

**UNITED STATES PATENT AND TRADEMARK OFFICE**

---

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

---

*Ex parte* MARK W. HEATON

---

Appeal No. 2001-2565  
Application No. 09/173,497

---

HEARD: Oct. 22, 2002

---

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

DECISION ON APPEAL

A patent examiner rejected claims 21-31. The appellant appeals therefrom under 35 U.S.C. § 134(a). We reverse.

BACKGROUND

The invention at issue concerns a hard disk drive ("HDD"). A HDD uses magnetically coated platters to store data. Such platters are mounted in a "platter stack" through a spindle; the platter stack is rotated by a servo motor. (Spec. at 2.) A space is provided between each platter to allow a read/write head to be positioned on each side of each platter so that data may be stored and retrieved. Each head is

mounted to an end of a suspension arm so that each it may be positioned as desired. The opposite end of each suspension arm is coupled together at a voice coil motor. (*Id.*)

When the HDD is powered-up, its read/write heads must transition from resting on surfaces of the platters to "flying" on a cushion of air above the surfaces. (*Id.*) Upon such power-up, however, the friction between each head and its corresponding platter must be overcome. (*Id.* at 3.) Once the heads are flying, moreover, a drag torque is created. The drag torque reduces the rotational speed of the platters and, hence, slows use of the HDD. (*Id.*)

In contrast, the inventive read/write head assembly includes a read/write head and an electrostatic head lifter.<sup>1</sup> The electrostatic head lifter positions the read/write head in an upward position, (*id.*, fig. 5), or a downward position. (*Id.*, fig. 6.) In the upward position, a spring holds the head is above an associated platter. (*Id.* at 8.) Because the head does not rest on the platter, no friction therebetween must be overcome upon power-up. (*Id.* at 9.) In the downward position, charge plates lower the head closer to the associated platter for reading or writing, which increases drag torque.

---

<sup>1</sup>Although another embodiment of the assembly uses an electromagnetic head lifter, the claims on appeal specify the electrostatic head lifter.

Drag torque is minimized, however, by lowering only "one or a limited number of read/write heads [of an HDD] . . . at a given time." (*Id.* at 13.)

A further understanding of the invention can be achieved by reading the following claim.

21. A read/write head assembly positioned on a suspension arm, the read/write head assembly comprising:

a read/write head; and

an electrostatic head lifter operable to position the read/write head with respect to the suspension arm in a first position and a second position, wherein said head lifter includes a microelectromechanical system to move said read/write head from said first position to said second position and a mechanical system to move said read/write head from said second position to said first position.

Claims 21-31 stand rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,082,827 ("Barnes") in view of U.S. Patent No. 5,717,630 ("Koshikawa") further in view of Denny K. Miu and Yu-Chong Tai ("Miu"), *Silicon Micromachined SCALED Technology*, IEEE Transactions on Indus. Engineering, June 1995, at 234-39.

#### OPINION

Rather than reiterate the positions of the examiner or the appellant *in toto*, we address the main point of contention therebetween. The examiner asserts, "[o]ne of

ordinary skill in the art . . . would have been motivated to provide the head assembly of Barnes with charge plates as taught by Koshikawa et al in lieu of the superconductor taught by Barnes since the charge plates do not require the disk drive to be cooled to the operating temperature of a superconductor." (Examiner's Answer at 4.) The appellant argues, "the Examiner has used the instant application as a template and has employed impermissible hindsight in order to piece together the teachings of the prior art in order to construct Appellant's invention." (Appeal Br. at 6.)

"[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 applicants." *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)). Furthermore, "prior art references . . . must be read as a whole and consideration must be given where the references diverge and teach away from the claimed invention." *Akzo N.V. v. U.S. Intn'l Trade Comm'n*, 808 F.2d 1471, 1481, 1 USPQ2d 1241, 1246 (Fed. Cir. 1986) (citing *W.L. Gore & Assocs. v. Garlock*, 721 F.2d 1540, 1550, 220 USPQ 303, 311 (Fed. Cir. 1983)).

Here, Barnes' invention is a "superconductor magnetic suspension. . . ." Col. 1, ll. 11-12. More specifically, "[a]n object of the invention is to provide a method and apparatus for establishing a controlled flying distance between data transducing head means and data disk means having a recording surface thereon, wherein **the controlled flying instance is maintained by operation of a superconductor/coil pair.**" Col. 3, ll. 22-27 (emphasis added). Consequently the reference "provides a superconductor/coil pair for each head of [a] disk stack." *Id.* at ll. 8-9. In summary, a superconductor magnetic suspension is Barnes' *sine qua non*.

The examiner's proposal to eliminate Barnes' superconductor magnetic suspension in favor of charge plates "would require . . . a change in the basic principles under which," *In re Ratti*, 270 F.2d 810, 813, 123 USPQ 349, 352 (CCPA 1959), the reference "was designed to operate." *Id.*, 123 USPQ at 352. "Such a material and radical modification of the prior art would be contrary to the teachings of the primary reference patent . . . and could be made only with the assistance of [the] appellant[s]' disclosure." *In re Irmischer*, 262 F.2d 85, ?, 120 USPQ 196, 198 (CCPA 1958).

Because the examiner's proposal to substitute charge plates for Barnes' superconductor magnetic suspension would have required a change in the basic

principle under which the reference was designed to operate, viz., a superconductor magnetic suspension, and would have been contrary to the teachings of Barnes, we are not persuaded that an artisan would have been motivated to combine the references in the proposed manner despite any desire to eliminate the need for cooling. Therefore, we reverse the obviousness rejection of claims 21-31.

#### CONCLUSION

In summary, the rejection of claims 21-31 under § 103(a) is reversed.

REVERSED

MICHAEL R. FLEMING  
Administrative Patent Judge

JOSEPH L. DIXON  
Administrative Patent Judge

LANCE LEONARD BARRY  
Administrative Patent Judge

)  
)  
)  
)  
)  
) BOARD OF PATENT  
) APPEALS  
) AND  
) INTERFERENCES  
)  
)  
)  
)

TEXAS INSTRUMENTS INCORPORATED  
P O BOX 655474, M/S 3999  
DALLAS, TX 75265