

United States Court of Appeals for the Federal Circuit

02-1551, -1574, 03-1091

KAPLESH KUMAR,

Plaintiff-Appellant,

v.

OVONIC BATTERY CO., INC.
and ENERGY CONVERSION DEVICES, INC.,

Defendants-Appellees.

Kaplesh Kumar, of Wellesley, Massachusetts, argued pro se.

Patrick J. Coyne, Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P., of Washington, DC, argued for defendants-appellees. With him on the brief was Troy E. Grabow.

Appealed from: United States District Court for the District of Massachusetts

Senior Judge Morris E. Lasker

United States Court of Appeals for the Federal Circuit

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KAPLESH KUMAR,

Plaintiff-Appellant,

v.

OVONIC BATTERY CO., INC.
and ENERGY CONVERSION DEVICES, INC.,

Defendants-Appellees.

DECIDED: December 11, 2003

Before BRYSON, DYK, and PROST, Circuit Judges.

Opinion for the court filed by Circuit Judge DYK. Opinion concurring in result filed by Circuit Judge BRYSON.

DYK, Circuit Judge.

Kaplesh Kumar, owner of U.S. Patent No. 4,565,686 (the “686 patent”), appeals the decision of the United States District Court for the District of Massachusetts, granting summary judgment of non-infringement to Ovonic Battery Company, Inc. and Energy Conversion Devices, Inc. (collectively “Ovonic”). We vacate the district court’s grant of summary judgment and remand the case for further proceedings.

BACKGROUND

In the early 1980s, Kumar discovered that the use of certain rare earth-transition metal alloys to store hydrogen in rechargeable nickel metal hydride batteries would overcome the inevitable fracturing associated with repeated recharging. Prior art alloys had a crystalline molecular structure, meaning that their molecules were arranged in a regular repeating pattern. These prior art crystalline alloys degraded severely with the repeated cycles of hydrogen storage and release that accompanied recharging. Kumar

found that certain alloys with a less ordered molecular structure were immune to material fracture and had improved hydrogen storage capacity. Kumar applied for a patent on this invention in 1981, and the '686 patent issued on January 21, 1986. In the patent that finally issued, he chose to describe these alloys as “amorphous.” Independent claims 1 and 6 of the '686 patent read as follows:

1. A system for retrievably storing hydrogen comprising:

an amorphous rare earth-transition metal alloy material;

a container for said material, and

means for supplying hydrogen to said material and exhausting hydrogen from said material for respective absorption and desorption thereby.

'686 patent, col. 5, ll. 17-24 (emphasis added).

6. A process for reversibly storing hydrogen in an amorphous rare earth-transition metal alloy material comprising the steps of:

supplying hydrogen to amorphous rare earth-transition metal alloy material in a closed system, cycling said hydrogen over said alloy material to cause hydrogen to be stored in said alloy material; and withdrawing hydrogen from said system to retrieve the stored hydrogen.

Id., col. 6, ll. 12-20 (emphasis added).

Ovonic, the alleged infringer here, sought patents in the same field. Ovonic is the owner of U.S. Patent No. 4,623,597 (the “'597 patent”), issued on November 18, 1986, on a rechargeable hydrogen battery comprising:

at least one anode for reversibly electrochemically charging and discharging hydrogen,

said anode comprising a disordered multicomponent material, said disordered multicomponent material having at least one structure from the group consisting of: amorphous, microcrystalline, polycrystalline lacking long-range order compositional order with three or more phases of said polycrystalline structure and any combination of said amorphous, microcrystalline and polycrystalline structures

'597 patent, col. 13, l. 60 - col. 14, l. 2 (emphasis added). In 1994, Ovonic filed another rechargeable battery application that matured into U.S. Patent No. 5,840,440 (the "'440 patent") in 1998. This patent claimed, in relevant part, "[a]n improved high capacity hydrogen storage material" consisting of alloys with a "crystallite size . . . less than 200 Angstroms [20nm]." '440 patent, col. 13, l. 56 - col. 14, l. 29. Kumar sued Ovonic in the District Court of Massachusetts for direct, contributory and induced infringement of the '686 patent, asserting in part that Ovonic's grants of licenses under the '597 and '440 patents constituted infringement of the '686 patent.

Ovonic filed a motion for summary judgment of non-infringement. Ovonic urged that the term "amorphous" alloys in the '686 patent should be construed to mean "completely" amorphous (i.e., where there is no ordering of molecules) and that Ovonic did not infringe the '686 patent because the batteries produced under its licenses did not use completely amorphous alloys. Kumar v. Ovonic Battery Co., Inc., No. 01-CV-11247-MEL, slip op. at 4 (D. Mass. July 8, 2002). Kumar urged that the term "amorphous" was not limited to completely amorphous alloys, but instead should be construed to cover all partially crystalline alloys with long range order less than 100 nm, which would have included alloys described in the '597 and '440 patents and used in Ovonic's batteries. Id. at 6. Ovonic also argued that it was not liable for infringement

because it had merely patented and licensed the batteries that were accused of infringement. *Id.* at 4 n.2 (citing 35 U.S.C. § 271(a), which defines infringement as “mak[ing], us[ing], offer[ing] to sell, or sell[ing] any patented invention”). The district court construed the ’686 patent claims as urged by Ovonic. The court found that the ’686 patent’s specification and prosecution history supported Ovonic’s definition of amorphous, whereas Kumar’s definition had been “developed after his patent was filed, and therefore [could not] be taken to describe accurately what he sought to patent.” *Id.* at 7 (emphasis in original). The court granted summary judgment of non-infringement based on its claim construction and did not decide whether Ovonic’s licensing actions would have made it liable for infringement under Kumar’s proposed claim construction, explaining that the latter question raised “disputes of material fact.” *Id.* at 4 n.2.

DISCUSSION

I.

We review the district court’s grant of summary judgment without deference. *Inverness Med. Switz. GmbH v. Warner Lambert Co.*, 309 F.3d 1373, 1377 (Fed. Cir. 2002) (“*Inverness II*”).

The central question here is one of claim construction, specifically the meaning of the term “amorphous” in claims 1 and 6 of the ’686 patent. Claim construction is a question of law that this court reviews without deference. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), aff’d, 517 U.S. 370 (1996). Under our precedent in *Texas Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1201-02 (Fed. Cir. 2002), and *Inverness II*, 309 F.3d at 1378, we look first to the dictionary definition of a contested term. Ovonic urges that the correct definition appears in *Webster’s Third New*

International Dictionary, defining amorphous as “without real or apparent crystalline form: uncrystallized.” Webster’s Third New International Dictionary 72 (1981). Ovonic argues that this definition means that amorphous alloys must be completely lacking in crystalline structure. Kumar, on the other hand, points out that the ’686 patent referenced the Polk patent, U.S. Patent No. 4,116,682 (issued Sept. 26, 1978) (the “Polk patent”), as prior art; that the Polk patent was extensively discussed and distinguished during prosecution; and that the Polk patent specifically defined a “solid amorphous metal” as one “in which the constituent atoms are arranged in a spatial pattern that exhibits no long range order, that is, it is non-crystalline In distinguishing an amorphous substance from a crystalline substance, X-ray diffraction measurements are generally employed.” Polk patent, col. 1, ll. 13-27 (emphasis added).

Our cases have recognized that although the dictionary can be an important tool in claim construction by providing a starting point for determining the ordinary meaning of a term to a person of skill in the art, “the intrinsic record” can resolve ambiguity in claim language or, where clear, trump an inconsistent dictionary definition. Tex. Digital, 308 F.3d at 1204; see Inverness Med. Switz. GmbH v. Princeton Biomeditech Corp., 309 F.3d 1365, 1371-72 (Fed. Cir. 2002) (“Inverness I”).

Our cases also establish that prior art cited in a patent or cited in the prosecution history of the patent constitutes intrinsic evidence. Tate Access Floors, Inc. v. Interface Architectural Res., Inc., 279 F.3d 1357, 1371-72 n.4 (Fed. Cir. 2002); Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996); Markman, 52 F.3d at 979-80. For example, in Arthur A. Collins, Inc. v. Northern Telecom Ltd., 216 F.3d 1042 (Fed. Cir. 2000), we rejected the district court’s claim construction, which “declined to consider the teachings of [prior art referenced in the patent] to ascertain the meaning” of

the claim term “time-space-time (TST) switch.” Id. at 1044. Instead, we interpreted the term based on its usage in the prior art that was cited in the patent, explaining that “[w]hen prior art that sheds light on the meaning of a term is cited by the patentee, it can have particular value as a guide to the proper construction of the term, because it may indicate not only the meaning of the term to persons skilled in the art, but also that the patentee intended to adopt that meaning.” Id. at 1045.

In the present case, the Polk patent is not simply cited in the '686 patent as pertinent prior art; nor is there any showing that the Polk patent adopted a special definition at variance with that prevailing in the art. Rather the Polk patent was considered by both the applicant and the examiner to be highly pertinent prior art, and there is no indication that the Polk patent's express definition (even if inconsistent with the general dictionary definition) was in any way at variance with the definition that would have been used by those skilled in the art at the time. Indeed, as noted below, Ovonic's own '440 patent, though issued some few years after the issuance of the Kumar patent, uses the same definition, thus at least suggesting that the “long range order” definition was not unique to the Polk patent.

Under these circumstances, we conclude that the Polk patent definition is to be preferred over the general dictionary definition relied upon by Ovonic. This Polk patent definition should control unless the specification clearly states an alternative meaning or this meaning was disclaimed during prosecution. See Inverness I, 309 F.3d at 1371-72. Here, the specification and prosecution history do not require a different interpretation than the Polk patent's definition of an amorphous alloy, namely one “in which the constituent atoms are arranged in a spatial pattern that exhibits no long range order” Polk patent, col. 1, ll. 13-15.

II.

Although it is firmly settled that an applicant may act as a lexicographer in the specification, Markman, 52 F.3d at 980, the specification cannot support a definition that is contrary to the ordinary meaning of a claim term unless it communicates a deliberate and clear preference for this alternative definition. Apple Computer, Inc. v. Articulate Sys., Inc., 234 F.3d 14, 21 n.5 (Fed. Cir. 2000) (citing Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1249 (Fed. Cir. 1998), for the proposition that in order to act as one's own lexicographer in the specification, "a patentee must deliberately and clearly point out how these terms differ from the conventional understanding"). Ovonic argues that the '686 specification requires that the term "amorphous" be interpreted to mean "completely" amorphous, contrary to the Polk patent definition. In support of this construction, Ovonic contends that the '686 specification defines the terms "amorphous" and "completely amorphous" in the same way, as having a "random atomic" structure. Ovonic cites the following passages from the '686 patent in support of this argument:

[T]he transformation to the low temperature crystalline phase is suppressed to produce either a completely amorphous, solid state, rare earth-transition metal material characterized by the random atomic structure

'686 patent, col. 2, ll. 19-22 (emphases added).

Recent investigations of rare earth-metal alloys has led to the discovery that the production of the alloy in its amorphous state, characterized by random atomic orientation, as opposed to the regular lattice structure of the crystalline state, produces a material capable of absorbing substantially larger quantities of hydrogen without any tendency to fracture

Id., col. 3, II. 5-12 (emphases added).

The difficulties with this argument are several. First, our precedent teaches that qualifications such as "completely" or "normally" are to be given significance in interpreting the specification. See E-

Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369 (Fed. Cir. 2003). Second, there is no indication in these passages or anywhere else in the specification that the term “completely amorphous” was used synonymously with the term “amorphous.” The fact that the ’686 patent refers to the “random atomic” structure or orientation of both amorphous and completely amorphous alloys does not indicate that the patent defines the terms interchangeably. The terms “random atomic structure” or “random atomic orientation” can themselves mean completely random or partially random.

Third, in the very same portion of the specification where amorphous is defined by reference to “random atomic” structure, the term “amorphous” is not used to distinguish material that is partially crystalline but rather material that is fully crystalline, *i.e.*, material characterized by “the regular lattice structure of the crystalline state,” and thus has a tendency to fracture.^[1]

Fourth, significantly, the specification distinguishes between “totally amorphous” material, which is cooled at “[t]he more rapid rate” approaching 10^8 degrees centigrade per second, and “amorphous” material, which is cooled over the much broader range of 10^6 to 10^8 degrees centigrade per second. ’686 patent, col. 3, ll. 17-27; col. 4, ll. 30-35. This plainly suggests that “amorphous” and “totally amorphous” are not the same.

Finally, only “totally” or “completely” amorphous material is distinguished from partially crystalline material. The following excerpts from the ’686 specification illustrate this point:

[T]he transformation to the low temperature crystalline phase is suppressed to produce either a completely amorphous, solid state, rare earth-transition metal material . . . or to a partially crystallized or metastable crystalline state depending upon the specific cooling rate utilized.

Id., col. 2, ll. 16-24 (emphases added).

The more rapid rate produces a totally amorphous state material from complete suppression of the transformation to the low temperature crystalline phase. A partially crystallized or metastable crystalline state in which some crystalline forms, occurs from a less rapid cooling

Id., col. 4, ll. 30-35 (emphases added).

Because the specification does not clearly and deliberately define the term “amorphous” as completely amorphous, it does not support a construction of the term contrary to its plain meaning as established in the Polk patent.

Nor is the term “amorphous” meaningfully defined in the specification by reference to its “random atomic structure.” Id., col. 2, ll. 19-22. The term “random atomic structure” is itself undefined in the specification, which provides no guidance as to its definition beyond contrasting it with the “regular lattice structure of the crystalline state.” Id., col. 3, ll. 7-10. As such, amorphous alloys with a “random atomic structure” (1) may encompass a broad range of alloys, except those that are fully crystalline, or alternatively (2) may encompass only those with a fully random structure. The specification provides no guidance as to which of these definitions or even some third definition is intended.

III.

Finally, we turn to the prosecution history. The relevant claims of Kumar’s original patent application read as follows:

1. In a system for retrievably storing hydrogen, a material for the retrievable storage of hydrogen comprising:
an alloy material in a nonequilibrium atomic structure state.
2. The system of claim 1 wherein said material is a rare earth-transition metal.
3. The system of claim 2 wherein said nonequilibrium rare earth-transition metal material is in the amorphous state.
4. The system of claim 2 wherein said rare earth-transition metal material is in a metastable crystalline state.

App. at 171 (emphases added). Kumar's application was rejected as obvious in light of the Polk patent. The examiner explained:

Although, the invention is not identically disclosed or described . . . the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious The applicant's arguments have been considered but [sic] not clear why unobvious to use alloys of Polk et al in process [sic] of basic reference The amorphous alloys claimed are old in the art

Id. at 189 (emphasis added). Although the examiner's written comments did not suggest specific amendments, Kumar stated during prosecution that the examiner indicated in an oral interview that "if the claims were limited to amorphous rare-earth transition metal alloys for reversible storage of hydrogen . . . they would likely be allowable." Id. at 224. Accordingly, Kumar cancelled claims 2-4, among other claims, and amended claim 1 to read: "A system for retrievably storing hydrogen comprising: an amorphous rare earth-transition metal alloy material" Id. at 223. All further references to alloys of a "nonequilibrium atomic structure" or their "metastable crystalline state" were excised from the claims.

Ovonic argues that the surrender of claims to "metastable crystalline" alloys effectively surrendered claims to all partially crystalline alloys.[2] Kumar's theory is that metastable crystalline and partially crystalline are mutually exclusive categories of alloys and that he, therefore, did not surrender partially crystalline alloys by surrendering "metastable crystalline" alloys during prosecution. Appellant's Reply Br. at 19-20. We do not agree that in the present context metastable crystalline alloys and partially crystalline alloys were used as mutually exclusive categories. The specification repeatedly equates partially crystalline with metastable crystalline, stating that "the transformation to the low temperature crystalline phase is suppressed to produce . . . a partially crystallized or

metastable crystalline state,” ’686 patent, col. 2, ll. 17-24 (emphasis added), and that “[a] partially crystallized or metastable crystalline state in which some crystalline forms, occurs from a less rapid cooling” Id., col. 4, ll. 33 (emphasis added). However, the mere fact that a party offers incorrect theories based on the specification and prosecution history to support a particular claim construction (here the Polk definition) does not require that we reject that particular construction. Just as we may consider “new or additional arguments in support of the scope of [a party’s] claim construction, on appeal,” Inverness II, 309 F.3d at 1381 (quoting CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1370-71 (Fed. Cir. 2002)) (internal citations omitted), we may also consider our own independent analysis of the prosecution history to conclude that a party’s proffered claim construction is correct. That is the situation here. Although we reject Kumar’s interpretation of the prosecution history, we also do not think Ovonic’s interpretation is correct. Even assuming that metastable crystalline and partially crystalline were used as synonyms, the prosecution history (and the specification) is equally consistent with an interpretation that metastable crystalline or partially crystalline is a broad term including any material that is not fully crystalline. To be sure, it would include amorphous material exhibiting some very limited degree of crystallinity (but would exclude material that was completely or totally amorphous). But by surrendering the broad claims to metastable crystalline and partially crystalline, Kumar did not surrender everything within the scope of metastable crystalline and partially crystalline. In other words, Kumar surrendered a broad claim covering all partially crystalline material, but did not thereby surrender the subset of such material within the scope of the definition of “amorphous.” At most the prosecution history is confusing in this respect, and the surrender is not clear and convincing as required by our cases. See Omega Eng’g, Inc. v. Raytek Corp., 334 F.3d 1314, 1323-25 (Fed. Cir. 2003).

Ovonic further argues that Kumar surrendered partially crystalline alloys by following the examiner's suggestion to limit his claims to "amorphous rare-earth transition metal alloys for the reversible storage of hydrogen." As Ovonic admits, however, there is nothing in the prosecution history that defines the term "amorphous." We have held that "[i]t is inappropriate to limit a broad definition of a claim term based on prosecution history that is itself ambiguous," as it is in this case. Inverness II, 309 F.3d at 1382.

Accordingly, neither the prosecution history nor the specification supports a definition of amorphous contrary to the plain meaning as defined by the Polk patent.

IV.

This is not the end of the matter. Questions remain as to the meaning of the phrase "long range order" in the Polk definition. Kumar contends that lack of long range order exists when "sizes of ordered regions [are] below 100 nm." In support of this definition, Kumar relies on statements in two textbooks,^[3] an article he had published before filing the application that gave rise to the '686 patent,^[4] and the language of a prior patent.^[5] But none of these sources provides a clear definition of the term. We conclude that testimony from those skilled in the art is required to establish the meaning of the term "long range order," a term which we note was used in one of Ovonic's own patents. '440 patent, col.3, ll. 26-32 ("[T]he types of disordered structures that provide local structural chemical environments for improved hydrogen storage characteristics include amorphous materials, microcrystalline materials, multicomponent multiphase polycrystalline materials lacking long range composition order . . .") (emphasis added); see Vitronics, 90 F.3d at 1584.

V.

Ovonic contends that it has not infringed because the mere act of licensing cannot constitute infringement, irrespective of the definition of amorphous. Kumar maintains that the licensing itself was sufficient to constitute contributory and induced infringement. See 5 Donald S. Chisum, Chisum on Patents § 17.04[4][a] (2002). We do not decide this question on the present record. We note that Kumar also argues that Ovonic is liable for infringement because it did more than merely license patents. Kumar alleges that Ovonic “experimented extensively with the ’686 patent’s alloys and profited from it”; that Ovonic “suppl[ied] their licensees” with infringing battery components; and that Ovonic’s “products most likely contain [infringing alloys] as well.” Appellant’s Reply Br. at 5-7. Although Ovonic submitted an affidavit of non-infringement stating that it “did not use any amorphous rare earth-transition metal alloy materials in any of its batteries,” App. at 113, it conceded at oral argument that this statement was made using Ovonic’s definition of amorphous and that the affidavit in any event covered only completed batteries. Because we have not adopted Ovonic’s definition, we do not agree with Ovonic that the affidavit constitutes evidence that its batteries do not infringe. There was no basis, therefore, for granting summary judgment of non-infringement.

CONCLUSION

Accordingly, we vacate the district court’s grant of summary judgment and remand for further proceedings consistent with this opinion.

VACATED AND REMANDED

COSTS

No costs.

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BRYSON, Circuit Judge, concurring.

I concur in the court's decision to remand this case for further proceedings and in much of the court's analysis. I agree with the court that the evidence indicates that the term "amorphous" was understood at the time of the application to mean "lacking in long-range order," although my conclusion is based on the totality of the evidence presented to the district court and not principally on the Polk patent, which is cited in the '686 patent only in the "references cited" section, and which was referred to in the prosecution history not for definitional purposes but in connection with the issue of obviousness. I also agree with the court that defining "amorphous" alloys as "lacking in long-range order" is not sufficient, without more, to determine whether Ovonic's accused products infringe; the court properly holds that the district court will have to determine with more specificity what "long-range order" denotes, and thus what structures fall within the scope of the asserted claims of the '686 patent. Finally, I agree with the court in rejecting Dr. Kumar's argument that the terms "partially crystallized" and "metastable crystalline," as used in the '686 patent, are mutually exclusive, and that the claim term

“amorphous” must be understood to include all alloys that are “partially crystallized” as well as those that are “totally amorphous.”

Although I agree that a remand is necessary, I would expand the scope of the remand in one respect. The specification expressly defines the term “amorphous” as “characterized by random atomic orientation.” The court concludes that that definition is not meaningful because it lacks specificity. But that is not a sufficient reason to disregard the definition altogether. The definition of “amorphous” as “lacking in long-range order” also lacks specificity standing alone, which is why a remand for supplementation of that definition is necessary. And the “random atomic orientation” definition has an advantage over the “long-range order” definition, in that the former is specifically referenced in the patent, while the latter is not. Accordingly, I would include within the scope of the remand the task of determining whether, to persons skilled in the field of amorphous solids, the phrase “random atomic orientation” is indicative of a particular class of structures. It may turn out that the phrase “random atomic orientation” is too indefinite to provide any significant guidance as to the bounds of the claim term “amorphous.” But if there was a general understanding in the field as to the meaning of that phrase at the time of the application, it should be employed, along with the general understanding of the meaning of “lacking in long-range order,” as a basis for construing the critical language of the asserted claims.

[1] The specification refers to “the production of the alloy in an amorphous state . . . as opposed to the regular lattice structure or the crystalline state, [that] produces a material capable of absorbing substantially larger quantities of hydrogen without any tendency to fracture over repeated absorption/desorption cycles.” ’686 patent, col. 3, ll. 7-13 (emphases added).

[2] Ovonic appears to argue that amorphous is a subset of “nonequilibrium” alloys and does not suggest that the surrender of that broader claim was a surrender of everything within it.

[3] Kumar quotes a passage in Quantum Electron Theory of Amorphous Conductors, stating that “partly ordered [=partially crystalline] solid alloy[s]... exhibit the short-range order in the distribution of atoms without any long-range order; in this respect they are similar to liquids.” Appellant’s Br. at 9 (quoting Aleksandr I. Gubanov, Quantum Electron Theory of Amorphous Conductors 85 (1965)) (alterations in original).

Kumar also quotes a sentence in Elements of X-Ray Diffraction, stating that “[a]t about 10^{-5} cm [100nm], the first signs of line broadening, due to small crystal size, begin to be detectable.” Appellant’s Br. at 10 (citing B.D. Cullity, Elements of X-Ray Diffraction 261-62 (1956)) (alterations in original).

[4] Kumar quotes the following passage from an article he wrote in 1978:

For depositing non-crystalline material in bulk form . . . the thermal conductivity of the deposit influences the rate at which heat is conducted away . . . A greater . . . crystallinity is . . . expected for sprayed material... away from the interface than that which is close to it . . . The X-ray peaks of [material closer to the interface] are considerably less resolved . . . therefore a reduced amount of crystallinity is indicated . . . The difference in . . . crystallinity is attributed to a decrease in the rate of quenching....

Appellant’s Br. at 13 n.17 (quoting K. Kumar & D. Das, Equilibrium and Metastable Samarium-Cobalt Deposits Produced by Arc Plasma Spraying, 54 Thin Solid Films 263, 268 (1978)) (deletions in original).

[5] Kumar cites portions of claims 1, 2 and 3 of U.S. Patent No. 3,949,387 (issued April 6, 1976), which read as follows:

1. A magnetic system, comprising; a magnetic medium exhibiting an amorphous structure without long range atomic ordering
2. The system of claim 1, where said amorphous medium has microcrystalline structure with atomic ordering over distances about 25-100

angstroms [2.5 to 10 nm].

3. The system of claim 1, where said amorphous medium is substantially amorphous having atomic ordering over distances about 25 angstroms [2.5 nm] and less.

Id., col. 21, ll. 40-62 (emphases added).