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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BING K. YEN, JIM HENNESSEY,
ERIC FREEMAN, KIM YANG LEE, DAVID S. KUO, and
MARK OSTROWSKI

Appeal 2015-005294
Application 13/835,873
Technology Center 1700

Before ROMULO H. DELMENDO, MONTÉ T. SQUIRE, and
LILAN REN, *Administrative Patent Judges*.

REN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants¹ appeal under 35 U.S.C. § 134(a) from a rejection² of claims 22–24, 26–28, 32–34, 36, 37, and 39–47. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ Seagate Technology LLC is identified as the real party in interest. (Appeal Brief, filed November 17, 2014 (“App. Br.”), 3.)

² Final Rejection mailed June 18, 2014 (“Final Act.”).

CLAIMED SUBJECT MATTER

The claims are directed to “bit patterned recording media having a stop layer for chemical mechanical polishing.” (Spec. ¶ 8.)³ More specifically, the ’873 Specification seeks to apply “chemical mechanical polishing (CMP)” “to remove surface topography in order to achieve planar surfaces suitable for photolithographic patterning of complex patterns.” (*Id.* ¶¶ 5, 6.) Claims 22 and 37, reproduced below, are illustrative of the claimed subject matter:

22. An apparatus, comprising:
 - a substrate;
 - an array of discrete magnetic bits on the substrate for magnetic recording;
 - regions of a non-magnetic filler material between the magnetic bits;
 - an overlying layer in direct contact with the magnetic bits; and
 - a stop layer comprising *a surface characteristic of chemical mechanical polishing (CMP)* between the regions of non-magnetic filler material and the overlying layer,
 - wherein the stop layer is adjacent to first and second side surfaces of the magnetic bits.

37. An apparatus, comprising:
 - a substrate;
 - an array of discrete magnetic bits on the substrate for magnetic recording,
 - wherein the magnetic bits have an exposed top surface;
 - regions of a non-magnetic filler material between the magnetic bits; and
 - a discontinuous stop layer comprising a surface characteristic of chemical mechanical polishing (CMP) overlying the regions of non-magnetic filler material,

³ Application 13/835,873, *Bit Patterned Media*, filed March 15 2013. We refer to the “’873 Specification” or “’873 Application,” which we cite as “Spec.”

wherein the stop layer abuts first and second side surfaces of the magnetic bits,
wherein the stop layer comprises an array of apertures occupied by the magnetic bits, and
wherein the stop layer and non-magnetic filler materials include properties that convey changes in an induced electrical current to detect removal amount of the stop layer.

(Claim Appendix, App. Br. 27, 29.)

REFERENCES

The prior art references relied upon by the Examiner in rejecting the claims on appeal are:

Suwa	US 2005/0199581 A1	Sept. 15, 2005
Kikitsu	US 2007/0281078 A1	Dec. 6, 2007
Yen	US 8,435,654 B2	May 7, 2013

REJECTIONS⁴

Claims 22–24, 26–28, 32–34, 36, 37, and 39–47 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1–12 of Yen. (Final Act. 4.)

Claims 22–24, 28, 32–34, 36, 42, 43, and 45 are rejected under 35 U.S.C. § 102(b) as being anticipated by Suwa. (Final Act. 4; Ans. 6.)⁵

Claims 22–24, 26, 28, 34, 37, and 39 are rejected under 35 U.S.C. § 102(e) as being anticipated by Kikitsu. (Final Act. 6.)

⁴ A rejection of claims 22–24, 26–28, 32–34, 36, 37, and 39–47 under 35 U.S.C. § 112, second paragraph has been withdrawn. (*Compare* Final Act. 2 *with* Advisory Action dated August 18, 2015, 2.)

⁵ Examiner’s Answer dated February 12, 2015 (“Ans.”). The rejection of claims 26, 27, 37, 39–41, 44, 46, and 47 under 35 U.S.C. § 102(b) as being anticipated by Suwa has been withdrawn. (Ans. 6.) The arguments with regard to the rejection are therefore moot.

OPINION

Findings of fact throughout this Opinion are supported by a preponderance of the evidence of record.

Non-Statutory Double Patenting

Appellants argue that the double patenting rejection is improper pursuant to the safe harbor provided by 35 U.S.C. § 121 for divisional applications filed as a result of a restriction requirement. (App. Br. 13.) Appellants argue they meet the requirements of the safe harbor as interpreted by law because they submitted the divisional application in response to the restriction requirement in the parent application. (*Id.*) Appellants also indicate that a terminal disclaimer may be filed upon allowance. (Reply Br. 5.)⁶

The Examiner responds that the '873 Application “is not directed to the process that was non-elected in the parent” application 12/208,095 which issued as the '654 Patent (Yen). (Ans. 6–7; *see also* Requirement for Restriction mailed September 29, 2009 in the parent application (requiring restriction between claims directed to a magnetic recording medium and claims directed to a method of making a magnetic recording medium).)

With regard to double patenting, section 121 will not apply to remove the parent as a reference where the principle of consonance is violated:

Consonance requires that the line of demarcation between the “independent and distinct inventions” that prompted the restriction requirement be maintained. Though the claims may be amended, they must not be so amended as to bring them back over the line imposed in the restriction requirement. Where that line is crossed the prohibition of the third sentence of Section 121 does not apply.

⁶ Reply Brief dated April 13, 2015 (“Reply Br.”).

Symbol Tech., Inc. v. Opticon, Inc., 935 F.2d 1569, 1579 (Fed. Cir. 1991).

In this case, Appellants do not refute the Examiner’s finding that the ’873 Application “is not directed to the process that was non-elected in the parent” application 12/208,095. (Ans. 6–7; *see* Reply Br. 5.) No error therefore has been identified in the Examiner’s determination that “the line of demarcation” has not been maintained. *See Symbol Tech.*, 935 F.2d at 1579.

*Anticipation of Claim 22 Based On Suwa*⁷

The Examiner finds that the ’873 Specification provides that a “surface characteristic” of CMP is “a planar, flattened surface.” (Ans. 7.) The ’873 Specification provides that “chemical mechanical polishing (CMP) may be used to planarize feature surfaces during processing.” (Spec. ¶ 5.) As a result of using CMP, “all of the excess material is removed, and a smooth planar surface remains.” (*Id.* ¶ 6.)

The Examiner therefore finds claim 22 anticipated by Suwa because Suwa discloses a prior art magnetic recording medium having “a substantially planar upper surface” which the Examiner finds anticipating the limitation of “a surface characteristic of chemical mechanical polishing.” (Final Act. 5.)

Suwa discloses “a method for manufacturing a magnetic recording medium having a recording layer of concavo-convex pattern.” (Suwa ¶ 2.) A conventional method, according to Suwa, may include one in which “a filler for filling concave portions is deposited over the surface of an object to

⁷ Consistent with the provisions of 37 C.F.R. § 41.37(c)(1)(iv) (2013), claims 23, 24, 28, 32–34, 36, 42, 43, and 45 stand or fall with claim 22 with regard to the rejection based on Suwa, as Appellants make no distinct arguments beyond the arguments regarding claim 22. (App. Br. 14–15.)

be processed having a concavo-convex pattern and an excess part of the filler above the surface are removed for flattening” (*Id.* ¶ 4.) While such “flattening can be effected by using such a processing technique as CMP (Chemical Mechanical Polishing,” Suwa discloses a method involving the “use of dry etching” to address “the problem of lower production efficiency” associated with the CMP method. (*Id.* ¶¶ 9, 10, & 14.)

Appellants argue that Suwa discloses “planarization . . . by etching” and therefore “[a] surface planarized by ion beam etching exhibits characteristics specific to ion beam etching . . . *not* CMP.” (App. Br. 14–15 (emphasis in original).) Appellants argue that a skilled artisan “would *not* consider a smooth, planarized surface alone sufficiently characteristic of ‘a surface characteristic of chemical mechanical polishing.’” (*Id.* at 15 (emphasis in original); Reply Br. 7.) Appellants argue that a skilled artisan would instead consider “CMP-specific defects (e.g., dishing, erosion, etc.)” to be sufficient characteristics of CMP. (App. Br. 15 (underlining removed).)

Unclaimed features cannot impart patentability to claims. *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998). In this case, all claim 22 requires is “a surface characteristic of chemical mechanical polishing.” Claim 22 does not require a characteristic “specific” to CMP, nor does it require one which may “alone [be] sufficiently characteristic” of CMP, as asserted by Appellants. (*See* App. Br. 14, 15; *see also* Reply Br. 7.) Claim 22 also does not preclude “a surface characteristic” common to CMP and other processes. No reversible error has been identified in the Examiner’s findings here.

In addition, Appellants have not shown that Suwa “criticize[s], discredit[s], or otherwise discourage[s] the solution claimed” – in this case, a recording media having “a surface characteristic of chemical mechanical polishing.” *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Suwa seeks to “manufactur[e] . . . a magnetic recording layer . . . with a sufficiently flat surface.” (Suwa ¶ 11.) Suwa provides that both the CMP method and the dry etching method may achieve this objective. (*See id.* ¶¶ 11 & 14.) Appellants, therefore, have not provided sufficient factual evidence to show reversible error in the Examiner’s findings with regard to Suwa.

*Anticipation of Claim 22 Based on Kikitsu*⁸

Kikitsu also discloses a method for “flattening” a magnetic film “by etching.” (Kikitsu ¶ 52 (cited in Final Act. 7).) Appellants argue the Kikitsu does not anticipate claim 22 because it discloses a surface planarized by reactive ion etching (RIE) which “exhibits characteristics specific to RIE” and not CMP. (App. Br. 21; *see also* Reply 10.)

As with the anticipation rejection based on Suwa, claim 22 is not limited to surface characteristics specific to CMP. All claims 22 and 37 require is “a surface characteristic of [CMP].”⁹ No reversible error in the Examiner’s findings here have been identified.

⁸ Consistent with the provisions of 37 C.F.R. § 41.37(c)(1)(iv), claims 23, 24, 26, 28, 34, and 39 stand or fall with claim 22 with regard to the rejection based on Kikitsu, as Appellants make no distinct arguments beyond the arguments regarding claim 22. (App. Br. 20–22.)

⁹ Claim 37 stands or fall with claim 22 with regard to this limitation based on Kikitsu. (App. Br. 20.)

Anticipation of Claim 37 Based on Kikitsu

With regard to the anticipation rejection of claim 37 based on Kikitsu, Appellants additionally argue that the Examiner has not shown that Kikitsu discloses an apparatus “wherein the stop layer and non-magnetic filler materials include properties that convey changes in an induced electrical current to detect removal amount of the stop layer” as recited in claim 37. (App. Br. 22.) Appellants reason that, claim 41 which depends from claim 37, “recites a number of materials for the stop layer” of claim 37 which are not disclosed in Kikitsu, which shows that the prior art apparatus would not inherently possess the properties recited in claim 37. (*Id.* at 23–24; Reply Br. 10.)

“[A] reference may anticipate even when the relevant properties of the thing disclosed were not appreciated at the time.” *Abbott Labs. v. Baxter Pharm. Products, Inc.*, 471 F.3d 1363, 1367 (Fed. Cir. 2006). Here, the Examiner finds that claim 37 does not limit either the “stop layer” or the “non-magnetic filler” to a particular material. (Ans. 11.) The Examiner finds that claim 41 which recites, in part, “wherein the stop layer is carbon, SiC, SiO_xN_y, Cr, NiCu, Ru, W, Pt, Au, or a combination thereof” is anticipated by a carbon stop layer disclosed in Kikitsu. (*Id.*) The Examiner also finds that the ’873 Specification discloses SiO₂ as a filler material and therefore “the embodiment disclosed by Kikitsu as having a carbon layer . . . and a SiO₂ layer as the claimed nonmagnetic filler would exhibit the same induction of electrical current as claimed.” (Ans. at 12 (citing Spec. ¶¶ 11, 24).)

Appellants do not respond to the Examiner’s finding that Kikitsu discloses a carbon stop layer. (*Compare* Ans. 12 *with* Reply Br. 10.)

Appellants do not respond to the Examiner's finding that no evidence has been shown "to establish that the carbon layer or Kikitsu does not inherently function in the claimed capacity." (*Compare* App. Br. 11 *with* Reply Br. 10.) Appellants do not respond to the Examiner's finding that Kikitsu discloses an apparatus having a carbon stop layer and a SiO₂ filler material. (*Compare* App. Br. 11 *with* Reply Br. 10.) No reversible error has been identified here.

DECISION

The Examiner's rejection of claims 22–24, 26–28, 32–34, 36, 37, and 39–47 for non-statutory obviousness type double patenting is affirmed.

The Examiner's rejection of claims 22–24, 28, 32–34, 36, 42, 43, and 45 based on Suwa is affirmed.

The Examiner's rejection of claims 22–24, 26, 28, 34, 37, and 39 based on Kikitsu is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED