

United States Court of Appeals for the Federal Circuit

99-1082

ATMEL CORPORATION,

Plaintiff-Appellant,

v.

INFORMATION STORAGE DEVICES, INC.,

Defendant-Appellee.

Robert T. Haslam, Heller Ehrman White & McAuliffe, of Palo Alto, California, argued for plaintiff-appellant. With him on the brief were Michael K. Plimack and Hope L. Hudson.

Charlene M. Morrow, Fenwick & West LLP, of Palo Alto, California, argued for defendant-appellee. With her on the brief were William A. Fenwick, Virginia K. DeMarchi, and Douglas B. Luftman. Of counsel was Sean P. DeBruine.

Appealed from: U.S. District Court for the Northern District of California

Judge Fern M. Smith

United States Court of Appeals for the Federal Circuit

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DECIDED: December 28, 1999

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Before MAYER, Chief Judge, LOURIE, Circuit Judge, and BLACK, District Judge.\*

Opinion of the court filed by Circuit Judge LOURIE. Dissenting opinion filed by Chief Judge MAYER.

LOURIE, Circuit Judge.

Atmel Corporation appeals from the decision of the United States District Court for the Northern District of California granting summary judgment to Information Storage Devices, Inc. ("ISD") that claim 1 of Atmel's patent, U.S. Patent 4,511,811, is invalid for indefiniteness. See *Atmel Corp. v. Information Storage Devices, Inc.*, No. C-95-1987-FMS, 1998 WL 184274 (N.D. Cal. Apr. 14, 1998). Because the district court erred by failing to consider the knowledge of one skilled in the art that indicated that the specification disclosed sufficient structure to satisfy 35 U.S.C. § 112, ¶ 2, we reverse and remand.

#### BACKGROUND

The '811 patent pertains to an improved "charge pump" circuit which is able to boost the voltage applied to, for example, a word line in a memory array during a programming operation without excessive current leakage. Claim 1, the sole claim of the patent, reads as follows:

1. An apparatus for selectively increasing the voltage on one or more of a plurality of conductive lines having inherent distributed capacitance disposed in a semiconductor circuit comprising:  
means disposed on said semiconductor circuit for selecting one or more of said conductive lines;  
high voltage generating means disposed on said semiconductor circuit for generating a high voltage from a lower voltage power supply connected to said semiconductor circuit;  
voltage pulse generating means disposed on said semiconductor circuit for generating voltage pulses;  
means for capacitively coupling voltage pulses from said voltage pulse generating means to a voltage node in said semiconductor circuit;  
transfer means responsive to said selecting means and connected to said voltage node for transferring increments of charge from said high voltage generating means to the inherent distributed capacitance in selected ones of said conductive lines in response to said voltage pulses;

said transfer means including switching means cooperating with said selecting means for blocking substantially all of the flow of current through and transfer of charge from said high voltage generating means to said conductive lines which are unselected.

'811 patent, col. 8, ll. 17-45 (emphasis added).

In June 1995, Atmel filed a complaint in the district court alleging that ISD was liable for infringement of claim 1. See *Atmel Corp. v. Information Storage Devices, Inc.*, 997 F. Supp. 1210, 1214 (N.D. Cal. 1998). In November 1997, ISD moved for summary judgment that, inter alia, claim 1 was indefinite under 35 U.S.C. § 112, ¶ 2, alleging that the specification failed to disclose any structure corresponding to the disputed high-voltage means limitation. See *id.* ISD further requested that the district court simultaneously consider its motion along with the court's claim construction. See *id.* After ruling that it would be more efficient to construe the claims before ruling on validity, see *id.*, the court proceeded to construe claim 1.

The district court first held, as a matter of law, that the disputed limitation is expressed in means-plus-function format under 35 U.S.C. § 112, ¶ 6.2 See *id.* at 1227. Neither party appeals this ruling. The court then observed that the portion of the specification that pertains to the structural component of this means-plus-function limitation discloses that:

[T]he present invention may include high-voltage generator circuit 34. Known Circuit techniques are used to implement high-voltage circuit 34. See *On-Chip High Voltage Generation in NMOS Integrated Circuits Using an Improved Voltage Multiplier Technique*, IEEE Journal of Solid State Circuits, Vol.[.] SC-11, No. 3, June 1976 [the "Dickson article"].

'811 patent, col. 4, ll. 56-63. The district court also noted that Figures 2 and 4 of the '811 patent only depict the high-voltage generator circuit as a "black box," see *Atmel*, 997 F. Supp. at 1227, i.e., they provide no detail as to what electrical components, e.g., transistors, resistors, or capacitors, comprise that circuit.<sup>3</sup> The district court then held that, based on the language in the written description set forth above, "the structure corresponding to the high voltage generating means cannot be any circuits beyond those described in the Dickson article." *Id.* For the district court, the resolution of the case turned on the permissibility of incorporating structures corresponding to the high-voltage means limitation by reference to material not in the specification. The court requested further briefing on this issue prior to ruling on ISD's motion for summary judgment. See *id.* at 1230.

After receiving this briefing, the court adopted the rule set forth in the version of the Manual of Patent Examining Procedure (MPEP), § 608.01(p), in effect at the time the patent application was filed.<sup>4</sup> See *Atmel*, 1998 WL 184274, at \*2-\*3. In relevant part, that section states that material "necessary to . . . support the claims" may not be incorporated by reference to a nonpatent publication. MPEP § 608.01(p) (4th ed., Rev. 8, 1981). Interpreting such "essential material" to include the structure corresponding to a means-plus-function limitation, the court concluded that the '811 patent improperly incorporated structure corresponding to the high-voltage means limitation by reference to the Dickson article; accordingly, the district court disregarded the structures disclosed in that publication. See *Atmel*, 1998 WL 184274, at \*3. In view of its prior holding that the structures corresponding to the high-voltage means limitation were limited by the specification itself to those set forth in the Dickson article, see *Atmel*, 997 F. Supp. at 1227, the court held that the resulting absence of any structure in the specification corresponding to the disputed limitation rendered the claim invalid as indefinite under 35 U.S.C. § 112, ¶ 2. See *Atmel*,

1998 WL 184274, at \*3 (citing *In re Dossel*, 115 F.3d 942, 946, 42 USPQ2d 1881, 1884-85 (Fed. Cir. 1997)).

The district court then rejected ISD's argument that it should determine whether the claim was indefinite based on the way the disclosure would be understood by one skilled in the art, not on the "technical form" of the specification. See *Atmel*, 1998 WL 184274, at \*3. In disregarding *Atmel's* expert testimony in support of its argument, the court concluded that:

Section 112, M 6 . . . requires that the specification disclose a structure corresponding to the claimed means. A patent holder cannot evade that requirement with a conclusory assertion that one skilled in the art would understand the claimed means despite the failure to disclose a structure. Under *In re Dossel*, the failure to comply with section 112, M 6 necessarily violates section 112, M 2.

*Id.* at \*4.

*Atmel* appealed the district court's grant of summary judgment of indefiniteness to this court. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1) (1994).

## DISCUSSION

### A. Standards of Review

Summary judgment is appropriate when there are no genuine issues of material fact and the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(c). We review a district court's grant of summary judgment *de novo*, reapplying the summary judgment standard. See *Conroy v. Reebok Int'l, Ltd.*, 14 F.3d 1570, 1575, 29 USPQ2d 1373, 1377 (Fed. Cir. 1994).

"A determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." See *Personalized Media Communications, LLC v. International Trade Comm'n*, 161 F.3d 696, 705, 48 USPQ2d 1880, 1888 (Fed. Cir. 1998). Indefiniteness, therefore, like claim construction, is a question of law that we review *de novo*. See *id.* at 702, 48 USPQ2d at 1886; cf. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1456, 46 USPQ2d 1169, 1174 (Fed. Cir. 1998) (*en banc*) (holding that claim construction is a question of law reviewed *de novo*).

### B. The Understanding of One Skilled in the Art

Citing *In re Dossel*, *Atmel* argues that the district court erred in not determining whether the high-voltage means limitation is sufficiently definite under § 112, M 2 based on the way one skilled in the art would understand that limitation in view of the specification. See *In re Dossel*, 115 F.2d 942, 42 USPQ2d 1881 (Fed. Cir. 1997). ISD responds that the knowledge available to such a person cannot serve as a substitute for adequate disclosure of structure in the specification. We also understand ISD to argue that even if the court failed to apply the proper standard, that error is harmless in view of its assertion of a total absence of structure in the specification corresponding to the high-voltage means limitation.

We agree with *Atmel* that the district court erred in its analysis under § 112, M 2 and should have determined whether sufficient structure was disclosed in the specification based on the understanding of one skilled in the art. As a general matter, it is well-established that the determination whether a claim is invalid as indefinite "depends on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the specification." *North Am. Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 1579, 28 USPQ2d 1333, 1339 (Fed. Cir. 1993); see *Miles Lab., Inc. v. Shandon, Inc.*, 997 F.2d 870, 875, 27 USPQ2d 1123,

1126 (Fed. Cir. 1993). For purposes of § 112 M 2, it is the disclosure in the specification itself, not the technical form of the disclosure that counts. In *In re Donaldson Co., Inc.*, we explained how § 112, M 2 applies in the specific context of a § 112, M 6 means-plus-function claim limitation: Although [§ 112, M 6] statutorily provides that one may use means-plus-function language in a claim, one is still subject to the requirement that a claim "particularly point out and distinctly claim" the invention [§ 112, M 2]. Therefore, if one employs means-plus-function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by the claim language. If an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112.

*Donaldson*, 16 F.3d 1189, 1195, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994). In *In re Dossel* we implied that the "one skilled in the art" mode of analysis applies with equal force when determining whether a § 112, M 6 means-plus-function limitation is sufficiently definite under § 112, M 2. In *Dossel*, the parties disputed whether adequate structure (in that case, a computer) was disclosed to support the "reconstructing means" limitation in the claims at issue. See *Dossel*, 115 F.3d at 946-47, 42 USPQ2d at 1885. In concluding that the claim limitation was sufficiently definite under § 112, M 2, the understanding of one skilled in the art was an integral part of our analysis:

Clearly, a unit which receives digital data, performs complex mathematical computations and outputs the results to a display must be implemented by or on a general or special purpose computer (although it is not clear why the written description does not simply state "computer" or some equivalent phrase). To bolster this result, we note that, in the medical imaging field, it is well within the realm of common experience that computers are used to generate images for display by mathematically processing digital input.

See *id.* at 947, 42 USPQ2d at 1885 (emphasis added).

That the "one skilled in the art" analysis should apply in determining whether sufficient structure has been disclosed to support a means-plus-function limitation flows naturally from the relationship between claim construction and § 112, M 2. We have previously observed that an analysis under § 112, M 2 is inextricably intertwined with claim construction, see *Personalized Media*, 161 F.3d at 705, 48 USPQ2d at 1888, and that in the § 112, M 6 context, a court's determination of the structure that corresponds to a particular means-plus function limitation is indeed a matter of claim construction, see *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1308, 46 USPQ2d 1752, 1756 (Fed. Cir. 1998). As it is well-established that claims are to be construed in view of the understanding of one skilled in the art, see, e.g., *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1365, 52 USPQ2d 1001, 1006 (Fed. Cir. 1999) (noting that "claim construction is firmly anchored in reality by the understanding of those of ordinary skill in the art"), the closely related issue concerning whether sufficient structure has in fact been disclosed to support a means-plus-function limitation should be analyzed under the same standard.

Moreover, the "one skilled in the art" analysis in this context is in accord with related analyses under § 112, M 1,5 viz., enablement, see § 112, M 1 (providing that the enablement requirement is satisfied if the patent applicant sets forth in the written description what one skilled in the art would need to know to make and use the claimed invention); best mode, see *Chemcast*

Corp. v. Arco Indus. Corp., 913 F.2d 923, 927, 16 USPQ2d 1033, 1036 (Fed. Cir. 1990) ("[W]hether a best mode disclosure is adequate, that is, whether the inventor concealed a better mode of practicing his invention than he disclosed, is a function not only of what the inventor knew but also how one skilled in the art would have understood his disclosure."); and written description, see Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991) (holding that, to satisfy the written description requirement, "the applicant must . . . convey with reasonable clarity to those skilled in the art that . . . he or she was in possession of the invention."). For the reasons outlined above, we thus conclude that the district court erred by failing to assess whether sufficient structure was disclosed in the specification to support the high-voltage means limitation based on the understanding of one skilled in the art.

We are aware that the PTO has recently issued proposed Supplemental Examiner Guidelines that adopt our reasoning in Dossel with respect to determining whether adequate structure has been disclosed to support a means-plus-function limitation. The proposed supplemental guidelines state in relevant part that:

The written description does not have to explicitly describe the structure (or material or acts) corresponding to a means- (or step-) plus-function limitation to particularly point out and distinctly claim the invention as required by 35 U.S.C. 112 M2. Rather, disclosure of structure corresponding to a means-plus-function limitation may be implicit in the written description if it would have been clear to those skilled in the art what structure must perform the function recited in the means-plus-function limitation.

PTO Supplemental Examiner Guidelines on Applying 35 U.S.C. 112 M6, 58 Fed. Reg. 443, 444 & nn.12 & 13 (1999) (emphasis added) (footnotes omitted). These guidelines would thus seem to be consistent with our holding on this point.

ISD asserts that consideration of the understanding of one skilled in the art in no way relieves the patentee of adequately disclosing sufficient structure in the specification. We agree. As we stated in Donaldson, "[I]f one employs means-plus-function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by the claim language."

Donaldson, 16 F.3d at 1195, 29 USPQ2d at 1850 (emphasis added); see Dossel, 115 F.3d at 946, 42 USPQ2d at 1884 ("Failure to describe adequately the necessary structure, material, or acts [corresponding to a means-plus-function limitation] in the written description means that the drafter has failed to comply with 112, M2."); B. Braun Med., Inc. v. Abbott Lab., 124 F.3d 1419, 1424, 43 USPQ2d 1896, 1900 (Fed. Cir. 1997) (holding that the "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history links or associates that structure to the function recited in the claim"). However, interpretation of what is disclosed must be made in light of the knowledge of one skilled in the art. Having settled the proper standard under which a court must assess the adequacy of disclosure of structure corresponding to a means-plus-function limitation, we now turn to the disclosure of the '811 patent.

### C. Sufficiency of the Disclosure

Atmel argues that the district court erred in adopting the relevant version of MPEP 608.01(p), which prohibits the incorporation of "essential material" by reference to nonpatent publications. Accordingly, Atmel contends that the court also erred in holding that the structures described in the Dickson article could not be incorporated by reference into the '811 patent.

Atmel asserts that the rule articulated by the district court not only conflicts with our precedent, but would encourage patentees to include inordinate quantities of written material in the specification for fear of omitting "essential material." Alternatively, Atmel contends that sufficient structure is provided in the specification even if one does not refer to the contents of the Dickson article. Atmel specifically directs us to the testimony of its expert, Michael Callahan, that the mere mention of the title of the Dickson article in the specification is sufficient for one skilled in the art to envision the structures disclosed in that article.

ISD responds that the district court correctly followed MPEP § 608.01(p) and properly excluded the structures described in the Dickson article. ISD argues that based on the plain language of § 112, M 6, incorporation by reference cannot be substituted for a disclosure in the specification. See 35 U.S.C. § 112, M 6 (1994). ISD asserts that incorporation by reference contravenes the public notice function that patents and their prosecution histories provide with respect to understanding the extent of a patentee's right to exclude, because competitors are unable to determine claim scope without burdensome reference to extrinsic evidence. ISD also responds that the district court properly limited the possible structures corresponding to the high-voltage means limitation to those in the Dickson article, and since the district court correctly excluded the contents of that article, the court properly held that no structure was disclosed corresponding to the high-voltage means limitation, thus rendering the claim indefinite.

We agree with ISD that the district court correctly held that structure supporting a means-plus-function claim under § 112, M 6 must appear in the specification. We disagree with the district court, however, that an inquiry under § 112 M 2 turns on whether a patentee has "incorporated by reference" material into the specification relating to structure. Instead, the inquiry asks first whether structure is described in specification, and, if so, whether one skilled in the art would identify the structure from that description. As we discuss below, we believe that these requirements of § 112 are revealed by its language and purpose, and we consider the issue in the context of the disclosure requirements of the statute rather than utilize the concept of incorporation by reference.

For the sake of clarity, we first set out in one place the provisions of § 112, MM 1, 2, and 6.

[M 1] The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

[M 2] The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

[M 6] An 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.

35 U.S.C. § 112, MM 1, 2, and 6 (1994).

Paragraph 1 is, inter alia, an enablement provision requiring that an inventor set forth in the patent specification how to make and use his or her invention. Paragraph 2 requires claims that particularly and distinctly indicate the subject matter that the inventor considers to be his or her invention. Paragraph 6 also addresses claim language, but refers to the specification for its meaning. In doing so, it specifically refers to "structure . . . described in the specification and equivalents thereof." *Id.* § 112, M 6. This provision represents a quid pro quo by permitting inventors to use a generic means expression for a claim limitation provided that the specification indicates what structure(s) constitute(s) the means. See *O.I. Corp. v. Tekmar Co.*, 115 F.3d 1576, 1583, 42 USPQ2d 1777, 1782 (Fed. Cir. 1997). The language indicates that means-plus-function clauses comprise not only the language of the claims, but also the structure corresponding to that means that is disclosed in the written description portion of the specification (and equivalents thereof). Thus, in order for a claim to meet the particularity requirement of M 2, the corresponding structure(s) of a means-plus-function limitation must be disclosed in the written description in such a manner that one skilled in the art will know and understand what structure corresponds to the means limitation. Otherwise, one does not know what the claim means. Fulfillment of the § 112, M 6 tradeoff cannot be satisfied when there is a total omission of structure. There must be structure in the specification. This conclusion is not inconsistent with the fact that the knowledge of one skilled in the particular art may be used to understand what structure(s) the specification discloses, or that even a dictionary or other documentary source may be resorted to for such assistance, because such resources may only be employed in relation to structure that is disclosed in the specification. Paragraph 6 does not contemplate the kind of open-ended reference to extrinsic works that M 1, the enablement provision, does.

Paragraph 1 permits resort to material outside of the specification in order to satisfy the enablement portion of the statute because it makes no sense to encumber the specification of a patent with all the knowledge of the past concerning how to make and use the claimed invention. One skilled in the art knows how to make and use a bolt, a wheel, a gear, a transistor, or a known chemical starting material. The specification would be of enormous and unnecessary length if one had to literally reinvent and describe the wheel.

Section 112, M 6, however, does not have the expansive purpose of M 1. It sets forth a simple requirement, a quid pro quo, in order to utilize a generic means expression. All one needs to do in order to obtain the benefit of that claiming device is to recite some structure corresponding to the means in the specification, as the statute states, so that one can readily ascertain what the claim means and comply with the particularity requirement of M 2. The requirement of specific structure in § 112, M 6 thus does not raise the specter of an unending disclosure of what everyone in the field knows that such a requirement in § 112, M 1 would entail. If our interpretation of the statute results in a slight amount of additional written description appearing in patent specifications compared with total omission of structure, that is the trade-off necessitated by an applicant's use of the statute's permissive generic means term.

Atmel argues that even though the text of the Dickson article is not in the specification, sufficient structure is nevertheless disclosed in the specification, and that the district court erred in limiting possible structures corresponding to the high-voltage generating means to those structures included in the Dickson article. While we do agree with ISD that the district court properly held that the Dickson article may not take the place of structure that does not appear in the specification, the specification plainly states that "[k]nown Circuit techniques are used to implement high-voltage circuit 34. See On-Chip High Voltage Generation in NMOS Integrated

Circuits Using an Improved Voltage Multiplier Technique, IEEE Journal of Solid State Circuits. . . ." '811 patent, col. 4, ll. 58-62. Atmel's expert, Callahan, testified that this title alone was sufficient to indicate to one skilled in the art the precise structure of the means recited in the specification. The record indicates that that testimony was essentially un rebutted. That being the case, we conclude that summary judgment was improperly granted invalidating the '811 patent for indefiniteness under ° 112, M2. We therefore reverse the grant of summary judgment of invalidity and remand for further consideration of other issues consistent with this opinion.

#### CONCLUSION

The district court properly concluded that the statutory requirement of disclosure of structure corresponding to the high-voltage means limitation can only be met by reference to those structures disclosed in the specification. However, the district court erred by failing to consider the knowledge of one skilled in the art that indicated, based on unrefuted testimony, that the specification disclosed sufficient structure corresponding to the high-voltage means limitation.

Accordingly, we

REVERSE and REMAND.

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MAYER, Chief Judge, dissenting.

I decline to join the court in holding that Atmel Corporation's ("Atmel") incorporation by reference of structure supporting the recited high voltage generating means is impermissible. Instead of the bobtailed approach the court today espouses, limiting inquiry to the structure that the mere title of the incorporated article would suggest to one of skill in the art, I would make the entire document available for all it teaches that artisan.

In its order construing claim 1 of United States Patent No. 4,511,811, the district court held that the "high voltage generating means" is a means-plus-function limitation. See 35 U.S.C. ° 112, M 6. According to the written description, the corresponding structure for this means is a "high-voltage generator circuit." Col. 4, ln. 56. The written description explains that "[k]nown circuit techniques are used to implement high-voltage generator circuit 34. See On-Chip High Voltage Generation in NMOS Integrated Circuits Using an Improved Voltage Multiplier Technique, IEEE Journal of Solid State Circuits, Vol SC-11, No. 3, June 1976 ["Dickson article"]." Id. at ll. 56-63. Based on this information, the court determined that "known circuit techniques" are "those described in the Dickson article, and no others." Therefore, it held that "the structure corresponding to the high voltage generating means cannot be any circuits beyond those described

in the Dickson article." Information Storage Devices, Inc. ("ISD") then moved for a finding of invalidity, based on the theory that if the structure corresponding to a means in a section 112, M 6 claim is described by reference to a non-patent document, the claim is indefinite under section 112, M 2.

ISD argued that the patentee's incorporation of the Dickson article by reference was improper because it violated section 608.01(p) of the MPEP, which states that "essential material," defined as material "necessary to (1) support the claims, or (2) for adequate disclosure of the invention (35 U.S.C. [§]112)," may not be incorporated by reference to "nonpatent publications." MPEP § 608.01(p) (4th ed. 1981). The district court agreed that it should follow the MPEP's rules about incorporation by reference because it is "good policy." The court reasoned that "[i]f someone reading the '811 patent must go to a library and find the [Dickson] article in order to determine what specific structure corresponds to the high voltage generating means, the scope of the patent cannot be said to have been fully disclosed, no matter how 'well known and readily available' the article may be." The court also said the MPEP's rules are "a reasonable interpretation of the requirements of section 112" and have "the strong advantage of providing a bright-line rule." Because the Dickson article was the sole support for the means-plus-function limitation, the district court found it was essential material, which was improperly incorporated into the written description. It effectively struck the article from the written description and held that claim 1 was indefinite for lack of structural support in the specification.

If the written description fails to "set forth an adequate disclosure" of a structure corresponding to the means in a means-plus-function claim, then the claim is indefinite, and therefore invalid. *In re Donaldson Co.*, 16 F.3d 1189, 1195, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994) (en banc); see also *In re Dossel*, 115 F.3d 942, 946, 42 USPQ2d 1881, 1885 (Fed. Cir. 1997). The court holds that the written description cannot adequately disclose a corresponding structure by incorporating a document fully describing this structure by reference. But unlike the district court, this court does not rely on the MPEP.

I agree that the MPEP does not control here. Although "the Commissioner of Patents is vested with wide discretion to formulate rules and guidelines governing [the] use [of incorporation by reference], thereby to prevent its abuse," *In re Hawkins*, 486 F.2d 569, 573, 179 USPQ 157, 161 (CCPA 1973), these guidelines do "not have the force of law," *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1425, 7 USPQ2d 1152, 1154 (Fed. Cir. 1988). "[T]he courts are the final authorities on issues of statutory construction. They must reject administrative constructions of [a] statute . . . that are inconsistent with the statutory mandate or that frustrate the policy that Congress sought to implement." *Id.* (quoting *Federal Election Comm'n v. Democratic Senatorial Campaign Comm.*, 454 U.S. 27, 32 (1981)).

I disagree with the court, however, that the language of section 112, M 6 itself requires its result. Section 112, M 6 does not expressly say that a structure is not "described in the specification" if it is "in" the specification by virtue of its incorporation by reference. Incorporation by reference is a common drafting tool used throughout the law. See *Hawkins*, 486 F.2d at 573, 179 USPQ at 161 (The practice of incorporation by reference has "longstanding basis in the law"); *General Elec. Co. v. Brenner*, 407 F.2d 1258, 1261-62, 159 USPQ 335, 337-38 (D.C. Cir. 1968). "As the expression itself implies, the purpose of 'incorporation by reference' is to make one document become a part of another document by referring to the former in the latter in such a manner that it is apparent that the cited document is part of the referencing document as if it were fully set out

therein." *In re Lund*, 376 F.2d 982, 989, 153 USPQ 625, 631 (CCPA 1967) (emphasis added); see also *Interstate Consol. St. Ry. v. Massachusetts*, 207 U.S. 79, 84 (1907) ("If the charter, instead of writing out the requirements of Rev. Laws, 112, § 72, referred specifically to another document expressing them, and purported to incorporate it, of course the charter would have the same effect as if it itself contained the words.") (emphasis added); *Black's Law Dictionary* 907 (4th ed. 1968) (defining "incorporate" as "[t]o declare that another document shall be taken as part of the document in which the declaration is made as much as if it were set out at length therein"). Therefore, unless Congress deviated from this accepted norm, material is "in" the specification if it is incorporated by reference.

The court has cited no authority for the proposition that in enacting section 112, Congress intended to exclude material incorporated by reference from the material that is otherwise "in the specification." Such an intent would be surprising in light of Congress' endorsement of the practice in section 112 itself. Under section 112, M 4, "[a] claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." 35 U.S.C. § 112, M 4; see also *id.* M 5. As the court recognizes, the specification consists of the written description and the claims. See *id.* MM 1, 2; see also *Dossel*, 115 F.3d at 945, 42 USPQ2d at 1884. If material incorporated by reference is not "in the specification," it also cannot be "in the claims." Under the court's definition of "in," therefore, the limitations of the claim to which the dependent claim refers are not "in" the claim by virtue of their incorporation by reference. How, then, could we construe dependent claims to include these limitations, as we have always done? See, e.g., *Bloom Eng'g Co. v. North Am. Mfg. Co.*, 129 F.3d 1247, 1250, 44 USPQ2d 1859, 1861 (Fed. Cir. 1997). Such an interpretation of "in" renders paragraphs 4 and 5 nonsensical.

As the court recognizes, claims may use language that those skilled in the art understand without the need for explicit, detailed definitions in the written description. See, e.g., *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1556-58, 220 USPQ 303, 315-16 (Fed. Cir. 1983) (claims not indefinite because the evidence showed that those skilled in the art understood their scope even though the written description failed to disclose precise definitions of certain terms of art). We have held claims to be definite, for example, where the written description disclosed only a black box for an electrical component—"digital detector"—because the definition provided in the written description, "a device that 'acts to detect the digital signal information' in another stream of information," was sufficient in light of the "well-known meaning" of the term "detector" to "those of skill in the electrical arts." *Personalized Media Communications, LLC v. International Trade Comm'n*, 161 F.3d 696, 704-06, 48 USPQ2d 1880, 1887-89 (Fed. Cir. 1998). We have also held claims definite where the claims recited a structure "so dimensioned," the written description provided no concrete dimensions, but "those of ordinary skill in the art realized that the dimensions could be easily obtained." *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1575-76, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). Finally, *In re Skoll*, 523 F.2d 1392, 1395-96, 187 USPQ 481, 483 (CCPA 1975), held claims definite after consulting dictionaries to determine that those of ordinary skill would understand the meaning of the recited phrase, "hydrolyzed carbohydrate," where the written description failed to define the term, "hydrolyzed."

Acknowledging the perspective of a person of ordinary skill in the art, as the court does, while refusing to afford incorporation by reference the same recognition, is incongruous. If it is appropriate to refer to material not incorporated into the written description by reference—such as

dictionaries and material well-known in the art to determine whether the claims are definite because "[t]hat which is common and well known is as if it were written out in the patent and delineated in the drawings," *Loom Co. v. Higgins*, 105 U.S. 580, 586 (1881), it is certainly appropriate to refer to incorporated material, which is more clearly a part of the written description itself. We have never before discounted the knowledge of those skilled in the art, which includes "the knowledge of where to search out information," *In re Howarth*, 654 F.2d 103, 106, 210 USPQ 689, 692 (CCPA 1981). Therefore, if those skilled in the art would understand what a "high voltage generating circuit" is, either by reading the Dickson article or because the circuit is a well-known structure in the art, the claim is definite in accordance with section 112, M 2.

ISD does not dispute that the incorporated Dickson article discloses sufficient structure. The district court should have determined, therefore, whether it is also publicly available. Not all incorporated references will satisfy the requirements of section 112, M 2. A claim must be understandable to those skilled in the art when it is read in light of both the material physically a part of the written description and the material incorporated in it by reference. If an incorporated reference, which is the sole support for a corresponding structure, is publicly unavailable, then the claim is not understandable. See *Quaker City Gear Works, Inc. v. Skil Corp.*, 747 F.2d 1446, 1455, 223 USPQ 1161, 1167 (Fed. Cir. 1984) ("Incorporation by reference has never been permissible under 35 U.S.C. § 112 of material necessary for an adequate disclosure which is unavailable to the public."); *Howarth*, 654 F.2d at 107, 210 USPQ at 692 ("When an applicant seeks to add necessary information to a specification by incorporating a source for the information by reference, public accessibility of that source alone may be the controlling factor."); *In re Heritage*, 182 F.2d 639, 643, 86 USPQ 160, 164 (CCPA 1950) ("There can be no question but that in a patent application, the disclosure thereof may be supplemented by reference to . . . any . . . disclosure which is available to the public.").

Whether an incorporated reference is available to the public is a factual inquiry. See *In re Wyer*, 655 F.2d 221, 226, 210 USPQ 790, 794 (CCPA 1981) (Public accessibility "involves such factual inquiries as classification and indexing."). A reference is reasonably accessible to the public, for example, if its incorporation would not be necessary because it is "common or well known," such as "[w]ell known text books in English" and "U.S. patents," *Howarth*, 654 F.2d at 106, 210 USPQ at 692. Similarly, if "interested members of the relevant public could obtain the information if they wanted to," then the reference is publicly available. *Constant v. Advanced Micro-Devices, Inc.*, 848 F.3d 1560, 1569, 7 USPQ2d 1057, 1062 (Fed. Cir. 1988). On the other hand, if a copy of the incorporated reference cannot be produced, the reference is unavailable to the public. See *Quaker City*, 747 F.2d at 1450, 1455, 223 USPQ at 1163, 1167. Also unavailable are "secret or privileged materials," "unpublished dissertations and theses," and "obscure foreign publications." *General Elec.*, 407 F.2d at 1262-63, 159 USPQ at 338; see also *In re Borst*, 345 F.2d 851, 854, 145 USPQ 554, 556 (CCPA 1965) (holding that a reference "was clearly not publicly available during the period it was under secrecy classification"). In this case, Atmel presented undisputed evidence that the Dickson article is publicly available because virtually every reputable engineering library in the United States carries the IEEE Journal containing it. The strongest argument for the court's outcome relies on its notion of the better public policy. Arguably, it is more convenient for one reading a patent to construe a means-plus-function limitation without having to refer to another document. Proper construction of a claim, however, already requires review of a separate set of documents-the prosecution history. See *Grain*

Processing Corp. v. American Maize-Prods. Co., 840 F.2d 902, 908, 5 USPQ2d 1788, 1793 (Fed. Cir. 1988). Therefore, convenience has not been a paramount concern. Competing with this concern for convenience is the statutory mandate of conciseness. See 35 U.S.C. § 112, M 1 ("The specification shall contain a written description . . . in . . . concise, and exact terms . . .") (emphasis added). In furtherance of this policy goal, we have admonished against including in the specification material that is known in the art. See, e.g., Spectra-Physics, Inc. v. Coherent, Inc., 827 F.2d 1524, 1534, 3 USPQ2d 1737, 1743 (Fed. Cir. 1987) ("A patent need not teach, and preferably omits, what is well known in the art."); Howarth, 654 F.2d at 105, 210 USPQ at 691 ("An inventor need not, however, explain every detail since he is speaking to those skilled in the art."); In re Gay, 309 F.2d 769, 774, 135 USPQ 311, 316 (CCPA 1962) ("Not every last detail is to be described, else patent specifications would turn into production specifications, which they were never intended to be."). Use of incorporation by reference makes the written description more concise. Requiring inventors to include every imaginable detail of a structure corresponding to a claimed means, including those widely understood by persons of ordinary skill in the art, would be the antithesis of conciseness and would result in exceedingly lengthy patents. In any event, by codifying the requirement of conciseness in section 112, M 1, Congress has expressed its preference.

\* Honorable Bruce D. Black, District Judge, United States District Court for the District of New Mexico, sitting by designation.

1 Section 112, M 2 states that:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

35 U.S.C. § 112, M 2 (1994).

2 Section 112, M 6 states that:

An 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.

35 U.S.C. § 112, M 6 (1994).

3 Atmel does not assert on appeal that these blocks are a sufficient disclosure of structure corresponding to the high-voltage generating means to satisfy § 112, M 2.

4 The fourth edition of the MPEP provided that:

An application for a patent when filed may incorporate "essential material" by reference to (1) a United States patent or (2) an allowed U.S. application . . . . "Essential material" is defined as that which is necessary to (1) support the claims, or (2) for adequate disclosure of the invention (35 U.S.C. 112). "Essential material" may not be incorporated by reference to (1) patents or applications published by foreign countries or regional patent offices, to (2) nonpatent

publications, to (3) a U.S. patent or application which itself incorporates "essential material" by reference or to (4) a foreign application.

MPEP ° 608.01(p) (4th ed., Rev. 8, 1981) (citation omitted).

5 Section 112, M 1 states that:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

35 U.S.C. ° 112, M 1 (1994).

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