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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HOO-SAN LEE, SUNG-DONG SUH,
TAE-SANG PARK, and HOON-SANG HO

Appeal 2011-010644
Application 12/108,205
Technology Center 1700

Before PETER F. KRATZ, CATHERINE Q. TIMM, and GRACE
KARAFFA OBERMANN, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

I. STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision to reject claims 1-17 and 26-29. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

Claim 1 is illustrative of the invention on appeal:

1. A perpendicular magnetic recording medium comprising:
 - a substrate;
 - a buffer layer formed on the substrate;
 - a soft magnetic underlayer formed on the buffer layer;and
 - a recording layer formed on the soft magnetic underlayer.

(Claims App'x. at Br. 24.)

The Examiner maintains, and Appellants appeal, the following rejections:¹

1. The rejection of claims 1, 3, 4, 10-13, 15-17, and 26-29 under 35 U.S.C. § 102(e) as anticipated by Oikawa²;
2. The rejection of claims 1-6, 10-17, and 26-29 under 35 U.S.C. § 102(e) as anticipated by Maeda³;
3. The rejection of 1, 3, 4, 7, and 15 under 35 U.S.C. § 102(e) as anticipated by Ajan⁴;
4. The rejection of claims 1-4, 10-17, and 26-29 under 35 U.S.C. § 103(a) as obvious over Oh⁵ in view of Oikawa; and

¹ Appellants wish to defer addressing the merits of the Examiner's provisional nonstatutory obviousness double patenting rejections over: (1) claims 1-20 of Application No. 12/137,318; (2) claims 1-17 of Application No. 12/117,766; and (3) claims 1-15 of Application No. 11/477,624 (now US 7,799,445) (Reply Br. 16). Because Appellants have not identified an error in these rejections, we summarily affirm the Examiner's decision to maintain them.

² Oikawa, US 2006/0269794 A1, pub. Nov. 30, 2006.

³ Maeda et al., US 2007/0065955 A1, pub. Mar. 22, 2007.

⁴ Ajan et al., US 2007/0230052 A1, pub. Oct. 4, 2007.

⁵ Oh et al., US 2004/0072031 A1, pub. Apr. 15, 2004.

5. The rejection of claims 8 and 9 under 35 U.S.C. § 103(a) as obvious over Oikawa or Maeda in view of Gusliyenko^{6,7}.

II. OPINION

Appellants contend that the Examiner erred in interpreting “buffer layer” and that none of the references relied upon by the Examiner describe the required buffer layer (Br. 11-22; Reply Br. 4-15). Therefore, our first task is to determine the correct interpretation of “buffer layer”. Claim interpretation is a question of law. *In re Donaldson Co.*, 16 F.3d 1189, 1192 (Fed.Cir.1994) (en banc).

A. *The Meaning of “Buffer Layer”*

In order to determine the correct interpretation, we read the claim language in light of the Specification as it would have been interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Unless the Specification provides a definition or disclaims the broader meaning one of ordinary skill in the art would give the term, we apply a broad interpretation consistent with the ordinary meaning of the term in the art. *In re Icon Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007); *In re Bigio*, 381 F.3d 1320, 1324-25, 1210-11 (Fed. Cir. 2004).

Turning to the Appellants’ Specification, we find that it describes a perpendicular magnetic recording medium with a buffer layer sandwiched

⁶ Gusliyenko, US 2006/0188752 A1, pub. Aug. 24, 2006.

⁷ The Examiner states the ground of rejection applied to claims 8 and 9 as under 35 U.S.C. § 103(c) for anticipation (Final Office Action 11; Ans. 9), however, it is evident from the Examiner’s explanation of the rejection that the basis of the rejection is obviousness under 35 U.S.C. §103(a). Appellants address the correct basis of the rejection (Br. 22), therefore, the error was harmless.

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between a substrate and a soft magnetic layer (Fig. 1 (buffer layer 12); Spec. 3:25-28).

The Specification does not specifically limit the buffer layer in terms of composition or thickness; it merely states that the buffer layer “can be formed of an oxide or a nitride,” provides example oxides, and states possible thicknesses (Spec. 4:32 to 5:2).

The Specification states that the buffer layer “has a thermal transfer coefficient of 1 W/mK to 10W/mK” in one location (Spec. 4:32-33), but merely states that it “can be” formed of a material having such a heat coefficient in another location (Spec. 6:4-5). The Specification similarly discusses a thermal stability property, stating it has the property in one location, but merely states it “can” have the property in another location (Spec. 4:32-34 and 6:3-6).

The Specification discloses a preventive function for the buffer layer. According to the Specification, “[t]he buffer layer 12 formed on the substrate 10 prevents the substrate 10 from being transformed, due to high temperature in the process of annealing the recording layer 18, to have a L1₀ structure.” (Spec. 4:28-30.) The Specification also states that “[t]his process of annealing the recording layer 18 also prevents the diffusion of impurities contained in the substrate 10 into the soft magnetic underlayer 14.” (Spec. 4:30-32.) While the language of the Specification is somewhat unclear, it appears that the buffer layer functions to protect the substrate from heat and further protect the soft magnetic underlayer from impurities during the annealing process.

The Specification provides evidence that the meaning to be ascribed to “buffer layer” is not particularly limited to any particular composition, thickness or other structural parameters beyond the structural parameters

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connoted by the word “layer.” The word “buffer” appears to refer to a protective function for the layer.

Other claims, both asserted and unasserted, can also be a source of enlightenment as to the meaning of a claim term. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005). “For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” *Id.*, at 1314-15.

Appellants’ broadest claim does not particularly limit the structure of the buffer layer (Claim 1). Claim 5 further limits the buffer layer to one formed of an oxide or nitride, which creates a presumption that the buffer layer of claim 1 encompasses layers formed of other materials. Claims 3 and 4 each further limits the function of the buffer layer, creating a presumption that the buffer layer of claim 1 is not limited to buffer layers performing a heat blocking or a diffusion preventing function. Likewise, the dependent claims create a presumption that the buffer layer of claim 1 may have a heat transfer coefficient outside the range of claim 2, a thermal stability outside the range of claim 27, and/or a thickness outside the range of claim 7.

The claims, like the Specification, provides evidence that the meaning to be ascribed to “buffer layer” is not particularly limited to any particular composition, thickness or other structural parameters beyond the structural parameters connoted by the word “layer.” The claims further provide evidence that the “buffer” refers to a protective function beyond that of heat blocking and diffusion preventing functions.

As found by the Examiner, the Specification does not provide any definition for the term “buffer layer” (Ans. 10). Moreover, Appellants do

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not provide any evidence or convincing reason to believe that “buffer” or “buffer layer” has a special meaning in the art of magnetic recording mediums. In the absence of any definitions in the Specification, and in cases where the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay people, general purpose dictionaries may be helpful. *See Phillips*, 415 F.3d at 1314.

According to the Examiner, “Webster's dictionary defines the term buffer to mean (1) ‘any of various devices or pieces of material for reducing shock or damage due to contact’ or ‘something that serves as a protective barrier.’” (Ans. 10, citing Merriam-webster.com/dictionary/buffer.)

Appellants find fault with the Examiner’s definition because it is located in what Appellants refer to as “a contemporary general purpose dictionary” (Br. 14). However, Appellants provide no evidence that the meaning of “buffer” has changed over time such that the online dictionary meaning fails to provide adequate evidence of the meaning at the time of Appellants’ invention.

Dictionaries endeavor to collect the accepted meanings of terms. *Phillips*, 415 F.3d at 1318. The meanings of most generally used terms remains relatively static over time, and an online dictionary will usually suffice to provide evidence of meaning over time. Appellants have provided no convincing evidence that “buffer” is a word that has changed in meaning between the time of the invention and the time the Examiner retrieved the definition from the online dictionary. In fact, Webster’s Ninth New Collegiate Dictionary, published by Merriam-Webster in 1986, contains exactly the same dictionary definition as the online version cited by the Examiner. The Examiner’s reliance on the online definition was reasonable

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and Appellants fail to present evidence tending to show that a different dictionary meaning should be ascribed to “buffer.”

The functional aspect of the “buffer layer” limitation, furthermore, must be viewed in light of the fact that the claim is directed to an article of manufacture, i.e., a perpendicular magnetic recording medium. Choosing to define an element functionally, i.e., by what it does, carries with it a risk: Where there is reason to conclude that the structure of the prior art is inherently capable of performing the claimed function, the burden shifts to the applicant to show that the claimed function patentably distinguishes the claimed structure from the prior art structure. *In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997); *In re Hallman*, 655 F.2d 212, 215 (CCPA 1981).

In light of the evidence as a whole, it is reasonable to interpret “buffer layer” as any layer that is capable of protecting other layers or structures within the perpendicular magnetic recording medium. Should Appellants desire a narrower meaning, they are free to amend the claim language to accomplish that goal. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d at 1364.

B. The Rejections

Turning to the rejections, we note that Appellants argue some claims apart from others. Where no claims are argued separately, in accordance with 37 C.F.R. 41.37(c)(1)(vii), we select claim 1 as representative to resolve the issues on appeal. Non-argued claims stand or fall with the argued claim from which they depend.

1. The Anticipation Rejection over Oikawa

The Examiner rejects claims 1, 3, 4, 10-13, 15-17, 26-29 as anticipated by Oikawa (Ans. 3-5). Appellants separately argue claims 3 and

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4 as a group and claims 26-28 as a group. For the general arguments we select claim 1 as representative.

a. Claim 1

Oikawa teaches a perpendicular magnetic recording medium (Oikawa, ¶ [0001]). There is no dispute that Oikawa's recording medium includes a substrate, a soft magnetic layer, and a recording layer (*Compare* Br. 11-15 *with* Ans. 4). The question is whether Oikawa describes a layer meeting the structural requirements of the buffer layer of claim 1.

The Examiner finds that Oikawa teaches a NiP layer that reads on the claimed "buffer layer" (Ans. 4, citing Oikawa, ¶¶ [0070-72]).

Appellants contend that Oikawa teaches that the NiP layer forms the substrate itself and does not teach that the NiP layer is a buffer layer (Br. 11; Reply Br. 4). However, the difference is merely semantic in nature. There is no real dispute that the NiP layer is a layer: It is plated onto, for instance, an Al-based alloy substrate (Oikawa, ¶ [0070]). The name given the layer by the reference is of little import when there is no patentable difference in structure between it and the claimed buffer layer. It is reasonable to conclude that the NiP layer would be capable of serving at least some protective function as required by the buffer layer of claim 1 because it covers the underlying substrate layer and separates that underlying substrate layer from the layers above it.

A preponderance of the evidence supports the Examiner's finding of anticipation with respect to claim 1.

b. Claims 3 and 4

Claims 3 and 4 further limit the functional aspect of the buffer layer of claim 1. Claim 3 requires that the buffer layer perform as a heat blocking

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layer. Claim 4 requires the buffer layer perform as a diffusion prevention layer.

The Examiner finds that Oikawa's NiP layer is capable of functioning as a heat blocking layer (claim 3) and as a diffusion prevention layer (claim 4) (Ans. 4)

Appellants contend that the mere possibility that the NiP layer could so function is insufficient to establish inherency (Br. 12).

Appellants' argument is not convincing because it is not in conformance with the law. The mere possibility that the prior art layer could function as claimed is, in fact, enough to show that there is a reason to believe that there is no actual difference in structure between the claimed layer and the prior art layer. In order to insure that an applicant is not awarded a claim that fails to patentably distinguish a claimed structure from prior art structures, our reviewing court and its predecessor have articulated a burden shifting rule with regard to function claiming: Where there is reason to believe that the prior art structure possesses all the claimed structural characteristics including the capability of performing the claimed function, the burden shifts to the applicant to show that, in fact, the claimed function structurally distinguishes the claimed apparatus from the prior art apparatus. *In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997); *In re Hallman*, 655 F.2d 212, 215 (CCPA 1981). *In re Ludtke*, 441 F.2d 660, 664 (CCPA 1971);

The Examiner has provided a reason to conclude that the NiP layer would block at least some heat and prevent some diffusion (Ans. 11-12). The layer would have a mass that would absorb some heat. The layer covers the substrate and, therefore, would provide a barrier to diffusion. As pointed out by the Examiner, heat blocking and diffusion prevention are qualitative

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limitations and not quantitative; any heat or diffusion blocked would meet claims (Ans. 11). The burden was shifted to Appellants to show that the claimed buffering function structurally distinguishes the claimed layer from Oikawa's NiP layer. Appellants have not met their burden in showing the required structural difference.

A preponderance of the evidence supports the Examiner's finding of anticipation.

c. Claims 26-28

With respect to claims 26-28, Appellants contend that the Examiner's Final Office Action fails to set forth grounds of rejection for these claims (Br. 15). The Examiner advanced reasons for rejecting claims 27 and 28 (Ans. 4). However, we find no mention of claim 26 or the annealing limitation of that claim (Ans. 4-5 and 10-12).

Therefore, we sustain the rejection of claims 27 and 28 because Appellants have not identified an error in the Examiner's rejection of those claims, but we do not sustain the Examiner's rejection of claim 26.

2. The Anticipation Rejection over Maeda

The Examiner rejects claims 1-6, 10-17, and 26-29 as anticipated by Maeda. Appellants present general arguments as well as argue claims 3 and 4 separately as a group and also argue claim 26 separately. We select claim 1 as representative for resolving the issues arising from the general arguments.

a. Claim 1

With regard to the rejection over Maeda, the Examiner finds that Maeda's longitudinal biasing layer meets the requirements of the claimed buffer layer (Ans. 5, citing Maeda, ¶ [0091]), and Appellants contend that this layer is not a buffer layer, but a bias-imparting layer (Br. 16).

What Maeda describes is a bias-imparting layer, such as an in-plane hard magnetic film and an antiferromagnetic film, for example, provided between the soft magnetic layer 12 and the substrate 11 (Maeda ¶ [0091]). The bias-imparting layer may be formed from, for example, a Cobalt alloy containing SiO₂ (*id.*)

It is reasonable to conclude that the bias-imparting layer would be capable of protecting the substrate 11 and the soft magnetic layer 12 as it covers the substrate layer 11 and separates it from the soft magnetic layer 12. Therefore, the burden shifted to Appellants to show that the prior art layer has a patentably different structure from that of the buffer layer of claim 1. Appellants have not presented convincing evidence of a structural difference.

b. Claims 3-4

With regard to claims 3 and 4, the Examiner finds that Maeda's bias-imparting layer would be capable of functioning as a heat blocking and a diffusion layer (Ans. 12). Appellants contend that "such allegations do not provide the requisite basis in fact and/or technical reasoning to reasonably support rejections under 35 U.S.C. § 102 for at least reasons similar to those already discussed above regarding Oikawa." (Br. 17.) As discussed above, in fact, the Examiner's rejection provides the required reasonable basis to support the rejection such that the burden shifted to Appellants. Appellants have not met their burden in showing a patentable difference in structure.

c. Claim 26

Claim 26 requires that the recording layer be an annealed recording layer. The Examiner determines that "annealed" refers to a process of making or treating the claimed recording layer that does not distinguish the claimed product structurally from the structure of the prior art (Ans. 6).

But as pointed out by Appellants, annealing defines structural characteristics (Br. 18, citing Spec. 4:14-21). Annealing, as explained in the Specification causes a phase transformation for an irregular structure to a regular structure (Spec. 4:14-21). The Examiner has not responded to this evidence (Ans. 13).

A preponderance of the evidence indicates that annealing results in a structural difference in the recording layer. Therefore, we do not sustain the Examiner's rejection of claim 26 over Maeda.

3. The Anticipation Rejection over Ajan

The Examiner rejects claims 1, 3, 4, 7, and 15 as anticipated by Ajan (Ans. 6-7). Appellants present general arguments and a separate argument for claims 3, 4, 7, and 15 (Br. 20-21). We select claim 1 as representative for resolving the issues raised by the general arguments.

a. Claim 1

The Examiner finds that Ajan's first soft magnetic layer is the required buffer layer (Ans. 7).

Ajan has a soft magnetic layer 13 adjacent the substrate 11 (Ajan, ¶ [0061]; Fig. 1).

Appellants argue that the soft magnetic layer 15 is not a buffer layer (Br. 20).

The evidence as a whole supports the Examiner's finding that soft magnetic layer 13 is capable of protecting the substrate and layers above it. The Examiner's finding is reasonable, and Appellants have not submitted evidence fulfilling their burden of showing a patentable difference in structure between the soft magnetic layer 13 of Ajan and the buffer layer of claim 1.

b. Claims 3, 4, 7, and 15

With respect to claims 3, 4, 7, and 15, Appellants contend that the Examiner has not set forth any reasoning to support the rejection of those claims (Br. 21). However, we find reasoning for claims 3, 4, 7, and 15 on pages 7 and 13 of the Answer. Therefore, Appellants' argument is not persuasive of error on the part of the Examiner.

4. The Obviousness Rejections

The Examiner further rejects claims 1-4, 10-17, and 26-29 as obvious over Oh in view of Oikawa (7-9). Claims 8 and 9 are rejected as obvious over Oikawa or Maeda in view of Gusliyenko (Ans. 9). Appellants do not argue any claim apart from the others (Br. 22; Reply Br. 15). We select claim 1 (the argued buffer limitation thereof is imported into dependent claim 8) as representative to resolve the issue on appeal.

To support the obviousness rejections, the Examiner finds that Oikawa and Maeda teach a buffer layer as recited in claim 1 (Ans. 7-9). Appellants' sole argument is that neither Oikawa nor Maeda teach or suggest the buffer layer for at least the reasons already discussed above (Br. 15).

For the reasons discussed above, we find that "buffer layer" is broad enough to encompass the layer structure of Oikawa and Maeda.

CONCLUSION

We sustain the Examiner's rejection of claims 1, 3, 4, 10-13, 15-17, and 27-29 as anticipated by Oikawa, but do not sustain the rejection of claim 26.

We sustain the Examiner's rejection of claims 1-6, 10-17, and 27-29 as anticipated by Maeda, but do not sustain the rejection of claim 26.

We sustain the Examiner's rejection of claims 1, 3, 4, 7, and 15 as anticipated by Ajan.

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We sustain the Examiner's rejection of claims 1-4, 10-17, and 26-29 as obvious over Oh in view of Oikawa.

We sustain the Examiner's rejection of claims 8 and 9 as obvious over Oikawa or Maeda in view of Gusliyenko.

We summarily sustain the Examiner's rejection of claims 1, 3-4, 10, 15-17 and 26-29 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15 of copending Application No. 11/477,624, which is now U.S. Patent 7,799,445.

We summarily sustain the Examiner's provisional rejection of claims 1, 3-4, 10, 12, 15-17 and 26-29 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 12/137,318.

We summarily sustain the Examiner's provisional rejection of claims 1, 3-4, 8-10, 15-16 and 26-29 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of copending Application No. 12/117,766.

DECISION

The Examiner's decision is affirmed.

TIME PERIOD FOR RESPONSE

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

AFFIRMED

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