

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 July 2003 (24.07.2003)

PCT

(10) International Publication Number
WO 03/060882 A1

(51) International Patent Classification⁷: **G11B 5/00, 5/127**

(21) International Application Number: PCT/US02/16719

(22) International Filing Date: 29 May 2002 (29.05.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/346,605 8 January 2002 (08.01.2002) US

(71) Applicant: **SEAGATE TECHNOLOGY LLC** [US/US];
920 Disc Drive, Scotts Valley, CA 95066 (US).

(72) Inventors: **BATRA, Sharat**; 124 Greenbriar Drive,
Wexford, PA 15090 (US). **CRUE, Billy, W.**; Apt. 4C,
833 Greentree Road, Pittsburgh, PA 15220 (US). **CHAL-
LENER, William, A.**; 104 Witherow Road, Sewickley,
PA 15143 (US).

(74) Agent: **BORDAS, Carol, I.**; Seagate Technology LLC,
1251 Waterfront Place, Pittsburgh, PA 15222-4215 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN,
YU, ZA, ZM, ZW.

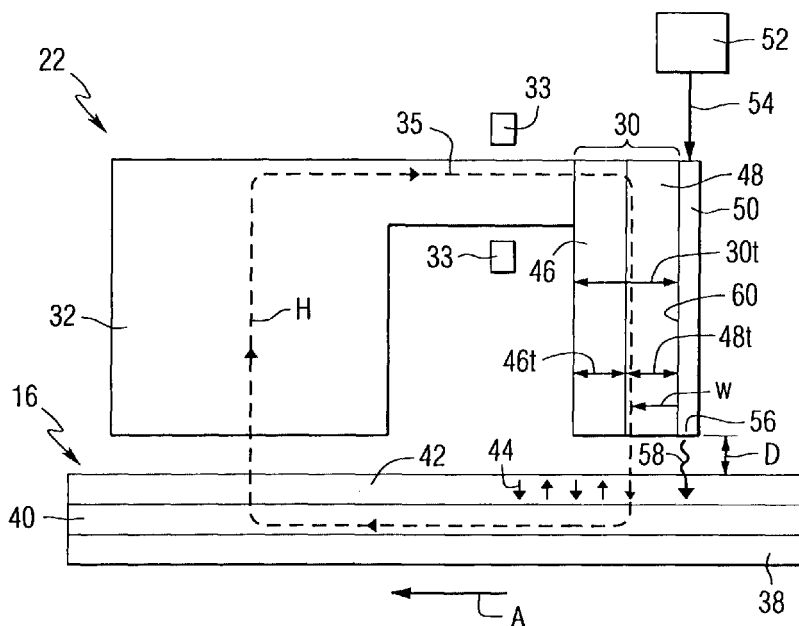
(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted
a patent (Rule 4.17(ii)) for the following designations AE,
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES,

[Continued on next page]

(54) Title: HEAT ASSISTED MAGNETIC RECORDING HEAD WITH HYBRID WRITE POLE



(57) Abstract: A magnetic recording head (22) for use in conjunction with a magnetic recording medium (16). The magnetic recording head (22) includes a hybrid write pole (30) structure for applying a magnetic write field H to the magnetic recording medium (16). The write pole (30) includes a first layer (46) and a second layer (48), wherein the first layer (46) has a first saturation magnetic moment and the second layer (48) has a second saturation magnetic moment that is greater than the first saturation magnetic moment. The magnetic recording head (22) also includes a means for heating (50) the magnetic recording medium (16) proximate to where the write pole (30) applies the magnetic write field H to the recording medium (16). A method of heat assisted magnetic recording is also included.



WO 03/060882 A1



FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.