

United States District Court,
N.D. Illinois, Eastern Division.

SAFE BED TECHNOLOGIES COMPANY,
Plaintiff.

v.

KCI USA, INC., Loyola University Health System, Rush System for Health, Swedish Covenant Hospital, and Sherman Hospital,
Defendants.

Sept. 8, 2004.

James D. Ryndak, Mark K. Suri, Ryndak & Suri, Chicago, IL, Anthony C. Valiulis, John H. Ward, Much Shelist Freed Denenberg Ament & Rubenstein, P.C., Chicago, IL, for Plaintiff.

Raymond P. Niro, Sally Wiggins, Douglas M. Hall, Niro, Scavone, Haller & Niro, Chicago, IL, for Defendants.

MEMORANDUM OPINION AND ORDER

ASHMAN, Magistrate J.

Plaintiff Safe Bed Technologies Company ("Safe Bed") charges defendants with infringing U.S. Patent No. 4,998,939 ("the '9 patent"), which covers a "Hospital Bed with Guard Rail Actuated Safety Apparatus." Safe Bed alleges that KCI USA, Inc. ("KCI") infringed the patent by making, selling, offering for sale, importing, and/or leasing certain hospital beds. Safe Bed alleges the remaining defendants infringed the '9 patent by using those hospital beds. This matter was referred to this Magistrate Judge for the purposes of construing the disputed claims of the '9 patent. The parties submitted memoranda on the issue of construction of the disputed claims, and illuminated some of their arguments in a *Markman* hearing the Court held on June 22, 2004. The Court's construction of the claims at issue in this case is set forth below.

I. BACKGROUND

A. Patented Invention

The '9 patent covers improvements to a hospital bed, especially a kinetic therapy hospital bed. Such beds allow for movement of a patient from side to side for therapeutic purposes, such as the reduction of fluid build-up and bed sores. The patent describes a "guard rail actuated safety apparatus," designed with the goal of preventing patients from falling from the hospital bed. To that end, when a guard rail is lowered, the safety apparatus prevents the operation of the features of the hospital bed that move the patient, or activates an alarm.

B. Disputed Claims

Claims 50, 64, and 69 of the '9 patent are at issue in this case. Claim 50 is an independent claim, and reads as follows:

In a hospital bed having a frame, a patient support assembly mounted for adjustable movement relative to the frame, a pair of left and right guard rails on opposite left and right sides of the patient support assembly and means for mounting the guard rails to the frame for movement between inoperative and operative positions in which they are relatively less and more effective to restrain the patient against lateral movement off the side of the patient support assembly directly associated therewith, the improvement being a guard rail actuated safety apparatus, comprising: means for preventing adjustment of the patient support assembly relative to the frame; means for sensing when at least one of said guard rails is in an inoperative position; and means responsive to said sensing means for actuating the adjustment preventing means.

('9 patent, 19 :58-20 :6). Claim 64 is also an independent claim, and reads as follows:

In a bed with a frame, a patient support assembly mounted to the frame and having a pressurizable member of a medical apparatus for interacting with the patient's body resting thereon, a pair of left and right guard rails opposite left and right sides of the patient support assembly and means for mounting the guard rails for movement between relatively inoperative and operative positions in which they are relatively less and more effective to restrain a patient against lateral movement off a side of the patient support assembly directly adjacent thereto, the improvement being a guard rail actuated safety apparatus, comprising: means for depressurizing said pressurizable member; means for sensing when at least one of the guard rails is in an inoperative position; and means responsive to said sensing means detecting a guard rail in an inoperative position for actuating said depressurizing means to depressurize said pressurizable member.

('9 patent, 21 :25-43). Claim 69 is dependent on Claim 64, and describes a "an alarm and means for actuating the alarm in response to the [sic] at least one of the guard rails being in an inoperative position." ('9 patent, 22 :14-16).

II. CLAIM CONSTRUCTION STANDARDS

In *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed.Cir.1995), the Federal Circuit held, and the Supreme Court later affirmed, that it is the court's responsibility to construe the claims of patents as a matter of law for the jury. 52 F.3d at 979, *aff'd*, 517 U.S. 370, 116 S.Ct. 1384 (1996). Claim construction is "the process of giving proper meaning to the claim language," the fundamental process that "defines the scope of the protected invention." *Abtox, Inc. v. Exitron Corp.*, 122 F.3d 1019, 1023 (Fed.Cir.1997). "[T]he language of the claim frames and ultimately resolves all issues of claim interpretation." *Id.*

Claim construction starts with a fundamental principle: there is a "heavy presumption" that a claim term carries its ordinary and customary meaning. *Teleflex, Inc. v. Ficosa North America Corp.*, 299 F.3d 1313, 1325 (Fed.Cir.2002). The court's task of discerning this meaning involves perusal of the intrinsic evidence of record, including the claims, the drawings, the specification, and the prosecution history, if in evidence. *Teleflex*, 299 F.3d at 1324. The court may also consult dictionaries and treatises in its effort to establish the meaning those skilled in the relevant art assign to a term. *Texas Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1202-03 (Fed.Cir.2002).

While the claim language is presumed to carry its ordinary and customary meaning, a patentee may overcome this presumption by clearly using the words in the specification, prosecution history, or both "in a

manner inconsistent with its ordinary meaning." *Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp.*, 320 F.3d 1339, 1347 (Fed.Cir.2003) (*citing* *Teleflex*, 299 F.3d at 1325-26). By doing so, a patent applicant may expand or limit the scope of the term in the context of the patent claims. *Genzyme Corp. v. Transkaryotic Therapies, Inc.*, 346 F.3d 1094, 1098 (Fed.Cir.2003). For example, in *Teleflex*, the court explained that "[o]ne purpose for examining the specification is to determine if the patentee has limited the scope of the claims." 299 F.3d at 1325. To illustrate such an instance, the court offered that "an inventor may choose to be his own lexicographer if he defines the specific terms used to describe the invention with reasonable clarity, deliberateness, and precision." *Teleflex*, 299 F.3d at 1325. In addition, the court also noted that the specification may be consulted to resolve ambiguity if the ordinary and customary meanings of the words used in the claims are not sufficiently clear to allow the scope of the claim to be determined from the words alone. *Id.* "The patentee may demonstrate an intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *Id.* Accordingly, of all the intrinsic evidence, courts have called the specification the "single best guide to the meaning of a disputed term," and have indicated that it is usually dispositive. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996).

This might seem a fairly straightforward process, but the law governing claim construction also holds that while the claims must be read in view of the specification, limitations from the specification are not to be read into the claims. *Teleflex*, 299 F.3d at 1326. "That claims are interpreted in light of the specification does not mean that everything expressed in the specification must be read into all the claims." *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 957 (Fed.Cir.1983). The Federal Circuit addressed this issue in *Telegenix*, where it held that:

the intrinsic record also must be examined *in every case* to determine whether the presumption of ordinary and customary meaning is rebutted. Indeed, the intrinsic record may show that the specification uses the words in a manner clearly inconsistent with the ordinary meaning reflected, for example, in a dictionary definition. In such a case, the inconsistent dictionary definition must be rejected. In short, the presumption in favor of a dictionary definition will be overcome where the patentee, acting as his or her own lexicographer, has clearly set forth an explicit definition of the term different from its ordinary meaning. Further, the presumption also will be rebutted if the inventor has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.

308 F.3d at 1204 (emphasis added, citations omitted). This suggests that the intrinsic record, including the specification, would generally "trump" the claim language in construing the claim. The court, however, went on to caution:

Consulting the written description and prosecution history as a threshold step in the claim construction process, before any effort is made to discern the ordinary and customary meanings attributed to the words themselves, invites a violation of our precedent counseling against importing limitations into the claims. For example, if an invention is disclosed in the written description in only one exemplary form or in only one embodiment, the risk of starting with the intrinsic record is that the single form or embodiment so disclosed will be read to require that the claim terms be limited to that single form or embodiment. *Indeed, one can easily be misled to believe that this is precisely what our precedent requires when it informs that disputed claim terms should be construed in light of the intrinsic record.* But if the meaning of the words themselves would not have been understood to persons of skill in the art to be limited only to the examples or

embodiments described in the specification, reading the words in such a confined way would mandate the wrong result and would violate our proscription of not reading limitations from the specification into the claims.

308 F.3d at 1204-05 (emphasis added, citations omitted).

The '9 patent employs two claim forms that implicate additional construction standards. One is the "means-plus-function" claim form. The means-plus-function form allows a patentee to define an invention as a means or a step for performing a specified function:

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. s. 112, para. 6. When a patentee uses the word "means" in a claim, it triggers a presumption that the limitation at issue is expressed as a means-plus-function limitation. *Personalized Media Communications, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 703 (Fed.Cir.1998). In construing a means-plus-function claim limitation, the court first identifies the function recited within that limitation. *ACTV Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1087 (Fed.Cir.2003). Then, the court must then identify the corresponding structure that performs the recited function. *Northrop Grumman Corp. v. Intel Corp.*, 325 F.3d 1346, 1350 (Fed.Cir.2003). As it does so, the court must bear in mind that:

structure disclosed in the specification is 'corresponding' structure 'only if the specification or the prosecution history clearly links or associates that structure to the function recited in the claim.' A court may not import into the claim features that are unnecessary to perform the claimed function. Features that do not perform the recited function do not constitute corresponding structure and thus do not serve as claim limitations.

Northrop Grumman, 352 F.3d at 1352 (citations omitted). While section 112, para. 6 allows the patentee to use "means" expressions without the burden of reciting of all the possible means that might be used in a claimed apparatus, the price of that convenience is limitation of the claim to the means specified in the written description and equivalents thereof. *Medical Instrumentation and Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211 (Fed.Cir.2003); *O.I. Corp. v. Tekmar Co.*, 115 F.3d 1576, 1583 (Fed.Cir.1997).

The other claim form used in the '9 patent is the Jepson form. Generally, a Jepson claim follows this format: "(1) a preamble comprising a general description of all the elements or steps of the claimed combination which are conventional or known, (2) a phrase such as 'wherein the improvement comprises,' and (3) those elements, steps, and/or relationships which constitute that portion of the claimed combination which the applicant considers as the new or improved portion." 37 C.F.R. s. 1.75(e) (1996). While the Jepson form allows a patentee to use the preamble to recite "elements or steps of the claimed invention which are conventional or known," *Kegel Co. v. AMF Bowling, Inc.*, 127 F.3d 1420, 1426 (Fed.Cir.1997), "[w]hen this form is employed, the claim preamble defines not only the context of the claimed invention, but also its scope." *Rowe v. Dror*, 112 F.3d 473, 479 (Fed.Cir.1997). The fact that the patentee has chosen the Jepson form of the claim evidences the intention "to use the preamble to define, in part, the structural elements of his claimed invention." *Id.*; *Kegel*, 127 F.3d at 1426, 44 USPQ2d at 1127. Thus, the preamble is a limitation in a Jepson-type claim. *Epcon Gas Systems, Inc. v. Bauer Compressors, Inc.*, 279 F.3d 1022,

III. CONSTRUCTION OF DISPUTED CLAIMS

A. Claim 50

1. "a patient support assembly"

The parties' dispute of the construction of this claim element focuses on what "a patient support assembly" includes.

Safe Bed:

KCI:

"A patient support assembly" is a conventional mattress or other assembly for supporting a patient directly or indirectly. (*Safe Bed's Memorandum in Support of its Claim Construction* ("Safe Bed's Mem."), at 7).

"A patient support assembly" must include at least one conventional mattress and an underlying patient support frame. (*KCI's Memorandum in Support of its Claim Construction* ("KCI's Mem."), at 6).

While the parties disagree over the construction of this claim element, both sides support their proposed construction by reference to the same language in the patent specification. (*Safe Bed's Mem.*, at 7; *KCI's Mem.*, at 7). The pertinent portion of the specification reads:

Supported by the frame 10 is a patient support assembly 12 including one or more conventional mattresses 12A, possibly, an optional overlying pressurizable member 12A' and an underlying patient support frame 12B.

("9 patent, 5 :15-18). While Safe Bed submits that "a patient support assembly" could be interpreted as nothing more than "one conventional mattress," KCI argues that the use of the word "assembly" dictates that the term require more. According to KCI, it must, at a minimum, include not only one conventional mattress, but an underlying patient support frame as well. The Court agrees with KCI's construction of this claim.

Claim interpretation begins with the ordinary and customary meaning of the words. "Assembly" is defined as "a collection of parts [fit together] as to form a complete machine, structure, or unit." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY, at 131 (1986). FN1 From this standpoint, then, a "patient support assembly" cannot be a single item, such as one conventional mattress, but must be a collection of more than one part. To accept Safe Bed's interpretation that the "patient support assembly" could be one mattress *or other* assembly would render the term "assembly" superfluous, which would

violate a canon of patent claim construction. *Elekta Instrument S.A. v. O.U.R. Scientific Intern., Inc.*, 214 F.3d 1302, 1307 (Fed.Cir.2000) (rejecting claim interpretation that would term superfluous).

FN1. Throughout its submissions in this case, Safe Bed repeatedly faults KCI for relying on a dictionary published in 1993, two years after the March 12, 1991 issue of the '9 patent. (*Safe Bed's Reply Memorandum on Claim Construction Issues*, at 2). Because it is true that the court should consult a dictionary that was "publicly available at the time the patent is issued" to determine the ordinary and customary meaning of a disputed term, *Telegenix, Inc.*, 308 F.3d at 1202-03, the court employs a dictionary that predates the issue of the '9 patent. Nevertheless, the passage of a few years has not had the dramatic effect on the language that Safe Bed suspects.

Safe Bed also argues that the specification cannot be grammatically read in the manner KCI suggests. According to Safe Bed:

[t]he plain English meaning of the quoted specification language is that a patient support assembly is comprised of one or more conventional mattresses. The sentence continues that the patient support assembly could "*possibly*" include an *optional* overlying pressurizable member and an underlying patient support frame ... This refers to the pressurizable member and an underlying support frame as *optional, not required* elements.

(*Safe Bed's Reply Memorandum on Claim Construction Issues* ("*Safe Bed's Reply*"), at 4). To the contrary, the sentence construction suggests that only "overlying pressurizable member" is modified by "an optional." The support assembly is said to include, "possibly, *an optional* overlying pressurizable member *and an* underlying patient support frame" as opposed to "possibly, *an optional* overlying pressurizable member *and* underlying patient support frame." The second version would more readily indicate both were optional, but that is not the version in the specification. To be sure, the specification language evinces a battle with grammar, but it is more amenable to KCI's interpretation than to Safe Bed's.

Safe Bed also points out that claim 52, which is dependent on claim 50, specifies that " 'said patient support assembly has an articulated frame mounted for adjustable movement.' " (*Safe Bed's Reply*, at 6 (*quoting* "9 patent, 20 :12-14)). According to Safe Bed, KCI's claim construction would import the "articulated frame" of claim 52 into claim 50, thus violating the doctrine of claim differentiation. (*Safe Bed's Reply*, at 6). While not a hard and fast rule of claim construction, the doctrine of claim differentiation does create a presumption that each claim in a patent has a different scope. *Sunrace Roots Enterprise Co., Ltd. v. SRAM Corp.*, 336 F.3d 1298, 1302 (Fed.Cir.2003). That presumption is especially strong when the limitation in dispute is the only meaningful difference between an independent and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim. *Ecolab Inc. v. Paraclypse, Inc.*, 285 F.3d 1362, 1375 (Fed.Cir.2002). This is not the case here, however. KCI is not arguing that the limitation of an *articulated* frame be read into claim 50, but merely an underlying support frame. The two phrases are not identical. The term "articulated" adds a meaningful difference between claim 50 and dependent claim 52: the difference between an ordinary frame and one "consisting of segments united by joints." WEBSTER'S, at 124. The specification, for example, indicates that a patient support frame might be mounted to the hospital bed frame in one fashion, while an articulated frame-which would have interconnected segments-would be mounted in another. ("9 patent, 5 :19-24). Accordingly, the Court construes "patient support assembly" to include at least one conventional mattress and an underlying patient support frame.

2. "mounted for adjustable movement relative to the frame"

Here, the parties' dispute focuses on whether the phrase "mounted for" in this claim requires that the patient support assembly be attached to the main hospital bed frame.

Safe Bed:

"Mounted for adjustable movement relative to the frame" means the patient support assembly is assembled in a manner to allow or permit adjustable movement with respect to the frame. (*Safe Bed's Mem.*, at 7).

KCI:

"Mounted for adjustable movement relative to the frame" means the mounting device must (1) attach the patient support assembly to the main frame, and (2) allow for adjustment of the patient support assembly relative to the main frame. (*KCI's Mem.*, at 9).

As KCI points out, the ordinary and customary meaning of "mount" in this context is "to attach to a support." WEBSTER'S, at 1477. Although Safe Bed argues that this definition "ignores the ordinary meaning of the element" (*Safe Bed's Reply*, at 7), it offers no competing definition of "mount" that might support its position. Instead, it attempts to argue that because the claim uses the phrase "mounted for," as opposed to "mounted to," the patient support assembly need not be attached to the bed frame. (*Safe Bed's Reply*, at 8). This stance, of course, ignores the fact that "mounted" *means* "attached to a support." Tellingly, Safe Bed contends that "mount" does mean "attach to a support" elsewhere in its brief when that definition suits its purposes. (*Safe Bed's Mem.*, at 8 ("The ordinary meaning of 'mount' is 'attach to a support' ')). Thus, the patient support assembly must be "attached to a support."

The question for Safe Bed, then, is whether the patient support assembly might be attached to a support other than the bed frame. Safe Bed offers no suggestion—at least not a convincing one—of how this might be accomplished. The only idea Safe Bed is able to advance in two rounds of briefing is that:

[a] patient support assembly mounted for adjustable movement relative to the frame in the context of the "9 specification includes a "continuously moving kinetic therapy bed." A patient support assembly also includes, for example, an inflatable patient turning device or a therapeutic air mattress. The "9 specification teaches that such an inflatable turning device may be comprised of at least a pair of inflatable members. Thus, one of skill in the art knew that a continuously moving kinetic therapy bed includes lateral rotation caused by successive inflation or deflation of bladders associated with a mattress.

(*Safe Bed's Mem.*, at 7 (citations to patent omitted)). This is an unconvincing explanation, mostly because it omits discussion of anything being attached to a support. Even if that flaw were ignored, the Court would be unable to accept Safe Bed's assertion as to what one skilled in the art might understand about the possibility

of support assemblies being "mounted" without, seemingly, being attached to any support. Safe Bed does not present any evidence whatsoever to support its conclusory statement that one skilled in the art would understand this claim as Safe Bed proposes. *See* *Creo Products, Inc. v. Presstek, Inc.*, 305 F.3d 1337, 1348 (Fed.Cir.2002) (rejecting unsupported contention as to what one skilled in the art would know). FN2

FN2. Throughout its submissions in the matter, Safe Bed repeatedly offers its opinion as to what those skilled in the art might understand about the claims at issue without providing any evidence in support. As such, the Court is constrained to ignore those arguments in each instance.

Because Safe Bed neither supports nor expounds upon its theory, the Court is left to assume that it is Safe Bed's contention that the "mounted for" term of the claim somehow refers to the placement of the inflatable bladders on the patient support frame. This construction puts far too great a strain on the ordinary and customary meaning of "mounted." This tenuous premise would force one to suppose that the inflation and deflation of the bladders would constitute the "adjustable movement relative to the frame." The movement of such bladders, however, would be relative to the patient support assembly as well-the inflatable devices would raise the surface of the mattress while the assembly remained stationary-and the remainder of the support assembly would not move at all. This is to say nothing of the fact that, according to Safe Bed and the specification, these inflatable or pressurizable devices are entirely optional. (*Safe Bed's Mem.*, at 4; "9 patent 5 :17-18). Safe Bed offers no inkling as to what might be moving relative to the frame in cases where there is no optional inflatable device. Obviously, then, the "patient support assembly" must be attached to a support-the main bed frame-in a manner that allows adjustable movement relative to the frame.

3. "means for mounting the guard rails to the frame for movement between operative and inoperative positions in which they are relatively less and more effective to restrain the patient against lateral movement off the side of the patient support assembly directly associated therewith"

From nearly all appearances, the parties seem to agree that this is a means-plus-function claim element. (*Safe Bed's Mem.*, at 8; *KCI's Mem.*, at 11; *Safe Bed's Reply*, at 9). FN3 The employment of the word "means" signals that this is a means-plus-function claim element. The parties agree that the function is to attach the guard rails to the frame in a manner that allows movement between inoperative and operative positions. (*Safe Bed's Mem.*, at 8; *KCI's Mem.*, at 11; *Safe Bed's Reply*, at 9). The parties disagree, however, as to what the corresponding structure is that performs this function.

FN3. The Court says "nearly all appearances" because Safe Bed's treatment of this claim element presents something of a problem. Throughout virtually the entirety of its submissions on this claim element, Safe Bed maintains that it is a means-plus-function claim element, and construes it accordingly. (*Safe Bed's Mem.*, at 8-10; *Safe Bed's Reply*, at 9-11). Yet, in a single paragraph in its reply, Safe Bed suddenly and cryptically argues it is *not* a means-plus-function element. (*Safe Bed's Reply*, at 10). There, Safe Bed fleetingly submits that this language is the preamble of a *Jepson* claim because the language is followed by the phrase, "the improvement being." (*Safe Bed's Reply*, at 10). Ordinarily, a litigant is not allowed to raise new arguments in a reply brief. As Safe Bed points out, however, Federal Circuit law suggests that Safe Bed ought not to be held to as high a standard as this court might hold a *pro se* litigant. *See Exxon Chemical Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555 (Fed.Cir.1995) (the trial judge has an independent obligation to determine the meaning of the claims, notwithstanding the adequacy of the arguments asserted by the parties).

Safe Bed:

KCI:

Structure: any suitable structure so that the guard rails can be moved between relatively operative and relatively inoperative positions (*Safe Bed's Mem.*, at 8); the prior art and equivalents thereto. (*Safe Bed's Reply*, at 9).

Structure: those structures specifically identified by incorporated prior art references U.S. Patents Nos. 2,734,104; 3,012,255; 3,336,609; 3,930,273; 3,840,917; and 4,509,217. (*KCI's Mem.*, at 10.).

"[S]tructure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed.Cir.1997). The patentee must link or associate structure in the specification to the recited function. *Braun*, 124 F.3d at 1424. In this instance, KCI argues that the "9 patent links the function here to the structures discussed in the Background of the Invention:

guard rails are often movably mounted to the bed frame to enable them to be lowered to an inoperative position. Movable mounting of the guard rails is required to facilitate access to the patient, to install and remove the patient and to periodically change soiled sheets, mattress covers, blankets and the like. There are numerous methods of movably mounting the guard rails to the bed frame which are known. Some guard rails are mounted to slide up and down, such as shown in U.S. Pat. Nos. 2,734,104 of Gollhofer issued Feb. 7, 1956 and 3,012,255 of Diehl issued Dec. 12, 1961; some are mounted for pivotal movement about an axis transverse to the elongate axis of the bed, such as shown in U.S. Pat. Nos. 3,336,609 of Taylor issued Oct. 15, 1974, 3,930,273 of Stern issued Jan. 6, 1976 and 3,840,917 of Taylor issued Aug. 22, 1967; and some are mounted for pivotal movement about an axis parallel to the bed such as shown in U.S. Pat. No. 4,509,217 of Therrien issued Apr. 9, 1985. Even though easily movable to an inoperative position, these guard rails are relied upon exclusively to protect the patient against falls off the bed.

* * *

There are basically two conventional means for movably mounting guard rails 26 and 28. The first way is to slidably mount the guard rail 26 to vertical poles 34 attached to the frame at opposite ends of the bed, as shown in FIG. 1. This type of mounting is also shown in U.S. Pat. Nos. 2,734,104 of Gollhofer and 3,012,255 of Diehl. Another conventional way of mounting such guard rails is to mount them for pivotal movement relative to the frame, and this mounting technique is well treated in U.S. Pat. Nos. 3,336,609 of Taylor; 3,840,917 of Taylor; 3,930,273 of Stern and 4,509,217 of Therrien. The guard rail 26 can, of course, also be mounted for releasable detachment from the frame 10 when it is moved out of an operative position. Generally, reference should be made to the patents for further background information on conventional hospital beds with guard rails.

("9 patent, 1:33-46; 6:7-23; *KCI Mem.*, at 12). Clearly, then, the patent links the function to the six examples of prior art referenced in the specification.

Under section 112, paragraph 6, a means-plus-function claim must be construed by reference to the specification, but it is not limited to the embodiment or embodiments disclosed in the specification. It also encompasses all equivalents to the disclosed structure. 35 U.S.C. s. 112, para. 6. Thus, in this instance, the structure must be construed to include all equivalents to the disclosed examples of prior art: those structures specifically identified by incorporated prior art references U.S. Patents Nos. 2,734,104; 3,012,255; 3,336,609; 3,930,273; 3,840,917; and 4,509,217.

This might be essentially what Safe Bed argues, although it is difficult to tell, because, as already noted, Safe Bed struggles with the construction of this claim. After arguing that this claim element is in means-plus-function format in its opening and reply memoranda, it changes its position briefly in its reply memorandum and argues it is a Jepson claim element. Safe Bed contends that the presumption triggered by the use of the word "means" is not applicable here, but rather than explain how the presumption is overcome, it simply argues that the specification makes it clear. (*Safe Bed's Reply*, at 10). FN4 Similarly, while Safe Bed argues that the claim element is really in the Jepson format and not the means-plus-function format, it does not suggest how that might impact on the interpretation of the claim, but only states that "how the guard rails are mounted is of no consequence-as long as they are movably mounted between relatively operable and relatively inoperable positions." (*Safe Bed's Reply*, at 10).

FN4. In fact, the presumption may be overcome in two ways, neither of which are addressed by Safe Bed. First, "a claim element that uses the word 'means' but recites no function corresponding to the means does not invoke s. 112, para. 6;" second, "even if the claim element specifies a function, if it also recites sufficient structure or material for performing that function, s. 112, para. 6 does not apply." *Allen Engineering Corp. v. Bartell Industries, Inc.*, 299 F.3d 1336, 1347 (Fed.Cir.2002) (citations omitted). A claim term recites sufficient structure if "the 'term, as the name for structure, has a reasonably well understood meaning in the art." '*Id.* (citations omitted). In this instance, for example, one might suppose that the phrase, "means for mounting the guard rails ..." could be interpreted as the name for the structure with a reasonably well understood meaning in the art.

The Court can only speculate as to what Safe Bed might have argued if it had decided upon its construction of this claim element earlier in this litigation, which it initiated over two-and-a-half years ago. If the claim is in the Jepson format, that means the preamble recites elements of the claimed invention that are conventional or known. *Epcos Gas Systems, Inc.*, 279 F.3d at 1029. Here, those elements would arguably be the "means for mounting the guard rails to the frame for movement between inoperative and operative positions." To the extent this is the preamble of a Jepson claim, it is admittedly prior art. *Pentec, Inc. v. Graphic Controls, Corp.*, 776 F.2d 309, 315, (Fed.Cir.1985). As already noted, the specification references the relevant prior art. Thus, and assuming this is the position Safe Bed is attempting to advance, there is no reason to depart from the construction of this claim term in which the structure must be construed to include the disclosed examples of prior art-U.S. Patents Nos. 2,734,104; 3,012,255; 3,336,609; 3,930,273; 3,840,917; and 4,509,217-and equivalents thereto.

4. "inoperative and operative positions"

This portion of claim 54 deals with the manner in which the hospital bed guard rails must be mounted to the

sides of the bed frame. The guard rails must be moveable from one position that would allow access to the patient or bedding, to another position that would prevent the patient from falling off the patient support assembly. The patent describes the possible positions of the guard rails as "inoperative" and "operative," and the parties disagree as to the meaning of those terms.

Safe Bed:

KCI:

"Inoperative position" means any position of the guard rail at which the guard rail adjustment prevention means is activated to stop movement of the patient support assembly relative to the bed frame. (*Safe Bed's Mem.*, at 9; *Safe Bed's Reply*, at 9).

"Inoperative position" means that the top of the guard rail is at or below the top the top edge of the patient support assembly. (*KCI's Mem.*, at 12)

"Operative position" means any position of the guard rail at which the guard rail adjustment prevention means is not activated and the patient support assembly is allowed to continue movement relative to the bed frame relative to the bed frame. (*Id.*).

"Operative position" means that the top edge of the guard rail is above the approximate top edge of the patient support assembly. (*KCI's Mem.*, at 17).

The parties essentially agree that the ordinary and customary meaning of "operative" is "producing an appropriate or designed effect," whereas "inoperative" means not producing such an effect. WEBSTER'S, at 1166, 1581. (*Safe Bed's Mem.*, at 9; *KCI Mem.*, at 12, 17). As such, it would seem clear enough that a guard rail is an "operative" position when it is producing its designed effect of preventing the patient from rolling off the bed. Conversely, a guard rail would be in an "inoperative" position when it would be ineffective at preventing a patient from rolling off the bed. According to Safe Bed, however, this is an instance where the ordinary and customary meaning is inapplicable. (*Safe Bed's Mem.*, at 9). As noted earlier, a patent applicant may overcome the "heavy presumption" that a claim term carries its ordinary and customary meaning by clearly using the words in the specification, prosecution history, or both "in a manner inconsistent with its ordinary meaning." Schering-Plough Corp., 320 F.3d at 1347 (*citing* Teleflex, 299 F.3d at 1325-26). Here, however, there is nothing that evinces an intention to depart from the ordinary and

customary meaning.

Rather than define "operative" and "inoperative" positions for guard rails in terms of the guard rails' effect on patient restraint, Safe Bed defines them in terms of the guard rails' effect on the mobility of the patient support assembly. Thus, as Safe Bed would have it:

In the context of the '9 patent, an operative guard rail position is defined as one which allows adjustable movement of the patient support assembly relative to the frame, while an inoperative position of one or both guard rails is defined as a position of the guard rail that initiates a guard rail activated safety apparatus to prevent translational movement of the bed. ['9 patent], 3:18-21.

* * *

The '9 specification teaches that the guard rail position at which the patient support assembly adjustment prevention means are initiated is adjustable. ['9 patent], 5:60-63; 12:12-13. Accordingly, an "inoperative guard rail position" is any position at which the patient support assembly adjustment prevention means is activated. Conversely, an "operative guard rail position" is any guard rail position at which the patient support assembly adjustment prevention means are not actuated and the patient support assembly is allowed to continue movement relative to the frame.

(*Safe Bed Mem.*, at 9). According to Safe Bed, then, an "operative" position for the guard rail does not refer to the guard rail being operative, or even the "guard rail safety apparatus" or "patient support assembly adjustment prevention means" being operative or activated. It is Safe Bed's position that the guard rail is in an "operative" position when the patient support assembly is in motion. This seems a somewhat tortured interpretation of the claim language, FN5 as well as an unnecessary abandonment of the ordinary and customary meaning of the words.

FN5. The Court is not unmindful of Safe Bed's inspiration for its unconvincing interpretation. The '9 patent specification teaches that the guard rail position at which the "guard rail safety apparatus" or "patient support assembly adjustment prevention means" is activated is adjustable. ('9 patent, 5:60-63; 12:12-13). That means the "designer, manufacturer, or user" determines the operative position of the guard rail by adjusting the trigger or activation point. (*Safe Bed Mem.*, at 9). The "designer, manufacturer, or user" might, perhaps through poor judgment, establish a trigger point below the level where the guard rail is still effective in restraining the patient. While judgment might vary, the effectiveness of the guard rail at restraining the patient is absolute: either it will restrain the patient or it will not.

That being said, the Court is not convinced of KCI's construction either, because it, too, departs from the ordinary and customary meaning of "operative" and "inoperative." According to KCI, the guard rails are in their "operative position" when they are at their highest elevation, and in their "inoperative position" when they are at their lowest elevation, below the top edge of the patient support assembly. (*KCI's Mem.*, at 12-13; 17-18). While there is little doubt that these positions would meet the respective requirements of being "operative" or "inoperative" in terms of restraining the patient, there is also little doubt that there are intermediate positions in which the guard rails would still have, or not have, their designed effect. In this instance, the Court rejects both parties' constructions and adheres to the ordinary and customary meaning of the terms: a guard rail is an "operative" position when it is producing its designed effect of preventing the

patient from rolling off the bed; and a guard rail is in an "inoperative" position when it would be ineffective at preventing a patient from rolling off the bed.

5. "the improvement being a guard rail actuated safety apparatus, comprising"

The parties agree that the phrase "improvement being" indicates that this is a Jepson claim, and that the phrase "guard rail actuated safety apparatus" is properly construed as "an apparatus that has one or more safety features that are activated by the guard rail." (*Safe Bed's Mem.*, at 10; *KCI's Mem.*, at 20; *Safe Bed's Reply*, at 18). The parties disagree, however, as to whether this phrase would be interpreted by one who is skilled in the art to mean detecting movement of the guard rail, as opposed to merely detecting the guard rail. (*Safe Bed's Mem.*, at 10; *KCI's Mem.*, at 20; *Safe Bed's Reply*, at 18). Safe Bed submits that this claim element "would be interpreted by one of knowledge in the art to be an apparatus whose purpose is in any way safety related that is activated by the position of a guard rail *including movement* or detection of position of a guard rail." (*Safe Bed's Mem.*, at 10 (emphasis added)). This is another example, however, of Safe Bed's penchant for asserting how one skilled in the art might interpret a claim without providing any support for its assertion. And, as KCI argues, there is nothing in the claims, specifications, or drawings that teaches the detection of movement of the guard rails.

As Safe Bed concedes, the ordinary and customary meaning of the word "actuate" is "to put into mechanical action or motion." WEBSTER'S, at 22. (*Safe Bed's Reply*, at 19). Thus, the safety apparatus is "actuated" or put into action or motion by the guard rail. That does not mean it is actuated by the motion of the guard rail being detected. This is clear from the claim's employment of the word "position," as in "inoperative" or "operative" positions. A "position" is "a point or area in space actually occupied by a physical object." WEBSTER'S, at 1769. What is detected, then, is the *presence* of the guard rail. The guard rail can move within a limited range-depending on the location of the adjustable trigger or activation point-without activating the safety apparatus. Accordingly, there is no reason, in this instance, to construe this phrase beyond "an apparatus that has one or more safety features that is activated by the guard rail."

6. "means for preventing adjustment of the patient support assembly relative to the frame"

The parties agree that this is a means-plus-function claim element, and claim to agree as to the function: to stop or prevent the movement of the patient support assembly relative to the frame. (*Safe Bed's Mem.*, at 10; *KCI's Mem.*, at 21; *Safe Bed's Reply*, at 19). A closer review of the parties' arguments, however, reveals that they do have a dispute over the function, albeit a slightly obscure one. They disagree as to what type of movement is to be stopped or prevented. This dispute is the source of their more obvious disagreement over the corresponding structure that performs this function.

The function portion of this claim calls for "preventing adjustment." The ordinary and customary meaning of the term "adjustment" is the "act or process of adjusting" which, in this context, would be "to change the position of as for better fit or appearance" or, perhaps, "the bringing into proper, exact, or conforming position." WEBSTER'S, at 27. In either case, the meaning of "adjustment" is not as broad as the meaning of "movement," which is "the action or process of moving" especially the "change of position, place, or posture." The use of the term "adjustment" connotes a targeted position-as in "better" or "proper"-while "movement" does not; it merely signifies a "change." Bearing this in mind, the Court addresses the question of the corresponding structure to perform the function of "preventing *adjustment* of the patient support assembly relative to the frame."

Safe Bed:

KCI:

Structure: a controller configured or programmed to prevent adjustment of the patient support assembly relative to the frame and its equivalents. (*Safe Bed Reply*, at 19).

Structure: moveable linkage member, an AC power controller, and an electrical motor. (*KCI's Mem.*, at 21).

According to KCI, the '9 patent specification identifies the structure to perform the function of stopping or preventing the adjustment of the patient support assembly as follows:

In some hospital beds, the patient support frame 12B is mounted to the frame 10 by means of movable linkage members 14 to selectively adjust the elevation, degree of tilt, or, in the case of an articulated frame having interconnected segments 12B', the relative angular position of these segments 12B'.

('9 patent, 5:19-24). The power for adjusting the patient support frame is supplied by either a hand crank 12 or an "electrical motor 18 ... connected with patient support frame 12B and linkage members 14." ('9 patent, 5:25-31; 11:54-59). The '9 patent further describes these components, along with an AC power controller 148, as the structure for "changing the elevation or angular position of the patient support assembly"; in other words, *adjusting* the patient support assembly:

The AC power controllers 148 are connected to one or more electrical motors, such as motor 104, for changing the elevation or angular position of the patient support assembly 12. In the case of an inflatable member being pressurized by means of an electrical motor, the AC power cord of the motor is releasibly connected to an AC receptacle to receive its power through AC power controller 148. Generally, the AC power controllers function to terminate power to the pressurizing motor or adjustment motor which gives movement to the articulated frame whenever an alarm condition is being detected.

('9 patent, 13: 16-27 (emphasis added)). Thus, as KCI would have it, the function of preventing the adjustment of the patient support assembly relative to the frame is accomplished by means of the AC power controller terminating power to an adjustment motor which gives movement to the articulated frame. (*KCI's Mem.*, at 23). In this instance, the Court must agree with KCI's identification of the structure in this means-plus-function claim element.

The portion of the '9 patent quoted above also refers to a "pressurizing motor" and an "inflatable member being pressurized by means of an electrical motor." Safe Bed's disagreement with KCI over the identification of corresponding structure focuses on these elements. Safe Bed submits that the '9 patent specification discloses "an adjustment prevention structure for an electromechanical embodiment of the adjustment mechanism in which the patient is turned by the selective pressurizing and depressurizing of an inflatable turning device." (*Safe Bed's Mem.*, at 11; *Safe Bed's Reply*, at 20). Accordingly, Safe Bed maintains that the corresponding structure must include controller 89 which controls the operation of "responsive actuator 144 opening release valve, 150," referring to FIG. 5B of the '9 patent. (*Safe Bed's Mem.*, at 11; *Safe Bed's Reply*, at 20). The trouble with Safe Bed's argument, however, is that this "inflatable

turning device" or "inflatable member" does not "adjust" the patient support assembly.

The '9 patent describes the "inflatable, or pressurizable, member" as an inflatable turning device or therapeutic air mattress which directs a stream of air to the patient. ('9 patent, 13:32-36). In either case, it does not "adjust" the patient support assembly. The patent explains that a therapeutic air mattress "has holes 151, as seen in FIG. 5A, which permits [sic] impingement of pressurized air against a patient's body." ('9 patent, 13:44-46). Obviously, this action does not adjust or even move the patient support assembly. Similarly, an inflatable turning device, such as in a kinetic therapy bed, is not adjusting the patient support assembly. It is turning the patient from side to side, to prevent bed sores or the accumulation of fluid. As such, it is not performing an adjustment, which would imply a completion of movement once the patient was turned to a "better" or "target" position. It is performing a "movement," most likely a continuous movement. This "movement," as already discussed, is not as specific as an "adjustment." In addition, the inflatable turning device is not adjusting the patient support assembly, because it is not acting upon the patient support assembly, but upon the patient. As already construed, the patient support assembly includes an underlying patient support frame. Accordingly, the corresponding structure to perform the function of stopping or preventing the adjustment of the patient support assembly relative to the frame is a moveable linkage member, an AC power controller, and an electrical motor.

7. "means for sensing when at least one of said guard rails is in an inoperative position"

This claim element, too, is written in a means-plus-function format, as the parties agree. (*Safe Bed's Mem.*, at 13; *KCI's Mem.*, at 25; *Safe Bed's Reply*, at 21). In this instance, the parties are at odds over both the function and the corresponding structure.

Safe Bed:

KCI:

Function: to automatically detect when a guard rail reaches the activation point. (*Safe Bed's Reply*, at 21).

Function: to detect when the top of the guard rail is at or below the edge of the patient support assembly. (*KCI's Mem.*, at 25)

Structure: any switch, such as a photo detector, mechanical limit switch or equivalent, which can be used to detect movement or position of the guard rails. (*Id.*).

Structure: photodetector or mechanical limit switch. (*Id.*).

With regard to the function portion of this claim element, Safe Bed and KCI agree that "sensing" carries its ordinary and customary meaning: "to detect automatically or mechanically." WEBSTER'S, at 22. (*Safe*

Bed's Mem., at 13, *KCI's Mem.*, at 25). The parties' disagreement as to the function in this claim element is simply a continuation of their dispute over the meaning of "inoperative position" of the guard rails. (*KCI's Mem.*, at 25-26; *Safe Bed's Reply*, at 21-22). As such, the Court identifies the function here in a manner consistent with its construction of "inoperative." The function is to detect when a guard rail is in a position where it would be ineffective at preventing a patient from rolling off the bed.

As for the corresponding structure to perform this function, the parties appear to agree that a photo detector, mechanical limit switch, or equivalent will serve the purpose. (*Safe Bed's Mem.*, at 13; *KCI's Mem.*, at 26). Their disagreement stems, again, from their dispute over the construction of another claim element. Safe Bed maintains that it is not just the presence or position of the guard rail that is sensed, but any movement of the guard rail. (*Safe Bed's Mem.*, at 13; *Safe Bed's Reply*, at 21). As the Court determined in its construction of "guard rail activated safety apparatus," there is no basis to interpret this structure to sense or detect movement. This is clear from the specification:

When the right rail sensor 118, such as a photodetector or mechanical limit switch, is actuated by *the presence of the guard rail 28*, being in an inoperative *position* ... it generates a detection signal.

("939 patent, 12:6-10). Again, there is no indication of any concern with whether a guard is in motion. The structure is a photo detector, mechanical limit switch, or equivalent that detects the presence of the guard rails.

8. "means responsive to said sensing means for actuating the adjustment preventing means"

The parties agree that the function portion of this means-plus-function claim element is to respond to a signal from the guard rail sensing means by actuating the adjustment prevention means. (*Safe Bed's Mem.*, at 13-14; *KCI's Mem.*, at 28; *Safe Bed's Reply*, at 23). They part company, however, on the corresponding structure.

Safe Bed:

KCI:

Structure: an electronic controller programmed or configured to include the disclosed logic and functional elements such that when at least one of the guard rails is sensed in a relatively inoperative position an electronic signal is sent that actuates the adjustment preventing means and its equivalents. (*Safe Bed's Reply*, at 23).

Structure: the combination of an X-OR gate that integrates the signals from the left and right rail sensors, a delay timer, and an alarm condition responsive apparatus actuator. (*KCI's Mem.*, at 28).

The parties appear to agree that the structure that corresponds to the function is disclosed in the "functional block diagram and logic diagram" depicted in FIG. 5B of the '9 patent. (*Safe Bed's Mem.*, at 14; *KCI's Mem.*, at 28; *Safe Bed's Reply*, at 23-24):

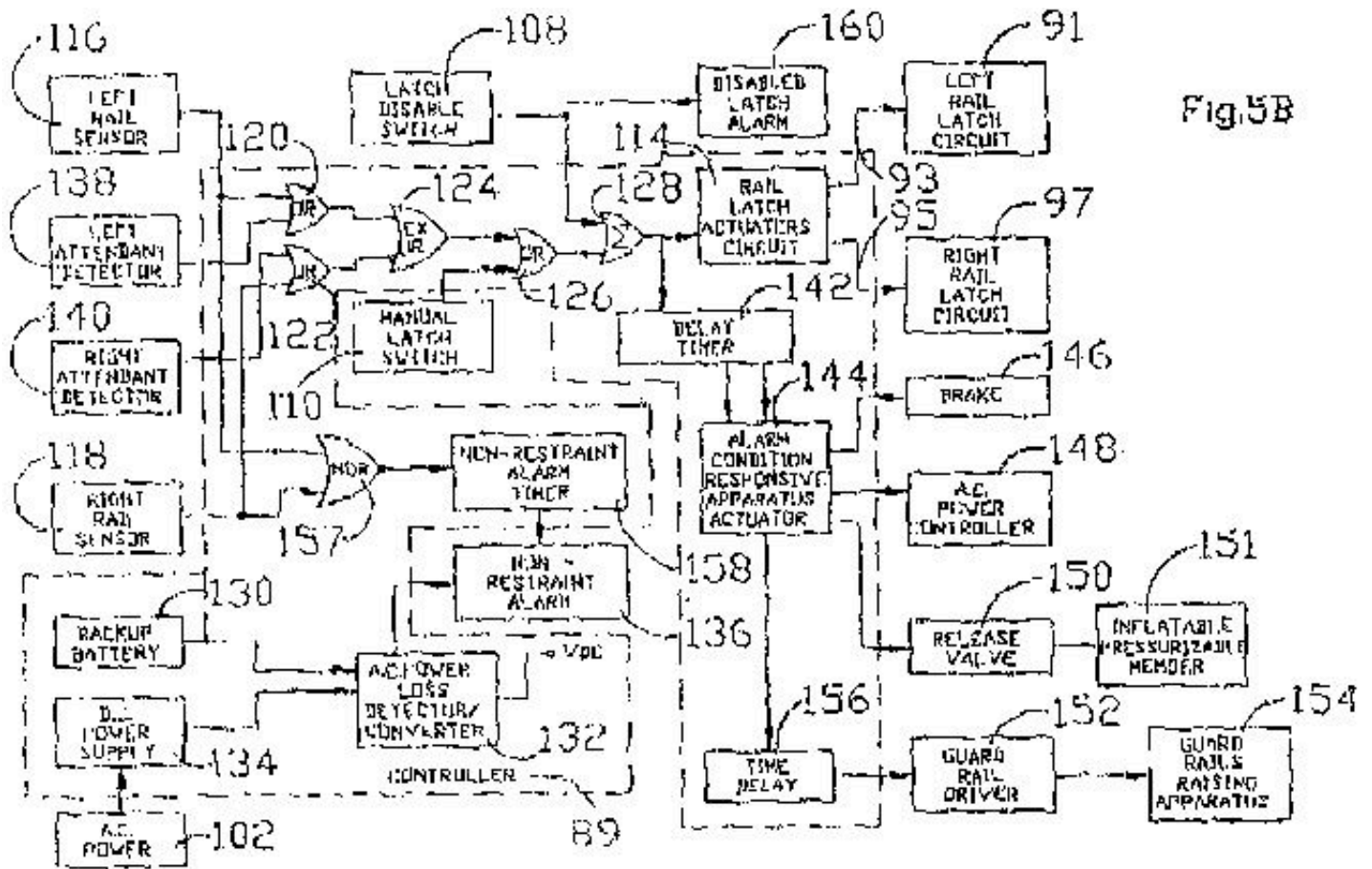
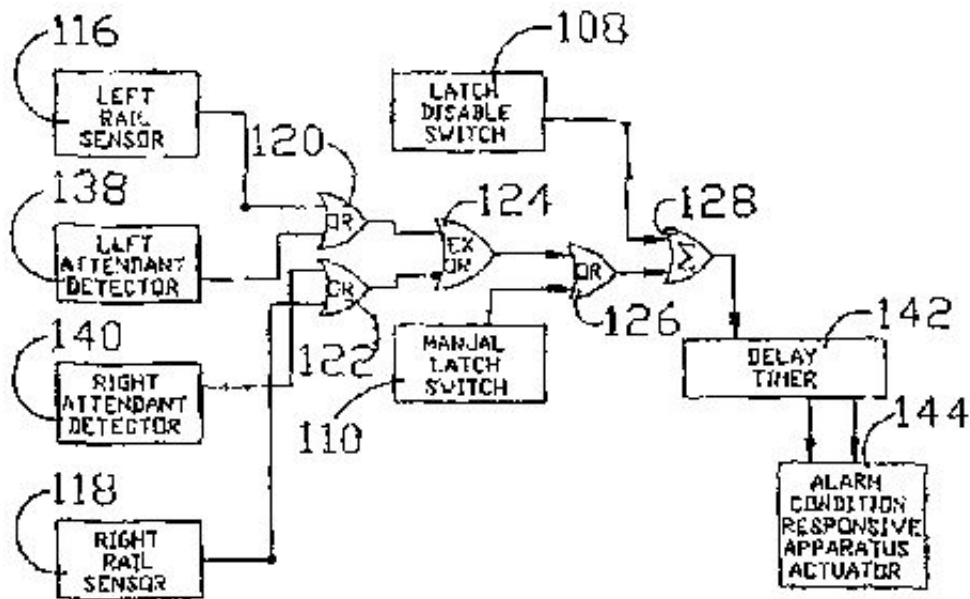


Fig. 5B

This diagram covers quite a bit that is not germane to claim 50. The pertinent signal or signals in this instance originate at the left rail sensor 116 and/or the right rail sensor 118. In order to actuate the adjustment prevention means, the signal must make its way to the responsive apparatus actuator 144. As a result, the parties agree that the diagram may be redacted to depict the elements at issue here, up to a point:



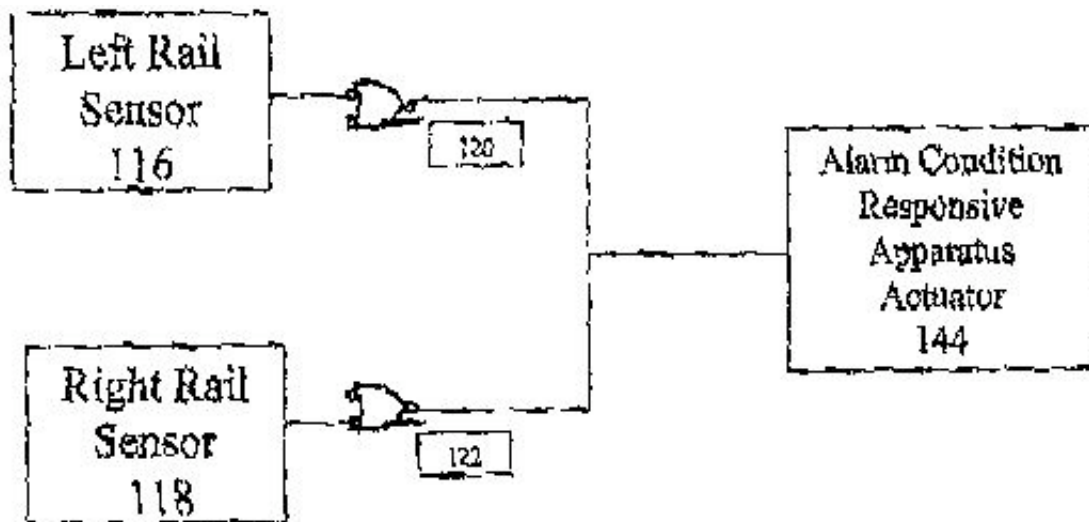
(*KCI's Mem.*, at 29; *Safe Bed's Reply*, at 24). Beyond that, however, they do not agree as to how it might be further simplified to cover only claim 50 and to depict the corresponding structure of this means-plus-function claim element.

The Court begins its analysis of this claim element with a brief discussion of this technology, working from this diagram. The guard rail sensors 116 and 118 are already familiar. There are two OR-gates 120 and 122. An OR-gate is a type of logic gate. Logic gates are elementary to digital circuitry. Most have two inputs, and one output. The inputs and outputs are low or high voltage levels, described as binary conditions low (0) or "false" and high (1) or "true." The output of an OR-gate will be "true" if *either or both* of the inputs are "true." Thus, returning to the diagram, the output of OR-gate 120 will be "true" if either or both of the inputs from the left guard rail sensor 116 or the left attendant detector are "true." The exclusive OR-gate, or XOR-gate, is another type of logic gate. The output of the XOR-gate is "true" if either, but not both, of the inputs are "true." The output is "false" if both inputs are "false" or both inputs are "true." In other words, the output of the XOR-gate is "true" if the inputs are different, and "false" if the inputs are the same.

Returning to the issue at hand, the Court's task is to identify the corresponding structure set forth in the written description that performs the function of responding to a signal from the guard rail sensing means by actuating the adjustment prevention means. In so doing, the Court must be careful not to include "structure from the written description beyond that necessary to perform the claimed function." *Asyst Technologies, Inc. v. Empak, Inc.*, 268 F.3d 1364, 1370 (Fed.Cir.2001) (citations omitted). "Structural features that do not actually perform the recited function do not constitute corresponding structure and thus do not serve as claim limitations." *Id.* (citations omitted). The structure disclosed in the specification, as noted early, "is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Braun*, 124 F.3d at 1424. The parsing of corresponding structural features from features that do not perform the recited function is the source of the parties' dispute over this claim element.

Safe Bed submits that the function of the responsive means element is, in effect, merely a simple binary on-off switch coupled to a guard rail operative/inoperative position sensor. Therefore, Safe Bed redacts the

diagram to this:

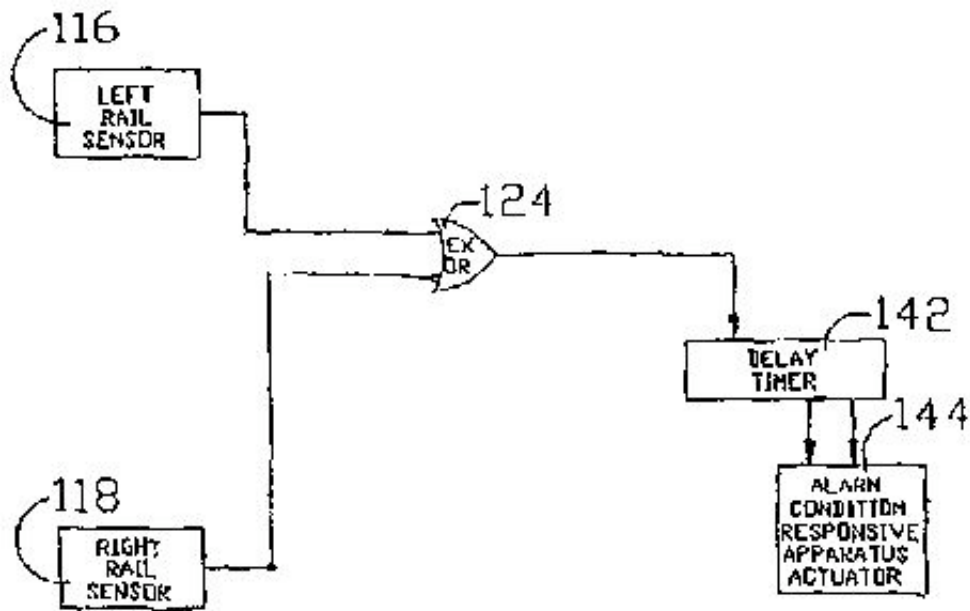


(*Safe Bed's Reply*, at 27). While Safe Bed's diagram is not clear on this point, the idea is to simplify the dual structure of OR-gates 120 and 122 by replacing them with a single equivalent OR-gate 120/122. (*Safe Bed's Reply*, at 27). According to Safe Bed:

an input from either right or left rail sensor 116/118 through [OR-gate] 120 or 122 results in responsive activator 144 activation. Alternatively, inputs from both right and left rail sensors 116/118 through [OR-gate] 120 and 122, similarly results in responsive activator 144 activation. Finally, inputs from neither right nor left rail sensors 116/118 results in no activation of the responsive activator 144. Since the above description identifies the logic table of a single OR logic structure with two inputs, the diagram's dual structure can be simplified to a single equivalent OR logic structure with two inputs.

(*Safe Bed's Reply*, at 27). As Safe Bed notes, the "9 patent specification discloses that "not all the features of the invention need be used together as they possess independent benefits for patient protection." ("9 patent, 14:56-59). What Safe Bed is arguing, then, is that the structure could be simplified to perform the function at issue, independent of the other patient protection features.

KCI, of course, has a different version the corresponding structure necessary to perform the function of responding to a signal from the guard rail sensing means by actuating the adjustment prevention means. The redacted diagram of KCI's version is:



(*KCI's Mem.*, at 30). According to KCI, the XOR-gate 124-absent from Safe Bed's version-is critical. KCI calls it the "only component in the diagram of Fig. 5B that integrates the separate signal paths coming from the left and right rail sensors 116 and 118 together, providing a common output that feeds into actuator 144" (*Appendix of Exhibits to KCI's Mem.*, Ex. H, Tumey Dec. at para. 23). Recalling the manner in which an XOR-gate functions, however, it is clear that this configuration will not prevent motion or adjustment of the patient support assembly when both guard rails are in inoperative positions-if both inputs at high or "true." This structure, then, does not perform the function. It is, instead, necessary to another facet of the invention.

The specification indicates that the XOR-gate corresponds not to the function at issue, but to an unrelated function and claim covering rail latches:

Referring to FIG. 5B, these detection signals are respectively coupled through suitable binary logic gates, such as OR-gates 120 and 122, exclusive OR-gate 124, OR-gate 126 and an AND-gate 128 to a *rail latch actuator circuit 114*. In a preferred embodiment, when a detection signal is provided by either of the left or right rail sensors, or switches 116 or 118, but not both, an actuation signal is applied by AND-gate 128 to cause the rail latch actuators circuit to actuate both solenoids 91 and 97.

("9 patent, 12:15-23). The XOR-gate is present, then, as a means to prevent the latch circuit from locking both guard rail in the inoperative position. It is an example of a "[s]tructural feature that do[es] not actually perform the recited function ..." *Asyst Technologies*, 268 F.3d at 1371. In this instance, the Court must accept Safe Bed's identification of the corresponding structure, up to a point.

That point happens to be an additional point of contention the parties have over this claim element: whether the FIG. B logic diagram can be said to disclose the use of a microprocessor. According to Safe Bed, it was well known in the art that the logical function of the type depicted in FIG. 5B could be implemented not only in a dedicated hardwired controller, but programmed into software on a programmable microcontroller as well. (*Safe Bed's Mem.*, at 11). Safe Bed supports this contention with references to treatises. For example, Safe Bed quotes R. Zaks & A. Wolfe, *From Chips to Systems*, at 447 (2nd ed.1987):

Every microprocessor is equipped with a basic set of logical instructions such as AND, OR and NOT. It is therefore capable of implementing by software the equivalent of any logic function normally implemented in hardware with AND, OR, and NOT gates. Since all function can be accomplished with these three primitives, the processor should be able to accomplish any logic function normally done by hardware. Indeed, sequential or combinatorial logic can be replaced by a program equivalent.

(*Safe Bed's Mem.*, at 12; *Appendix of Exhibits to Safe Bed's Mem. Ex. 8*). Thus, Safe Bed contends that the corresponding structure disclosed in the diagram can be configured or programmed into the controller.

KCI argues that nothing in the '9 patent discloses or suggests the use of a programmable microcomputer, microprocessor, or microcontroller for any purpose. (*KCI's Mem.*, at 34). As already noted, while the means-plus-function claim format allows the use of means expressions in patent claims without requiring the patentee to recite in the claims all possible structures that could be used as means in the claimed apparatus, the claim is limited to the means specified in the written description and equivalents thereof. *Medical Instrum. & Diag. Corp.*, 344 F.3d at 1211. That means that it is "important to determine whether one of skill in the art would understand the specification itself to disclose the structure, not simply whether that person would be capable of implementing that structure." *Id.* All that Safe Bed argues here-and all that its referenced treatises support-is that a person skilled in the art would be able to implement by software the hardwired function set out in FIG 5B. That is not the same as understanding FIG 5B to encompass software for programming a microcontroller. In *Medical Instrum. & Diag. Corp.*, the court noted that the plaintiff's expert was unable to point to any disclosure of structure but, instead, could only testify that it was "not disclosed or discussed in the [patent], presumably because it was well-known in the art and required not explanation." 344 F.3d at 1212. This is essentially what Safe Bed's treatise citations tell us; the patent does not discuss how it might be done, but on skilled in the art could figure it out.

Safe Bed submits that this situation is more closely akin to those considered in *Intel Corp. v. VIA Technologies, Inc.*, 319 F.3d 1357 (Fed.Cir.2003) and *S3, Inc. v. nVIDIA Corp.*, 259 F.3d 1364 (Fed.Cir.2001), than it is to the circumstance in *Medical Instrum. & Diag. Corp.* (*Safe Bed's Reply*, at 28). Review of those cases, however, suggests otherwise. In *Intel Corp.*, the court dealt with the issue of whether the defendant had proven by clear and convincing evidence that a means-plus-function claim was invalid because the specification lacked adequate disclosure of structure. 319 F.3d at 1366. In this case, there is no issue that there is corresponding structure to perform the function in question. Notably, the patent in *Intel Corp.* covered an electronic interface and signal protocols by which devices in a computer system communicate with each other. 319 F.3d at 1359. There is not even a reference to a computer or microprocessor anywhere in the '9 patent. Furthermore, the *Intel Corp.* court found that the "core logic" FN6 modified to perform a particular program was adequate corresponding structure for a claimed function although the specification did not disclose internal circuitry of the core logic to show exactly how it must be modified. 319 F.3d at 1366. Because the core logic was described as structure in the specification, and the specification explained that it was the adapted core logic that was capable of performing the functions recited in the claim, the court found there was no need for a disclosure of specific circuitry. *Id.* Here, however, there is no core logic described, nor is there a software or program code linked to the function of responding to a signal from the guard rail sensing means by actuating the adjustment prevention means.

FN6. "Core logic" is the central processing logic of a complete system (such as a desktop PC), a component of that system or a function of a specific component. A system's core logic can include a controller for handling memory functions, a cache for instructions, the logic for bus interfaces and the functions of data

paths. It is also referred to as the "core logic chipset," where a chipset would be the integrated circuits designed to perform one or more related functions. For example, one chipset may provide the basic functions of a modem while another provides the CPU functions for a computer.

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Similarly, in *S3, Inc.*, the court concluded that a "selector" was adequately disclosed as corresponding structure for the "means ... for selectively receiving," although the electronic structure of the sensor and the details of its operation were not described, 259 F.3d at 1370. There was uncontradicted evidence that the "selector" was a standard component well known in the art and that such standard components were usually represented in the same way that they were in the patent. *Id.* at 1370-71. The evidence that Safe Bed presents here, as already noted, does not demonstrate that what is disclosed in FIG. 5B was a standard component depicting a microprocessor, or that such microprocessors were usually represented in this manner in patents. Accordingly, the Court rejects Safe Bed's contention that the corresponding structure disclosed in the diagram includes a programmable microcontroller in addition to a hardwired controller. The Court construes the disputed structure as an electronic controller configured to include the disclosed logic and functional elements such that when at least one of the guard rails is sensed in an inoperative position an electronic signal is sent that actuates the adjustment preventing means and its equivalents.

B. Claim 64

1. "a patient support assembly mounted to the frame"

The Court construes this terms of this claim element in accordance with its construction of these terms in claim 50. A "patient support assembly" must include at least one conventional mattress and an underlying patient support frame. As "mounted" means "attach[ed] to a support," WEBSTER'S, at 1477, "mounted to the frame" indicates that the patient support assembly is attached to the hospital bed frame.

2. "having a pressurizable member of a medical apparatus for interacting with the patient's body resting thereon"

KCI does not dispute Safe Bed's construction of most of this claim element. A "pressurizable member," in the context of the '9 patent, refers to a component or element that can be pressurized above atmospheric pressure, such as an inflatable turning device or a therapeutic air mattress. (*Safe Bed's Mem.*, at 17-18; *KCI's Mem.*, at 38-40). A "medical apparatus" refers to the hospital bed itself. (*Safe Bed's Mem.*, at 17-18; *KCI's Mem.*, at 38-40). KCI does dispute, however, Safe Bed's construction of the word "thereon" as used in the phrase "interacting with the patient's body resting thereon." The dictionary definition of "thereon" is simply "on that." WEBSTER'S, at 2372. In KCI's construction of the term, "thereon" indicates that there is contact between the patient's body and the pressurizable member. (*KCI's Mem.*, at 39). According to Safe Bed, that contact is unnecessary. (*Safe Bed's Reply*, at 31).

Maintaining that "thereon" does not require direct contact but can refer to indirect contact between a patient's body and any structure underneath it, Safe Bed posits the example of a patient lying on a mattress covered by a sheet, noting that the patient would still be considered resting on the mattress, although not in direct contact with it. (*Safe Bed's Reply*, at 31). Arguing that there must be contact between the patient's body and the pressurizable member, KCI takes Safe Bed's argument to its logical extreme and submits that under Safe Bed's interpretation, a person walking on a raft floating on a river would be considered to be walking on the water. (*KCI Mem.*, at 39). The parties' analogies, while creative, fail to resolve their dispute

over this claim element.

This argument is really over whether this claim element can be construed to cover an inflatable turning device positioned underneath the mattress or patient support assembly. (*KCI's Mem.*, at 38-39; *Safe Bed's Reply*, at 31). Obviously, focusing on the word "thereon" is of little aid in resolving this dispute. The remainder of the phrase, however, provides some clues. The patient's body must "rest" on the pressurizable member. "Rest" is defined as "to have place; sit or lie fixed or supported." WEBSTER'S, at 1935. If a person is resting on a mattress, one would not ordinarily consider that person to be resting on everything that might lie beneath the mattress as well. In addition, the pressurizable member must "interact" with the patient's body. That means the pressurizable member and the patient's body must "act upon each other" or "have a reciprocal effect or influence." WEBSTER'S, at 1176. An inflatable device that turns a mattress from underneath it might be considered to be acting upon that mattress, but would not ordinarily be considered to be acting upon a person lying on that mattress. The device exerts an influence on the mattress, which in turn exerts an influence on the person. The sense gained from the meanings of these other terms tends to support KCI's construction of this claim element. Accordingly, the Court adopts KCI's construction of this claim element to require the pressurizable member to be one on which the patient's body is resting.

3. "means for mounting the guard rails to the frame for movement between relatively operative and inoperative positions in which they are relatively less or more effective to restrain the patient against lateral movement off the side of the patient support assembly directly associated therewith"

The Court construes this claim element in accordance with its construction of the nearly identical element in claim 50. Thus, a guard rail is an "operative" position when it is producing its designed effect of preventing the patient from rolling off the bed; and a guard rail is in an "inoperative" position when it would be ineffective at preventing a patient from rolling off the bed. The function is to attach the guard rails to the frame for movement between operative and inoperative positions. The structure must be construed to include the disclosed examples of prior art-U.S. Patents Nos. 2,734,104; 3,012,255; 3,336,609; 3,930,273; 3,840,917; and 4,509,217-and equivalents thereto.

4. "means for sensing when at least one of the guard rails is in an inoperative position"

Because this claim language is identical to the corresponding element in claim 50, the Court construes it to have the same meaning. The function is to detect when a guard rail is in a position where it would be ineffective at preventing a patient from rolling off the bed, while the structure is a photo detector, mechanical limit switch, or equivalent that detects the presence of the guard rails.

5. "means responsive to said sensing means detecting a guard rail in an inoperative position for actuating said depressurizing means to depressurize said pressurizable member"

The parties agree that this is a means-plus-function claim element, but disagree as to the function of the responsive means and as to the corresponding structure that performs that function.

Safe Bed:

KCI:

Function: to respond to a signal from the guard rail sensing means by

Function: to respond to the guard rail sensor's sensing when at least

actuating
depressurizing means. (*Safe
Bed's Reply*, at
33).

one of said
guard rails is in an inoperative
position by
depressurizing the
pressurizable member
that interacts with the patient's
body resting
thereon. (*KCI's Mem.*, at 41).

Structure: an electronic
controller
programed or configured to
include the
disclosed logic and functional
elements such
that when at least one of the
guard rails is
sensed in a relatively
inoperative position an
electronic signal is sent that
actuates the
depressurizing means. (*Safe
Bed's Reply*, at
33).

Structure: the combination of
an XOR gate
that integrates the signals
coming from the
left and right rails sensors, a
delay timer, an
alarm condition responsive
apparatus,
actuator, and AC power
controller. (*KCI's
Mem.*, at 41).

Review of the parties' submissions demonstrates that their dispute over the function of this claim element stems from their dispute over the construction of "pressurizable member." (*KCI's Mem.*, at 41; *Safe Bed's Reply*, at 33). The Court has already adopted KCI's construction of "pressurizable member" to be one on which the patient's body is resting. Therefore, the Court construes the function of this claim element accordingly, as responding to the guard rail sensor's sensing when at least one of said guard rails is in an inoperative position by depressurizing the pressurizable member that interacts with the patient's body resting thereon.

The parties' quarrel over the corresponding structure entails a return to FIG. 5B. *Safe Bed* refers to FIG. 5B to disclose the corresponding structure to perform this function, and redacts the diagram in fashion familiar from the construction of Claim 50's "means responsive to said sensing means for actuating the adjustment preventing means." In this instance, the input from either right or left rail sensor 116/118 through OR-gate 120/122 results in the activation of responsive apparatus actuator 144. Alternatively, inputs from both right and left rail sensors 116/118 through OR-gate 120/122, similarly results in activation of responsive apparatus actuator 144. Responsive apparatus actuator 144, in turn, actuates the depressurizing means, release valve 150. This much of the construction is consistent with that of Claim 50, except for the actuation of the release valve.

KCI raises two points of contention with this construction. One is a reiteration of its argument regarding the X-OR gate that it raised in connection with Claim 50, which the Court rejects for the same reasons as

expressed in its discussion of that earlier claim. The second point of contention focuses on a single sentence in the '9 patent specification. As KCI argues:

The only portion of the '9 written description expressly referring to any "responsive means" is at column 13, line 41, which states that "[o]nce a rail is sensed in an inoperative position, *responsive means or AC power controller 148 actuates release valve or means for depressurizing 150 to depressurize pressurizable member 151*."

(*KCI's mem.*, at 41-42). Clearly, this language conflicts with FIG 5B, which depicts no association between AC power controller 148 and release valve or means for depressurizing 150. It also conflicts with other language in the specification which states that the alarm condition response actuator 144 "actuate[s] one or more of a brake 146, one or more AC power controllers 148, a release valve 150 ..." ('9 patent, 13:4-7). As such, Safe Bed argues that it is an obvious typographical error: the language at column 13, line 41 should read "responsive means or *alarm condition response actuator 144*." (*Safe Bed's Reply*, at 33-34). Curiously, however, neither party presents any argument as to the law applicable to such a situation.

The Federal Circuit has determined that the district court can correct an error in a patent only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims. *Novo Industries, L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed.Cir.2003). The Court finds that the correction at issue here is not subject to reasonable debate based on the claim language and the specification. As already noted, the drawing makes it clear that the AC controller is not associated with the release valve. Drawings alone may constitute an adequate "written description" if they describe what is claimed and convey to those of skill in the art that the patentee actually invented what is claimed. *Cooper Cameron Corp. v. Kvaerner Oilfield Products, Inc.*, 291 F.3d 1317, 1322 (Fed.Cir.2002). In addition to the drawing, the other language of the specification, as discussed above, demonstrates that the alarm condition response actuator is the means that activates the release valve. Finally, even KCI concedes that Safe Bed's identification of the corresponding structure of this means-plus-function claim element-the disclosed logic of FIG. 5B-is the closest to the "means responsive" element of claim 64.

Turning to the prosecution history of the '9 patent, we note that the language at issue-"responsive means or AC controller"-was added in response to the Patent Examiner's objection that the antecedent basis for terms and phrases in claim 64 was not clear. (*Appendix of Exhibits to KCI's Mem.*, Ex. F, at 72). Notably, this was not a response to a rejection, because the Patent Examiner had already allowed claim 64. (*Id.*, Ex. F, at 70). *Cf.* *Novo Industries*, 350 F.3d at 1357-58 (Court could not correct language where language added in response to claim rejection). In this instance, then, the Court will accept Safe Bed's identification of the corresponding structure in this means-plus-function claim element, with the exception of the reference to a programmable microcontroller or microprocessor, for those reasons already expressed in the discussion of claim 50. The corresponding function is construed as: an electronic controller configured to include the disclosed logic and functional elements such that when at least one of the guard rails is sensed in an inoperative position an electronic signal is sent that actuates the depressurizing means.

C. Claim 69

This claim is dependent on Claim 64. It reads:

"The hospital bed of claim 64 in which said safety apparatus includes an alarm, and means for

actuating the alarm in response to the at least one of the guard rails being in an inoperative position"

We begin construction of this claim with the ordinary and customary meaning of "an alarm," which in this context is "a device that warns or signals by means of a noise or visual effect." WEBSTER'S, at 48. The parties agree that the alarm in this claim may emit a "notice or warning" which can be "audible, visible, or both." (*Safe Bed's Mem.*, at 27; *KCI's Mem.*, at 44). The parties also agree that this is a means-plus-function claim element, and that the function is "to respond to a signal from at least one of the guard rail sensors by actuating the alarm when at least one of the guard rails is in an inoperative position. (*KCI's Mem.*, at 44; *Safe Bed's Reply*, at 35). The parties disagree, however, as to the corresponding structure to perform this function.

To identify the corresponding structure, Safe Bed returns to the disclosed logic circuit of FIG. 5B, as well as the specification, and traces the signal from the guard rail sensors to the alarm as follows:

the left and right rail sensors 116 and 118 of figure 5A and their inputs 112 and 114 are provided to controller of figure 5B to determine when at least one of the guard rails is sensed in an inoperative position. These inputs operate through suitable binary logic circuits to provide an electronic signal to response apparatus actuator 144 which actuates an alarm. ["9 patent], 12:14-18; 13:3-10; FIG. 5B.

The function of these logic elements is merely that when at least one of the guard rails is sensed in a relatively inoperative position, an electrical signal is sent. Thus, when sensors 116 and 118 sense a guard rail in a relatively inoperative position, it sends a signal. *Id.* at 12:1-13. That signal is received into controller 89 through inputs 112 and 114. The controller 89, through actuator 144, sends a signal to an alarm which calls attention to the circumstance, state, status, condition or event of a guard rail being in a relatively inoperative position.

(*Safe Bed's Reply*, at 35). Thus, the specification and the drawings describe this as the route the signal from the guard rails sensors follows through the controller to the alarm response apparatus actuator.

KCI argues that the only alarms depicted in FIG. 5B are the disabled latch alarm 160 and the non-restraint alarm 136. (*KCI's Mem.*, at 44). As KCI contends, neither of these alarms are actuated when at least one of the guard rails is in an inoperative position. The disabled latch alarm is not associated with the guard rail sensors, while the non-restraint alarm "is caused to provide an alarm condition only in response to both guard rails 126 and 128 being sensed in an inoperative position." ("9 patent, 13:65-67). According to KCI, this renders claim 69 indefinite for failing to disclose adequate structure.

It is true that the failure to disclose adequate structure corresponding to the recited function in will result in the claim being of indefinite scope, and thus invalid. *Intellectual Property Development, Inc. v. UA-Columbia Cablevision of Westchester, Inc.*, 336 F.3d 1308, 1319 (Fed.Cir.2003). The claims of a patent are afforded a statutory presumption of validity, however, that can only be overcome by clear and convincing proof of the facts supporting a holding of invalidity. *Id.* Therefore, a challenge to a claim containing a means-plus-function limitation as lacking structural support requires a finding, by clear and convincing evidence, that the specification lacks disclosure of structure sufficient to be understood by one skilled in the art as being adequate to perform the recited function. *Id.* Here, KCI does not develop its argument much further beyond its assertion of invalidity as an affirmative defense in its answer, so it is difficult to find it has proven invalidity by clear and convincing evidence. The parties agree as to what an alarm is as claimed in Claim 69. It would certainly seem that one skilled in the art would understand that the structure Safe Bed

identifies-the diagram depicting the path from the rail sensors from the alarm response apparatus activator-would be adequate to activate an alarm. Without more from KCI, the Court certainly cannot find the claim indefinite. The Court, therefore, identifies the structure of this means-plus-function claim element as an electronic controller configured to provide an electrical signal that activates an alarm.

IV. *CONCLUSION*

For the foregoing reasons, the court has construed the disputed terms in claims 50, 64, and 69, of the "9 patent as stated above.

N.D.Ill.,2004.

Safe Bed Technologies Co. v. KCI USA, Inc.

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