

United States District Court,
D. Minnesota.

ADC TELECOMMUNICATIONS, INC,
Plaintiff.

v.

THOMAS & BETTS CORPORATION and Augat Communications Products, Inc,
Defendants.

No. CIV 98-2055 DWF/SRN

April 3, 2001.

Patentee brought infringement action against competitor, alleging infringement of various patents relating to telecommunications equipment. Upon *Markman* hearing on issue of patent claim construction, the District Court, Frank, J., held that: (1) patent relating to high-density distribution bays did not require that vertical troughs and horizontal troughs have absolutely no overlap; (2) claims directed to coaxial jack were not limited to devices having supports with cavities; (3) patentee's construction of coaxial jack claims was not barred by prosecution history estoppel; and (4) "holding structure" in patent for optical fiber distribution frame referred to an adaptor having specified features.

Ordered accordingly.

34,955. Construed.

Timothy Lindquist, Philip Caspers, and Alan Carlson, Merchant & Gould, Minneapolis, MN, appeared on behalf of Plaintiff.

Dean Bostock, and Paul Hayes, Weingarten, Schurgin, Gagnebin & Hughes, Boston, MA, appeared on behalf of Defendant.

MEMORANDUM OPINION AND ORDER

FRANK, District Judge.

Introduction

The above-entitled matter came on for hearing before the undersigned United States District Judge on January 12, 2001, on the issue of patent claim construction pursuant to *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996).

Background

Defendants Thomas & Betts Corporation and Augat Communications Products, Inc. (collectively "T & B" or "Defendants") and Plaintiff ADC Telecommunications, Inc. ("ADC") provide equipment to the telecommunications industry; that equipment includes cabinets, distribution frames for cables, and plug-in

jacks for interconnecting bundles of cables. ADC owns three patents which are at issue in this litigation: U.S. Patent No. 5,220,600 ("the '600 patent"), U.S. Patent No. 4,749,968("the '968 patent"), and U.S. Patent No. Re. 34,955, as amended by reexamination certificate B1 Re. 34,955 ("the '955 patent"). ADC alleges that the Defendants have infringed all three patents. The Defendants deny any infringement.

The '600 patent relates to high-density distribution bays. As described by the parties, in the telecommunications industry, service providers must be able to electronically collect hundreds of pieces of equipment with each other. Rather than have direct connections which are difficult to redirect, the individual pieces of equipment are connected to distribution bays. Specifically, the distribution bays have an array of "pins" to which the equipment is wired. Links between pieces of equipment are then made by running "jumper wires" between the pins for the individual pieces of equipment. Multiple distribution bays are often linked to one another, and the volume of jumper wires is staggering.

In the prior art, each distribution bay consisted of "blocks" of pins, perhaps four pins high by fifteen pins wide. FN1 A number of blocks are arranged vertically, with small horizontal trays, or shelves, in between each block. The jumper wires connected to the pins in a given block, drop down vertically to these trays, and then run through the trays to a vertical trough which separates and lies between adjacent bays. The jumper wires then run either up or down the vertical trough to "horizontal express troughs." These horizontal express troughs are located along the top and bottom edge of the bay; when multiple bays are connected, the horizontal express troughs line up, and the troughs transport the jumper wires from bay to bay.

FN1. The numbers are based on schematic diagrams in ADC's brief. They are not accurate reflections of the actual bays, but merely meant to offer some general idea of the size and relative dimensions of the blocks.

Because of the large volume of wires extending from each bay, the limited space within the horizontal express troughs effectively limited the number of bays which could be connected. The jumper wires simply filled up the express troughs and made the process of rerouting connections difficult, if not impossible. However, the old distribution bay design offered few alternatives. If a technician sought to bypass the express troughs and simply run jumper wires along adjacent horizontal shelves (the small horizontal corridors directly under each block of pins), the wires would end up crossing the vertical troughs and tangling with the wires running vertically.

The ADC invention allows technicians to utilize the horizontal trays as intermediate express troughs. It does this by moving the vertical troughs out of the way, setting them off from the midplane of the bay. As a result, jumper wires can run horizontally from one bay to the next without interference. The vertical wires run in a space behind the horizontal trays. The '600 patent describes this invention.

At issue in this motion is the language in the patent describing the spatial relationship between the vertical troughs and the horizontal trays. T & B asserts that the scope of the patent is limited to embodiments where the vertical trough is entirely set off from the horizontal troughs, with absolutely no overlap. ADC argues that the claim language does not contain such a rigid limitation. Rather, the claim language describes a vertical trough which is offset from the horizontal troughs but does not preclude any overlap.

The '968 patent describes a particular switching mechanism, a coaxial jack, used in the telecommunications industry. Basically, the jacks at issue are used to connect two pieces of equipment via coaxial cable. The jacks have ports for cables to each piece of equipment as well as two "access ports" which allow the signal from each piece of equipment to be tested, by attaching a "patch cord" to one of the access ports, without physically disconnecting the two pieces of equipment. When the access ports are empty, the signal runs between the two pieces of equipment. But when a patch cord is attached to one of the access ports, the signal between the two pieces of equipment is interrupted and the signal path switches to running between one of the equipment ports and the patch cord.

The '968 patent describes three improvements over the prior art. First, the jack housing contains a "support means" which holds in place the element conducting signal between the cables connected to the ports; the '968 patent discloses a support means which has cavities designed to match the impedance of the support and conductor to the impedance of the cable attached to the port. Second, the '968 patent describes a "make-before-break" switch. With this make-before-break switch, when a patch cord is inserted in one of the access ports for connection with one of the pieces of equipment, the signal from the other piece of equipment is grounded before the connection between the two pieces of equipment is broken. This prevents data loss from an open circuit. Finally, the jack described in the '968 patent has two inductors which serve to offset the capacitance of the switch, thus maximizing the power transmission through the jack. FN2

FN2. As described by ADC, the jacks used in the prior art had a net capacitance because of the characteristics of the switch itself. According to ADC, "[i]n alternating current circuits, power transmission is maximized by matching capacitance and inductance."

The products sold by Defendants which allegedly infringe the '968 patent fall into two categories. One set of products features the in-line inductors and the make-before-break switch described in the patent; ADC alleges that these products infringe claim 1 and claims 7-12. FN3 The other set of products features the make-before-break switch but not the in-line inductors; ADC alleges that these products infringe claims 7-12. None of Defendants' products contain support members with cavities. All of the claims allegedly infringed reference a "means for supporting" the conducting means within the jack housing. Independent claims 3 and 4 specifically describe the means for supporting as possessing a plurality of cavities, those cavities being designed to match the impedance of the switch to the incoming cable. Independent claims 1 and 7 simply describe a "means for supporting said conducting means with respect to said housing." Defendants argue that claims 1 and 7, when read in the context of the patent specification, implicitly require that the means for supporting possess a plurality of cavities. ADC contends that only claims 3 and 4 should be read to require a plurality of cavities.

FN3. Claims 8-12 are dependent to claim 7. The '968 patent has four independent claims, claims 1, 3, 4, and 7.

The '955 patent describes an optical fiber distribution frame—a means for organizing and managing fiber optic cables. Basically, the distribution frame is composed of a number of modular cabinets, including an optical fiber cross-connect cabinet. This cross-connect cabinet allows optical fiber cables to be connected to each other. As with most cabinets of this sort, the '955 invention has a front panel which boasts a number of openings. The optical fibers, approaching from the back and front of this panel, are inserted into connectors. The connectors, in turn, are inserted in adaptors which snap into the openings on the front panel of the cabinet. The adaptors have standardized external perimeters which allow them to fit into the panel's standard opening, but the interior opening on the adaptors vary to accommodate a wide variety of shapes and sizes of connectors.

There are some drawbacks to working with optical fibers. One, relevant to the invention described in the '955 patent, is that optical fibers are fragile; if you bend them too far, they will break. Thus, the '955 patent describes a connector panel divided into right and left fields of openings, and a "holding structure for holding a first set of a plurality of said fiber optic connectors mounted in said right field at an angle directed toward said right side of the cabinet and for holding a second set of a plurality of said fiber optic connectors mounted in said left field at an angle directed toward said left side of the cabinet." U.S. Patent No. Re. 34,955, Reexamination Certificate B1, col. 1, ll. 47-52. By angling the fiber optic cables, rather than inserting them perpendicular to the connector cabinet, this device directs the cables in a gradual bend around the outside of the cabinet. By directing some fibers to the right and some to the left, the device improves the

accessibility of the fibers.

The allegedly infringing device produced by Defendants allows for right- and left-directed angling of fiber optic cables approaching the connector cabinet. Specifically, on the allegedly infringing device, the "adaptors" are really a series of corrugated plates into which the connectors attach. FN4 Defendants assert that the claims in the '955 patent do not extend to this sort of corrugated panel, but rather that the means described in the '955 patent is limited to individual angled adaptors which insert in the regular flat panel but which hold the connectors and cables at an angle.

FN4. Frankly, the Court is unclear about the precise nature of the allegedly infringing device. ADC seems to suggest that T & B's device employs a corrugated, plural adaptor which accepts a number of connectors and attaches to a flat front panel. In contrast, T & B suggests that the front panel of the cabinet itself is corrugated so that it allows regular flat adaptors to be employed. The Court need not resolve which characterization is more accurate; that is perhaps an issue for resolution at the summary judgment stage.

Discussion

1. The '600 Patent

[1] Claims 1 and 9 of the '600 patent describes a "second trough defining means for defining a substantially vertical trough extending the height of said panel ... said vertical trough disposed offset from said horizontal trough defining means and located proximate said horizontal trough rear portion." Similarly, Claim 11 describes a "means for defining a vertical trough ... said vertical trough-defining means lying in a plane parallel to and spaced apart from said horizontal trough-defining means...." Defendants contend that this language, when read in the context of the patent specification, requires that there be absolutely no overlap between the space occupied by the vertical troughs and the space occupied by the intermediate horizontal troughs. The Court does not agree.

On their face, the claims do not require that the vertical trough and horizontal troughs have absolutely no overlap. In common parlance, "offset" means merely that the two objects are not perfectly aligned. FN5 Similarly, "lying in a plane parallel to and spaced apart from" does not require the troughs to be completely offset. An entire object, with depth, cannot occupy a single plane, which, by definition, has no depth. Typically, however, an object is thought to "lie in the plane" which passes through its center. Thus, for the vertical and horizontal troughs to lie in parallel but separate planes, their center planes cannot be aligned.

FN5. Neither side has suggested that "offset" has a particular meaning within the telecommunications equipment field which differs from the common usage of the term. ADC has noted, however, that, in advertisements, T & B has used the term "offset" to describe the relationship between horizontal and vertical troughs in the allegedly infringing device—a device in which there is overlap between the horizontal and vertical troughs. The Court, however, need not consider this extrinsic evidence of the claim meaning to reach the conclusion that "offset," given its ordinary meaning, does not mean entirely without overlap.

Defendants argue that the language used to describe the preferred embodiment of the invention suggests that Plaintiff intended a more narrow definition of "offset" and "spaced apart from." Specifically, Defendants quote the following language: "No interference is provided by the vertical troughs. Accordingly, a horizontal run is unrestricted between a plurality of side-by-side bays." U.S. Patent No. 5,220,600, col. 4, ll. 23-26.

[2] "It is entirely proper to use the specification to interpret what the patentee meant by a word or phrase in the claim. But this is not to be confused with adding an extraneous limitation appearing in the specification, which is improper." *See E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433

(Fed.Cir.1988) (citations omitted). The language quoted by Defendants accurately reflects the spatial relationship between the vertical and horizontal troughs in the preferred embodiment, but the specification goes on to note that the preferred embodiment is not intended to serve as a limitation on the claims themselves. The Court cannot construe the claim language as limited to devices having the exact characteristics of the preferred embodiment, specifically "no interference" by the vertical trough and an "unrestricted run" through the horizontal troughs.

It is true that the specification makes clear that the vertical trough must be positioned in such a way as to allow jumper wires to run through a series of horizontal troughs without getting tangled in vertical wires. The background section of the patent notes the problems in the prior art: "The common planar arrangement of the horizontal and vertical troughs of the [prior art bays] results in interference of wires passing through the [sic] intersection of horizontal and vertical troughs.... It is desirable for a wire to pass from one bay to other bays in the installation." U.S. Patent No. 5,220,600, col. 1, ll. 51-61. However, this function is not inconsistent with an arrangement of offset but overlapping vertical and horizontal troughs. So long as some portion of the horizontal troughs does not overlap with the vertical troughs, there is unrestricted access between horizontal troughs of different bays. Thus, to the extent that the specification discusses the purpose for having the vertical and horizontal troughs offset or in different planes, that specification does not suggest any limitation beyond the plain meaning of the claim language.

The Court concludes that the proposed claim construction of the Defendants unduly narrows the scope of the '600 patent. The claims should be read and construed as they are written, to require that the vertical and horizontal troughs not be perfectly aligned so that there is some measure of unrestricted passage between horizontal troughs of different bays. The claims should not be limited to devices in which there is absolutely no overlap between horizontal and vertical troughs.

2. The '968 Patent

[3] Claims 1 and 7 of the '968 reference a "means for supporting [the] conducting means with respect to [the jack] housing." U.S. Patent No. 4,749,968, col. 12, ll. 7-8; col. 14, ll. 18-19. Claim 3 of the same patent references a "means for supporting [the] conducting means with respect to [the jack] housing, said supporting means including a dielectric support member for supporting [the] conductor member, said support member having ... a plurality of regularly spaced cavities...." U.S. Patent No. 4,749,968, col. 12, ll. 38-46. Plaintiff alleges that certain devices produced by Defendants, all of which have only a solid disk supporting means, infringe claims 1 and 7 of the '968 patent. Defendants contend that claims 1 and 7 should be construed to cover only devices with supporting means possessing "a plurality of regularly spaced cavities." The Court cannot agree.

The Court finds the Federal Circuit's decision in *Clearstream Wastewater Systems, Inc. v. Hydro-Action, Inc.*, 206 F.3d 1440 (Fed.Cir.2000), to be highly instructive. *Clearstream* involved a patent for a wastewater treatment apparatus utilizing aerobic bacteria to digest solid organic particles in wastewater. As described in the court's decision, treatment systems using aerobic bacteria require some means for aerating the wastewater so that the bacteria can survive. The prior art means for aerating the wastewater involved rigid conduits, which were difficult to replace and maintain. The patent at issue in *Clearstream* described an improvement over the rigid conduits: flexible hoses inserted in rigid conduits. The patent also described a number of other novel improvements over the prior art. The allegedly infringed claims recited a "'means for injecting air into the waste water in the aeration chamber to support the growth of aerobic microorganisms....'" *Id.*, at 1443. The allegedly infringing device used only a rigid conduit for aeration. The alleged infringer argued that the "only possible corresponding structure for the 'means for injecting air' or 'means for aerating' limitations [was] the flexible-hose structure described in the patent." *Id.* The Federal Circuit disagreed.

The Federal Circuit noted that the prior art "means for injecting air"-the rigid conduit-was mentioned in the

background of the patent, and that the rigid conduit was a corresponding structure for the "means for injecting air." Furthermore, the Federal Circuit noted that the patent noted the disadvantages to the rigid conduit but did not assert that the rigid conduit was incapable of performing the function of aeration. Finally, the Federal Circuit noted that the flexible hose means was not the only point of novelty in the patent. Ultimately the court concluded that, with respect to the allegedly infringed claims, the "means for injecting air" was not limited to the novel means disclosed in the patent. The court reasoned, inter alia, that the doctrine of claim differentiation supports Clearstream's position that the means plus function elements of the disputed claims, the elements reciting a "means for injecting air," should be read broadly to cover the prior art. The court noted that the disputed independent claims recited other novel features of the patent, but referred only generally to a "means for injecting air," while other claims specified the use of flexible hoses inside of rigid conduits as the "means for injecting air." *Id.* at 1446.

The present case is almost directly on point. First, the prior art "means of supporting"-solid disks-is described in the background of the '968 patent, and, while noting the disadvantages of the solid disks, the patent specification does not suggest that the solid disks are incapable of supporting the conducting means. FN6 Thus, the description of the prior art solid disks is a corresponding structure for a means of supporting the conducting means. Second, the novel means of supporting is not the only novelty in the patent; rather, claims 1 and 7 each recite additional patentable novel features. And finally, the doctrine of claim differentiation requires a finding that the "means of supporting" language in claims 1 and 7 should not be construed as limited to the novel means of supporting described in the specification. Where claims 1 and 7 refer only generally to a means of supporting, claims 3 and 4 clearly specify a means of supporting which also matches impedance by featuring a plurality of cavities.

FN6. Rather, the novel supporting means, with the plurality of regularly spaced cavities, performs two functions: it supports the conducting means *and* it matches the impedance.

[4] In support of their respective positions, the parties both point to the correspondence in the prosecution history between the Patent and Trademark Office ("PTO") and ADC regarding the relationship between the '968 patent and prior art U.S. Patent No. 3,109,997 to Giger (the "Giger patent"). The Giger patent disclosed, among other things, solid disk supports for the conducting means within the jack housing. Initially, the PTO rejected the '968 patent, including claims 1 and 7, as obvious over Giger. In a responsive letter, ADC differentiated the '968 patent claims from the device disclosed in Giger. Defendants allege that ADC specifically differentiated claims 1 and 7 from Giger on the basis that Giger did not disclose supporting means with cavities; thus, Defendants assert, prosecution history estoppel bars any construction of claims 1 and 7 which does not require supports with cavities. Defendants' allegation and conclusion are simply inaccurate.

It is true that ADC stated that "Giger does not mention as a possibility or point to in any way the indicated structure defined by Claim 1," and that "Giger does not point to the type of structure defined by claim 7." However, reading these statements in context, it is abundantly clear that ADC differentiated claims 1 and 7 from Giger by pointing to features described in those claims *other than the supporting means*. Specifically, ADC differentiates claim 1 from Giger by noting the presence of the inductors in claim 1, and ADC differentiates claim 7 from Giger by noting the presence of the make-before-break switch in claim 7. Defendants quote a portion of ADC's response to the PTO which states that "Giger shows solid dielectric support members. Giger shows no cavities in the support members." This language, though, is in the context of differentiating *claim 3* FN7 from Giger, not claims 1 or 7; ADC readily concedes that supports with cavities are a requirement of claim 3, and they have not alleged infringement of claim 3. Indeed, the fact that ADC did not raise the issue of the supports with cavities in its discussion of claim 1, but rather waited until it began discussing claim 3, strongly suggests that ADC did not consider supports with cavities to be a requirement of claim 1.

FN7. In the prosecution history itself, the quoted language discusses claim 2; however, the claim which was claim 2 at that time became claim 3 in the patent as it was finally accepted.

In short, the Court concludes that the "means for supporting" language in claims 1 and 7 is not limited to the novel means for supporting described in the patent, but rather can read onto the prior art solid disk supports.

3. The '955 Patent

[5] The language at issue here comes from amended claims 12 and 15 found in Reexamination Certificate, B1 Re. 34,955. The language describes a "holding structure for holding a first set of a plurality of [] fiber optic connectors mounted in [the] right field at an angle directed toward [the] right side of the cabinet and for holding a second set of a plurality of [] fiber optic connectors mounted in [the] left field at an angle directed toward [the] left side of the cabinet." U.S. Patent No. Re. 34,955, Reexamination Certificate B1, col. 1, ll. 47-52. The specification of the '955 patent notes that the angling will be accomplished by means of adaptors and offers a preferred embodiment of such an adaptor, specifically an adaptor which accepts an individual connector.

The parties and the Court agree that the disputed language in the '955 patent constitutes a means-plus-function claim invoking 35 U.S.C. s. 112, para. 6. *See* ADC Telecommunications, Inc. v. Alcoa Fujikura Ltd., 13 F.Supp.2d 951 (D.Minn.1998) (Doty, J.) (discussing this same patent, finding that the language in the amended claims of the reissue patent set forth means-plus-function limitations). That statutory provision states that a means-plus-function claim "shall be construed to cover the corresponding structure, materials, or acts described in the specification and equivalents thereof."

Looking to the specification of the '955 patent, the discussion of the cross-connect cabinet states that "[t]he present invention utilizes a plurality of connector sleeve adaptors ... to receive the commercially available connectors 100 and mount them within connector panel 92 at an orientation such that the axis of connectors 100 are at about a 45E angle with respect to the plane of connector panel 92." U.S. Patent No. Re. 34,955, col. 5, l. 64-col. 6, l. 1. Although the specification notes that "the specific attachment member of the individual adaptors ... will not be described in detail to avoid limitation of the present inventions to the specific adaptor shown," *Id.* at col. 6, ll. 11-15, the specification draws the reader's attention to the common features shared by the adaptors: a mounting plate, mounting clip, mounting slot, and an adaptor structure.FN8 *Id.* at col 6, ll. 15-28.

FN8. The Defendants would further specify that the adaptor involve an angled plate for mounting the adaptor to a flat connection panel. This further limitation, while perhaps a feature of the preferred embodiment, is not supported by the language of the specification.

The specification does not disclose any other structure which might perform the function of holding the connectors and directing them at an angle to the right and left of the cabinet's front panel. Thus, the Court concludes that the means-plus-function elements of claims 12 and 15 cover only a structure which meets those criteria (an adaptor having a mounting plate, mounting clip, mounting slot, and adaptor structure). The Court does not, however, resolve the question of whether a corrugated adaptor meets these criteria or what the appropriate scope of equivalents to these claims might be.

For the reasons stated, **IT IS HEREBY ORDERED:**

1. That, regarding claim construction of U.S. Patent No. 5,220,600 (Doc. No. 192), the terms "offset" and "spaced apart" do not mean "entirely without overlap," and the claims are not limited in scope to devices in which the vertical trough does not intrude into the horizontal trough at all;

2. That, regarding claim construction of U.S. Patent No. 4,749,968 (Doc. No. 194), the term "means for supporting said conducting means with respect to said housing," as used in independent claims 1 and 7, is not limited to supports with cavities formed therein that also accomplish the separate function of impedance matching; and

3. That, regarding claim construction of U.S. Patent No. Re. 34,955 (Doc. No. 196), the term "holding structure for holding" is construed by the court to mean an adaptor having a mounting plate, mounting clips, mounting slot, and adaptor structure.

D.Minn.,2001.

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