UNITED STATES DISTRICT COURT
DISTRICT OF CONNECTICUT

COMAIR ROTRON, INC.,	:	
Plaintiff,	:	
	:	
v.	:	Civil Action No. 2:91CV00032(CFD)
	:	
NIPPON DENSAN CORPORATION,	:	
NIDEC CORPORATION,	:	
Defendants.	:	

MARKMAN RULING CONCERNING CERTAIN DISPUTED CLAIM TERMS IN U.S. PATENT NO. 4,494,028

I. Introduction

Plaintiff Comair Rotron, Inc. ("Rotron") brought this action against defendants Nippon Densan Corporation and its wholly owned subsidiary Nidec Corporation (collectively "Nidec") alleging infringement of United States Patent Nos. 4,494,028 (the "'028 patent") and 4,779,069 (the "'069 patent"). The patents, which are owned by Rotron, concern rotor magnets used in brushless direct current ("DC") fans. In its Ruling on Pending Discovery Motions, dated March 21, 2000, the Court concluded that a hearing was needed to construe three disputed claim terms pursuant to the holding in Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996). The disputed claim terms are the following: (1) "substantially unmagnetized"; (2) "substantial angular length"; and (3) "field and commutation portion." The Court held the Markman hearing on November 30, 2000, and has concluded that the terms should be construed as explained below.

For purposes of this ruling, familiarity is presumed with the Court's Ruling on Cross Motions for Summary Judgment [Doc. # 189] (the "summary judgment ruling"), dated September

28, 1998, and in particular, the facts and descriptions recited therein.

II. Standard

The Court has the responsibility of construing the claims of a patent in a patent infringement case that is to be tried to a jury. See Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc) (Markman I), aff'd, 517 U.S. 370 (1996) (Markman II). The purpose of claim construction is to decide "the meaning and scope of the patent claims asserted to be infringed." Id. at 976. "[A]fter the court has defined the claim with whatever specificity and precision is warranted by the language of the claim and the evidence bearing on the proper construction, the task of determining whether the construed claim reads on the accused product is for the finder of fact." PPG Indus. v. Guardian Indus. Corp., 156 F.3d 1351, 1355 (Fed. Cir. 1998).

In construing a claim, a court initially looks to intrinsic evidence, which includes "the patent itself, including the claims, the specification, and, if in evidence, the prosecution history." Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996). In examining the intrinsic evidence, the court first considers "the words of the claims themselves, both asserted and nonasserted, to define the scope of the patented invention." Id. These words are to be given their ordinary and customary meaning, which is presumed to be correct unless a different meaning is clearly and deliberately set forth in the intrinsic materials or unless the ordinary and accustomed meaning would deprive the claim of clarity. See K-2 Corp. v. Salomon S.A.,191 F.3d 1356, 1362-63 (Fed. Cir. 1999). The court also may reference other intrinsic evidence, including the specification and prosecution history, the latter of which contains the record of proceedings before the Patent and Trademark Office and the prior art cited therein. See id; Vitronics, 90 F.3d

at 1583; Markman I, 52 F.3d at 980. However, "one may not read a limitation into a claim from the written description, but . . . one may look to the written description to define a term already in the claim limitation, for a claim must be read in view of the specification of which it is a part." Renishaw PLC v. Marposs Societa' Per Azioni, 158 F.3d 1243, 1248 (Fed. Cir. 1998). "[T]here is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification." Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 1186 (Fed. Cir. 1996). Similarly, "[a]lthough the prosecution history can and should be used to understand the language used in the claims, it too cannot 'enlarge, diminish, or vary' the limitations in the claims." Markman I, 52 F.3d at 980 (citation omitted).

While an analysis of the intrinsic evidence generally will resolve ambiguity in a disputed term, the court may look to extrinsic evidence when this is not the case. See Vitronics 90 F.3d at 1583-84. Extrinsic evidence includes expert testimony, inventor testimony, dictionaries, technical treatises and articles, and prior art not cited in the specification or file history. See Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1308 (Fed. Cir. 1999); Vitronics, 90 F.3d at 1584. This evidence, and in particular expert testimony, may be used only to assist the court in arriving at the proper understanding of the claims; it may not be used to vary or contradict the claim language or other parts of the specification. See Vitronics, 90 F.3d at 1584. However, "it is entirely appropriate, perhaps even preferable, for a court to consult trustworthy extrinsic evidence to ensure that the claim construction it is tending to from the patent file is not inconsistent with clearly expressed, plainly apposite and widely held technical understandings in the pertinent technical field." Pitney Bowes, Inc., 182 F.3d at 1309.

III. Discussion

As indicated above, the disputed claim terms are the following: (1) "substantially unmagnetized"; (2) "substantial angular length"; and (3) "field and commutation portion."

A. "Substantially Unmagnetized"

The term "substantially unmagnetized" is contained in Claims 1 and 9 of the '028 patent, which are independent claims, and Claim 3 of the '028 patent, which is a dependent claim. Rotron contends that the term "substantially unmagnetized" need not be construed in a way that distinguishes the substantially unmagnetized sectors from the prior art, such as U.S. Patent No. 4,030,005 to Doemen ("Doemen '005"), because those sectors are inherently different than the change-over areas and pole gaps or clearances disclosed in the prior art. Accordingly, Rotron argues that the Court should adopt the following construction for this term: "The phrase 'substantially magnetized' includes sectors of field portions of the rotor magnets that have relatively weak magnetization relative to the adjacent magnetic poles of the permanently magnetized sectors. There is no numerical limitation on the amount of magnetization."

In contrast, Nidec argues the substantially unmagnetized sectors must be distinguished from the change-over areas disclosed in the prior art, particularly Doemen '005. It contends that the phrase should be construed as "a sector of a field portion of the rotor magnet wherein the magnetizable material has zero magnetization or as close to zero magnetization as possible in contrast to a 'change-over area' between the poles as disclosed in the prior art where the magnetization of one pole diminishes to zero and the magnetization of the next pole builds up to full strength." Nidec maintains that this construction is supported by the claims and the other portions of the specification, and argues that Rotron's proposed meaning would improperly broaden its claims to cover the prior art.

Claims 1 and 9 do not define the term "substantially unmagnetized." However, Claim 1 provides some guidance, stating that the unmagnetized sectors of the field magnet portion are "substantially unmagnetized portions of the magnetic material." This language indicates that the patentee sought to distinguish "substantially unmagnetized" from simply "unmagnetized" sectors, and thus suggests that the substantially unmagnetized sectors need not have zero magnetization. Unfortunately, Claim 1 does not explain the extent to which the magnetization may vary from zero, and the ordinary meaning of the word "substantially"–"in a substantial manner" or "so as to be substantial"–also is practically useless as a guide for claim construction in this context. Thorn EMI North America Inc. v. Intel Corp., 936 F. Supp. 1186, 1199 (D. Del. 1996), aff'd, 157 F.3d 887 (Fed. Cir. 1998), cert. denied, 119 S. Ct. 1756 (1999). In other parts of the specification, however, including Claim 3 and the preferred embodiment, the patentee uses "unmagnetized" and "substantially magnetized" interchangeably, indicating that the terms may be defined similarly. See Amhil Enters. Ltd. v. Wawa, Inc., 81 F.3d 1554, 1559 (Fed. Cir. 1996) (noting that in a similar situation, "[t]he entire specification . . . leaves its reader with the impression that 'substantially vertical' and 'vertical' mean essentially the same thing"). Similarly, the substantially unmagnetized sectors are also referred to as "null sectors." '028 pat. col. 6, ll. 63 & 68. This interpretation is further supported by the description of the method and apparatus for making the magnet contained in the preferred embodiment. Describing the features of the apparatus, the patentee states, "Relatively no magnetic field exists in the V-shaped cut-outs . . . and the corresponding sections of the ring . . . remain unmagnetized." '028 pat., col. 5, ll. 25-27.

The court next reviews the prosecution history to ascertain the meaning of the term "substantially unmagnetized," keeping in mind that the prosecution history should be used to

understand the language used in the claims, but not to enlarge, diminish, or vary the limitations in the claims. See Markman I, 52 F.3d at 980. First, in explaining the difference in the creation of substantially unmagnetized sectors in the '028 patent and the prior art, the applicant referred to nulls as "the absence of magnetic fields." Defs.' Ex. 5, at 7.

Further, as stated above, Nidec contends that the prosecution history indicates that the nulls in the '028 patent must be distinguished from the prior art, particularly the pole clearances of Doemen '005. The prosecution history shows that the patent examiner twice rejected the patentee's claims as unpatentable, at least in part because the patentee's definitions of the unmagnetized portions of the field magnet did not sufficiently distinguish those structures from those contained in the prior art such as U.S. Patent No. 4,311,933 to Riggs ("Riggs '933"). As the examiner explained, "Magnetization between poles must always become zero at some point, because there can be no discontinuity in the magnetization vector." Defs.' Ex. 9, at 3-4; Ex. 10, at 2. His statement seemed to imply that prior art such as Riggs '933, which also claimed magnets with different poles, necessarily included areas of zero magnetization that could not be distinguished from the patentee's description of the null areas in the '028 patent.[1]

The patent applicant eventually amended his application to include new language in Claim 1, including the term "substantially unmagnetized," and new language in Claim 25 (which was eventually renumbered to become Claim 9) that used the phrase "substantially unmagnetized sectors of substantial angular length." In making this change, the applicant apparently attempted

[1]The patent examiner indicated that it appeared obvious that the fabrication and assembly of Riggs '933 could have been used with the teachings of other patents, including Nakamura, Inariba, and U.S. Patent No. 3,299,355 to Wessels ("Wessels '355"), which all suggested unitary arrays of different magnetization systems.

to distinguish these sectors from those claimed in other patents. He explained,

> The unmagnetized sectors of substantial angular length differ, for example, from those locations where adjacent oppositely polarized field magnet sections convert from one polarization to another forming pole gaps or pole clearances as in the attached Muller patent No. 3,374,104[2] or Doemen Patent No. 4,030,005. There the field of one pole diminishes to the center of the gap where the field of the next pole begins to build up. There appears to be no unmagnetized area of any substantial extent, and even where Doemen extends this change-over area in the commutation section, it is for the purpose of gradually decreasing the field (to taper off the Hall generator response) and not to create a substantial effective angular null where there is insufficient magnetization to have an effect. It is believed that this is the kind of gradual change from one polarity of magnetic field to another that the Examiner had in mind with respect to his last sentence on page 2 of the outstanding Official Action.

Defs.' Ex. 6, at 12.

Thus, the patent applicant explained that the nature of a pole gap or clearance and a null sector are two different things–the former is an area where "the field of one pole diminishes to the center of the gap where the field of the next pole begins to builds up," while the latter is an area that is unmagnetized. Therefore, Rotron's proposed meaning–that "substantially unmagnetized" should be construed as meaning relatively weak magnetization compared with the magnetized segments–appears not to sufficiently distinguish the prior art, and in particular, the pole clearances or extended change-over areas of Doemen '005. At the same time, the specification suggests that the term "substantially unmagnetized" should not be understood to be limited to areas with no magnetization at all. Accordingly, the Court finds that the specification and prosecution history supports a construction more similar to Nidec's proposed meaning, which allows for some variation from zero magnetization without improperly broadening the disputed term. The Court

[2]The applicant apparently intended to refer to U.S. Patent No. 4,099,104 to Muller ("Muller '104"), which contains pole gaps.

thus adopts the following construction of "substantially unmagnetized": "having zero magnetization or as close to zero magnetization as possible."

B. "Substantial Angular Length"

The term "substantial angular length" appears in Claims 1 and 9 of the '028 patent. In its summary judgment ruling, the Court concluded that the term "substantial angular length" should be construed using a functional definition. In light of that ruling, Rotron argues that the Court should adopt the following construction, which it phrases in functional terms: "The phrase 'substantial angular length' includes unmagnetized sectors of field portions of the rotor magnets that are wide enough to be substantially effective. There is no numerical limitation on this width in Claims 1-11." Rotron again argues that it is improper to read a numerical limitation into a claim that lacks such precision. See Modine, 75 F.3d at 1551.

Nidec argues that "substantial angular length" should be construed as "large unmagnetized sectors of field portions of the rotor magnets which occupy an average angular extent throughout the axial length of the field portion which is greater than the 'relatively narrow' 10 to 20 degrees 'pole clearances' disclosed in the prior art." Nidec again maintains that a narrow definition and numerical specificity are necessary to distinguish the substantially unmagnetized segments of substantial angular length in the '028 patent from pole gaps or clearances disclosed in the prior art, such as Doemen '005, the patent from which the 10 to 20 degree requirement is derived.[3]

[3]Claim 12 of the '028 patent states the following: "The magnet according to claim 9, wherein each null sector has an effective arcuate extent greater than 20E mechanical." As Nidec indicates, under the rule of claim differentiation, narrow claim limitations cannot be read into broad ones. See Transmatic, Inc. v. Gulton Indus., Inc., 53 F.3d 1270, 1277 (Fed. Cir. 1995). Nidec explains that it has abandoned its position, rejected by the Court in its summary judgment ruling, that the limitation contained in Claim 12 should be read into Claim 1. Instead, it maintains that its present argument that the term "substantial angular length" should be construed as

Nidec also argues that Rotron's proposed functional definition improperly looks to the prosecution history to provide a disclosure–specifically, the purpose of the substantially unmagnetized sectors–that is not apparent from the specification itself.[4]

As stated above, Claims 1 and 9 both are independent claims. Neither defines "substantial angular length" and the ordinary meaning of the term is not apparent from the claims. When the claims do not provide a definition, the specification is generally "the single best guide to the

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meaning sectors that are "greater than the 'relatively narrow' 10 to 20 degrees 'pole clearances'" in the prior art does not violate the doctrine of claim differentiation because it is less restrictive than the requirement of Claim 12.

[4]35 U.S.C. § 112 ¶ 6 provides that "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." See 35 U.S.C. § 112, ¶ 6. "Without the term 'means,' a claim element is presumed to fall outside means-plus-function strictures . . . . [H]owever, that presumption can collapse when an element lacking the term 'means' nonetheless relies on functional terms rather than structure or material to describe performance of the claimed function." Micro Chemical, Inc. v. Great Plains Chemical Co., 194 F.3d 1250, 1257 (Fed. Cir. 1999); see also Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1318 (Fed. Cir. 1999). Nevertheless, if the claim contains functional language, but also discloses the structure within the language of the claim, § 112, ¶ 6 is not applicable. See Personalized Media Communcations, LLC v. International Trade Comm'n, 161 F.3d 696, 704 (Fed. Cir. 1998).

Here, Nidec suggests that Rotron's proposed meaning for the term "substantial angular length" fails to adhere to the requirements of § 112, ¶ 6 because it includes some functional language, as it states that the length of the segments must be great enough to render them "substantially effective." However, the word "means" does not appear in the claim, and the claim clearly defines its elements in structural terms. Nor is there other evidence that the patentee intended to assert a means-plus-function claim. See, e.g., Greenberg v. Ethicon Endo-Surgery, Inc., 91 F.3d 1580, 1584 (Fed. Cir. 1996) ("In this case . . . the element in question did not use conventional "means-plus-function" language, no other element of the claim was in means-plus-function form, and nothing cited to us from the prosecution history or elsewhere suggests that the patentee intended to claim in that fashion."). Further, a patent applicant is free to define features of an apparatus functionally. See In re Schreiber,128 F.3d 1473, 1478 (Fed. Cir. 1997); In re Swinehart, 439 F.2d 210, 212 (C.C.P.A. 1971). Therefore, the Court concludes that the term "substantial angular length" should not be construed as a means-plus-function claim.

meaning of a disputed term." Vitronics, 90 F.3d at 1582. "The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." Id. Here, however, the specification provides no express definition of the term. Nevertheless, as Rotron points out, the specification does indicate that the size of the substantially unmagnetized segments of substantial angular length–like all the magnetized segments–differ based on the purpose for which they are used. It states, "[t]he number and lengths of the unmagnetized and magnetized segments of the field portion, and the number and relative sizes of the commutation segments will differ with the number of poles of a particular brushless DC motor and the particular commutation circuit, for example," '028 pat., col. 4, ll. 38-43. The specification further indicates that the permanently magnetized segments of the integral magnet are "each of the required size, angular extent and polarity for its particular purpose." '028 pat., col. 1, ll. 48-51. This statement implies that the length of the unmagnetized segments of the field magnet varies.

The fact that the substantially unmagnetized segments of substantial angular length "occupy about 45E of circular arc" in the preferred embodiment is of no moment. "It is usually incorrect to read numerical precision into a claim from which it is absent, particularly when other claims contain the numerical limitation" Modine v. United States Int'l Trade Comm'n, 75 F.3d 1545, 1551 (Fed. Cir. 1996). Moreover, "[i]t is well established that the preferred embodiment does not limit broader claims that are supported by the written description." Toro Co. v. White Consol. Indus. Inc., 199 F.3d 1295, 1301 (Fed. Cir. 1999); see also Burke, Inc. v. Bruno Indep. Living Aids, Inc., 183 F.3d 1334, 1341 (Fed. Cir. 1999) ("[A]n attribute of the preferred embodiment cannot be read into the claim as a limitation."). While this rule does not apply when the preferred embodiment is described as the specification as the invention itself, rather than one

way of utilizing it, see Modine, 75 F.3d at 1551, here the preferred embodiment states that it "is not to be construed as limiting the scope of this invention," thus making it clear that the preferred embodiment is simply one example of how the invention may be utilized. '028 pat., col. 5, ll. 48-49.

The court next turns to the prosecution history to construe this term. As explained above, Nidec argues that the proper construction of "substantial angular length" should be limited based upon the prior art, again referring to Doemen '005. However, as explained above, the patent applicant's submission to the patent examiner indicates that the substantially unmagnetized sectors in the '028 patent are distinguished from the pole gaps or clearances in Doemen '005 and '104 Muller based upon the nature of the magnetization pattern. Thus, Rotron's contention that null and pole clearance size should not be compared appears to be supported by the prosecution history–they indeed appear to be two different phenomena. While it is necessary to construe amount of the magnetization of the sectors with some specificity to distinguish the sectors from the prior art, doing so obviates the need to read the same specificity into the length of the substantially unmagnetized sectors. The Court therefore declines to construe the term "substantial angular length" with any precise numerical limitations derived from Doemen '005. The prosecution history does not indicate that this sort of specificity was intended by the patentee.[5] Modine, 75 F.3d at 1551.

Rotron's proposed functional definition reflects some statements in the prosecution history, which suggests that the "large null sectors of the field magnet portion can be provided as

[5]Given that the Court will not adopt Nidec's proposed construction, it will not determine whether "average angular extent" is the proper measure of the size of the substantially unmagnetized sectors.

best suits the stator lamination geometry for improved starting, least torque ripple, and maximum torque," Defs.' Ex. 6, at 7, and that purpose of the substantially unmagnetized sectors is to "create a *substantial effective* angular null." Id. at 12 (emphasis added). Similarly, extrinsic evidence in the form of the inventor's response during a deposition indicates that substantial angular length should be determined based upon "whether or not the fan operates properly."[6] Defs.' Ex. 13, at 146. However, Rotron's proposed meaning–that the substantially unmagnetized sectors are "wide enough to be substantially effective"–should not be adopted because it improperly broadens the disputed term. See Markman I, 52 F.3d at 980. Conversely, while it may be possible to further define the function of the substantially unmagnetized sectors of substantial angular length based on the purpose set forth in the prosecution history (the prevention of cogging and related problems), "limitations cannot be read into the claims from the specification or prosecution history" Burke, 183 F.3d at 1340. Instead, the Court concludes that the term "substantial angular length" needs no further construction, particularly given the fact that the magnetization of the sectors has been defined with some specificity, and the fact that the claims and the other portions of the specification provide no guidance for the proper definition of "substantial angular length." No further specificity or precision is warranted by the language of the claim and other evidence. See PPG Indus. v. Guardian Indus. Corp., 156 F.3d 1351, 1355

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[6]The exchange was as follows:

Q: Is what determines whether a null is of substantial angular length whether or not the fan operates properly?

. . .

A: I believe I've used that term on several past depositions. That is correct.

Defs.' Ex. 13, at 146.

(Fed. Cir. 1998).

C. "Field and Commutation Portions"

The term "field and commutation portions" appears in independent Claim 9 of the '028 patent. Similar terms–"field magnet portion" and "commutation magnet portion"–are also included in Claim 1. Rotron argues that the Court should construe these terms in the following manner:

> The terms "field magnet portion" and "commutation magnet portion" require the field and commutation portions to be axially displaced portions on an integral magnet. The "commutation magnet portion" of the integral magnet is the portion of the integral magnet that takes the place of separate commutation magnets, and provides a magnetic field to effect commutation. The "field magnet portion" of the integral magnet is the portion of the integral magnet that takes the place of separate field magnets, and is that portion of the remainder of the integral magnet that provides a magnetic field to effect rotation of the magnet. The claims do not preclude the commutation magnet portion from also having an effect on rotation of the magnet, and do not preclude the field magnet portion from having an effect on commutation.

Rotron argues that its functional construction is supported by the intrinsic evidence and notes that the limitations of dependent claims such as 6 and 7, which describe the magnetization patterns of the field and commutation magnet portions, should not be used to limit the term in Claim 9. Rotron also argues that extrinsic evidence–the expert testimony and prior art–indicate that its definition reflects the ordinary meaning of the term.

Nidec contends that the following construction should be adopted: "The terms 'field magnet portion' and 'commutation magnet portion' mean axially displaced and non-overlapping portions of an integral rotor magnet, each having a different magnetization pattern. The 'field magnet portion' is coextensive with the stator and the 'commutation magnet portion' is adjacent to the Hall device." Nidec reasons that because the novelty of the '028 patent is that two areas of

different magnetization–the field and commutation portions–are formed on a single piece of magnetized material rather than from separate magnets, the proper construction of those terms should emphasize their distinctness. In support of its proposed construction, Nidec notes that the preferred embodiment and prosecution history discloses axially displaced magnetized portions which indeed have different magnetization patterns. Finally, Nidec argues that the field and commutation portions should be defined in part by their location to distinguish the prior art.

Claim 9 describes the position and certain characteristics of the field and commutation portions. In particular, it states that the portions are

> at axially displaced first and second locations, said commutation portion comprising integral alternating oppositely radially magnetized commutation magnet sectors in close succession around the annular commutation magnet portion and the field magnet portion comprising integral oppositely radially magnetized field magnet sectors and integral substantially magnetized sectors of substantial angular length angularly adjacent radially magnetized sectors in the field magnet portion and defining null sectors.

'028, col. 6, ll. 54-63. "Although words in a claim are generally given their ordinary and customary meaning, a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition is clearly stated in the patent specification or file history." Vitronics, 90 F.3d at 1582. Here, it may be possible to interpret Claim 9 as an attempt by the patentee to define the term "field and commutation portions." However, the Claim does not contain explicit language indicating that the patentee intended the phrases following the term "comprising" to be construed as a definition, see, e.g., Hoechst Celanese Corp v. BP Chems. Ltd., 78 F.3d 1575, 1578 (Fed. Cir. 1996) (discussing a specification that contains the language "By the term 'stable,' it is meant . . ."), and neither party argues that the patentee intended such a meaning. Further, the term "comprising" means that the

invention includes the listed elements, but does not exclude others. See Moleculon Research Corp. v. CBS, Inc., 229 USPQ 805, 812 (Fed. Cir. 1986). Thus, the Court will interpret the term "field and commutation portions" according to the ordinary meaning of the words by one skilled in the art, in light of the recited description and other intrinsic evidence.

The intrinsic evidence indicates that several distinct features characterize the "field and commutation portions." First, as both parties agree, the "field and commutation portions" are axially displaced portions on an integral magnet. This construction is supported by the language of the claims, see, e.g., '028 pat., col. 5, l. 57 (describing the commutation magnet portion at a second location "axially displaced" from the first location); col. 6, l. 11 (describing the field and commutation portions as axially displaced"; col. 6, l. 48-51 (stating that "the first and second locations of the field and commutation portions are at opposite ends of the annular one piece magnet"), and is confirmed by the prosecution history. See Defs.' Ex. 6, at 11 (stating that Claim 25, which was eventually re-numbered as Claim 9, "emphasizes the axial displacement of the two portions of the annular magnet").

The intrinsic evidence also indicates that the field and commutation portions are defined–and in fact distinguished–by the unique "null sectors" of the field magnet. Claim 9 clearly describes the magnetization of each area and indicates that the structural feature that distinguishes between them is the "substantially unmagnetized sectors of substantial angular length" that are "angularly adjacent" to the magnetized areas of the field magnet. See '028 pat. col. 6, ll. 52-63. The importance of this feature is confirmed by other portions of the specification. See, e.g., '028 pat. col. 1, l. 61- col. 2, l. 15 (describing the patterns of magnetization); col. 3, l. 64 - col. 4, l. 43 (same). At the same time, however, it would be improper to read any specific magnetization

pattern from the preferred embodiment (aside from the field magnet's null sectors contained in Claim 9 itself) into the definitions of "field and commutation portions," see Renishaw, 158 F.3d at 1248, particularly given the fact that the preferred embodiment itself states that "The number and lengths of the unmagnetized and magnetized segments of the field portion, and the number and relative sizes of the commutation segments will differ with the number of poles of a particular DC motor and the particular commutation circuit, for example." '028 pat. col. 4, ll. 38-43. Thus, while the construction of the term "field and commutation portion" should include the substantially unmagnetized sectors of the field portion, the Court will not define the magnetization pattern with any further specificity.[7]

Still, structural characteristics alone do not fully describe the full meaning of "field and commutation portions." The evidence indicates that Rotron's functional constructions accurately reflect the meaning of this term. The summary of the invention indicates that the magnetic sections are "of the required size, angular extent and polarity for its particular purpose," and states that commutation magnet interacts with the Hall device. '028 pat., col., 1, ll. 48-54. The specification further notes that the "[c]ommutation magnet sections of an integral magnet secured on the rotor regularly alter the condition of the Hall device to effect commutation," '028, col. 3, ll. 54-58, and that "the Hall device is "located proximate the commutation portion of the magnet and circuit means for altering the energization of the winding in dependence on the annular position of the commutation magnet portion." '028 pat., col. 6, ll. 33-36. This functional

[7]Still, Nidec's proposed construction, which states that the "field and commutation portions" should be defined in part by the fact that they "each have a different magnetization pattern," misconstrues the novelty of the '028 patent. While the patterns do appear to be different, the distinguishing feature are the nulls contained in the field portion.

understanding of the term commutation portion is further supported by the extrinsic evidence, as Dr. Alexander Kusko confirms in his deposition that the commutation portion "provides the magnet field which is sensed by the Hall element to provide the commutation switching signal." Pl.'s Ex. 1 at 43. Similarly, Claim 6 states that the motor includes at least one "stator field winding for establishing a stator field in the location of the field magnet portion of the integral magnet." This description suggests that the purpose of the field magnet is to interact with the windings by way of the stator field. Kusko's deposition also indicates that a functional definition of a field portion is consistent with the ordinary meaning of the term as understood by someone of ordinary skill in the art. See Pl.'s Ex. 3 at 385 (characterizing Nidec's magnet as a field portion "since the magnetic flux from the entire rotor magnet interacts with the stator poles").

Nidec correctly points out that the specification, extrinsic evidence, and prior art repeatedly describe the proximity of the field portion and the commutation portion to the stator and Hall device, respectively. However, the exact location of each magnetic area with respect to these features is not meaningful in and of itself. Instead, it is apparent from the specification language quoted above that the significance of the positioning is the purpose that each will effect. This understanding is also suggested by at least two examples of prior art. For instance, Claim 3 of U.S. Patent No. 3,988,654 to Takahashi ("Takahaski '654") describes the two magnetized segments of the assembly according to their purpose, stating that the "permanent magnet rotor" has "a first magnetization portion magnetized through a first magnetization angle for interaction with said selectively energized driving coils and a second magnetization portion magnetized though a second magnetization angle for selective activation of said magnetically responsive element means." '0654 pat., col. 6, ll. 12-18. Similarly, in the Japanese Laid-Open Patent

Application No. 53-23008 ("JLOPA '008"), the equivalent of the commutation magnet is actually referred to as the "Hall element-driving magnet," in contrast to the "rotor magnet" which effects rotation. Defs.' Ex. 21, at 6. Thus, the functional definition appears to be appropriate in light of the prior art.

Finally, the evidence suggests that the term "field and commutation portions" should be construed to distinguish those areas from the separate field magnets and commutation magnets disclosed in the prior art. See, e.g., '028 pat., col. 5, ll. 52-54 (claiming "[a]n integral annualr [sic] field and commutation magnet for a brushless DC motor formed on a single piece of permanently magnetized material"); col. 1, ll. 30-54 (distinguishing the '028 patent from other magnets whose parts are separately made and magnetized); col. 2, ll. 23-26 ("The flux conduct flux through the single piece of permanently magnetizable material that becomes the integral field and commutation magnets."); col. 3, ll. 7-10 ("By providing a one piece unitary magnet . . . the number of parts is reduced and the relationship of the commutation segments and field magnets is always the same.").

Accordingly, the Court adopts the following construction of the term "field and commutation portions":

> The terms field and commutation portion mean axially displaced portions of an integral rotor magnet. The commutation portion takes the place of separate commutation magnets, and provides a magnetic field to effect commutation. The field portion takes the place of separate field magnets, and provides a magnetic field to effect rotation of the magnet. The field magnet is comprised in part of substantially unmagnetized sectors of substantial angular length.

IV. Conclusion

For the reasons explained above, the Court declines to further construe the term

"substantial angular length." The term "substantially unmagnetized" means "having zero magnetization or as close to zero magnetization as possible," and the Court adopts the following construction of the term "field and commutation portions":

> The terms field and commutation portion mean axially displaced portions of an integral rotor magnet. The commutation portion takes the place of separate commutation magnets, and provides a magnetic field to effect commutation. The field portion takes the place of separate field magnets, and provides a magnetic field to effect rotation of the magnet. The field magnet is comprised in part of substantially unmagnetized sectors of substantial angular length.

SO ORDERED this 25th day of July 2001, at Hartford, Connecticut.

_____/s/_____
Christopher F. Droney
United States District Judge