

United States Court of Appeals for the Federal Circuit

01-1360

TROVAN, LTD., ALGERNON PROMOTIONS, INC.,
and ELECTRONIC IDENTIFICATION DEVICES, LTD.,

Plaintiffs-Appellees,

v.

SOKYMAT SA, IRORI, and AKE GUSTAFSON,

Defendants-Appellants.

Charles H. De La Garza, Fulbright & Jaworski, L.L.P., of Austin, Texas, argued for plaintiffs-appellees. With him on the brief was Mark T. Garrett.

Edward P. Walker, Oliff & Berridge, PLC, of Alexandria, Virginia, argued for defendants-appellants. With him on the brief were James A. Oliff, John W. O'Meara and William J. Utermohlen.

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

Judge Mariana R. Pfaelzer

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DECIDED: August 1, 2002

Before MICHEL, BRYSON and LINN, Circuit Judges.

Opinion for the court filed by Circuit Judge LINN. Dissenting opinion filed by Circuit Judge MICHEL.

LINN, Circuit Judge.

Sokymat SA, Irori, and Ake Gustafson appeal the judgment of the United States District Court for the Central District of California that Gustafson is not a co-inventor and co-owner of U.S. Patent No. 5,281,855 (“the ‘855 patent”), and that Sokymat SA and Irori therefore infringe the ‘855 patent. Trovan, Ltd. v. Sokymat SA, No. CV-97-4585-MRP (C.D. Cal. Apr. 24, 2001) (“Opinion”). Because the district court did not properly construe the claims at issue, requiring the resolution of factual questions on the issue of inventorship of the claims as properly construed, we vacate and remand.

BACKGROUND

This case involves patents relating to miniature electronic devices known as passive transponders. Passive transponders are used in many applications including animal tracking and identification, anti-theft devices, and access control systems. Passive transponders consist of a small coil winding attached to a tiny integrated circuit. Figure 1 illustrates an encapsulated transponder corresponding to an embodiment of the invention in the '855 patent.

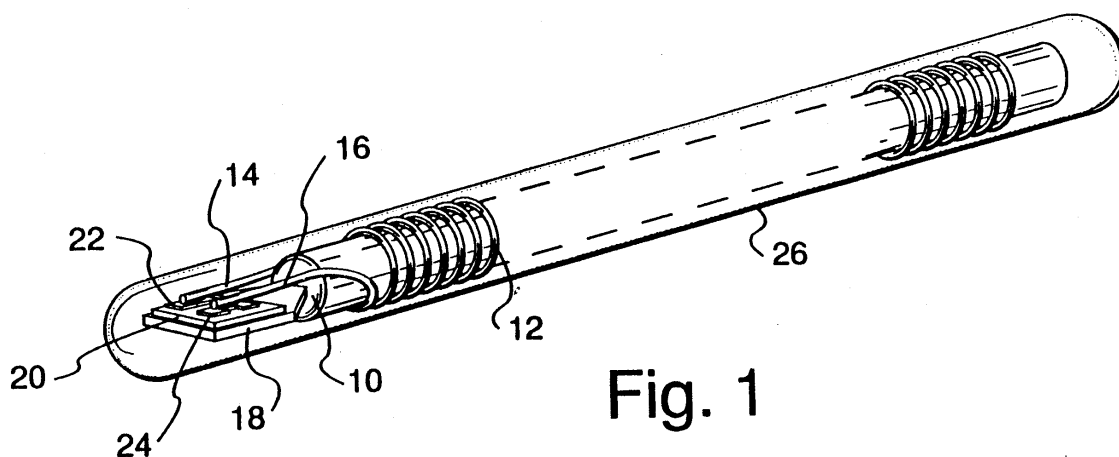


Fig. 1

The coil winding acts as an antenna and is composed of very thin wire 12 wound around an elongated cylindrical magnetic core 10. The wire ends 14 and 16 are attached to an integrated circuit die 20. In some embodiments of the invention, a support means 18 is affixed to the end of core 10, and the integrated circuit die 20 is

then attached to support 18. In other embodiments, wire ends 14 and 16 provide the sole support for the integrated circuit without the need for support 18. '855 patent, col. 2, ll. 44-47. After assembly and testing, the transponder is encapsulated in a suitable glass or plastic capsule 26. Id., col. 2, ll. 55-57.

The integrated circuit device is very tiny. The specification describes contact pads 22 and 24 in one embodiment as approximately 16 mils long by 6 mils wide (0.41 millimeter by 0.15 millimeter). Id., col. 3, ll. 18-21. The commercial embodiments of the invention sold by both parties use an integrated circuit chip measuring approximately 40 mils by 40 mils (1 millimeter square). The antenna wire 12 is typically 18 microns (0.71 mils) in diameter, which is less than one-fourth the thickness of a human hair. The overall size of a passive transponder in this case can be seen as compared to a standard trial exhibit sticker below.



Passive transponders are generally affixed to objects that require identification. To read the identifying information contained in a transponder, an external reader transmits an electromagnetic signal that is received by the transponder antenna. The signal generates electrical energy in the antenna coil which activates the integrated

circuit. The activated circuit incites a coded identifying output impulse that passes back through the antenna, inducing a return electromagnetic signal. The coded signal is received by the reader and identified as having been generated by the particular transponder. The relevant claims at issue include independent claims 1 and 7, and dependent claims 4, 5, 8, and 9. Those claims provide:

1. An integrated circuit device comprising:
 - a silicon substrate forming a die having an integrated signal processing circuit formed in a surface thereof and including a first set of contact pads;
 - an insulative layer covering the circuit carrying surface of said die and having apertures therein exposing said first set of contact pads, said insulative layer having a thickness in excess of 10,000 angstroms;
 - a plurality of second contact pads disposed over discrete surface areas of said insulative layer, each such area surrounding one of said apertures, and each such second contact pad contacting one of said first set of pads through a corresponding aperture, said second pads being of a relatively soft metal and having a thickness in excess of 20 microns, said second pads being substantially larger than the corresponding first contact pads; and
 - means forming an electromagnetic antenna having wire leads bonded to said second pads, the size and thickness of said second pads combining with the thickness of said insulative layer to protect said integrated circuit during the bonding of each said wire lead to one of said second pads.
4. An integrated circuit device as recited in claim 1 wherein each of said wire leads is thermal compression bonded to its corresponding second pad.
5. An integrated circuit device as recited in claims 1, 2, 3, or 4, wherein said silicon substrate is supported by said wire leads.
7. A miniature integrated circuit transponder device comprising:
 - a semiconductor substrate having an integrated signal processing circuit formed thereon, said integrated circuit including a plurality of discrete contact pads for facilitating electrical interconnection thereto;
 - an electrically insulative layer covering said integrated circuit and having apertures formed therein exposing said contact pads, said insulative layer having a thickness in excess of 10,000 angstroms;
 - a plurality of bonding pads disposed over said insulative layer, with each said bonding pad extending through one of said apertures to make electrical contact with

one of said contact pads, each said bonding pad being of a relatively soft metal having a thickness of at least 20 microns and having a surface area overlying a portion of said insulative layer substantially larger than the area of its corresponding aperture; and

electromagnetic antenna means having lead wires bonded to corresponding ones of said bonding pads, the size and thickness of said bonding pads and said insulative layer being sufficient to protect said substrate and said integrated circuit during the bonding of said lead wires to said bonding pads.

8. A miniature integrated circuit transponder device as recited in claim 7 wherein said lead wires are thermal compression bonded to their corresponding bonding pads.

9. A miniature integrated circuit transponder device as recited in claims 7 or 8 wherein said substrate is supported by said lead wires.

Id., col. 4, ll. 24-48, 60-62; col. 4, l. 2 - col. 6, l. 2; col. 6, ll. 7-9.

When manufacturing these miniature transponders, several technical challenges arise including both (1) attaching the thin wire leads of the antenna to the small integrated circuit chip and (2) providing support for the integrated circuit chip after it is connected to the antenna and before it is encapsulated. One of the issues in this case specifically focuses on dependent claims 5 and 9 and the direct attachment of the coil wire antenna to the integrated circuit chip where the wire leads provide support for the chip. Another inventorship issue focuses on dependent claims 4 and 8, which require the claimed wire leads to be thermal compression bonded to their corresponding pads.

As set forth in more detail in Trovan, Ltd. v. Sokymat SA, Nos. 99-1474, -1488, 2000 U.S. App. LEXIS 22901 (Fed. Cir. Sept. 8, 2000) (non-precedential opinion) ("Trovan I"), Trovan began designing a manufacturing process for mass production of miniature transponders in the late 1980s to be marketed in the radio frequency identification industry. Joseph Masin, a businessman, was chosen to direct the passive transponder project. Masin obtained the services of Dr. Philip Troyk of the Illinois Institute of Technology to act as the leader for the development team. In the fall of 1989, Masin hired Leonard Hadden and Glen Zirbes of Cross Technologies ("Cross"),

an engineering firm involved in the design and manufacture of integrated circuits, to aid Trovan in the development of new, smaller transponders. Hadden was particularly experienced in the packaging of integrated circuits including placing metal bumps on the integrated circuit chips to facilitate electrical connection thereto. After recruiting Hadden and Zirbes, Masin sought expertise on ways to automate the winding of wire to make the antenna coils. Following discussions with a number of coil winding companies, Masin eventually picked defendant Sokymat, a Swiss watch manufacturer headed by co-defendant, Ake Gustafson.

Trovan and Sokymat agreed to work together in optimizing production of Trovan's transponders. They entered into a Nondisclosure Agreement, which covered Trovan's existing intellectual property but did not cover Sokymat's existing intellectual property. The agreement had no provision for assignment of any invention developed during the collaboration

In the summer of 1989, Trovan and Sokymat began working on the project. The team including Gustafson, Hadden, and Zirbes initially considered two automated methods for connecting the chip to the antenna. One method connected the wire leads of the antenna coil to the integrated circuit chip through a printed circuit board ("print") or leadframe bound onto the surface of the integrated circuit chip by gold bump contacts. The term "print" in this case refers to an insulated board onto which a circuit has been etched. See Rudolf F. Graf, Modern Dictionary of Electronics, 778 (6th ed. 1992). A leadframe is the metal part of a solid-state device package which achieves electrical connection between the die and other parts of the system of which an integrated system is a component. Id. at 551. The other method did not use a leadframe and included a direct connection between the wire leads and the integrated circuit chip via larger gold bump contacts or "megabumps." Both of these attachment methods were being used by manufacturers of related products, but the parties did not know of any manufacturer using either method for such minute applications.

Masin testified that during his search for assistance in developing the coil winding and attachment process, he spoke with at least three manufacturers who considered the possibility of directly attaching the coil antenna to the integrated circuit chip. He also met with at least one manufacturer who had experience directly bonding leads from thin wire coils to integrated circuit chips using gold bump contact pads. Masin further testified, however, that the manufacturer rejected the idea of using a direct bonding method in Trovan's miniature transponders because the manufacturer's process was not used for integrated circuits as small as those proposed by Trovan.

Although Masin testified that the direct bonding idea was raised early among the development team, the first documentation of the issue at the center of this inventorship debate is a December 16, 1989 letter which Gustafson faxed to Masin. The letter describes different attachment methods which might be applied to the manufacture of miniature passive transponders. One method involved a doubled-sided print attached to the chip. Gustafson noted that "[w]hen the chip can be modified to slighter [sic] bigger contacts [sic] points, the leads can be connected without print, provided the dots are gold plated." Masin testified, however, that Gustafson's letter was not the first time that the direct bonding idea was raised among the development team. Specifically, Masin testified that he first introduced that idea to Gustafson in September, 1989, and that Gustafson simply repeated Masin's idea back to him in the letter. Gustafson submitted an affidavit describing the direct bonding method mentioned in the letter as his "recognition" and "idea."

During the last week of December, 1989, members of the project team met in Chicago to discuss production of the passive transponders. Masin, Troyk, Hadden, Gustafson, and Ulrich Usling, a Trovan distributor, were among those in attendance. Hadden testified that during the Chicago meeting he suggested to the participants the use of large gold bumps for direct bonding of the antenna wires. Hadden submitted a declaration indicating that:

[I]t occurred to [him] that it might be possible [to] take an integrated circuit . . . and fabricate a gold bump over the aluminum pad such that the gold bump spread out over the insulating layer and the active circuitry underneath. In this way, a tiny chip could be provided with large gold bumps, so that the antenna wires could be bonded directly to the chips. I suggested to the group that this could be done. To illustrate my idea, I drew a picture of what I had in mind on a board or large flip chart type pad. The drawing illustrated a silicon chip or "die" with wires directly bonded to a large gold bump spread out over active circuitry on the die. In my drawing, there was no other mechanical means of support between the integrated circuit chip and the antenna wires, other than the wires themselves. I had in mind that, at least at some point during the manufacturing process, the chip would be connected to the antenna only by the wires.

Hadden's declaration further indicated that Gustafson rejected the idea during the Chicago meeting. Hadden's testimony changed slightly during his later deposition when he testified that he did not believe the coil wire leads could fully support the chip, but rather he expected to provide mechanical support for the chip by gluing it to the core of the antenna coil.

Following these early proposals, Trovan and Sokymat did not initially pursue the direct bonding method. Instead, the design team pursued a method by which the antenna would be connected to the integrated circuit chip via a leadframe. This approach encountered several problems including difficulty in attaching the leadframe to the chip. In an attempt to improve the bonding of the leadframe to the chip, Cross increased the size of the gold bumps.

Gustafson submitted a declaration saying that when he learned that Cross increased the size of the gold bumps, he realized that he could bond the wire leads directly to the chip without an additional mechanical connection supporting the chip. On January 21, 1991, Gustafson faxed Masin a letter indicating that "I come back to my proposal of attaching the chip directly to the ferrite and bond [sic] the wires directly to the bumps." The letter also requested samples of the integrated circuit chips with enlarged gold bumps.

Shortly after receiving the chips, a Sokymat employee in Switzerland, under the direction of Gustafson, directly bonded lead wires from the antenna to the enlarged gold bumps on the chip. Gustafson proceeded to produce a transponder component assembly wherein the wire leads of the antenna were thermal compression bonded directly to the surface of the integrated circuit chip. The wire leads sufficiently supported the chip without the need for additional support structure during the manufacturing process. Gustafson exhibited the transponder to Masin and Zirbes at a meeting on February 26, 1991, in Switzerland. Gustafson shook the assembly in Zirbes's presence to demonstrate that the wire leads were sufficient to support the chip.

On February 25, 1991, Gustafson filed a patent application with the Swiss patent office claiming a method for bonding an integrated circuit and an antenna without a support as well as the product obtained by the method. The application listed only Gustafson as an inventor. Gustafson later used the Swiss application to obtain priority for a United States patent application, which matured into U.S. Patent No. 5,572,410 ("the '410 patent"). Gustafson did not disclose the patent application or its contents to Zirbes, Hadden, or anyone at Trovan.

Gustafson's '410 patent concerns manufacturing technology for coil windings bonded to electronic circuits in very small electronic components. '410 patent, col. 1, ll. 4-6. The patent discloses and claims a component and a process for producing the component which include a winding and at least one electronic circuit wherein the winding and the electronic circuit are electrically and mechanically bonded by wire leads to leadless metal contact regions on the electronic circuit. Id., col. 8, ll. 35-36. The '410 patent issued on November 5, 1996.

On June 5, 1991, Hadden and Zirbes filed the application that matured into the '855 patent. Hadden and Zirbes were named as co-inventors and the patent was assigned to Trovan. Gustafson was not included in the application as a co-inventor. The '855 patent issued on January 25, 1994.

On June 23, 1997, Trovan filed suit against Sokymat asserting, inter alia, ownership and infringement of the '410 and '855 patents. Sokymat responded, alleging that Gustafson was the sole inventor and sole owner of the '410 patent and should be declared to be a co-inventor and co-owner of the '855 patent. Sokymat further alleged that the '855 patent is invalid and unenforceable because Gustafson was omitted as a co-inventor with deceptive intent.

In late 1998, the parties filed motions for summary judgment directed to the issues of inventorship and ownership of the '855 and '410 patents. On February 10, 1999, the district court granted summary judgment that Gustafson is not a co-inventor of the '855 patent and that Hadden and Zirbes are not co-inventors of the '410 patent. Two issues remained for trial: (1) the effect of a non-disclosure agreement as it related to the '410 patent and (2) the validity of the '855 patent. That trial commenced on April 21, 1999. During the trial, the district court granted Sokymat's renewed motion for judgment as a matter of law that neither Hadden nor Zirbes were co-inventors of the '410 patent. The jury returned a verdict finding the '855 patent not invalid in view of the prior art. The parties then reached and filed a settlement agreement (contingent upon the outcome of any appeal) which conceded infringement by Sokymat of the '855 patent and set the damages. The district court thereafter entered judgment against Sokymat SA and Irori for infringement of the '855 patent.

Sokymat appealed the grant of summary judgment that Gustafson was not a co-inventor of the '855 patent. Trovan cross-appealed the issue of ownership of the '410 patent, but did not challenge the determination that Hadden and Zirbes were not co-inventors of the '410 patent. This court affirmed the district court's determination that Trovan did not own the '410 patent but remanded for a determination regarding inventorship of the '855 patent. Trovan I.

On remand, the district court conducted a bench trial and held that "the concept of the wire support as the sole support is not a requirement of the '855 patent." Opinion,

slip op. at 6. The district court further held that to prove inventorship, Gustafson had to prove “that the ‘855 patent requires that thermal compression bonding alone of the wires to the chip provides the sole support.” Id., slip op. at 7. The district court’s opinion includes findings of fact that: (1) Gustafson failed to “provide[] sufficient evidence that it was he, rather than (or in addition to) Hadden, who conceived of directly connecting the antenna lead wires to the megabump of Trovan’s integrated circuit at the December 1989 Chicago meeting;” (2) Hadden conceived the direct bonding idea; and (3) Gustafson’s December 1989 letter to Masin did not amount to a conception of the direct bonding method. Id., slip op. at 4-5.

Sokymat appeals the district court’s ruling that Gustafson is not a co-inventor of the ‘855 patent. The parties stipulate that if Gustafson is determined to be a co-inventor and co-owner of the ‘855 patent, Sokymat and Irori have a complete defense to the infringement charges.

This court has jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

A. Standard of Review

On appeal from a bench trial, we review a district court’s decision for errors of law and clearly erroneous findings of fact. Tegal Corp. v. Tokyo Electron Am., Inc., 257 F.3d 1331, 1338, 59 USPQ2d 1385, 1390 (Fed. Cir. 2001), cert. denied, 122 S.Ct. 1297 (2002). A factual finding is clearly erroneous when, “although there is evidence to support [the factual finding], the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed.” United States v. United States Gypsum Co., 333 U.S. 364, 395 (1948). Inventorship is a question of law that this court reviews without deference. Ethicon, Inc. v. United States Surgical Corp., 135 F.3d 1456, 1460, 45 USPQ2d 1545, 1547 (Fed. Cir. 1998). Because there is a presumption that the inventors named on an issued patent are correct, misjoinder or nonjoinder of inventors must be proven by facts supported by clear and convincing

evidence. Hess v. Advanced Cardiovascular Sys., Inc., 106 F.3d 976, 979-80, 41 USPQ2d 1782, 1785-86 (Fed. Cir. 1997).

B. Analysis

On appeal, Sokymat posits two main theories why the district court erred in concluding that Gustafson was not entitled to co-inventor status on the '855 patent. First, Sokymat argues that because Gustafson was named the sole inventor of the '410 patent, and because the '410 and '855 patents have "overlapping subject matter," it follows that Gustafson is at least a co-inventor of the '855 patent. Second, Sokymat contends that Gustafson conceived and reduced to practice the wire support feature of claims 5 and 9 of the '855 patent. Trovan argues that Sokymat's first theory is legally flawed and that on Sokymat's second theory, the district court correctly credited Hadden with the conception of the wire support feature.

1. Inventorship Law

A patent is invalid if more or less than the true inventors are named. Jamesbury Corp. v. United States, 518 F.2d 1384, 1395 (Ct. Cl. 1975) (inclusion of more or less than the true inventors renders patent void and invalid). However, because a patent is presumed valid, 35 U.S.C. § 282, there follows a presumption that the named inventors on a patent are the true and only inventors. Hess, 106 F.3d at 980, 41 USPQ2d at 1785-86. Moreover, to the extent that fewer than the true inventors are named on a patent, the patent may be corrected to so reflect as long as the nonjoinder was done without deceptive intent on the part of the person erroneously left off the patent. 35 U.S.C. § 256 (2000).

When two or more persons make an invention jointly, they must apply for a patent jointly. 35 U.S.C. § 116 (2000). Co-inventors need not "physically work together or at the same time," "make the same type or amount of contribution," or "make a contribution to the subject matter of every claim of the patent." Id. "Because '[c]onception is the touchstone of inventorship,' each joint inventor must generally

contribute to the conception of the invention.” Ethicon, 135 F.3d at 1460, 45 USPQ2d at 1548 (alteration in original) (citations omitted). “Conception is the ‘formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice.’” Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1376, 231 USPQ 81, 87 (Fed. Cir. 1986) (quoting 1 Robinson on Patents 532 (1890)). “Conception is complete when one of ordinary skill in the art could construct the apparatus without unduly extensive research or experimentation.” Sewall v. Walters, 21 F.3d 411, 415, 30 USPQ2d 1356, 1359 (Fed. Cir. 1994) (citing Summers v. Vogel, 332 F.2d 810, 816, 141 USPQ 816, 820 (CCPA 1964)). An inventor may solicit the assistance of others when perfecting the invention without “losing” any patent rights. See Shatterproof Glass Corp. v. Libbey-Owens Ford Co., 758 F.2d 613, 624, 225 USPQ 634, 641 (Fed. Cir. 1985). However, the basic exercise of ordinary skill in the art, without an inventive act, does not make one a joint inventor. Fina Oil & Chem. Co. v. Ewen, 123 F.3d 1466, 1473, 43 USPQ2d 1935, 1941 (Fed. Cir. 1997).

Because co-inventors need not “make a contribution to the subject matter of every claim of the patent,” 35 U.S.C. § 116, inventorship is determined on a claim-by-claim basis. See Ethicon, 135 F.3d at 1460, 45 USPQ2d at 1548. Moreover, an inventorship analysis, like an infringement or invalidity analysis, begins as a first step with a construction of each asserted claim to determine the subject matter encompassed thereby. Cf. Markman v. Westview Instruments, Inc., 52 F.3d 967, 996 n.7, 34 USPQ2d 1321, 1344 n.7 (Fed. Cir. 1995) (Mayer, J., concurring), aff’d, 517 U.S. 370 (1996) (“A claim must be construed before determining its validity just as it is first construed before deciding infringement.”). The second step is then to compare the alleged contributions of each asserted co-inventor with the subject matter of the properly construed claim to then determine whether the correct inventors were named. See Ethicon, 135 F.3d at 1462, 45 USPQ2d at 1548-49.

To meet the clear and convincing burden of proof, alleged co-inventors must prove their contribution to the conception with more than their own testimony respecting the facts surrounding a claim of derivation or priority of invention. Price v. Symsek, 988 F.2d 1187, 1194, 26 USPQ2d 1031, 1036 (Fed. Cir. 1993). Whether the inventor's testimony has been sufficiently corroborated is evaluated under a "rule of reason" analysis. Id. at 1195. Under this analysis, "[a]n evaluation of all pertinent evidence must be made so that a sound determination of the credibility of the [alleged] inventor's story may be reached." Id. (emphasis omitted) (citing Coleman v. Dines, 754 F.2d 353, 360, 224 USPQ 857, 862 (Fed. Cir. 1985)). Corroborating evidence may take many forms. Reliable evidence of corroboration preferably comes in the form of physical records that were made contemporaneously with the alleged prior invention. See Sandt Tech., Ltd. v. Resco Metal & Plastics Corp., 264 F.3d 1344, 1350-51, 60 USPQ2d 1091, 1094 (Fed. Cir. 2001) ("Documentary or physical evidence that is made contemporaneously with the inventive process provides the most reliable proof that the inventor's testimony has been corroborated." (citing Woodland Trust v. Flowertree Nursery, Inc., 148 F.3d 1368, 1373, 47 USPQ2d 1363, 1367 (Fed. Cir. 1998))). Circumstantial evidence about the inventive process may also corroborate. See Knorr v. Pearson, 671 F.2d 1368, 1373, 213 USPQ 196, 200 (CCPA 1982) ("[S]ufficient circumstantial evidence of an independent nature can satisfy the corroboration rule."). Additionally, oral testimony of someone other than the alleged inventor may corroborate. See Price, 988 F.2d at 1195-96. With that background in mind, we review each of Sokymat's theories separately.

2. Effect of the '410 Patent on the '855 Patent Inventorship Issues

Sokymat first argues that because Gustafson was named the sole inventor of the '410 patent, and because the '410 and '855 patents have "overlapping subject matter," it follows that Gustafson is at least a co-inventor of the '855 patent. Sokymat contends that the '410 patent is directed to winding electronic circuit assemblies formed by

bonding the wire leads from the winding directly to bonding pads on the circuit, such that the wire leads support the circuit without any other mechanical means of support. Because dependent claims 5 and 9 of the '855 patent are directed to similar subject matter, Sokymat argues that the unappealed finding by the district court that no one else is entitled to co-inventor status on the '410 patent means that Gustafson is necessarily an inventor of claims 5 and 9 of the '855 patent. In this argument, Sokymat, in part, contends that the district court misconstrued certain claims of the '410 patent.

Sokymat misunderstands the issue that was before the district court following the remand by this court. In Trovan I, this court affirmed the district court's determination that Gustafson was the sole owner of the '410 patent. With the issuance of the '410 patent came the presumption that Gustafson was the true and sole inventor of the invention described in that patent. The district court held on summary judgment that Hadden and Zirbes could not prove by clear and convincing evidence that they were entitled to be named co-inventors of the '410 patent and, thus, did not overcome the presumption that Gustafson was the sole inventor of the invention claimed in that patent. Trovan did not appeal that decision, but instead challenged the ownership of the '410 patent based on a theory of implied assignment.

As with the '410 patent, the '855 patent issued with the presumption that Hadden and Zirbes were the true and only inventors of the invention described in that patent. The district court held on summary judgment that Gustafson could not prove by clear and convincing evidence that he was entitled to be named a co-inventor of the '855 patent. This court found that there were disputed issues of material fact on that issue and remanded the case for trial on the issue of inventorship regarding the '855 patent.

Although Gustafson is presumed to have invented the invention described in the '410 patent, that presumption does not carry over to the '855 patent issued to Hadden and Zirbes. Even if Sokymat showed that the '410 and '855 patents contain "overlapping subject matter," that alone is insufficient to prove by clear and convincing

evidence that Gustafson invented part of the invention in the '855 patent. While an examination of Gustafson's inventive efforts toward the '410 patent may have been probative regarding whether he invented certain features of the '855 patent, Sokymat cannot rely on Hadden and Zirbes's failure to meet their burden of proof on the issue of inventorship of the '410 patent to satisfy its burden to prove that Gustafson is a co-inventor of the '855 patent. The two issues are distinct. It is not inconsistent in circumstances like this for a court to find that both parties have failed to meet their respective burdens.

Sokymat cites Mycogen Plant Science, Inc. v. Monsanto Co., 252 F.3d 1306, 1310-12, 58 USPQ2d 1891, 1894 (Fed. Cir. 2001), vacated on other grounds by Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. ___, 122 S. Ct. 1831 (2002), and Pharmacia & Upjohn Co. v. Mylan Pharmaceuticals, Inc., 170 F.3d 1373, 1379-82, 50 USPQ2d 1033, 1038-40 (Fed. Cir. 1999), for the proposition that the determination that Gustafson is the sole inventor of the subject matter of the '410 patent, and all facts necessary thereto, has preclusive effect and cannot be challenged by Trovan with respect to the '855 patent. Those cases do not stand for the asserted proposition. Both Mycogen and Pharmacia & Upjohn deal with collateral estoppel. Under that doctrine, a party is prohibited from relitigating a particular issue when: "(1) the issue at stake [is] identical to the one alleged in the prior litigation; (2) the issue [was] actually litigated in the prior litigation; and (3) the determination of the issue in the prior litigation [was] a critical and necessary part of the judgment in the earlier action." Clark v. Bear Stearns & Co., 966 F.2d 1318, 1320-21 (9th Cir. 1992); see also Blonder-Tongue Labs., Inc. v. Univ. of Illinois Found., 402 U.S. 313, 332-33, 169 USPQ 513, 521 (1971). Here, there is no identity of issues. The issues surrounding the '410 patent dealt with whether Hadden and Zirbes were co-inventors of the '410 patent. The district court ruled that neither Hadden nor Zirbes presented clear and convincing evidence to overcome the presumption that Gustafson was the sole inventor of the '410 patent. This case, on the

other hand, deals with whether Gustafson has presented clear and convincing evidence that Hadden and Zirbes are not the sole inventors of the '855 patent. Again, the issues are distinct, and a finding relating to a failure of proof regarding the '410 patent does not amount to a satisfaction of the burden of proof regarding the '855 patent.

3. Inventorship of the Wire Support Feature of the '855 Patent

Beyond the overlap theory, the district court examined directly the inventorship issue raised with respect to the '855 patent. However, the district court did not conduct an independent claim construction analysis, which is the first step in determining inventorship. Cf. Markman, 52 F.3d at 996 n.7, 34 USPQ2d at 1344 n.7. While the district court did make some conclusory statements about what different claims require, it did not engage in any specific interpretation of the scope of claims 5 and 9 at the center of the present dispute. Indeed, it made a number of broad statements as to the scope of coverage of the '855 patent which were not directed to any particular claims and were not consistent with a proper construction of claims 5 and 9. In particular, we note that the district court, in comparing the '410 and '855 patents, remarked that “the central distinction between the [two patents] involves whether the wire must be the sole support for the chip or whether additional means may be used to support the chip.” Opinion, slip op. at 6. The district court continued its analysis with the determination that the '855 patent “simply claims integrated circuits both with and without additional support means, such as the encapsulating media,” and concluded by holding that “the concept of the wire support as the sole support is not a requirement of the '855 patent.” Id. Claims 5 and 9 describe the chip as being “supported by said wire leads.” While the opinion is not explicit, to the extent the conclusions reached by the district court are considered relevant to claims 5 and 9, we agree that support by the wire leads does not mean sole support. But the opinion goes on to discount almost to the point of insignificance the wire support feature except for its incidental relevance to thermal bonding:

[T]he '855 patent does not require furnishing support by wires that must have been directly connected to the chip by thermal compression bonding alone. In other words, Gustafson would have to prove, among other things, that the '855 [patent] requires that thermal compression bonding alone of the wires to the chip provides the sole support.

Id. at 6-7. Without a direct construction of claims 5 and 9, the meaning and scope of the claims and the extent to which Gustafson may have contributed to the invention recited in those claims cannot be determined. We thus turn our attention to the construction of claims 5 and 9.

To construe the claim language, we begin with the words of the claim. Interactive Gift Express, Inc. v. Compuserve, Inc., 256 F.3d 1323, 1331, 59 USPQ2d 1401, 1406-07 (Fed. Cir. 2001). After looking to the claim language we consider the rest of the intrinsic evidence, that is, the written description and the prosecution history, if in evidence. Id. Accordingly, we proceed first to examine the disputed claim language. Specifically, we look to the claim limitations directed to the silicon substrate on which the chip rests and the method of supporting it. With respect to that claim limitation, claims 1, 5, and 6 provide, in pertinent part:

1. An integrated circuit device comprising:
a silicon substrate forming a die having an integrated signal processing circuit formed in a surface thereof and including a first set of contact pads;
* * *
5. An integrated circuit device as recited in claims 1, 2, 3, or 4, wherein said silicon substrate is supported by said wire leads.
6. An integrated circuit device as recited in claims 1, 2, 3, or 4, wherein said silicon substrate is supported by a support means attached to said electromagnetic antenna.

'855 patent, col. 4, ll. 24-48, 60-66 (emphases added). The plain language of the claims indicates that in some embodiments of the invention, the silicon substrate can be supported by the wire leads while in other embodiments, an alternative support means can provide the support. Independent claim 1 is silent on the issue of supporting the silicon substrate. Although the dependent claims indicate a particular type of support

for the silicon substrate, the plain language of the dependent claims does not limit the type of support solely to the type listed in the claim. For example, because claim 5 does not recite “wherein said silicon substrate is supported solely by said wire leads,” claim 5 would read on both an integrated circuit supported solely by said wire leads and an integrated circuit supported by the wire leads and another support means. Thus, the plain language suggests that claim 5 merely requires that the wire leads provide at least some support for the silicon substrate.

The specification provides no reason to deviate from the ordinary meaning of the claim language here. The ‘855 patent’s specification describes the principal object of the invention as “provid[ing] a means for attaching fine wires directly to an integrated circuit without requiring the use of a leadframe structure.” Id., col. 1, ll. 47-49. The specification further provides that “[f]or some applications it may be possible to dispense with the support means 18 and depend entirely upon the wires 14 and 16 for support prior to subsequent encapsulation.” Id., col. 2, ll. 44-47. While the written description shows that some embodiments can be supported solely by the wire leads, the claim language does not require that narrow an interpretation. To hold otherwise, as the dissent urges, would amount to improperly importing a limitation from the specification into the claims. See Laitram Corp. v. NEC Corp., 163 F.3d 1342, 1347, 49 USPQ2d 1199, 1203 (Fed. Cir. 1998) (“[A] court may not import limitations from the written description into the claims”). Thus, we hold that claims 5 and 9 require that the wire leads provide at least some support for the silicon substrate but not necessarily the sole support. With the proper claim construction in place, we next examine whether Gustafson is entitled to co-inventor status regarding the invention claimed in claims 5 and 9.

It is undisputed that an integrated circuit chip supported solely by the end wires of a coil was first reduced to practice by Gustafson. While Trovan argues that it was in fact a Sokymat employee other than Gustafson who first reduced it to practice, the only

evidence of record on the subject shows that the Sokymat employee bonded the wire leads to the gold bumps at Gustafson's direction. Using the services of other Sokymat employees to bond the wire leads to the gold bumps does not change the fact that Gustafson, rather than Hadden or Zirbes, was the first to reduce the invention to practice. See Shatterproof Glass, 758 F.2d at 624, 225 USPQ at 641 ("An inventor 'may use the services, ideas, and aid of others in the process of perfecting his invention without losing his right to a patent.'" (quoting Hobbs v. United States Atomic Energy Comm'n, 451 F.2d 849, 864, 171 USPQ 713, 724 (5th Cir. 1971))). Gustafson took the wire-supported chip and shook it in Zirbes's presence to show that he in fact had reduced it to practice.

While Gustafson's reduction to practice is clear from the record, the parties dispute who first conceived of the invention of claims 5 and 9 where the wire leads are directly connected to the chip and provide support for the chip. Both parties presented evidence that the concept of directly bonding the antenna wires to the integrated circuit was discussed by project members prior to reducing the invention to practice. For example, Masin testified that before he hired Sokymat, he discussed the direct bonding idea with at least one manufacturer who had experience directly bonding wire leads to integrated circuit chips using gold bump contact pads, but never with such small devices as the transponders in this case. Gustafson's December 1989 fax to Masin discusses connecting the wires to the chip without an intervening leadframe or print. Hadden testified that he discussed the direct bonding concept two weeks later at the Chicago meeting. All of that testimony, while relevant to any claim by Sokymat that Gustafson was the first to conceive of the direct bonding method, is not on point with respect to the wire support feature of claims 5 and 9. The invention embodied in claims 5 and 9 involves connecting very thin wire leads to a chip that is approximately one square millimeter with the wires providing at least some support for the chip.

Trovan blurs the two distinct concepts of (1) directly bonding wire leads to the chip and (2) providing at least some support for the chip by the wire leads. It is possible to directly bond the wire leads to an integrated circuit chip without those wire leads serving to support the chip in any way. For example, Hadden testified that at one point, he considered gluing the silicon substrate to the ferrite core. When other methods of support are used, the smaller than human hair wire leads may or may not provide additional support for the chip. Because some witnesses did not distinguish between the direct bonding and wire support features, the inventorship trail on the wire support feature is difficult to follow. For example, Masin testified that he discussed the “direct connect methodology” with others prior to talking with Gustafson and Sokymat. Masin used the same phrase, “direct connect methodology,” to describe what Hadden revealed at the Chicago meeting and also to describe what Gustafson demonstrated on February 26, 1991, in Switzerland. We cannot discern from this record whether “direct connect methodology” refers to the wire support concept or the direct bonding concept. Because of this blurring of the concepts of direct bonding and wire support, the district court’s fact-finding is inconclusive on whether Gustafson contributed to the wire support feature of claims 5 and 9 and seems to have completely read the wire support requirement out of claims 5 and 9.¹

The district court did make a number of factual findings regarding other claim limitations. For example, the district court held that Gustafson did not present clear and convincing evidence that the concept of using thermal compression bonding to provide a means for directly connecting the integrated circuit and the antenna without additional support, as claimed in the ‘855 patent, was conceived originally by him. Nor has

¹ The dissent correctly notes that “the parties used the [direct connect and wire support] terms to mean one and the same thing.” Post at 3. However, the parties’ understanding of the invention does not trump the construed meaning of the claim terms. A proper inventorship analysis begins with a common understanding of the meaning of the claim terms and then proceeds to a factual inquiry regarding the specific fact issues. Because the district court and the parties began with an erroneous legal backdrop, the resulting fact-finding in this case is inconclusive.

Gustafson provided sufficient evidence that it was he, rather than (or in addition to) Hadden who conceived of directly connecting the antenna lead wire to the megabump of Trovan's integrated circuit at the December 1989 Chicago meeting. Opinion, slip op. at 3-4. While those two factual findings are relevant to Sokymat's claims that Gustafson invented the direct bonding and thermal compression bonding features, they do not speak to the wire support feature of claims 5 and 9. Thermal compression bonding is indeed a claimed feature of claim 4, and Sokymat also contended that Gustafson is the inventor of that feature. However, claim 5 does not require thermal compression bonding. Claim 5 is a multiple dependent claim that depends upon claims 1, 2, 3, or 4. Since thermal compression bonding is only a limitation of claim 4, findings relevant to that feature do not address whether Gustafson conceived of the wire support feature. Likewise, because direct bonding and wire support are distinct features, a finding that Gustafson did not conceive of direct bonding does not necessarily lead to the conclusion that Gustafson did not conceive of wire support.

Other findings by the district court show that wire support was never the focus of the factual inquiry into the inventorship issue. For example, the district court held that

Gustafson has not shown by clear and convincing evidence that the support features of claims 5 and 9 of the '855 patent was anything more than the observation of Hadden's idea reduced to practice. . . . For instance, in his February 28, 1991 letter to Masin, Troyk noted that Sokymat "initially refused to consider the approach" of directly connecting the wires.

Opinion, slip op. at 4-5. That analysis does not focus on the wire support feature. The district court's reference to Hadden's idea is a reference to Hadden's drawing at the Chicago meeting in late December 1989. Trovan claims that Hadden first conceived of "directly and solely connecting an integrated circuit with a megabump to antenna wires" at the Chicago meeting. Hadden testified that he drew on a flip chart a chip showing the enlarged pads over active circuitry and the direct connection between the enlarged pads and the antenna wires. Hadden further testified that his drawing did not depict a

method of supporting the chip. That drawing, however, no longer exists and is not part of the record. While some Trovan witnesses present at the Chicago meeting testified for purposes of this litigation that Hadden made a drawing at the Chicago meeting, the record is devoid of any corroboration of Hadden's alleged conception that is contemporaneous with Hadden's alleged conception. Moreover, Hadden's drawing showing neither the presence nor the absence of mechanical support is not the same as a drawing showing that the wire leads provide any support for the chip. As Sokymat argued to this court, Trovan's argument is analogous to finding an 1875 picture of a horse-drawn carriage without a horse nearby and describing the drawing as a conception of the automobile.

Trovan presented testimony from at least three witnesses to corroborate Hadden's conception. However, each witness's testimony relates to the direct bonding feature rather than the wire support feature. For example, Masin's declaration provided:

57. During the meeting, Leonard Hadden conceived of and suggested a way in which the antenna wires could be directly bonded to the tiny integrated circuit chips. He illustrated his idea on a board or large drawing pad.

* * *

59. Mr. Hadden's drawing did not show any other connection between the chip and the antenna coil other than the wires being connected directly to the chip.

60. Mr. Hadden indicated that directly bonding antenna wires to this large gold bump over the active circuitry would eliminate the need for a leadframe and therefore reduce production costs.

(emphases added). Masin's testimony provides no corroboration of the wire support feature. Masin's declaration focuses instead on the direct bonding feature. While Masin does say that the drawing did not show any other connection between the chip and the antenna coil other than the wire leads, that declaration testimony does not go as far as saying that the wire leads provided or were even capable of any sort of mechanical support for the chip. It just says that no support was shown on the drawing.

Another witness, Ulrich Usling, gave the following deposition testimony regarding the Chicago meeting:

Q. What did Len Hadden draw?

A. He showed Sokymat, Gustafson, how it was possible to bond the wires onto the chip.

Q. Do you recall what he drew to demonstrate that point?

A. It was -- he draw the chips, and on the two holes he had a gold bump -- it looks like a mushroom -- and direct contacted to the chip layers.

(emphases added). Like Masin's testimony, this proffered evidence of corroboration focuses on the direct bonding feature rather than the wire support feature.

In support of its finding that Gustafson did not conceive of the wire support feature, the district court relied on testimony from Troyk saying that Gustafson did not want to consider the approach of "directly connecting the wires." Again, because direct bonding and wire support are distinct features, Troyk's testimony does not inform the fact-finder as to whether Gustafson conceived the wire support feature. Furthermore, none of Masin's, Usling's, or Troyk's testimony amounted to corroboration made contemporaneously with Hadden's alleged conception. See Sandt Tech., 264 F.3d at 1350-51, 60 USPQ2d at 1094.

The district court also concluded that

Sokymat has not presented clear and convincing evidence that it was Gustafson, rather than inventors from Trovan, who had conceived of the idea claimed in the '855 patent. Sokymat has not shown that Gustafson did anything more than connect the wires to the megabump chip provided by Trovan, and at Trovan's direction.

Opinion, slip op. at 4-5. In addition to further supporting our conclusion that the district court read out the wire support feature of claims 5 and 9, the above passage demonstrates a clearly erroneous finding of fact. Sokymat did, in fact, show that Gustafson did something "more than connect[ing] the wires to the megabump chip provided by Trovan" – it proved that Gustafson actually constructed a transponder in

which the wire leads provided support for the chip. Moreover, it is undisputed that such an integrated circuit chip supported by the end wires of a coil was first reduced to practice by Gustafson. Although the district court correctly held that claim 5 does not require that the wire leads provide the sole support for the chip, it did not appreciate that a feature of claim 5 is that the wire leads provide at least some support. Gustafson took the wire-supported chip, shook it in Zirbes's presence, and proved that the wire provided at least some support for the chip. Zirbes himself not only acknowledged Gustafson's reduction to practice, but also suggested that Gustafson contributed to other claimed aspects of the invention, including the thermal compression bonding feature of claims 4 and 8.

Q. Okay. Well, Mr. Gustafson's demonstration, at least as far as you knew, he had an assembly where the wires were attached to the chip without any mechanical connection; isn't that right?

A. As far as I could see with the naked eye.

Q. Okay. And prior to that you hadn't seen anybody produce such an assembly other than Mr. Gustafson; is that correct?

A. That's correct.

Q. All right. In your opinion, did Mr. Gustafson contribute anything to the subject matter that's disclosed and claimed in the 855 Patent?

A. Well, I believe Mr. Gustafson contributed his previous knowledge of thermal compression bonding from circuit boards to thermal compression bonding onto the semiconductor.

Q. Directly onto the semiconductor?

A. Yes.

Q. Okay. So that's something that you feel Mr. Gustafson did contribute to this invention, is that right?

A. Yes.

Gustafson's reduction to practice alone is evidence that Gustafson had a definite and permanent idea of the complete and operative invention of claims 4, 5, 8, and 9, the

demonstration of which amounted to proof of conception as well as reduction to practice by that time. As to claims 5 and 9, no other evidence of record points to an earlier conception by Hadden or Zirbes of the recited wire support feature.

While Sokymat asks us to reverse the district court's judgment on inventorship, we are unable to do so on the record before us.² The district court did not focus on the wire support feature of claims 5 and 9 and did not completely address the thermal compression bonding feature of claims 4 and 8. Without the fact-finder distinguishing between the direct bonding and wire support features, we are unable to discern from the current record whether Gustafson is entitled to co-inventor status. Consequently, we vacate the district court's holding that Gustafson is not entitled to co-inventor status of the '855 patent and remand the case to the district court for a determination of whether Hadden or Zirbes first conceived of the wire support feature of claims 5 and 9 or whether Gustafson sufficiently contributed to the conception of claims 5 and 9 to be deemed a co-inventor. See Ethicon, 135 F.3d at 1465-66, 45 USPQ2d at 1552 (holding a co-inventor of at least one claim is entitled to a pro rata undivided interest in the entire patent). The district court should further determine whether Gustafson first conceived of the thermal compression bonding feature of claims 4 and 8. If the district court determines that Gustafson is entitled to co-inventor status and further finds that Gustafson was omitted without deceptive intention on his part, it should order that the

² If, as the dissent urges, claims 5 and 9 require that the wire leads provide the "sole support" for the silicon substrate, we would be more inclined to reverse rather than vacate. The record is devoid of any evidence that Hadden or Zirbes conceived of the "sole support" feature prior to Gustafson's undisputed reduction to practice. While the record on this issue is unclear, it is possible that some of Trovan's evidence of direct connection is probative of conception of the wire support feature. Much of that evidence, however, is not probative of "sole support" feature. Thus, the case requires further factual development in light of the proper claim construction.

'855 patent be so corrected by the U.S. Patent and Trademark Office, and the complaint should be dismissed with prejudice.

VACATED AND REMANDED

COSTS

No costs.

United States Court of Appeals for the Federal Circuit

01-1360

TROVAN, LTD., ALGERNON PROMOTIONS, INC.,
and ELECTRONICS IDENTIFICATION DEVICES, LTD.,

Plaintiffs-Appellees,

v.

SOKYMAT SA, IRORI, and AKE GUSTAFSON,

Defendants-Appellants.

MICHEL, Circuit Judge, dissenting.

The majority believes that we must remand this case for further proceedings because the district court has yet to consider the inventorship question in the light of our proper claim construction. This is true, however, only if the district court's (purportedly) incorrect claim construction was not harmless error. Because I believe that it was, I would affirm.

The district court originally granted summary judgment that inventorship was correct on the face of the '410 and '855 patents. After a seven-day trial in which the jury found the '855 patent valid, the defendants conceded infringement and appealed. We reversed the trial court's grant of summary judgment with respect to the '855 patent and remanded for another trial. Trovan, Ltd. v. Sokymat SA, Nos. 99-1474 and 99-1488, U.S. App. LEXIS 22901 (Fed. Cir. Sept. 8, 2000). Specifically, we held there was a genuine issue of material fact "as to whether the direct connection contributed by Gustafson, which was known and used before in circuit boards but apparently not in chips to attach antennae, was a significant inventive contribution, and not one for which it could be said that a reasonable jury would not find that this limitation represented anything more than the application of knowledge already accumulated." Id. at *15. On

remand, the case was tried to the court, which found -- again -- that Gustafson had not carried his burden of proving by clear and convincing evidence that he was a co-inventor of the '855 patent.

The majority now remands the case yet a second time primarily because it views the concepts of direct bonding and wire support as distinct concepts. Ante at 24 (“Because of this blurring of the concepts of direct bonding and wire support, the district court’s fact-finding is inconclusive on whether Gustafson contributed to the wire support feature of claims 5 and 9 and seems to have completely read out the wire support feature of requirement out of claims 5 and 9.”). My review of the record does not support this conclusion.

As an initial matter, I am not at all convinced that the district court improperly construed the claims. The specification teaches that “[f]or some applications, it may be possible to dispense with the support means and depend entirely upon the wires for support prior to subsequent encapsulation.” ’855 patent, col. 2, lines 44-47. I find the requirement for “sole support” a natural consequence of reading dependent claims 5 and 9 in light of this disclosure. There is nothing in the record before us that suggests the hair-thin lead wires provide partial or additional support; either the wires provide the sole support or they provide no support at all.³ We need not decide this question to resolve the present appeal, however, because the majority’s premise that in the present case the direct connect and wire support are distinct concepts is incorrect. The record is clear, in my view, that the parties used the terms to mean one and the same thing.⁴

In a January 1991 facsimile to Joseph Masin, Gustafson suggests that the parties “come back to [his] proposal of attaching the chip directly to the ferrite and bond

³ Notably, as depicted in ’855 patent Figure 1, the wires are not a part of and are completely separate from support means **18**. ’855 patent, col. 2, lines 38-44.

⁴ Although appellants submit that wire support “is a more accurate shorthand description of the limitation of claims 5 and 9” than the direct connection terminology, this is merely attorney argument; we have been directed to nothing in the record indicating that such a position was ever taken below, despite ample opportunity to do so.

the wires direct to the bumps.” In his declaration in support of summary judgment, Gustafson describes the '410 patent as disclosing an invention “wherein the electronic circuit and the winding are directly and mechanically connected solely by the ends of the winding wires being directly connected to the leadless metal contact regions of the integrated circuit.” And it is evident that defendants’ expert, Dr. Eugene Rymaszewski, also understood the concept of direct connect and wire support to be the same thing: “The Gustafson patent successfully eliminates the ‘lead frame,’ and connects the wire leads or leads directly to the metal contact pads on the integrated circuit chip, so that the wire leads/chip connection is the only mechanical connection between the chip and the winding and the integrated circuit chip is not mechanically fastened to a ferrite core.” (emphasis added).

It is likewise evident from the testimony of Masin, Hadden, and Zirbes that the plaintiffs shared this understanding. When questioned about the incident in Switzerland when Gustafson shook the assembly to demonstrate its firmness even though the wires were the sole support, Masin testified as follows:

Q: Well, is that the first time that you had seen an assembly with a one-millimeter size chip where the wires were connected directly to the gold bumps with nothing else supporting the chip?

A: [I] don’t think anybody could have seen it before, so - - -

* * * *

Q: But before this no one had created an assembly with the wires directly bonded to the gold bumps of the chip, at least this size chip; is that right?

A: Yes.

The testimony of Zirbes is virtually identical:

Q: Okay. Now I think earlier we talked a little bit about the fact that Mr. Gustafson’s demonstration in Switzerland was the first time you had seen a coil winding directly connected to a chip; is that correct?

A: [That] is correct.

Q: All right. Do you have any reason to believe that Mr. Gustafson wasn’t the first person to reduce, to conceive of and reduce the direct bonding idea to practice?

A: I don't have any reason -- he provided a first sample I saw, I didn't hear of anybody else doing it out in the industry.

Finally, the testimony of Hadden confirms that he had the same understanding:

Q: [Y]ou can look at as much of the ['855] patent as you need to to answer any of these questions, but I'm calling your attention to column 4 beginning on line 60 which is claim 5 and it talks about an 'integrated circuit device as recited in claims 1, 2, 3, or 4 wherein said silicon substrate is supported by said wire leads,' do you see that?

A: Yes.

Q: Okay. Is that referring to a structure where the wires are bonded directly to the chip and the chip is essentially suspended in air as we talked about before?

A: Yes, at some point in the assembly, yes.

(emphasis added).

In light of this testimony and the record as a whole, I view as implausible the conclusion drawn by the majority -- that "[i]t is possible to directly bond the wire leads to an integrated circuit chip without those wire leads serving to support the chip in any way" -- just because Hadden testified, for example, that "he considered gluing the silicon substrate to the ferrite core." Although the majority may be correct in general, the evidence demonstrates that in this case the inventorship dispute is focused on a direct connect method wherein the wires do provide the sole support. Compare Gustafson Aff. at J.A. 2117 ("[I] developed a process and a tool to enable the wire leads of a coil winding to be directly connected . . . with no other mechanical connection between the winding and the chip.") with Hadden Dep. at J.A. 9389 (responding, when asked if '855 patent claim 5 referred to direct connect and sole support, that "[t]hat's exactly what I wrote on the board in the Chicago meeting in 1989").

With this evidence before it, the district court found that Gustafson had not proven by clear and convincing evidence that he had conceived of the direct connect method. The district court likewise concluded that "Gustafson has not presented clear and convincing evidence that the concept of using thermal compression bonding to provide a means for directly connecting . . . [,] as claimed in the '855 patent, was conceived by him originally." Overlooking this finding of fact, the majority remands for

the district court “to determine whether Gustafson first conceived of the thermal compression bonding feature of claims 4 and 8,” ante at 30, without explaining any deficiency in the trial court’s judgment.

We only review judgments, of course, not opinions. See Strato-Flex v. Aeroquip Corp., 713 F.2d 1530, 1540 (Fed. Cir. 1983). In this case, the district court found that Gustafson had failed to overcome by clear and convincing evidence the presumption of correct inventorship of the ’855 patent. The majority remands this case a second time, however, for further development of a record that I believe is sufficiently complete for us to affirm the judgment. In my view, the practical effect of our decision is to give Gustafson a second bite at the apple when (even assuming an erroneous claim construction) the district court plainly believed that the defendants had not carried their burden the first time. Therefore, I respectfully dissent.