

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 39

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TAKESHI OHWE, TORU WATANABE,
RYOSUKE KOISHI and SEIZI YONEOKA

Appeal No. 2002-1157
Application No. 08/901,940¹

ON BRIEF

Before HAIRSTON, BARRY and SAADAT, Administrative Patent Judges.
SAADAT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the Examiner's final rejection of claims 58-64, which are all of the claims pending in this application. Claims 1-57 have been cancelled.

We affirm-in-part.

BACKGROUND

Appellants' invention relates to a magnetic head assembly used in a magnetic disk drive which includes a magnetic head

¹ Application for patent filed July 29, 1997, which is a continuation of the Application No. 08/352,926, filed December 9, 1994, now abandoned, which claims the foreign filing priority benefit under 35 U.S.C. § 119 of Japanese Application No. 5-310629, filed December 10, 1993.

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positioned on a slider which is mounted on a gimbal spring with an adhesive agent. According to Appellants, at least a slit formed in a slider-mounting portion of the gimbal spring prevents the adhesive agent from spreading beyond the slit and limits the area on which the adhesive agent is applied (specification, page 4). A small contact area limits the warping of the slider which is caused by different coefficients of linear expansion between the slider and the gimbal spring (id.).

Representative independent claims 58 and 59 and dependent claim 60 are reproduced below:

58. A magnetic head assembly comprising a slider having a magnetic head for reading data from and writing data onto a magnetic recording medium, and a gimbal spring having a slider-mounting portion on which said slider is mounted with an adhesive agent, wherein said adhesive agent is located on a part of said slider-mounting portion which opposes an adhesion surface of said slider, wherein at least two slits are formed in said slider-mounting portion of said gimbal spring and said gimbal spring is formed integrally with a load beam, and is constituted by said slider-mounting portion being partitioned from said load beam by two opposing U-shaped holes that are formed in a tip portion of said load beam, two opposing V-shaped holes that are formed on the outsides of the two opposing U-shaped holes, and a pair of beam portions via which said slider-mounting portion is supported by said load beam, wherein said part of said slider-mounting portion onto which said adhesive agent is located is limited by said at least two slits.

59. A magnetic head assembly comprising:

a slider having a magnetic head for reading data from, and writing data onto, a magnetic recording medium, and

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a gimbal spring, formed integrally with a load beam and having a slider-mounting portion on which said slider is mounted with an adhesive agent,

wherein said slider-mounting portion is supported by said load beam via a beam portion and said slider-mounting portion is partitioned by a C-shaped hole which is formed in said gimbal spring in a direction facing said beam portion,

wherein at least one slit is formed in said slider-mounting portion so that a portion where said slider is adhered to said gimbal spring is limited by said at least one slit.

60. The magnetic head assembly of claim 59, wherein a dummy thin-film pattern is also formed in said slider-mounting portion so that a portion where said slider is adhered to said gimbal spring is limited by said at least one slit and said dummy thin-film pattern.

The references relied on by the Examiner in rejecting the claims are:

Ainslie et al. (Ainslie)	4,761,699	Aug. 2, 1988
Konishi et al. (Konishi)	5,027,238	Jun. 25, 1991
Yaginuma et al. (Yaginuma)	5,377,064	Dec. 27, 1994 (filed Sep. 7, 1993)
Hyde	5,550,694	Aug. 27, 1996 (filed Jul. 12, 1993)

Claim 59 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Konishi.

Claim 60 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Konishi in view of Ainslie.

Claims 58 and 61-64 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hyde in view of Yaginuma.

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Rather than reiterate the viewpoints of the Examiner and Appellants, we refer to the answer (Paper No. 36, mailed September 25, 2000) for the Examiner's complete reasoning in support of the rejections, and to the brief (Paper No. 35, filed June 16, 2000) for Appellants' arguments thereagainst.

OPINION

At the outset, we note that Appellants indicate their intention that all of the claims being rejected stand together (brief, page 5) and merely present arguments for each ground of rejection. Therefore, we address each ground of rejection separately and limit our review to claims 59, 60 and claim 58, which is the representative claim of its corresponding group.

With respect to the 35 U.S.C. § 103 rejection of claims 58 and 61-64 over Hyde and Yaginuma, Appellants argue that Hyde discloses only four slits whereas the claimed configuration, as depicted in Appellants' Figure 7, has six slits (brief, page 6). Appellants further point out that the claimed U-shaped holes may be equivalent to the two slits formed immediately above and below the gimbal spring 49 of Hyde (Figure 4) whereas the U-shaped slits of Hyde can be considered equivalent to the claimed pair of slits (id.). Appellants assert that Hyde does not show any V-shaped holes formed outside of the two U-shaped holes and the two

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slits of Hyde do not limit the adhesive agent (brief, page 7). With respect to Yaginuma, Appellants argue that the disclosed slits 71 may not be substituted for the claimed U-shaped holes (id.).

However, we note that the Examiner characterizes the elements disclosed by Hyde and Yaginuma differently from what Appellants argue above. The examiner, in fact, relying on Figure 4, indicates that Hyde provides for two opposing U-shaped holes (immediately left and right of slider-mounting portion 49) and two opposing V-shaped holes (above and below gimbal spring 49) formed outside of the U-shaped holes (answer, pages 6 & 8). Recognizing that the gimbal portion of Hyde lacks the two slits that limit the portion onto which the adhesive agent is located, the Examiner further relies on Figures 8 & 9 of Yaginuma. The Examiner points to Yaginuma's gimbal spring which includes slider-mounting portion 84 wherein at least two slits 71 limit the area of the slider-mounting portion that is attached to slider 2 by adhesive agent 90 (answer, page 6). The Examiner further argues that the rejection is not based on substituting the slits of Yaginuma for the U-shaped holes of Hyde, instead, Yaginuma provides for additional "at least two slits" (answer, page 9).

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In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). A prima facie case of obviousness is established by presenting evidence that the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the references before him to make the proposed combination or other modification. See In re Lintner, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). Furthermore, the conclusion that the claimed subject matter is prima facie obvious must be supported by evidence, as shown by some objective teaching in the prior art or by knowledge generally available to one of ordinary skill in the art that would have led that individual to combine the relevant teachings of the references to arrive at the claimed invention. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

Our review of Hyde confirms that the reference relates to a head assembly wherein a slider for mounting a read/write head is mounted on a load beam (col. 2, lines 50-62). Hyde discloses that (col. 5, lines 15-26):

Near the outboard end of the load beam, generally arcuate holes are etched through the load beam to leave roughly circular gimbal pad 49 in the center. A slider 31 (hidden

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by the load beam in FIG. 4) is mounted on the gimbal pad 49. Narrow webs of metal between the gimbal pad and the balance of the load beam can bend to provide gimbal pivots for the pad. One pair of webs is parallel to the axis of the load beam, and the other pair is transverse to the axis. Thus the pad can roll or tilt in any direction so that the slider mounted on the pad can tilt or roll to fly at the appropriate attitude relative to the surface of the disk. Such gimbal assembly is conventional.
[Emphasis added.]

Hyde, therefore, teaches that the gimbal pad is defined by generally arcuate holes which leave metal web or bridges both parallel to the axis of the load beam and transverse to the axis. As depicted in Figure 4, one opposing pair of U-shaped holes (to left and right of gimbal pad 49) define the metal web or bridges above and below the gimbal pad whereas one opposing pair of generally V-shaped holes (above and below gimbal pad 49) are formed outside the U-shaped holes and define the metal web or bridges to left and right of the gimbal pad.

Yaginuma, on the other hand discloses a structure for supporting a slider with a magnetic head, which is bonded to a joining portion of a gimbal portion (col. 1, lines 59-66). As depicted in Figure 8, slider mounting portion 84 of gimbal 8 includes opening portions 51 and 71 which shorten the bonding length of the adhesive between the magnetic head and the slider mounting portion (col. 5, lines 37-50). Therefore, we find that,

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as set forth by the Examiner (answer, pages 5 & 8), one of ordinary skill in the art would have found it obvious to include the at least two slits of Yaginuma in the gimbal pad of Hyde to reduce or limit the "part of said slider-mounting portion onto which said adhesive agent is located."

Additionally, the Examiner bases the combination of the reference teachings to include the at least two slits in the gimbal pad of Hyde on the suggestion of Yaginuma to minimize slider camber by dividing the adhering portion in several parts (col. 5, lines 12-22). Although, the motivation to modify a prior art reference to arrive at the claimed subject matter does not have to be identical to that of applicants to establish obviousness (see In re Kemps, 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1311 (Fed. Cir. 1996), Yaginuma's slits for dividing the adhering portion also limits the area onto which the adhesive agent is located between the magnetic head and the gimbal. Therefore, we find the Examiner's position to be reasonable and sufficient to establish a prima facie case of obviousness. Accordingly, the rejection of claims 58 and 61-64 under 35 U.S.C. § 103(a) over Hyde and Yaginuma is sustained.

Turning to the 35 U.S.C. § 102(b) rejection of claim 59 over Konishi, we note that Appellants only argue that slit 15a of

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Konishi prevents the adhesive E from invading between the magnetic core 4 and the flexure portion 14 (brief, page 8). Appellants assert that Konishi does not provide the slit for limiting the portion where the slider is adhered on the gimbal spring, but rather, it is aimed "to prevent the adhesive E from flowing toward the magnetic core and escaping from the end portion of the magnetic core 4 when the flexure portion is bent" (brief, page 9).

In response, the Examiner points out that the magnetic core of Konishi is a part of the magnetic head and the slider where the slider is attached to the gimbal spring (answer, page 10). The Examiner further asserts that preventing the adhesive E from invading between the magnetic core and the flexure portion would also limit the portion where the slider (including the magnetic core) is adhered onto the gimbal spring (id.).

A rejection for anticipation under section 102 requires a finding that the claim at issue "reads on" a prior art reference. Atlas Powder Co. v. IRECO Inc., 190 F.3d 1342, 1346, 51 USPQ2d 1943, 1945 (Fed. Cir. 1999) (quoting Titanium Metals Corp. v. Banner, 778 F.2d 775, 781, 227 USPQ 773, 778 (Fed. Cir. 1985)). See also In re Paulsen, 30 F.3d 1475, 1479, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994). Further, establishing anticipation of a claim

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requires that a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Sys. Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984); W. L. Gore & Assoc., Inc. v. Garlock Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983).

Similar to Hyde and Yaginuma, Konishi relates to a magnetic head equipped with a slider that includes a magnetic core. Konishi, as depicted in Figure 4, provides through hole 15 formed of slit 15a and an expanded hole 15b in flexure portion 14 in the area immediately above magnetic core 4 (col. 2, lines 51-59). Konishi further teaches that the formation of hole 15 prevents the adhesive E from invading between the magnetic core (a part of the slider) and the flexure portion (the gimbal spring) (col. 3, lines 12-16). Therefore, Konishi provides for a slit that prevents the adhesive E from covering the entire area between the slider and the gimbal spring.

In view of our findings above, we agree with the Examiner and find that although slit 15a prevents the adhesive material from entering between the magnetic core and the gimbal, since the

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magnetic core is a part of the slider, slit 15a also limits the area on the slider onto which the adhesive agent is located. We also disagree with Appellants' arguments (brief, pages 8 & 9) that because the placement of through hole 15 prevents the magnetic core from running into the gimbal spring, it does not limit the adhesive area between slider 1 and flexure portion 14. As pointed out by the Examiner, with placing hole 15 over the magnetic core, the adhesive E, used to attach the slider to the gimbal spring in the portion confined between C-shaped hole 12a, is prevented from entering between the slider and the gimbal spring in the area of the slider under hole 15. In fact, absent slit 15a, the adhesive would have covered the entire surface between slider 1 and gimbal spring 14 which is confined between C-shaped hole 12a. Thus, we find that the Examiner has met the burden of providing a prima facie case of anticipation. Accordingly, the 35 U.S.C. § 102 rejection of claim 59 over Konishi is sustained.

With respect to the 35 U.S.C. § 103 rejection of claim 60 over Konishi and Ainslie, Appellants argue that Ainslie does not disclose the dummy thin-film pattern recited in the claim (brief, page 9). Appellants further point out that Ainslie merely adheres slider 16 on conductive layer 44 of suspension 40 by

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using solder balls 80 (brief, pages 9 & 10). However, the focus of the Examiner's response to Appellants' arguments is that Ainslie discloses a dummy thin-film pattern, such as extension pattern 49, in a slider-mounting portion (answer, page 11).

Ainslie relates to a method for attaching a slider to a suspension, which is attached to a support arm of the head positioning actuator (col. 1, lines 15-28). Ainslie provides for a pattern of solder contact pads on the back side of the slider and a similar pattern on the planar portion of the suspension to which the slider is to be attached (col. 2, lines 46-50. Ainslie further teaches that because the orientation of the slider with respect to the suspension is determined by the pattern of the solder contact pads, the slider can be reliably positioned on the suspension by merely orienting the solder contact pads (col. 3, lines 51-55). As depicted in Figures 2 and 3, Ainslie mechanically bonds slider 16 to the large area portions 52 and 54 of conductive pattern 44 by reflowed solder balls 60 between the slider back 24 and the conductive layer 44 (col. 5, lines 50-53).

We further note that the portion of the reference relied on by the Examiner (col. 5, lines 57-59) merely refers to extensions 49 of portion 52 as the areas onto which the inactive transducer 13 are connected and has nothing to do with the claimed dummy

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thin-film pattern that, with a slit, may limit the adhesive between the slider and the gimbal spring. This limitation requires that a dummy pattern and a slit on the gimbal spring limit the portion where the slider is attached to the gimbal spring. Therefore, based on our review of Ainslie, we agree with Appellants that conductive layer 44 and its extensions 49 are not the same as the claimed dummy thin-film pattern formed in a slider-mounting portion of a gimbal spring that would limit the adhesive material between the pattern and a slit. The Examiner has failed to identify any teachings in the prior art that would have suggested to one of ordinary skill in the art the claimed dummy thin-film pattern and to establish a prima facie case of obviousness. Accordingly, we cannot sustain the 35 U.S.C. § 103(a) rejection of claim 60 over Konishi and Ainslie.

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CONCLUSION

In view of the foregoing, the decision of the Examiner rejecting claim 59 under 35 U.S.C. § 102 and rejecting claims 58 and 61-64 under 35 U.S.C. § 103 is affirmed. The decision of the Examiner rejecting claim 60 under 35 U.S.C. § 103 is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
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MAHSHID D. SAADAT)	
Administrative Patent Judge)	

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Arent, Fox, Kintner, Plotkin & Kahn
1050 Connecticut Avenue, N.W.
Suite 600
Washington, DC 20036-5339