

The evidentiary hearing on November 3, 2014 sought to determine whether the Court should correct inventorship of U.S. Patent Nos. 7,727,310 (the “’310 patent”) and 8,500,862 (the “’862 patent”), issued to Defendants, and U.S. Patent Nos. 7,740,816 (the “’816 patent”), 7,803,337 (the “’337 patent”), 8,337,585 (the “’585 patent”), 8,337,604 (the “’604 patent”), and 8,337,763 (the “’763 patent”), issued to Plaintiffs.

I.

A.

This case involves seven patents. The ‘310 NanoVapor Fuels Group, Inc. (“NanoVapor”) patent lists Elliot Moorhead (“Moorhead”) as inventor and the ‘862 NanoVapor patent lists Moorhead and Bryant Hickman (“Hickman”) as inventors. The ‘816, ‘337, ‘585, ‘604, ‘763 Vapor Point patents list Jeffrey St. Amant (“St. Amant”), Keith Nathan (“Nathan”), and Kenneth Matheson (“Matheson”) as inventors.

On December 30, 2011, Plaintiffs Vapor Point L.L.C. (“Vapor Point”), Nathan, and Matheson filed suit against Defendants Moorhead and NanoVapor. (Instrument No. 1). Plaintiffs Vapor Point, Nathan, and Matheson assert a claim for correction of inventorship of the ‘310 patent under 35 U.S.C. § 256 currently issued to Moorhead. (Instrument No. 1). Plaintiffs claim that the patents should be issued to Nathan and Matheson. (Instrument No. 1). In Plaintiffs’ First Amended Complaint, they added Hickman as a defendant. (Instrument No. 151). Plaintiffs’ asserted claims are for correction of inventorship of the ‘310 and ‘862 patents and seek to name Nathan and Matheson as the sole inventors under 35 U.S.C. § 256. (*Id.*). Plaintiffs’ claims for common-law fraud, fraud by nondisclosure, unjust enrichment, tortious interference, misappropriation of trade secrets, and violation of the Texas Theft Liability Act were dismissed with prejudice on August 5, 2014. (Instrument No. 257).

Defendants Moorhead and NanoVapor have also filed counterclaims against Vapor Point, Nathan, Matheson, Don Alford (“Alford”), and Jefferey St. Amant (“St. Amant”) (collectively, “Counter-Defendants”). In the Fourth Amended Counterclaim, Moorhead and NanoVapor allege infringement of the ’310 patent and seek correction of inventorship for the ’816, ’337, ’585, ’604, and ’763 patents to include Moorhead as inventor. (Instrument No. 212). Defendants’ claims for misappropriation of trade secrets, violation of the Texas Theft Liability Act, breach of fiduciary duty, tortious interference with business relationships, tortious interference with prospective business relationships, breach of contract, and unjust enrichment were dismissed on August 11, 2014. (Instrument No. 261). Defendants also assert claims for infringement of the ’310 patent.

An evidentiary hearing on the inventorship motions was held on November 3, 2014.

B.

The technology at issue in this case generally relates to the removal of volatile fuel vapors, also known as volatile organic compounds (“VOCs”), from storage tanks and other holding vessels, generally in the oil and gas industry. VOCs are “any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions.” 40 C.F.R. § 51.100(s). It is often necessary to remove fuel vapors from storage tanks and other holding vessels, for example to prevent human exposure to hazardous pollutants before servicing or repairing a holding vessel or to eliminate the danger of an explosion. (Plaintiffs’ Tutorial at 13). Conventional techniques and prior art required burning the vapor fuel in order to empty tanks and containers of the unwanted fuel vapors. (Plaintiffs’ Tutorial at 12; Defendants’ Tutorial at 4).

The parties agree that fuel vapors cannot be discharged into the atmosphere for several reasons: first, EPA and state “clean air” regulations regulate the percentage of contaminants that may be discharged. Second, fuel vapors are safety hazards. Third, fuel vapors can interfere with fluid intake in refill operations. (Plaintiffs’ Tutorial at 12; Defendants’ Tutorial at 3).

Because fuel vapors cannot be discharged from the holding vessel directly into the atmosphere, the technology at issue in this case aims to address this problem by capturing and recovering the fuel vapors. The technology purportedly removes the fuel vapors from the holding vessel and introduces a second vessel, which contains a liquid medium designed to capture or bond with the fuel vapor particles, thus removing the fuel vapors from the original holding vessel without discharging the vapors into the atmosphere. (Plaintiffs’ Tutorial at 15).

This suit involves seven patents. Two patents were issued to Defendant NanoVapor: the ’310 patent, entitled “System and Method for Removing Volatile Vapors from Containers,” was issued on June 1, 2010, with claimed inventor Defendant Moorhead. (Instrument No. 174-2 at 26). The ’862 patent, also entitled “System and Method for Removing Volatile Vapors from Containers,” was issued on August 6, 2013, with claimed inventors Defendants Moorhead and Hickman. (Instrument No. 183-12 at 1). The ’862 patent is a continuation-in-part of the ’310 patent (Instrument No. 183-12 at 1), which means that it “contain[s] a portion or all of the disclosure of [the] earlier application together with added matter not present in that earlier application.” *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1304 n.3 (Fed. Cir. 2008).

The ’310 and ’862 patents, issued to Defendant NanoVapor, disclose a system for removing VOCs from containers. The container may hold fuel or other volatile substances, including gasoline, kerosene, crude fuel, butane, octane, Pentane, LPG, LNG, alcohol, amines, ketones, benzenes, toluenes, xylene, and ethyl benzene. (Instrument No. 190 at 4-7). The

container may hold anywhere from hundreds to millions of gallons of fuel or other volatile substances. (*Id.*). The container may also be used on a vehicle, ship, tanker, or aircraft. (*Id.*). When the tank is empty or partially empty, the presence of VOC vapors and residue creates a potential hazard. (*Id.*). Additionally, the VOC vapors must be sufficiently removed from the tank so that it can be refilled. Therefore, the container is connected to the claimed system to cleanse and optionally recapture VOCs in the form of fuel vapor when the container is empty or nearly empty. (*Id.*). The system includes a particulatizer and a vapor capture medium. (*Id.*). The particulatizer receives the VOC vapor and causes the VOC vapor to particularize into micro-size particles. The particulatizer also distributes the particles into the vapor capture medium. (*Id.*). For example, the particulatizer may be a pipe or tubing that carries the VOC vapor and includes high-density, micro-porous walls that distribute the VOC particles into the vapor capture medium. (*Id.*). Alternately, the particulatizer may distribute the VOC particles into the vapor capture medium along a flat surface, for example by providing the particulatizer as a layer positioned underneath the vapor capture medium. (*Id.*). Once the vapor capture medium is saturated with or contaminated by the VOC, the contaminated medium is removed from the system. The recaptured VOCs may then be re-used in liquid form. (*Id.*). For example, fuel vapors may be recaptured as liquid fuel and then re-used. (*Id.*). Additionally, cleansed medium may result from the recapture process, and the cleansed medium may be re-introduced into the system for re-use as vapor capture medium. (*Id.*). Some VOC particles may pass through the vapor capture medium without capture, becoming residual vapor. (*Id.*).

Five patents were issued to Plaintiff Vapor Point: the '816 patent, entitled "Method for Treating Gases to Be Scrubbed," was issued on June 22, 2010, with claimed inventors Plaintiffs St. Amant and Matheson. (Instrument No. 174-4 at 121). The '337 patent, entitled "Method for

Treating a Fluid to Be Scrubbed,” was issued on September 28, 2010, with claimed inventors St. Amant and Matheson. (Instrument No. 174-2 at 38). The ’337 patent is a continuation-in-part of the ’816 patent. (Instrument No. 174-2 at 39; Instrument No. 174-4 at 121). The ’763 patent, entitled “System for Removing Unwanted Contaminates from Fluids,” was issued on December 25, 2012, with claimed inventors St. Amant, Matheson, and Plaintiff Nathan. (Instrument No. 174-2 at 55). The ’604 patent, entitled “System for Removing Unwanted Contaminates from Gases,” was issued on December 25, 2012, with claimed inventors St. Amant, Matheson, and Nathan. (Instrument No. 174-4 at 147). The ’585 patent, entitled “Flow Scrubber Column and Method for Removing Volatile Organic Compounds from a Fluid Stream,” was issued on December 25, 2012, with claimed inventors St. Amant and Matheson. (Instrument No. 174-4 at 161).

The ’816, ’337, ’604, and ’763 patents, issued to Plaintiff Vapor Point, have almost identical specifications. (Instrument No. 190 at 6-8). The ’816 patent covers a method for removing contaminants from gases, while the ’337 patent covers a system for removing contaminants from gases. (*Id.*). Similarly, the ’604 patent covers a method for removing contaminants from fluids, and the ’763 patent covers a system for removing contaminants from fluids. (*Id.*). All four patents describe treating either a fluid or a gas in order to remove VOCs. All four patents illustrate an embodiment of a *system* for removing unwanted contaminants from gases or liquids. (*Id.*).

The ’585 patent issued to Plaintiff Vapor Point covers a method for removing VOCs from fluids using a counter flow method. (Instrument No. 190 at 9). The parties only disputed one claim term in this patent, “biodiesel.” Under an embodiment of the method, clean biodiesel and volatile organic compounds flow past each other within a housing, forming a cleaned vapor.

(*Id.*). The cleaned vapor then exits the system and the contaminated fluid is recycled. (*Id.*). The recycled fluid continues through the process until the VOCs are fully absorbed. This scrubbed system is intended to be portable, for example on a highway, and both used and monitored remotely. (*Id.*).

NanoVapor is an industry leader in the field of volatile organic compound (“VOC”) containment, including a process called Vapor Suppression System developed by Moorhead that aims to control or eliminate combustible and toxic gases in fuel storage and transfer operations. (Instrument No. 118 at 3). According to Defendants, Moorhead met Nathan at an industry conference in 2005, and despite Nathan’s disclosure that his former employer had sued him for misappropriating trade secrets and that Nathan paid his employer damages to settle the suit, Moorhead sought Nathan’s assistance in testing technology. (Instrument No. 118 at 4). Plaintiffs claim that Nathan began working with Moorhead and NanoVapor on the development of a functional vapor removal system in the summer of 2006. (Instrument No. 273 at 15; No. 274-1 at 1-3). Moorhead also used Nathan’s warehouse facilities in League City, Texas for these purposes. (Instrument No. 118 at 4). Nathan signed a confidentiality agreement and worked closely with Moorhead in the process of developing an absorption method for removing VOCs from hydrocarbon tanks. (Instrument No. 118 at 4-5).¹ Plaintiffs allege that Nathan changed and experimented with the nozzle configurations for introducing the Nano-LEL (Lower Explosive Level) vapor capture medium into a tank to be degassed in an effort to improve the results. (Instrument No. 273 at 16-17). Plaintiffs allege that between November 9 and 19, 2006, the group decided to move towards a system that extracts VOCs from a storage tank for treatment. (*Id.*). On December 22, 2006, Moorhead filed provisional patent application 60/871/766 based on

¹ In the original counterclaim, Defendants assert that “Moorhead *independently* conceived of and reduced to practice” this method. (Instrument No. 9 at 12, emphasis added). In the second amended counterclaim, Defendants assert only that “Moorhead conceived of and reduced to practice” the method. (Instrument No. 118 at 5).

this work. (Instrument No. 118 at 5). Defendants allege that Nathan was both aware of the patent's progress and also involved in testing the new process. (Instrument No. 118 at 5). Plaintiffs dispute this. (Instrument No. 273 at 15-22).

In 2007, Nathan became NanoVapor's Chief Operating Officer. (Instrument No. 118 at 5). NanoVapor then hired Don Alford ("Alford") as Vice President of Business Development, and Matheson for help with "commercial embodiment." (Instrument No. 118 at 5-6). Defendants allege that Nathan, Alford, and Matheson plotted to steal Defendants' technology and destroy Defendants' business when the trio developed the commercial embodiment of NanoVapor's patent-pending concept. (Instrument No. 118 at 6-7). Defendants allege that, after an outside group conducted due diligence testing that exceeded expectations, Nathan, Alford, and Matheson decided to steal the technology and associated trade secrets. (Instrument No. 118 at 7). In December 2007, each requested a 20% stake in NanoVapor, which Defendants rejected. (Instrument No. 118 at 8). In contrast, Plaintiffs allege that between January and March of 2007, Nathan continued to perform experiments to introduce VOCs to the vapor capture medium as micro-sized particles and to use particulatizer and diffusion plates. (Instrument No. 273 at 26-27). Plaintiffs claim that the '310 patent Defendant Moorhead filed for on December 18, 2007 wrongfully incorporated, disclosed, and claimed all of Nathan and Matheson's conceptual and inventive contributions. (Instrument No. 273 at 49-50). Plaintiffs also allege that Defendants Moorhead and Hickman filed another patent application, which was issued as the '862 patent, on December 9, 2009, again misappropriating Nathan and Matheson's conceptions. (*Id.*). On December 21, 2007, Alford, Matheson, and Nathan resigned from NanoVapor, and Defendants allege that they immediately began to compete with NanoVapor using its technology, trade secrets, and equipment. (Instrument No. 118 at 8).

C.

1.

Defendants request that this Court correct inventorship of Plaintiffs' Vapor Point patents (the '816 patent, the '337 patent, the '585 patent, the '604 patent, and the '763 patent) to name Defendant Moorhead as an inventor because the Vapor Point patents are based on Defendant Moorhead's conceptions in the '310 patent. (Instrument No. 271 at 5-11). Defendants point to three "key features" of the Vapor Point patents which are allegedly based on Moorhead's '310 patent concepts: the removal of VOCs from a storage vessel and their introduction into a separate containment, a particulatizer that receives VOCs and introduces them to a vapor capture medium as microparticles, and a vapor capture medium capable of retaining VOC particles. (Instrument No. 271 at 5-6). Defendants offer a diagram making side-by-side comparisons between the '310 patent concepts and those listed in the Plaintiff's '901 and '720 provisional patent applications. (Instrument No. 271 at 6-11). Defendants request this Court to correct inventorship of the 5 Vapor Point patents to name Moorhead as an inventor.

2.

Plaintiffs allege that Plaintiffs Nathan and Matheson are the true inventors of the '310 patent, because Defendant Moorhead brought on Nathan and Matheson to help him reengineer the system and bring it to market but that Moorhead wrongfully filed for the '310 patent without consent, notice, or compensation to Nathan or Matheson. (Instrument No. 277 at 7-9). Plaintiffs allege that Defendant Moorhead was unsuccessful in his individual conception of the device prior to the joint collaboration between Moorhead, Nathan, and Matheson. (Instrument No. 277 at 14-15). Plaintiffs alleges that this collaboration led to the invention of the '310 patent (namely the removal of VOCs from a storage vessel and their introduction to a vapor capture medium, a

particulatizer which particulates VOCs and diffusion pates to create micro-sized particles, and a biodiesel vapor capture medium). (Instrument No. 277 at 14-15).

In response to Moorhead's claim that he is a joint inventor of the 5 VaporPoint Patents, Plaintiffs claim that the '310 patent concepts were already in the public domain before the Vapor Point patents were ever filed. (Instrument No. 277 at 11-13). Plaintiffs allege that NanoVapor allowed the concepts embodied in the '310 patent to enter the public domain as early as October 2007, through presentation to Otto Ewers at Proco Inc. (*Id.*). Plaintiffs further allege that Moorhead played no part in conceptualizing the claims or methods embodied in the Vapor Point patents. (*Id.*).

3.

Defendants request that this Court deny Plaintiffs' motion for correction of inventorship on the '310 and '862 patents, because Moorhead alone conceived the '310 patent claims concepts, and Moorhead and Hickman alone conceived the '862 patent claims concepts. (Instrument No. 272 at 3-4). Defendants deny that Plaintiffs have presented clear and convincing evidence that anyone else conceived of the '310 and '862 patent concepts. (*Id.*).

4.

Plaintiffs request the Court to correct inventorship of the '310 and '862 patents to Nathan and Matheson. (Instrument No. 278 at 1). Alternatively, Plaintiffs request the Court to add Nathan and Matheson as joint inventors to the '310 and '862 patents. (*Id.*).

5.

Plaintiffs allege that Nathan conceived of the use of biodiesel as a vapor capture medium after he obtained the biodiesel product for experimentation from a former customer in April of

2006. (Instrument No. 273 at 16). Second, Plaintiffs allege that Nathan conceived the key concept of removing VOCs to enable their capture for treatment, a concept that Nathan fully disclosed to Moorhead during a whiteboard presentation on November 10, 2006. (Instrument No. 273 at 17-18). Plaintiffs allege that during this time, Industrial Imaging (Nathan's company) and Matheson had executed reciprocal confidentiality agreements with NanoVapor to allow for the free exchange of technical development information. (Instrument No. 273 at 7-8). Third, Plaintiffs allege that Nathan conceived the particulatizer for creating micro-sized particles as claimed in the '310 and '862 patents, and that Matheson conceived the diffusion plates as claimed in the '310 and '862 patents. (Instrument No. 273 at 26-33). Additionally, Plaintiffs allege that Defendant Moorhead could not have conceived the four key concepts in the '310 and '862 patents because he did not have the requisite skills to invent the claimed subject matter. (Instrument No. 39).

Accordingly, Plaintiffs allege that Plaintiffs Nathan and Matheson conceived and invented the claims concepts in the '310 and '862 patents and disclosed them to Defendant Moorhead under the confidentiality agreement, and Defendant Moorhead wrongfully filed for the '310 and '862 patents with himself as the sole inventor.

6.

Defendants request the Court to deny Plaintiffs' motion to correct inventorship of the '310 and '862 patents, claiming that Nathan and Matheson merely reduced Moorhead's concept to practice and into a commercial product, which is not an inventive act necessary for inventorship. (Instrument No. 283 at 11-14). Defendants claim that Moorhead first conceived the idea to reverse the flow of the system and move the VOCs to the vapor capture medium during his flight to California on November 10, 2006. (*Id.*). Moorhead claims that he first disclosed the idea to

Wilkinson and Nathan that weekend in November 2006 and later to his patent attorney Van Mahamedi on December 15, 2006. (Instrument No. 285 at 11-12). Defendants further accuse Plaintiff Nathan of secreting Moorhead's lab notebooks containing detail of the concepts and illegally withholding them from discovery. (Instrument No. 285 at 12).

7.

Plaintiffs request the Court to correct inventorship of the '310 and '862 patents to Nathan and Matheson because they did contribute to the conception of the invention claims concepts. (Instrument No. 283 at 1-3). Plaintiffs allege that Nathan did not understand his rights when he approached Moorhead regarding a license in December 2007 and that Plaintiffs timely filed suit after the '310 patent was issued. (Instrument No. 283 at 6-9).

II.

“Whenever through error . . . an inventor is not named in an issued patent, the Director may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.” 35 U.S.C. § 256. A person who alleges that he is a co-inventor of the invention claimed in an issued patent who was not listed as an inventor on the patent may bring a cause of action to correct inventorship in a district court under 35 U.S.C. § 256. *See MCV, Inc. v. King-Seeley Thermos Co.*, 870 F.2d 1568, 1570 (Fed. Cir. 1989) (holding that “section 256 ... explicitly authorizes judicial resolution of co-inventorship contests over issued patents”); *Eli Lilly & Co. v. Aradigm Corp.*, 376 F.3d 1352, 1357 n.1 (Fed. Cir. 2004). The determination of whether an inventor has been incorrectly omitted from an issued patent is, like an infringement analysis, a two-step process. *Trovan, Ltd. v. Sokymat SA, Irori*, 299 F.3d 1292, 1302 (Fed. Cir. 2002). “Because co-inventors need not make a

contribution to the subject matter of every claim of the patent . . . inventorship is determined on a claim-by-claim basis.” *Id.* (citations omitted). First, the Court must determine the meaning and scope of the patent claims for which the claimed inventor asserts contribution. *See id.*; *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995), *aff’d*, 116 S. Ct. 1384 (1996). This step is commonly known as claim construction or interpretation. Claim construction, including the construction of terms of art within a claim, is a matter of law “exclusively within the province of the court.” *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996). Second, the court must compare the alleged contributions of the asserted co-inventor with the subject matter of the construed claim to determine whether the correct inventors have been named in the patent. *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1460 (Fed. Cir. 1998). “Inventorship is a mixed question of law and fact: The overall inventorship determination is a question of law, but it is premised on underlying questions of fact.” *Eli Lilly & Co. v. Aradigm Corp.*, 376 F.3d 1352, 1362 (Fed. Cir. 2004).

“Patent issuance creates a presumption that the named inventors are the true and only inventors.” *Caterpillar Inc. v. Sturman Industries, Inc.*, 387 F.3d 1358, 1377 (Fed. Cir. 2004). To overcome this presumption, alleged co-inventors must establish their co-inventorship by facts supported by clear and convincing evidence. *Ethicon*, 135 F.3d at 1461. To meet the burden of clear and convincing evidence, the alleged co-inventors must prove their contribution to the conception of the invention with more than their own testimony concerning the relevant facts. *Trovan*, 299 F.3d at 1302 (citing *Price v. Symsek*, 988 F.2d 1187, 1194 (Fed. Cir. 1993)). Whether the co-inventor's testimony has been sufficiently corroborated is evaluated under a “rule of reason analysis,” which requires that an “evaluation of all pertinent evidence must be made so that a sound determination of the credibility of the inventor's story may be reached.” *Price*, 988

F.2d at 1195. Corroborating evidence may take many forms. “Reliable corroboration preferably comes in the form of records made contemporaneously with the inventive process.” *Trovan*, 299 F.3d at 1302 (citing *Sandt Tech., Ltd. v. Resco Metal & Plastics Corp.*, 264 F.3d 1344, 1350–51 (Fed. Cir. 2001)). However, circumstantial evidence about the inventive process or oral testimony of someone other than the alleged co-inventor may corroborate. *Trovan*, 299 F.3d at 1303.

“Section 116 of Title 35 is the statutory locus of joint inventorship doctrine.” *Eli Lilly and Co. v. Aradigm Corp.*, 376 F.3d 1352, 1358 (Fed. Cir. 2004). Section 116 provides that:

Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.

35 U.S.C. § 116(a). “This provision sets no explicit lower limit on the quantum or quality of inventive contribution required for a person to qualify as a joint inventor.” *Fina Oil & Chem. Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1997). Nevertheless, the Federal Circuit has clarified that “to be a joint inventor, an individual must make a contribution to the conception of the claimed invention that is not insignificant in quality, when that contribution is measured against the dimension of the full invention.” *Id.*

“Conception is the touchstone of inventorship, the completion of the mental part of invention.” *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1227-28 (Fed. Cir. 1994). “The definition of conception in patent law has remained essentially unchanged for more than a century. It 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.’” *Dawson v. Dawson*, 710 F.3d 1347, 1352 (Fed. Cir. 2013) (quoting *Hybritech Inc. v. Monoclonal*

Antibodies, Inc., 802 F.2d 1367, 1376 (Fed. Cir. 1986)). “Conception is complete only when the idea is so clearly defined in the inventor’s mind that only ordinary skill would be necessary to reduce the invention to practice, without research or experimentation. *Burroughs Wellcome Co.*, 40 F.3d at 1228. “[T]he test for conception is whether the inventor had an idea that was definite and permanent enough that one skilled in the art could understand the conception; the inventor must prove his conception by corroborating evidence, preferably by showing a contemporaneous disclosure.” *Id.* “[A]n inventor need not know that his invention will work for conception to be complete,” but rather “need only show that he had the idea; the discovery that an invention works is part of its reduction to practice.” *Id.* “One who simply provides the inventor with well-known principles or explains the state of the art without ever having a firm and definite idea of the claimed combination as a whole does not qualify as a joint inventor.” *Ethicon*, 135 F.3d at 1460 (citations omitted).

In order to establish joint inventorship, there must also be “some element of joint behavior, such as collaboration or working under common direction[.]” *Kimberly-Clark Corp. v. Procter & Gamble Distributing Co., Inc.*, 973 F.2d 911, 917 (Fed.Cir.1992). Two parties cannot be joint inventors “if they have had no contact whatsoever and are completely unaware of each other’s work.” *Id.* at 916. While joint inventors are not required to work together physically, there must be “some open line of communication during or in temporal proximity to their inventive efforts[.]” *Eli Lilly & Co. v. Aradigm Corp.*, 376 F.3d 1352, 1359 (Fed. Cir. 2004). “The fact that each of the inventors plays a different role and that the contribution of one may not be as great as that of another does not detract from the fact that the invention is joint if each makes some original contribution, though partial, to the final solution of the problem.” *Kimberly-Clark Corp.*, 973 F.2d at 917.

III.

A.

Plaintiffs claim that Moorhead wrongfully filed for the '310 and '862 patents when Plaintiffs Nathan and Matheson actually conceived the four key concepts for the group's joint collaboration. In response, Defendants claim that Moorhead alone conceived of the key concepts and that Plaintiffs merely helped turn Moorhead's idea into a commercial product – short of the inventive conceptual contribution required for inventorship.

1.

Plaintiffs first claim that Nathan conceived the use of biodiesel as a vapor capture medium in the '310 and '862 patents. In its Markman Order, this Court construed the term “biodiesel” as “a non-petroleum based hydrocarbon made from plant or animal fats.” (Instrument No. 190 at 60-64). As a nonjoined inventor, Nathan's claim to inventorship must be corroborated by clear and convincing evidence which proves Nathan's contribution to the conception of the invention. *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1327 (Fed. Cir. 2004).

The parties agree that the use of biodiesel was a significant evolution in the efficacy and success of the technology at issue. Defendants claim that Plaintiff Nathan merely reduced a pre-existing concept to use biodiesel into a commercially viable product. Plaintiff Nathan testified that Wilkinson invited him to a storage tank conference in late September of 2006 and they spoke about the need for hard data to show that using biodiesel would successfully reduce the LEL (Lower Explosive Level) results. Nathan also testified that Nathan proposed to initiate a small pilot unit for the project at his facility in League City, Texas, and that Wilkinson and Fleming, a venture capital sponsor for NanoVapor, approved Nathan's budget for a pilot demonstration for the concept. Nathan testified that he purchased a used fuel storage tank on

October 25, 2006 which was shipped to his League City facility and that Moorhead sent apparatus and chemicals to the facility as part of the project. (Instrument No. 304; Plaintiff's Ex. 2). Nathan testified that he took photos of two meters showing that his tests were unsuccessful and that very little drop in LEL had occurred because the spray nozzle caused the majority of the mist to drop into the bottom of the chamber. (Instrument No. 304; Plaintiffs' Ex. 2). After evaluating the results of Nathan's demonstration, Nathan and his team decided to reposition the spray nozzle and do a drum test with a Wagner power painter, but with similar results. Nathan testified that this recalibration was the subject of an email he sent to Moorhead on October 30, 2006, which contains photos dated October 27, 2006. Additionally, an email from NanoVapor associate Greg Hawk to Moorhead, Wilkinson, and Nathan on October 27, 2006 indicates that Moorhead's system as of that date was incomplete and could not account for spent vapor capture or provide for the recovery of captured VOCs. (Instrument No. 274-1 at 9-12). Nathan testified that the last photo in Plaintiffs' Exhibit 4 depicts his redesign of the system, where the vapors would enter the tank without pooling. (Instrument No. 304; Plaintiffs' Ex. 4).

After these developments, Nathan testified that he learned about biodiesel starting in the summer of 2006 and blended biodiesels with other chemicals to act as a cleaning solvent and an asphalt release agent. Nathan testified that on November 9, 2009, he first tried blending biodiesel with gasoline and ran a test and has some successful results. Nathan testified that he conceived of an idea to put together a process in which he would use biodiesel as a capture medium for VOCs removed from the storage tank. Nathan testified that he sent Moorhead an email attaching a video of his beaker test, and that the pair met the next morning. (Instrument No. 304; Plaintiffs' Ex. 7). Nathan testified that he drew a block diagram on a white board for Moorhead, explained his prior experiment to Moorhead for the first time, and informed Moorhead about the desirable

qualities of biodiesel. Nathan testified that Moorhead became extremely excited about Nathan's discovery, and wanted to keep the concept secret. Nathan testified that Moorhead coined the acronym MESS for methyl ester secret sauce to reference Nathan's biodiesel concept without revealing Nathan's experiments or discoveries.

In contrast, Defendants allege that Moorhead conceived of the use of biodiesel in the '310 patent starting on November 7, 2006 when he instructed Nathan and Greg Hawk to conduct tests on a 6200 gallon fuel vessel. (Instrument No. 279 at 11). Nathan's testimony as well as additional emails sent from Nathan to Moorhead indicate that Nathan independently tested the capture rate and degassing intervals of the biodiesel vapor capture medium for a hypothetical fuel tank, and that Nathan emailed Moorhead a "Confidential Memo NanoVapor IGM" document which set out the developmental framework for the system that Nathan conceived, including the "why," "how," "what," and "result." (Instrument Nos. 273 at 20-21; No. 274-11 at 135-36; No. 274-13 at 4-12). Nathan's testimony as well as the memo sent from Nathan to Moorhead suggest that Nathan's initiative and experimental work to use biodiesel as a vapor capture medium was definite and permanent enough to constitute conception. *See Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1227-28 (Fed. Cir. 1994).

After reviewing the evidence and considering testimony presented at the hearing, the Court finds that Nathan contributed to the conception of using biodiesel as a vapor capture medium, which was not insignificant in quality as measured against the dimension of the full invention, and that his contribution did not merely explain the current state of the art. *See Trovan, Ltd. v. Sokymat SA, Irori*, 299 F.3d 1292, 1302 (Fed. Cir. 2002); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995), *aff'd*, 116 S. Ct. 1384 (1996). The Court

therefore finds as a matter of law that Nathan is an inventor of the key concept of using biodiesel as a vapor capture medium in the '310 and '862 patents.

2.

Second, Plaintiffs claim that Nathan conceived the key concept of removing VOCs from a vessel containing fuel vapors and introducing them into a vapor capture medium as claimed in the '310 and '862 patents. In its *Markman* Order, this Court adopted the following construction of the term “vapor capture medium”: “a liquid or solid that has the ability to retain volatile organic compounds.” (Instrument No. 190 at 23-26).

In the evidence presented before the Court, several emails sent from Nathan to Moorhead in October and November 2006 indicate that Nathan independently experimented with the concept of removing VOCs from a fuel vessel and introducing them to a vapor capture medium. (Instrument Nos. 273 at 20-21; No. 274-11 at 135-36; No. 274-13 at 4-12). In particular, Nathan sent Moorhead an email attaching a document entitled “Confidential Memo NanoVapor IGM,” which supports Plaintiffs’ theory that Nathan conceived of the developmental framework for a system which would remove VOCs from a fuel vessel and introduce them directly into a vapor capture medium. (Instrument Nos. 273 at 20-21; No. 274-11 at 135-36; No. 274-13 at 4-12). Nathan testified before the Court that he approached Moorhead in January 2007 about the concept of removing VOCs from the tank for treatment, and sent Moorhead a photograph of his experimental apparatus. (Instrument No. 304; Plaintiffs’ Ex. 18). Nathan also testified that on and after January 3, 2007, he set up several other different experiments to test and fine-tune the concept. Nathan testified that he sent diagrams and calculations from his experiments to Moorhead during this time. (Instrument No. 304; Plaintiffs’ Exs. 18; 25; 26). Nathan also testified that he emailed Moorhead on January 29, 2007 with his plans to scale up the testing and

to determine how to make micro-sized particles of VOCs. Nathan's communications to Moorhead include another email on March 13, 2007, which details a demonstrative set up with a beaker. (Instrument No. 304; Plaintiffs' Ex. 28). Additional communications between Nathan and Moorhead indicate that Nathan independently tested the capture rate and degassing intervals for a capture system which first removes VOCs from the fuel vessel and introduces them into a biodiesel vapor capture medium. (Instrument Nos. 273 at 20-21; No. 274-11 at 135-36; No. 274-13 at 4-12).

This testimony and contemporaneous evidence supports Plaintiffs' theory that Nathan conceptualized a system which removed VOCs from the fuel tank into the biodiesel vapor capture medium, and then disclosed this process to Defendant Moorhead during a meeting on November 10, 2006. (Instrument No. 273 at 17).

After reviewing the evidence and testimony presented at the hearing, the Court finds that Nathan contributed to the conception of a system which removes VOCs from a tank containing fuel vapors to be directly introduced into a vapor capture medium, which was not insignificant in quality as measured against the dimension of the full invention, and which does not merely explain the current state of the art. *See Trovan, Ltd. v. Sokymat SA, Irori*, 299 F.3d 1292, 1302 (Fed. Cir. 2002); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995), *aff'd*, 116 S. Ct. 1384 (1996). The Court therefore finds as a matter of law that Nathan is an inventor of the key concept of removing VOCs from the fuel tank to be introduced directly into the vapor capture medium in the '310 and '862 patents.

3.

Third, Plaintiffs claim that Nathan and Matheson conceived the use of a particulatizer to create micro-sized particles as claimed in the '310 and '862 patents. In its *Markman* Order, this

Court construed the term “particulatizer” as “an apparatus that performs the act of making volatile organic compounds particulate,” and “micro-sized particles” as “particles sized in the range from .01 to 500 microns.” (Instrument No. 190 at 31-36).

Plaintiff Nathan testified at the hearing that he brought Matheson onto the project to help develop a commercial embodiment of the vapor removal system based on Nathan’s prior design work, and that Matheson assembled and implemented a new prototype system involving the use of a particulatizer. (Instrument No. 273 at 32). The Court in particular reviewed Defendant Moorhead’s provisional ‘766 patent application titled “Degassing System and Technique” filed by Defendant Moorhead on December 22, 2006 which details the concept of extracting VOCs from a fuel tank and introducing them to a vapor capture medium. (Instrument No. 273 at 23; No. 274-10 at 54-59). Defendant maintains that Moorhead alone first conceived the use of a particulatizer to create micro-sized VOC particles during a flight to California on November 10, 2006. However, Moorhead’s ‘766 provisional application does not discuss the concept of introducing VOCs to the vapor capture medium as micro-sized particles. (Instrument No. 274-10 at 54-59; No. 273 at 23-24). Rather, Nathan and Matheson’s diagrams and photographs of the experiment apparatus, which were attached to emails sent from Nathan to Moorhead between January and March of 2007, include the concept of introducing VOCs to the vapor capture medium as micro-sized particles. (Instrument No. 274-12 at 21-24; No. 274-13 at -17; No. 274-14 at 1-2). Nathan testified before the Court that he and Matheson created the diagrams that formed the basis of the experimental apparatus and first memorialized the concept of introducing VOCs to the vapor capture medium as micro-sized particles. Additionally, Nathan’s email messages to Moorhead including text like “Another photo to keep your spirits high!!” and “pics from lab this AM” support Plaintiffs’ theory that Nathan and Matheson conceived of the need for

micro-particles of VOCs. Lastly, email communications and accompanying diagrams between Moorhead, Wilkinson, and Matheson during this period corroborate Plaintiff's theory that Plaintiff Matheson also worked directly on the prototype and made the calculations and measurements necessary to use a particulatizer to create micro-sized particles. (Instrument No. 274-14 at 10-23).

Upon a review of the evidence, the Court finds that Nathan and Matheson contributed to the conception of using a particulatizer to create micro-sized VOC particles for treatment, which was not insignificant in quality as measured against the dimension of the full invention, and which does not merely explain the current state of the art. *See Trovan, Ltd. v. Sokymat SA, Irori*, 299 F.3d 1292, 1302 (Fed. Cir. 2002); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995), *aff'd*, 116 S. Ct. 1384 (1996). The Court therefore finds as a matter of law that Nathan and Matheson are inventors of the key concept of using a particulatizer to create micro-sized particles in the '310 and '862 patents.

4.

Fourth, Plaintiffs claim that Matheson conceived the use of diffusion plates to distribute micro-sized particles across the vapor capture medium as claimed in the '310 and '862 patents. In its Markman Order, this Court construed the term "diffusion plates" to mean "micro-porous plates." (Instrument No. 190 at 40-44).

Plaintiff Matheson claims to have first conceived the diffusion plates as a horizontal element directly above the air chamber as a series of plates and to configure the plates to "planarly distribute the micro-sized particles across the interface of the vapor capture medium." (Instrument No. 273 at 34; No. 274-15 at 14-15). Indeed, Matheson's design drawing, sent from Matheson's email address on September 22, 2007, depicts an air chamber and labeled

“horizontal diffusion plates” (Instrument No. 273 at 34). Nathan and Matheson testified before the Court that they discussed and created diagrams of Matheson’s model diffusion plates which would ideally distribute the micro-particle VOCs across the vapor capture medium. Nathan also testified that he and Matheson conceptualized the use of micro-sized particles and experimented using pieces of 2-inch PVC (polyvinyl chloride) pipe, and that Moorhead was not present in creating these pieces or when Moorhead and Nathan tested the devices. Emails from Nathan and Matheson to Defendant Moorhead attach diagrams of Matheson’s model diffusion plates made from porous plastics. (Instrument No. 273 at 35; No. 274-15 at 11-13). Emails from Matheson to Moorhead corroborate that Matheson tested the diffusion plate prototype in an aquarium to verify that it would generate the necessary micro-sized particles of VOCs. (Instrument No. 274-15 at 11-13). Additionally, Defendant Moorhead’s ‘766 provisional application does not discuss any concept of a diffusion or any other plate, which suggests that Moorhead did not understand the importance of introducing micro-sized VOCs to the vapor capture medium until Nathan explained this concept to Moorhead during their meeting on November 10, 2006. (Instrument No. 274-10 at 54-59; No. 273 at 23-24; No. 273 at 17).

Upon a review of the evidence, the Court finds that Nathan and Matheson conceived the use of a particulatizer to create micro-sized VOC particles for treatment, which was not insignificant in quality as measured against the dimension of the full invention, and which does not merely explain the current state of the art. *See Trovan, Ltd. v. Sokymat SA, Irori*, 299 F.3d 1292, 1302 (Fed. Cir. 2002); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995), *aff’d*, 116 S. Ct. 1384 (1996). The Court therefore finds as a matter of law that Matheson invented the use of a diffusion plate to distribute micro-sized VOC particles across the vapor capture medium in the ‘310 and ‘862 patents.

Although Matheson did not conceive the use of biodiesel as a vapor capture medium and a system which extracts VOCs from the fuel vapor tank to be introduced into the vapor capture medium, there is no requirement for all joint inventors to contribute to all claims elements or to contribute equally to all conceptions in a patent. *See Kimberly-Clark Corp. v. Procter & Gamble Distributing Co., Inc.*, 973 F.2d 911, 917 (Fed. Cir. 1992) (“The fact that each of the inventors plays a different role and that the contribution of one may not be as great as that of another does not detract from the fact that the invention is joint if each makes some original contribution, though partial, to the final solution of the problem.”). Therefore, this Court finds as a matter of law that both Plaintiffs Nathan and Matheson are joint inventors of the ‘310 and ‘862 patents for their contributions. While Defendant Moorhead certainly conceptualized some of the claims of the ‘310 and ‘862 patents, he failed to give proper credit to his co-inventors. Accordingly, Plaintiff’s motion to correct inventorship of the ‘310 and ‘862 patents to add Nathan and Matheson as joint inventors is GRANTED.

B.

Counter-Plaintiffs request this Court to correct inventorship of the Vapor Point patents to Moorhead because Moorhead is the sole inventor of the ‘310 patent, on which the Vapor Point patents are allegedly based. (Instrument No. 271 at 4-5). Counter-Plaintiffs claim that three key features of the 5 Vapor Point patents (‘816, ‘337, ‘585, ‘604, and ‘763 patents) are based on Moorhead’s ‘310 patent concepts: the removal of VOCs from a storage vessel and their introduction into a separate containment, a particulatizer that receives VOCs and introduces them to a vapor capture medium as micro-particles, and a vapor capture medium capable of retaining VOC particles. (Instrument No. 271 at 5-6).

First, Counter-Plaintiffs liken the '310 patent's feature of "removal of VOCs from a storage vessel and their introduction into a separate containment holding the vapor capture medium" to elements of the '901 and '720 provisional patent applications. (Instrument No. 271 at 7-8). In its *Markman* Order, this Court adopted the following construction of the term "vapor capture medium": "a liquid or solid that has the ability to retain volatile organic compounds." (Instrument No. 190 at 23-26). Second, Counter-Plaintiffs liken the '310 patent's feature of "a particulatizer that receives VOCs and introduces them to a vapor capture medium as micro-sized particles" with elements of the '901 and '720 applications. (Instrument No. 271 at 9-10). In its *Markman* Order, this Court construed the term "particulatizer" as "an apparatus that performs the act of making volatile organic compounds particulate," and "micro-sized particles" as "particles sized in the range from .01 to 500 microns." (Instrument No. 190 at 31-36). Third, Counter-Plaintiffs liken the '310 patent's feature of "vapor capture medium that has the capacity to retain VOC particles" to elements of the '901 and '720 applications. (Instrument No. 271 at 10-11). In its *Markman* Order, this Court adopted the following construction of the term "vapor capture medium": "a liquid or solid that has the ability to retain volatile organic compounds." (Instrument No. 190 at 23-26).

After a review of Counter-Plaintiffs' motions and hearing testimony and submitted evidence, the Court finds that although Counter-Plaintiffs cite to similar language between the '310 patent and the '901 and '720 provisional patent applications, they present no corroborating evidence to show that Moorhead contributed to the Vapor Point patents to the extent required to be named a joint inventor. *See Linear Tech. Corp v. Impala Linear Corp.*, 379 F.3d 1311, 1327 (Fed. Cir. 2004); *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1460 (Fed. Cir. 1998). Counter-Plaintiffs have not presented clear and convincing evidence, outside of the language of

the '310 patent, or even alleged that there was joint behavior, such as collaboration or working under common direction. *See Kimberly-Clark Corp. v. Procter & Gamble Distributing Co., Inc.*, 973 F.2d 911, 917 (Fed.Cir.1992). Counter-Plaintiffs simply submit a chart allegedly demonstrating conceptual similarities between the '310 patent and the Vapor Point patents. (Instrument No. 271 at 7-11). Moreover, Counter-Plaintiffs' motions and testimony fail to demonstrate how Moorhead's alleged conceptions in the '310 patent are encompassed by the discrete and distinguishable methods claimed in the '816, '337, and '585 patents. While Moorhead is not required to work together physically with the existing inventors, there must be "some open line of communication during or in temporal proximity to their inventive efforts [.]"*Eli Lilly & Co. v. Aradigm Corp.*, 376 F.3d 1352, 1359 (Fed. Cir. 2004). In this case, Counter-Plaintiffs make no such allegations of collaboration.

As a matter of law, Counter-Plaintiff Moorhead has failed to show that he is a joint inventor of the Vapor Point patents. Accordingly, Defendants' motion for correction of inventorship of the '816, '337, '585, '604, '763 is DENIED.

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IV.

Based on the foregoing, IT IS HEREBY ORDERED THAT Defendants' Motion for Correction of Inventorship of Vapor Point Patents is DENIED (Instrument No. 271), Defendants' Motion to Deny Correction of Inventorship of NanoVapor Patent is DENIED (Instrument No. 272), and Plaintiffs' Motion for Correction of Inventorship is GRANTED. (Instrument No. 273).

The Clerk shall enter this Order and provide a copy to all parties.

SIGNED on this the 13th day of March, 2015, at Houston, Texas.



VANESSA D. GILMORE
UNITED STATES DISTRICT JUDGE