of the magnetic disk drive," (Final Rejection at 5), the examiner fails to allege, let alone show, that the tertiary reference cures the defect of the primary and secondary references. Therefore, we reverse the rejection of claims 40 and 49 and of claims 41-47 and 49-55, which respectively depend therefrom.

CONCLUSION

In summary, the rejection of claims 40-55 under § 103(a) is reversed.

REVERSED

LEE E. BARRETT)	
Administrative Patent Judge)	
)	
)	
)	
)	BOARD OF PATENT
JOSEPH L. DIXON)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	

BARRETT, Administrative Patent Judge, concurring-in-part and dissenting-in-part.

I concur in the result, but dissent from the reasoning the majority uses in reversing the Examiner's rejection based on NHK Spring and Karam.

NHK Spring shows a suspension assembly having a first rigid beam section having a first portion for connection to a support member and a second portion extending beyond the support member, a flexible spring section connected to the second portion of the first rigid beam section, and a second rigid beam section connected to the flexible spring section. A transducer assembly is intended to be connected to the second rigid beam section. NHK Spring shows stamped raised ridges extending along the edges of the first and second rigid beam sections. One of ordinary skill in the art would have appreciated that the stamped raised ridges provide stiffness to the first and second sections. However, NHK Spring does not show a stamped raised ridge in the interior portion of the first rigid section and extending from the first portion through the second portion.

The Examiner finds (final rejection, p. 4): "Karam teaches a method of increasing the rigidity of a suspension by forming ridges in the metal. Karam further teaches that the ridges can be formed by stamping the metal" The Examiner finds that "Karam further shows in Figure 8 that the ridges extend over an edge of a support member (61)" (final rejection, p. 4). The Examiner concludes that it would have been obvious to provide the suspension of NHK Spring with ridges that extend over an edge of the support member and terminate prior to the spring section in view of Figure 8 of Karam (final rejection, p. 4).

Out of the entire limitation of "the first rigid beam section having a flat planar base with a stamped ridge rising above the base and extending along an interior portion of its length from the first portion overlying the support member, through the second portion extending beyond the support member, and terminating at a position proximate to, but not inside, a flexible spring section," the majority concludes that the Examiner has failed to establish the obviousness of

the limitation of a "stamped ridge," that is, a permanent ridge.

The majority finds that Figure 8 does not show a stamped ridge. I agree. The specification states that the metal is elastically deformed in Figure 8 and that the ridges will not remain when the force is removed (col. 10, lines 7-17). In addition to stating that Karam taught forming ridges by stamping (final rejection, p. 4), the Examiner points to (in the examiner's answer, p. 4) the following teachings in Karam (col. 9, lines 63-66): "FIGS. 5, 6, and 7 are illustrative of a few of the ways the metal can be plastically, or irreversibly, deformed on a small scale. Each of these methods can be performed on various areas of the suspension." (col. 9, lines 63-65). The majority finds that this statement refers only to the embodiment of Figures 5, 6, and 7, and does not refer to the embodiment of Figure 8. The majority finds that the Examiner fails to allege, or provide evidence of, the desirability of using stamping to form the ridges in the embodiment of Figure 8. The majority concludes: "Absent evidence of a benefit of stamped ridges, we are not

persuaded that teachings from the prior art would have suggested the teachings of the various embodiments."

I believe the majority misapprehends the rejection. The rejection is that Karam teaches stamped ridges, and discloses in Figure 8 that ridges may be located to extend over the edge of the support member (two separate teachings) and, therefore, would have suggested to one skilled in the art locating stamped ridges in the first section of NHK Spring. I do not perceive the rejection to be based on modifying Figure 8 to use stamped ridges and then using that to modify NHK Spring (although, in my opinion, this also would have been obvious).

Karam teaches "micro-stiffening" of the suspension by placing small distortions in the metal of the suspension. "Micro-stiffening can be formed in the metal in numerous ways" (col. 9, lines 36-37), such as by crimps (Figure 5), spot welding (Figure 6), stamping (Figure 7), or elastic deformation against a form (Figure 8). "The above examples represent but a small fraction of the many potential ways micro-stiffening can be implemented." (Col. 10, lines 18-20.)

Figure 11 also shows a pattern of stamped ridges formed in an interior portion of the second rigid beam section. Karam expressly discloses that ridges may be formed by stamping. Since Karam as a whole discloses alternative methods of forming the ridges, one of ordinary skill in the art would have been taught that the ridges in Figure 8 could be formed by stamping, but this is not necessary to the rejection. Karam, Figure 8, discloses that ridges may be located to extend over the edge of the support member. I agree with the Examiner's conclusion that Karam teaches using stamped ridges and the ridges may be located as shown in Figure 8. Accordingly, I disagree with the majority's reasoning for reversing the Examiner's rejection.

However, the Examiner's rejection, as stated, is not without its problems. First, the rejection does not address the limitation of the stamped ridges rising above a flat planar base. Figure 8 does not show this limitation. While ridges rising above a planar base are shown, for example, in Figure 11, the rejection ignores the limitation. Second, Appellant argues that Figure 8 is concerned with making ridges

to provide damping in the spring section and does not provide ridges to extend the first rigid section a distance beyond the edge of the support member (brief, pp. 5-6). The Examiner does not address this argument. More explanation for modifying NHK Spring is needed than just the fact that Karam shows the ridges extending beyond the edge, because Karam does not teach stiffening a rigid section. There may be reasons why it would have been obvious to stiffen the interior of the second portion of NHK Spring, such as the fact that NHK Spring already has stamped ridges along the edges, but these reasons are not stated in the rejection. Absent an accounting for these limitations and arguments, I conclude that the Examiner has not established a prima facie case of obviousness and, therefore, concur in the result of reversing the rejection.

LEE E. BARRETT
Administrative Patent Judge

) BOARD OF PATENT
) APPEALS
) AND
)

INTERFERENCES DOUGLAS R. MILLETT
IBM CORPORATION
INTELLECTUAL PROPERTY LAW

Appeal No. 2000-0356
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Once signed, forward to Team 3 for mailing.

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APPLICATION NO. 08/825,424

APJ BARRY - 2 copies

APJ DIXON

APJ BARRETT

Prepared By: APJ BARRY

DRAFT SUBMITTED: 26 Sep 02

FINAL TYPED:

Team 3:

I typed all of this opinion.

Please proofread spelling, cites, and quotes. Mark your proposed changes on the opinion, but **do NOT change matters of form or style. I will include the diskette with the signed copy so that you can make all changes before mailing.**

For any additional reference provided, please prepare PTO 892 and include copy of references

Thanks,
Judge Barry