UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW HAMPSHIRE

Markem-Imaje Corporation

v.

Civil No. 07-cv-00006-PB
Opinion No. 2012 DNH 136

Zipher Ltd. &
Videojet Technologies, Inc.

MEMORANDUM AND ORDER

Markem-Imaje Corporation ("Markem"), a manufacturer of thermal transfer printers, seeks a declaratory judgment that a series of patents held by Zipher Ltd. and Videojet Technologies, Inc. (collectively "Zipher") are invalid, unenforceable, and have not been infringed by Markem or its customers. For the reasons detailed below, I determine that the broad functional claim language in Zipher's patents fails to satisfy the definiteness requirement of 35 U.S.C. 112, ¶ 2. On that basis, I grant Markem's motion for summary judgment, and declare the challenged patent claims invalid.

I. BACKGROUND

A. Overview[1]

This dispute involves the tape drive systems used in industrial thermal transfer printers. Product manufacturers use these printers to rapidly print unique information onto individual labels or packaging material. For example, a potato chip manufacturer might use a thermal transfer printer to stamp expiration dates onto a roll of flat potato chip packages before separating the roll into individual bags and filling the bags with potato chips.

The act of thermal transfer printing consists of pressing a print head against an inked tape that contacts the printing medium (the potato chip bag) and using the print head to selectively heat the tape, thereby transferring the desired ink pattern to the printing medium (e.g., "BEST IF USED BY 08.29.2012"). The basic principle is similar to that of a typewriter or dot matrix printer, except that the print head

[1] The descriptions of thermal transfer printers, prior art, and the patents are drawn from my prior orders in this litigation. See Markem-Imaje Corp. v. Zipher Ltd., No. 10-cv-112-PB, 2011 WL 5837087 (D.N.H. Nov. 21, 2011); Markem-Imaje Corp. v. Zipher Ltd., No. 07-cv-06-PB, 2008 WL 4116666 (D.N.H. Aug. 28, 2008) (Doc. No. 92).

uses heat rather than the force of the impact to transfer the ink from the ribbon to the printing medium.

The printer may be required to operate in intermittent mode or continuous mode, depending on how the production line is set up in a particular factory. In intermittent mode, the printing medium is advanced into position and remains stationary during the printing process. In continuous mode, the printing medium advances through the printer at a constant rate throughout the printing process; as the printing medium moves forward, the printing head moves with it. Once the current sheet has been printed, the printing head then rapidly returns to its home position and the printing ribbon briefly rewinds so that the printing head is lined up with the boundary between the used and unused sections of ribbon.

As with any industrial application, reliability is extremely important in a thermal transfer printer. Some of the failures that can interrupt the operation of such a printer include excessive tape tension (which can cause the tape to break, forcing the operator to halt the production line to respool the tape), insufficient tape tension (which can interfere with the printer's ability to position the tape

properly), wastage of unused tape (which forces the operator to replace the tape spools more frequently), and mechanical failures caused by wear and tear on the tape drive system. Accordingly, tape drives must be designed to maintain tape tension within an acceptable range.

For two reasons, simply rotating each spool the same number of degrees for each printing cycle will not produce consistent tape tension. First, even in perfect conditions, rotating a given spool by a given number of degrees will result in a different length of ribbon advance depending on the diameter of ribbon on the spool. For example, a one-degree rotation of a spool 100 mm in diameter will result in about 0.9 mm of ribbon advance, whereas a one-degree rotation of a spool 50 mm in diameter will result in only about 0.4 mm of ribbon advance. Thus, the rotation of each spool must be adjusted according to the amount of ribbon remaining on the spool. Second, real-world conditions can interfere with the ideal mathematical relationship between spool diameter, spool rotation, and ribbon advance. For example, ribbon may stretch unevenly over time, causing unpredicted slack to develop. Additionally, if the ribbon breaks, operators may take actions (such as taping two

sections of ribbon together or tying off the ribbon) that make it even more difficult to measure how much ribbon remains on each spool.

B. Prior Art

The most common form of prior art relies upon a single motor to drive the take-up spool (the spool onto which used ribbon is taken up), with tension control provided by some form of "slipping clutch" arrangement on the supply spool (the spool from which fresh ribbon is drawn). As the take-up motor pulls more ribbon from the supply spool, the slipping clutch provides a resistive force that maintains an appropriate level of tension in the ribbon. The slipping clutch becomes less reliable, however, as it wears out over time. Additionally, a slipping clutch system's reliance on friction for tension control limits the acceleration, deceleration, and maximum speed capability of the ribbon transport system.

Other prior art uses two motors, with one motor driving the ribbon in a tape-transport direction and the other functioning solely for tension control, not ribbon advance. For example, U.S. Patent No. 5,366,303 (filed May 11, 1993) ("Barrus") discloses a printer that employs a take-up motor and a supply

motor. Barrus, however, is a "pull-drag" device in that only the take-up motor provides rotational torque in the direction of ribbon transport; the supply motor merely provides a variable drag on the other motor.

C. The Patents

At issue in this case are U.S. Patent No. 7,150,572 ("the '572 Patent") and four patents that are continuations of the '572 Patent: U.S. Patent Nos. 7,682,094 ("the '094 Patent"), 7,722,268 ("the '268 Patent"), 7,748,917 ("the '917 Patent"), and 7,753,605 ("the '605 Patent"). Although the claims of the continuation patents differ from the '572 Patent, each patent's specification is necessarily the same as the one filed with the '572 Patent. The patents disclose a tape drive intended for use in a thermal transfer printer.

The tape drive described in the common specification consists of two spools of tape, each mounted on a spool support. The exemplary embodiment energizes both motors to drive the spools in a tape transport direction, drives the spools to add or subtract appropriate lengths of ribbon for tension control purposes, uses the operation of the motors to measure tape tension without making physical contact with the tape, and

switches easily between continuous and intermittent operation.

For purposes of the analysis that follows, claim 1 of the '572 Patent is representative. It is directed to "[a] tape drive comprising" the following four elements:

> [1] two motors, at least one of which is a stepper motor;
>
> [2] two tape spool supports on which spools of tape are mounted, each spool being driveable by a respective one of said motors;
>
> [3] a controller adapted to control energization of said two motors such that tape is transported in at least one direction between spools of tape mounted on the spool supports;
>
> [4] wherein the **controller energizes both said motors** to drive the spools in a tape transport direction, and said **controller calculates a length of tape** to be added to or subtracted from tape extending between said spools in order to maintain tension in said tape between predetermined limit values **and controls said motors** to drive the spools to add or subtract the calculated length of tape to or from the tape extending between said spools.

'572 Patent, Doc. No. 151-4 at 35 (emphases added). The dispute in this case centers on the active verb clauses in the fourth element that describe the functional capabilities of the controller. Zipher concedes that such language constitutes

"functional claiming."[2] Although I focus on the fourth element of claim 1 of the '572 Patent, each of the challenged claims in the five patents contains similar functional language describing a controller's capabilities.

D. Prior Litigation

In a series of prior orders, I construed the terms "drive" and "spools" as they were used in the '572 patent. See Markem Corp. v. Zipher, Ltd., No. 07-cv-06-PB, 2009 WL 2855011 (D.N.H. Sept. 1, 2009) (Doc. No. 117); Markem-Imaje Corp. v. Zipher Ltd., No. 07-cv-06-PB, 2008 WL 4116666 (D.N.H. Aug. 28, 2008) (Doc. No. 92). I construed "drive" to mean "rotates" and "spools" to mean "more than one spool." Based on these rulings, I held that Markem's printer did not literally infringe the '572 Patent. On appeal, the Federal Circuit vacated my rulings and held that "'drive' is properly construed to mean the application of torque to the spools, whether the torque causes rotation or resists it." Markem-Imaje Corp. v. Zipher Ltd., 657 F.3d 1293, 1301 (Fed. Cir. 2011).

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[2] In an argument that I do not reach, Markem alternatively contends that the active verb clauses constitute method-step language, rendering the claims invalid under IPXL Holdings, LLC v. Amazon.com, Inc., 430 F.3d 1377 (Fed. Cir. 2005), as impermissible method/apparatus hybrid claims.

After my rulings, Zipher obtained the four continuation patents enumerated above. In a separately filed action that was consolidated with the instant action in December 2011,[3] I agreed with Zipher that various claims in the continuation patents that used the terms "controller" or "monitor" should not be construed as "means-plus-function claims" under 35 U.S.C. § 112, ¶ 6. Markem-Imaje Corp. v. Zipher Ltd., No. 10-cv-112-PB, 2011 WL 5837087 (D.N.H. Nov. 21, 2011). I also resolved disagreements about the construction of three claim terms. I held that the phrase "correction amount of tape to be added to or subtracted from tape extending between the tape spools" requires neither a calculated amount of tape nor a linear length of tape, and that the correction amount is designed to restore tension to an acceptable level but need not necessarily do so; that "controlling the operation of said two motors" means "controlling the motors to rotate or hold their respective spool of tape against rotation"; and that the phrase "parameter indicative of", as used in "parameter indicative of tension" and "parameter indicative of the [spool] diameter," includes both

[3] To date, I have also consolidated with this action, for pretrial purposes only, Videojet Tech. Ltd. v. Markem-Imaje Corp., No. 12-cv-34-PB.

direct and indirect methods of monitoring tension or diameter.

On March 30, 2012, Markem moved for summary judgment, contending that Zipher's patents are invalid on the grounds of indefiniteness. Zipher responded in an objection filed on May 31. To assist in my consideration of the issues at hand, I conducted an oral argument on July 30, at which time I allowed each party to clarify their respective positions.

II. STANDARD OF REVIEW

A summary judgment motion should be granted when the record reveals "no genuine dispute as to any material fact and that the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a); see Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248 (1986). Where a party argues that a patent claim is invalid for indefiniteness, the issue ordinarily is amenable to resolution on summary judgment because "claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." Datamize, LLC v. Plumtree Software, Inc., 417 F.3d 1342, 1347 (Fed. Cir. 2005) (quoting Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n, 161 F.3d 696, 705 (Fed. Cir. 1998)).

The definiteness requirement arises out of paragraph 2 of 35 U.S.C. § 112, which commands that the specification of a patent conclude by "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." This requirement is satisfied only by claims that "clearly distinguish what is claimed from what went before in the art and clearly circumscribe what is foreclosed from future enterprise." United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236 (1942). Because a patent's claims delineate the bounds of the invention, a claim is invalid for indefiniteness if "it does not reasonably apprise those skilled in the art of its scope." IPXL Holdings, LLC v. Amazon.com, Inc., 430 F.3d 1377, 1383-84 (Fed. Cir. 2005).

Each of a patent's claims enjoys a presumption of validity, and clear and convincing evidence must be shown to invalidate a patent. 35 U.S.C. § 282; Microsoft Corp. v. i4i Ltd. P'ship, 131 S. Ct. 2238, 2242 (2011). Where claim construction is necessary to resolve an indefiniteness challenge, general principles of claim construction apply, and claims should not be found indefinite unless "reasonable efforts at claim construction prove futile." Datamize, 417 F.3d at 1347-48.

III. ANALYSIS

In its motion for summary judgment, Markem argues that the claims are indefinite because they use impermissibly functional language at the point of novelty. Although I reject Markem's categorical approach to functional claiming, I conclude that in the specific factual circumstances of this case, the functional language at issue renders the claims indefinite because one of ordinary skill in the art would not apprehend what additional structure is implied by the functional language.

A. Categorical Indefiniteness Argument Based on *Halliburton*

Markem first contends that the patent claims asserted by Zipher are invalid for indefiniteness because, in contravention to the Supreme Court's 1946 decision in Halliburton Oil Well Cementing Co. v. Walker, they use "conveniently functional language at the exact point of novelty." 329 U.S. 1, 8 (1946). Under Markem's per se approach, Halliburton establishes a two-part test, where a claim is automatically invalid if it (1) uses functional language (i.e., language that defines a structure "by what it does rather than by what it is," In re Swinehart, 439 F.2d 210, 212 (C.C.P.A. 1971)), (2) to distinguish the claimed

invention from the prior art. Zipher's central response is that Halliburton is no longer good law, having been overturned by Congress's passage of the 1952 Patent Act. I agree with Zipher insofar as the categorical prohibition suggested by Markem is not borne out by recent case law. I disagree, however, that this ends the inquiry. Because functional claiming may violate generally applicable patent law standards, its usage must be closely scrutinized. Zipher's patents do not withstand that scrutiny. I begin my analysis with a discussion of the genesis of Halliburton and its remaining vitality.

Eight years prior to Halliburton, in a case where it invalidated a patent claim disclosing a lamp filament, the Supreme Court stated that functional claiming can render a patent claim invalid "when the inventor is painstaking when he recites what has already been seen, and then uses conveniently functional language at the exact point of novelty." General Electric Co. ("GE") v. Wabash Appliance Corp., 304 U.S. 364, 371 (1938). Elaborating on the potential vice of functional claiming, the Court in GE explained that although "[a] limited use of terms of effect or result, which accurately define the essential qualities of a product to one skilled in the art, may

in some instances be permissible and even desirable, [] a characteristic essential to novelty may not be distinguished from the old art solely by its tendency to remedy the problems in the art met by the patent." Id. at 371-72.

Adverting to the GE decision and its derogation of the use of "conveniently functional language at the exact point of novelty," the Court in Halliburton invalidated a patent claim on the basis that it was a combination of old ingredients whose novel aspect was described in purely functional terms. 329 U.S. at 8-9. In the Court's view, the claim impermissibly described the "most crucial element" of the apparatus -- in whole, a structure for measuring oil well depth -- "in terms of what it will do rather than in terms of its own physical characteristics or its arrangement in the new combination apparatus." Id. at 9. The Court explained that the danger of using functional language to distinguish a claimed invention from the prior art inhered in an inventor's ability to use ambiguous language to claim more than what he had actually invented:

> [T]here may be many other devices beyond our present information or indeed our imagination which will perform that function and yet fit these claims. . . . Had [the inventor] accurately described the machine he claims to have invented, he would have had no such

> broad rights to bar the use of all devices now or hereafter known which could [accomplish the function]. . . . [A] patentee cannot obtain greater coverage by failing to describe his invention than by describing it as the statute commands.

Id. at 12-13.

Apparently displeased by the decision in Halliburton, Congress enacted portions of the 1952 Patent Act as a response to the Court's prohibition on functional claiming. See In re Donaldson Co., 16 F.3d 1189, 1194 (Fed. Cir. 1994) ("Congress enacted paragraph six . . . to statutorily overrule [the Halliburton] holding"). Section 112, paragraph 6 of the Act explicitly authorizes what is termed "means-plus-function" claiming: "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 . . . ." 35 U.S.C. § 112, ¶ 6. In exchange for the convenience of means-plus-function claiming, however, the Act restricts the patentee to "the corresponding structure, material, or acts described in the specification and equivalents thereof." Id.

In a prior order in this case I determined, at Zipher's urging, that the patent claims at issue are not means-plus-

function claims. Markem-Imaje, 2011 WL 5837087. I was persuaded, in large part by extrinsic evidence denoting established definitions for the disputed terms "controller" and "monitor," that one of ordinary skill in the art would understand those terms as "known physical apparatuses" rather than as "'nonce words' or 'verbal constructs' that are simply substitutes for the term 'means for,'" id. at *4-5 (quoting Mass. Inst. of Tech. v. Abacus Software, 462 F.3d 1344, 1356 (Fed. Cir. 2006)). I also accepted Zipher's representations that the two terms connote sufficient structure to perform the functions recited. Def.'s Brief at 7, 9, Doc. No. 47 of No. 10-cv-112-PB. In light of the evidence presented and the presumption against means-plus-function claiming that arises when a claim avoids using the term "means," I concluded that the restrictions of section 112, paragraph 6 do not apply.

Markem argues that where, as here, a patentee does not avail itself of the "safe harbor" of section 112, paragraph 6, the bright-line rule of Halliburton continues to govern and bars a patentee from functional claiming at the point of novelty. I am unpersuaded by Markem's categorical approach, however, because it is inconsistent with Federal Circuit precedent, which

plainly sanctions functional claiming, whether or not at the point of novelty, outside of the framework of a means-plus-function claim. E.g., Microprocessor Enhancement Corp. ("MEC") v. Tex. Instruments Inc., 520 F.3d 1367, 1375 (Fed. Cir. 2008) ("Functional language may also be employed to limit the claims without using the means-plus-function format."); Swinehart, 439 F.2d at 212-13 ("[A]ny concern over the use of functional language at the so-called 'point of novelty' . . . . is not only irrelevant, it is misplaced . . . . We are convinced that there is no support, either in the actual holdings of prior cases or in the statute, for the proposition, put forward here, that 'functional' language, in and of itself, renders a claim improper."); see, e.g., Halliburton Energy Servs., Inc. v. M-I LLC, 514 F.3d 1244, 1255 (Fed. Cir. 2008) (quoting Swinehart with approval); Haberman v. Gerber Prods. Co., 236 F. App'x 592, 596 n.3 (Fed. Cir. 2007) (patentee is "permitted to use functional language to limit the claims"); K-2 Corp. v. Salomon SA, 191 F.3d 1356, 1363 (Fed. Cir. 1999) (analyzing functional language in patent claim as an additional limitation).[4]

[4] In asserting the continuing vitality of Halliburton, Markem cites no recent federal case law as precedent, relying instead

Instead, the Federal Circuit has adopted a more nuanced approach. See M-I, 514 F.3d at 1255; Swinehart, 439 F.2d at 212-13. The appropriate inquiry is directed to the traditional patent formalities: because "there is nothing intrinsically wrong with" functional claiming, a court should invalidate a patent with functional language only if it fails to satisfy the established, generally applicable requirements set out in section 112 and elsewhere. See Swinehart, 439 F.2d at 212. That said, as the Supreme Court recognized in Halliburton and GE, there are particular dangers implicated when an inventor

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on the decision of the Board of Patent Appeals and Interferences ("Board") in Ex Parte Miyazaki, 89 U.S.P.Q.2d 1207, 1217 (B.P.A.I. 2008). I place little weight on that opinion largely for the same three reasons expressed by the district court in American Medical Systems, Inc. v. Laser Peripherals, LLC, 712 F. Supp. 2d 885, 910 (D. Minn. 2010). That court explained: (1) in Miyazaki, the Board expressly limited its holding to claim construction before the Board; (2) the Board linked its concerns about functional language to the traditional requirements of section 112; and (3) Board opinions are not binding on federal courts. 712 F. Supp. 2d at 910. As an addendum to the first reason, I would also add that the Board in Miyazaki expressly stated that it had chosen to adopt a "lower threshold standard of ambiguity for indefiniteness for claims during prosecution" as compared to the threshold for claims subject to court review after issuance. 89 U.S.P.Q.2d at 1212. I also place no weight on the Board's subsequent decision in Ex Parte Rodriguez, 92 U.S.P.Q.2d 1395, 1408-11 (B.P.A.I. 2009), which unquestionably accepted Miyazaki as governing law.

describes his invention in functional terms. A leading treatise succinctly lists three problems that tend to arise:

> First, functionality may present a problem of definiteness under the second paragraph of Section 112 because it fails to provide a clear indication of what subject matter is within the claim. Second, functionality may present a problem of inadequate disclosure under the first paragraph of Section 112. Functional terms tend to be very broad in scope and the specification may not provide an enabling disclosure commensurate in scope. Finally, functionality may present a problem of novelty and nonobviousness: "the mere recitation of a newly discovered function or property, inherently possessed by things in the prior art does not cause a claim drawn to those things to distinguish over the prior art.

Donald S. Chisum, Chisum on Patents § 8.04[3] (2010) (footnotes omitted).

In this case, Markem has made clear in its briefing and at oral argument that its challenge is predicated only on the putative indefiniteness of the patent claims at issue. See Pl.'s Mem. in Supp. of Summ. J. at 1, Doc. No. 151-1. Stripped of any categorical rule existing by dint of Halliburton, Markem's functionality argument links the functional language in Zipher's claims to the traditional concern of definiteness encapsulated in 35 U.S.C. § 112, ¶ 2. My analysis of that argument is guided by the many Federal Circuit decisions on

indefiniteness and by its admonition in M-I that "[w]hen a claim limitation is defined in purely functional terms, the task of determining whether that limitation is sufficiently definite is a difficult one that is highly dependent on context[.]" 514 F.3d at 1255.

B. Specific Indefiniteness Argument

Although Markem's brief is not a paragon of clarity, I understand its more specific indefiniteness argument to be as follows.[5] The claims in Zipher's patents recite a variety of "generic components" that have long been "ubiquitous in tape drives," including "controllers." Pl.'s Mem. in Supp. of Summ. J. at 30, Doc. No. 151-1. Although a generic controller has inherent functionality, it requires additional structure -- i.e., additional programming, hardware, circuitry, etc. -- to be able to perform the particular functions detailed in the claims. The patents, however, do not claim any particular programming

[5] Zipher's counsel complained at oral argument that Markem had not raised a general indefiniteness argument untethered from a per se rule predicated on Halliburton. My review of Markem's brief (Doc. No. 151-1), specifically pages 30-34, satisfies me that Markem did assert a more nuanced, fact-specific indefiniteness argument, and that Zipher had fair notice that the issue was in play. The argument I describe in the text is drawn directly from Markem's brief and fairly characterizes Markem's contentions.

for the controllers, but instead "broadly claim[] all controllers that operate in the ways claimed, even if they do so using very different technology than that described in the patent specifications." Id. at 34. As such, the argument concludes, Zipher's claims are invalid for indefiniteness because they fail to specify the scope of the subject-matter embraced by the claims.

As a general principle, when functional language in an apparatus patent acts as an additional claim limitation to describe a capability of a structural component, it will either describe a capability that is inherent in an already disclosed structural component, or it will describe a capability that is not inherent and that therefore implies some additional unidentified structure that is required to perform the claimed function. The first type of claiming is problematic if the functional claim language is at the point of novelty because "[w]here all structural elements of a claim exist in a prior art product, and that prior art product is capable of satisfying all functional or intended use limitations, the claimed invention is nothing more than an unpatentable new use for an old product." Bettcher Indus., Inc. v. Bunzl USA, Inc., 661 F.3d 629, 653

(Fed. Cir. 2011) (Reyna, J., dissenting); see also Swinehart, 439 F.2d at 213. The second type of claiming, whether or not it is at the point of novelty, can present a problem if the claimed function can be performed through various structural means and a person skilled in the art cannot determine the structures that are encompassed by the claim. See, e.g., M-I, 514 F.3d at 1254. The functional claiming at issue here is of the latter variety.

Zipher's patents all require controllers that perform a variety of functions, including energizing motors to transport tape, calculating a correction amount of tape, and operating the motors to maintain tape tension at an acceptable level. As Zipher now concedes, however, a controller is not inherently capable of performing these functions without special programming.[6] See Tr. of July 30, 2012 Hr'g at 131, Doc. No. 168. Thus, a person skilled in the art must be able to discern what additional structures are encompassed by the functions

[6] This concession represents a change in position by Zipher. In its brief arguing that the functional claim language was not means-plus-function claiming, Zipher contended that a controller was capable of performing the claimed functions without additional structure. Def.'s Reply to Pl.'s Claim Construction Br. at 7, Doc. No. 47 of No. 10-cv-112-PB ("'Controller' Sufficient to Perform Recited Functions").

claimed. Here, however, Zipher does not argue that its functional claim terms connote specific structure. Instead, its position is that the functional terms encompass all means by which the functions can be performed. In other words, the purely functional claim language broadly and impermissibly "cover[s] any means which anyone may ever discover of producing the result." In re Fuetterer, 319 F.2d 259, 263 (C.C.P.A. 1963). Indeed, Zipher's counsel admitted as much during the claim construction hearing when he acknowledged that the term "controller" was a "deliberately chosen broad term[]" that was intended to cover every controller capable of performing the recited functions, no matter the algorithm used in the software enabling that functionality. Tr. of June 16, 2011 Markman Hr'g at 68-69, Doc. No. 68 of No. 10-cv-112-PB. It is clear, therefore, that one of ordinary skill in the art, confronted by the unbounded functional claiming at issue, would not apprehend what additional structure was being claimed to enable the controller to accomplish the recited functions. Therefore, the claims are invalid for indefiniteness under section 112, paragraph 2, for "fail[ing] 'to provide a clear-cut indication of the scope of the subject matter embraced by the claim.'"

M-I, 514 F.3d at 1255 (quoting Swinehart, 439 F.2d at 212-13).

Zipher might argue that I should attempt to save its claims by construing them as means-plus-function claims and limiting their scope to the structures disclosed in the specification. That course is inappropriate for two reasons. First, Zipher carefully pled its patent claims to avoid such treatment by refraining from using "means" language. Second, Zipher zealously resisted means-plus-function treatment in this litigation, contending until recently that the recitation of a controller was sufficient structure to perform the recited functions.

Nonetheless, belated application of section 112, paragraph 6 would not save Zipher's claims because the specification does not disclose structures sufficient to perform the functions at issue. Instructive on this point is the line of Federal Circuit cases addressing claims that recite a general-purpose computer as the means for performing a function that requires special programming. In such cases, the Federal Circuit has made clear that a patent's specification must disclose the algorithm that enables the computer to perform the claimed function because the algorithm serves as the "defining structure [that] render[s] the

bounds of the claim understandable to one of ordinary skill in the art." AllVoice Computing PLC v. Nuance Commc'ns, Inc., 504 F.3d 1236, 1244 (Fed. Cir. 2007). A patent that fails to disclose the limiting algorithm -- for example, a patent that only discloses the existence of software or a general-purpose computer -- is invalid for indefiniteness under section 112, paragraph 2. See, e.g., In re Katz Interactive Call Processing Patent Litig., 639 F.3d 1303, 1315 (Fed. Cir. 2011); Finisar Corp. v. DirecTV Grp., Inc., 523 F.3d 1323, 1340-41 (Fed. Cir. 2008).

As Zipher now concedes, a controller, just like a general-purpose computer, can be programmed to perform various functions that are not inherent to its structure. Under a section 112, paragraph 6 analysis, a means-plus-function claim that recites a programmable controller capable of performing special functions must be accompanied by an adequate disclosure in the patent specification of the algorithm that enables the claimed functions. That algorithm need not be in any particular form, so long as it is expressed "in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient

structure." Finisar, 523 F.3d at 1340 (internal citation omitted).

Means-plus-function treatment could not operate to save the claims at issue because the common specification fails to disclose sufficient algorithmic structure to describe the controller's functions. At the hearing, I questioned Zipher's counsel on whether and where the common specification disclosed an algorithm. I was directed to various portions of the specification that show the following: a circuit diagram illustrating the connections of a controller to other components; a description of the circuit diagram; references to one known set of conventional control algorithms and an explanation of what those algorithms might allow; and a description of how hardware can be configured to allow for a calculation of spool diameter. Tr. of July 30, 2012 Hr'g at 133-38, Doc. No. 168. I have reviewed these sections of the specification, and conclude that they do not set out the necessary algorithms that would enable a controller to perform the claimed functions. Therefore, Zipher's claims would remain invalid for indefiniteness even if I applied the limiting mechanism of section 112, paragraph 6.

IV. CONCLUSION

I am, of course, cognizant of the presumption of validity that accompanies a patent, and I am aware of the need for clear and convincing evidence to overcome that presumption. In this case, Markem has overcome that burden and established that Zipher's functional claiming "fail[s] 'to provide a clear-cut indication of the scope of the subject matter embraced by the claim.'" M-I, 514 F.3d at 1255 (quoting Swinehart, 439 F.2d at 212-13).

For the foregoing reasons, I grant Markem's motion for summary judgment (Doc. No. 151). The asserted claims are invalid for indefiniteness under 35 U.S.C. § 112, ¶ 2 for failing to "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." Specifically, claim 1 of the '572 Patent, claims 2, 18, and 31 of the '094 Patent, claims 1 and 33 of the '268 Patent, claims 1 and 3 of the '917 Patent, and claims 1, 5, 12, 13, 14, 15, and 18 of the '605 Patent are invalid. The clerk is directed to enter judgment accordingly and to close the case.

SO ORDERED.

/s/Paul Barbadoro
Paul Barbadoro
United States District Judge

August 9, 2012

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