UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AFFORDABLE WIRE MANAGEMENT, LLC,
Petitioner,

v.

CAMBRIA COUNTY ASSOCIATION FOR THE BLIND AND HANDICAPPED, INC.,
Patent Owner.

IPR2024-00139
Patent 10,177,551

DECLARATION OF JONATHAN D. PUTNAM IN SUPPORT OF PATENT OWNER'S RESPONSE

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I. QUALIFICATIONS

1. I am the founder and principal of Competition Dynamics Inc., a litigation and management consulting firm located in Greater Boston, where I specialize in economic and financial analysis pertaining to intellectual property, antitrust- and trade-related litigation. I have provided expert testimony in patent, copyright, trade secret, antitrust, breach of contract and tax actions before U.S. state, federal and bankruptcy courts, the U.S. International Trade Commission, the U.S. Federal Trade Commission, the U.S. Tax Court and private tribunals, and before courts, agencies and tribunals in Canada, the UK, Germany, India, Singapore and China.

2. I received B.A., M.A. and Ph.D. degrees in economics from Yale University. I studied intellectual property law and antitrust law under fellowships at Yale Law School and the Columbia University School of Law. My doctoral dissertation, *The Value of International Patent Rights*, was the first to measure the global value of patent rights. Based on that research, I received a grant from the U.S. National Science Foundation to measure the value of corporate patent portfolios. I then co-authored "How to Count Patents and Value

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Intellectual Property," which has been subsequently cited in the economic literature more than 1,000 times.

3. From 2001-2005, I held the Ontario Research and Development Challenge Fund professorship in the law and economics of intellectual property at the Centre for Innovation Law and Policy, University of Toronto, where I taught property law, intellectual property law, and the regulation of high technology industries in the Faculty of Law. While at the University of Toronto, I edited and contributed to *Intellectual Property Rights and Innovation in the Knowledge-Based Economy*, essays by international experts in the law and economics of intellectual property.

4. I have taught intellectual property management at Boston University Graduate School of Management; advanced topics in technological properties at Columbia University Schools of Law and Business; the economics of technology at Yale University; and microeconomic theory, industrial organization, and the economics of finance at Vassar College.

5. A summary of my professional experience is set forth in EX2045. Competition Dynamics is compensated at the rate of $835 per hour for my time.

II. SCOPE OF ASSIGNMENT

6. Counsel for Patent Owner Cambria County Association for the Blind and Handicapped, Inc. ("CAB") have asked me to examine the commercial success of CAB products that are coextensive with U.S. Patent Nos. 11,349,291 (the "'291 patent") and 10,177,551 (the "'551 patent)," as a factor for secondary considerations supporting the patents' nonobviousness. The Patent Trial and Appeal Board ("PTAB") instituted an *inter partes* review based on a petition filed by Affordable Wire Management, LLC ("AWM"). On July 25, 2024, I submitted a declaration in support of CAB's response to the *inter partes* review for the '291 patent. Counsel have asked me to submit this declaration in support of CAB's response for the '551 patent.[1]

7. Appendix 1 lists all documents and other materials that I received or considered in forming my opinions, including the documents cited in this declaration. All materials that I have considered and relied upon

[1] Although this declaration is in support of CAB's response to the *inter partes* review for the '551 patent, I also discuss the contributions of the '291 patent because I understand that CAB's implementation of the '551 invention builds on the implementation of the '291 invention.

in forming my opinions as set forth in this declaration, and all facts, data and analyses contained in such materials, are of the type that an expert in my field would reasonably rely upon in forming opinions on the subject matter contained in this declaration. I may supplement and/or amend my opinions should additional information, evidence or testimony become available.

III. SUMMARY OF OPINIONS

8. The invention claimed in CAB's '551 patent offers CAB's customers substantially improved performance at substantially lower cost over prior-art alternatives for implementing grounding systems. The integrated system claimed in the '551 patent further offers improvement over CAB's standard system for the above-ground, messenger wire-supported cable management system claimed in the '291 patent. Cost breakdowns indicate that each of the CAB inventions claimed in the '291 and '551 patents substantially reduces the cost of materials and labor in connection with the installation and management of the various kinds of electrical cables in a so-called "Balance of Systems" (BOS) within a utility-scale photovoltaic (PV) installation relative to the prior-art technology: trenching (in the case of the '291 patent); above-ground systems that required separate

grounding conductors (in the case of the ’551 patent). In addition, each of the CAB inventions significantly reduces the cost of maintenance in a BOS. The combination of lower installation cost and better feature performance, with no significant tradeoffs in other dimensions, is attractive to customers and thus constitutes a significant productivity improvement of the kind the patent system was designed to promote. These improvements have driven the substantial growth in CAB’s sales.

9. While new solar energy generation capacity has grown by a factor of about 6x from 2015 (CAB’s first full year of sales) to 2023, CAB’s sales of products that embody the ’291 patent, or ’291 plus ’551 patents, have grown much faster (more than [redacted]).[2] The data decisively support the conclusion that CAB’s sales growth has been caused by each of the claimed inventions (which, I understand, are coextensive with its products). Conversely, these data contradict any claim that CAB’s growth is due merely to the growth of the solar industry as a whole.

[2] Appendix 2.1.

10. CAB's sales can be divided into two types: its "standard" system, which is coextensive with the inventions claimed in the '291 patent, and its "integrated" system, which builds on the standard system and is coextensive with the inventions claimed in the '551 patent. Moreover, after adding the integrated grounding technology claimed in the '551 patent in 2018, CAB's sales growth [redacted] after introducing its standard system.[3] Because CAB's integrated system offers all the benefits of the standard system, plus integrated grounding, sales of integrated systems [redacted] standard systems.[4] Thus, there is strong evidence that ties CAB's sales growth to both patents at issue.

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[3] In particular, CAB's sales grew at a compound annual growth rate of [redacted] from 2015 to 2017, and [redacted] from 2018 to 2023. *See* Appendix 2.1.

[4] As I explain below, CAB continued to sell some systems that embody only the '291 technology even after augmenting the '291 technology with the '551 technology. As will be seen, that fact does not undermine my conclusions.

11. Invoices and bills of material show that CAB's major customers clearly specified individual components that, when assembled, together constitute the systems of the claimed inventions. In short, there also exists strong evidence of a nexus between CAB's rapid sales growth and the features claimed in each of the '291 and '551 patents. Conversely, CAB's sales growth cannot be attributed to any feature not claimed in one patent or the other.

IV. BACKGROUND

12. CAB, a Pennsylvania nonprofit corporation, develops products that are implemented in industries including mining, solar, utilities, shipbuilding, and many others.[5] CAB has over 45 years of experience in above-ground cable management for the electrical industry. Among other products, CAB provides a patented, above-ground, messenger wire-supported solar cable management system for wiring

[5] Cambria County Association for the Blind and Handicapped. "CAB Products." Available at: https://www.cabproducts.com/. Last accessed on July 24, 2024.

in utility-scale, ground-mount solar power plants,[6] and currently offers a separately patented above-ground system with an integrated grounding option to its solar customers.[7]

13. The ’291 patent covers an above-ground cable management system that includes an aerial messenger wire with cable hangers suspended from it.[8] CAB began selling products that embody the ’291 patent in 2014.[9] The ’551 patent covers an integrated grounding system[10] with the messenger wire serving to support the cable hangers and electrical

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[6] Cambria County Association for the Blind and Handicapped. “CAB Solar.” Available at: https://www.cabproducts.com/solar/. Last accessed July 24, 2024.

[7] *Id*.

[8] *See* EX2061, Declaration of Allen Garrett Smith in Support of Patent Owner’s Response, July 23, 2024 (“Smith Declaration”), ¶ 5.

[9] EX2046, Solar Sales Figures - Total Calculations (Jan 2014 - Mar 2024). In 2014, CAB’s total sales were negligible.

[10] *See* EX2061, Smith Declaration, ¶¶ 6, 67, 68; EX2028, Declaration of Mitchel F. Bowman in Support of Patent Owner’s Response, July 24, 2024 (“Bowman Declaration”), ¶ 3.

cables, as well as serving as the grounding conductor for the system, which eliminates the need for installing a separate grounding conductor adjacent to the messenger wire and further installing jumper splices between the separate grounding conductor and the solar panel piles (as was done in connection with CAB's standard system).[11] CAB began selling products that embody the '551 patent in 2018. As Figure 1 shows, CAB's sales grew from about [redacted] in 2015 to [redacted] in 2018 when the integrated grounding system was introduced, and have grown further to about [redacted] in 2023. This implies a compound annual growth rate of more than [redacted] from 2015 to 2023, and about [redacted] from 2018 to 2023.

[11] EX2061, Smith Declaration, ¶¶ 5, 6, 67, 68; EX2028, Bowman Declaration, ¶¶ 7, 46.

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[redacted]

I understand that CAB owns all rights to the patents at issue in this proceeding.

V. ESTABLISHING COMMERCIAL SUCCESS

A. LEGAL STANDARDS[12]

14. In addressing the question of obviousness, I understand a fact-finder should take into account any objective evidence that may shed light

[12] Here as elsewhere, I offer no legal opinions; instead, I state my understanding of the law as I have been instructed by CAB's counsel.

on the non-obviousness of the claimed invention.[13] Objective evidence may, for example, show how the patented invention is viewed by the interested public: not the inventor, but persons concerned with the invention in the objective arena of the marketplace. I understand that such considerations are often the most probative and cogent evidence in the record, and that courts must consider such evidence when determining whether a claimed invention is obvious.

15. Courts have applied numerous, non-exhaustive objective factors in assessing whether an invention is obvious. I understand that a non-exhaustive list of these factors include: (1) commercial success attributable to the invention; (2) long-felt but unsolved need for the invention; (3) failure of others; (4) industry skepticism; (5) industry praise; (6) teaching away by others; (7) recognition of a problem

[13] I understand that the inquiry into the validity of the ’291 and ’551 patents’ claims is directed, in particular, to the claims that are at issue in each of the IPR proceedings. In referring to the relationship between “the claimed feature” and “the patented invention,” I rely on the testimony of CAB’s technical experts to establish this relationship.

which the claimed invention addresses; (8) copying by others; and (9) unexpected results.

16. I take the following to be accurate statements of the law.

(a) Objective indicia are an integral part of the obviousness analysis;[14] they are part of the totality of evidence concerning obviousness.[15]

(b) Commercial success is recognized evidence of non-obviousness, for the way persons in the field of an invention perceive its advantages "may often be the most probative and cogent evidence in the record."[16]

(c) "For objective evidence of secondary considerations to be accorded substantial weight, its proponent must establish a

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[14] *Graham v. John Deere Inc*., 383 U.S. 1, 18-19 (1966).

[15] *Stratoflex, Inc. v. Aeroquip Corp*., 713 F.2d 1530, 1538-39 (Fed. Cir. 1983).

[16] *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1071 (Fed. Cir. 2018).

nexus between the evidence and the merits of the claimed invention."[17]

(d) There can be "a presumption of nexus for objective considerations when the patentee shows that the asserted objective evidence is tied to a specific product" and that product "is the invention disclosed and claimed in the patent."[18] A showing that the specific products are embodiments of the claimed invention and that the proffered objective evidence relates to these products is sufficient to establish the presumption of nexus.[19]

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[17] *ClassCo, Inc. v. Apple, Inc*., 838 F.3d 1214, 1220 (Fed. Cir. 2016) (internal quotation marks omitted).

[18] *WBIP, LLC v. Kohler Co*, 829 F.3d 1317, 1329 (Fed. Cir. 2016) (internal quotation marks omitted); *see also Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1374 (Fed. Cir. 2019) ("[W]hat we do require is that the patentee demonstrate that the product is essentially the claimed invention.").

[19] *WBIP*, 829 F.3d 1317 at 1330.

(e) The presumption can apply "even when the product has additional, unclaimed features."[20]

(f) "Requiring patentees to prove that objective evidence is tied to a specific claim element — and only that claim element — runs counter to the statutory instruction that the obviousness analysis involves determining whether '*the claimed invention as a whole* would have been obvious.' 35 U.S.C. § 103 (emphasis added)."[21]

17. Once established, the presumption of nexus is rebuttable with evidence showing the objective evidence is "due to extraneous factors

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[20] *PPC Broadband, Inc. v. Corning Optical Commc'ns RF, LLC*, 815 F.3d 734, 747 (Fed. Cir. 2016); *see also Fox Factory*, 944 F.3d at 1374-75.

[21] *WBIP*, 829 F.3d at 1332 (citing *Rambus Inc. v. Rea*, 731 F.3d 1248, 1257-58 (Fed. Cir. 2013)). Similarly, "Where the allegedly obvious patent claim is a combination of prior art elements, we have explained that the patent owner can show that it is the claimed combination as a whole that serves as a nexus for the objective evidence; proof of nexus is not limited to only when objective evidence is tied to the supposedly 'new feature(s).'" *Id.*

other than the patented invention,"[22] such as marketing and advertising.[23] But an advertising campaign that specifically highlights a feature of the invention may influence customer purchase decisions and thus explain a product's commercial success.[24]

18. Economists are familiar both with defining the economic effect ("success") and with the causal framework necessary to explain it.

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[22] *WBIP*, 829 F.3d at 1329 (quoting *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1393 (Fed. Cir. 1988)).

[23] *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1055 n.17 (Fed. Cir. 2016) (citing *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1129–30 (Fed. Cir. 2000); *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994)). "However, a patent challenger cannot successfully rebut the presumption with argument alone — it must present evidence." *WBIP*, 829 F.3d at 1329 (citing *Brown & Williamson*, 229 F. 3d 1120 at 1130; *Demaco*, 851 F.2d 1387 at 1393).

[24] *Apple*, 839 F.3d 1034, 1055; *see also* n. 17.

Sound economic analysis depends on accounting for the effect with one or more economic causes.[25]

B. ECONOMIC PRINCIPLES

(1) Products that embody the claimed technology

19. On the supply side, "commercial success" occurs when a firm supplies products that consumers demand, at a price that at least covers the full cost of production, including a return on invested capital – that is, the firm makes a profit. Even before sales occur, the firm's selection of a feature into a product, in anticipation that it will stimulate sales, is evidence of (expected) success. *Actual* "success" means that the firm chooses a combination of such features, and a

[25] For example, in the area of computing patent infringement damages, "(T)his court requires sound economic proof of the nature of the market and likely outcomes *with infringement factored out* of the economic picture." *Grain Processing Corp. v. Am. Maize-Prods. Co*., 185 F.3d 1341, 1350-51 (Fed. Cir. 1999) (emphasis supplied). Similarly, the apportionment of a product's profit among multiple causes is a standard component of a reasonable royalty damages opinion. *Georgia-Pacific Corp. v. U.S. Plywood Corp*., 318 F. Supp. 1116 (S.D.N.Y. 1970) (factor 13).

price, so that it makes a profit. Widespread sales of that combination, at a profitable price, is necessary (but not sufficient) evidence of commercial success, other things equal.

20. On the demand side, success means that a substantial number of consumers who are "in the market" select the combination of features found in patented products from among the alternative combinations that they face (including not purchasing at all). This decision represents each consumer's optimal response to the consumer's "choice set." Widespread purchasing of the patented product is, again, necessary but not sufficient evidence of commercial success.

21. It should be clear that actual market outcomes represent the combined effects of both suppliers, who create products having a given combination of features and who offer them at a profitable price, and consumers, who decide to accept or reject these offers, given the combinations of product features and price they are offered. In short, to explain "success" in a market one must consider the decisions made on both sides of the market.

(2) Economic causation and the nexus to a feature

22. The causation of profit often requires a complex inquiry. In general, there are multiple causes of a firm's profit. In the present context, the

inferential question is whether the profit of a successful product can be associated reliably with an individual invention (or with a product feature enabled by that invention).

23. To answer this question, it is again useful to examine both the supply and demand sides of the market. On the supply side, firms who seek to induce consumers to purchase their products tout the product's features, particularly those that distinguish the product from others the consumer may consider purchasing. On the demand side, consumers may voice preferences for certain features, sometimes informed by third parties who review products and who weigh features before purchase. Consumers may also reveal preferences implicitly, by choosing products that possess the feature in question over otherwise similar products.

24. When a supplier advertises a given feature, and its customers or their surrogates specify such a feature, or reveal a preference for it in their purchase decisions, there is a "meeting of the minds" that makes it reasonable to infer that the feature helped cause the observed customer demand.

VI. CONSUMER DEMAND FOR THE PATENTED PRODUCTS

A. CAB'S PATENTED SYSTEMS

25. Since 2014, CAB has sold two classes of above-ground cable management systems: a "standard" system, introduced in 2014, and an "integrated" system, introduced in 2018. It is my understanding that both systems use above-ground messenger wire supported cable hangers to support and separate the various kinds of electrical cables within a solar installation array ("above-ground cable management"). The principal difference between the two systems is that the integrated system also uses the messenger wire not just to support the cable hangers and electrical cables, but as the system's equipment grounding conductor. In other words, CAB employs both systems in the context of above-ground cable management in solar installations, but only the integrated system also uses the messenger wire as a grounding conductor.

26. I rely on the expert declaration testimony of Edward C. Kern, Jr., Ph.D., dated July 25, 2024, with respect to his analysis of whether the features of CAB's above-ground cable management system are claimed in, and are co-extensive with, the inventions claimed in the '291 patent. On the basis of Dr. Kern's analysis, I am assuming that

the features of the above-ground cable management system are co-extensive with the inventions claimed in the ’291 patent.[26]

27. I rely on the expert declaration testimony of Joshua Phinney, Ph.D., dated August 7, 2024, with respect to his analysis of whether the additional features of CAB’s integrated grounding system are claimed in, and are co-extensive with, the inventions claimed in the ’551 patent. On the basis of Dr. Phinney’s analysis, I am assuming that the additional features of the integrated grounding system are co-extensive with the inventions claimed in the ’551 patent.[27]

28. Even if it is not determined that the features claimed in the ’291 patent are coextensive with CAB’s standard system, and/or that the features claimed in the ’551 patent are coextensive with CAB’s integrated

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[26] EX2038, Declaration of Edward C. Kern, Jr., Ph.D. in Support of Patent Owner’s Response, July 25, 2024, submitted in IPR2024-00178, and separately submitted as EX2038 in the present IPR proceeding (“Kern Declaration”), ¶¶ 180-197; Appendix A.

[27] EX2064, Declaration of Joshua Phinney, PhD. in support of Patent Owner’s Response, August 7, 2024 (“Phinney Declaration”), ¶¶ 298-312; Appendix A.

system, so as to establish a presumption of nexus, the analysis set forth below confirms ample evidence of actual nexus in the case of each patent.

B. THE ADVANTAGES OF CAB'S INVENTIONS

(1) Qualitative evidence

29. CAB's invention of the '291 patent introduced significant cost savings and efficiency improvements over prior solar cable management alternatives. Previously, the industry buried power transmission cables in underground trenches.[28] I understand that that practice imposed several costs. Burying cables requires significant labor costs for installation (trenching and blasting through bedrock) and maintenance or repair (unearthing previously buried cables).[29] The system claimed in the '291 patent eliminates trenching costs by suspending and organizing the cables above ground, reducing

[28] EX2038, Kern Declaration, ¶¶ 208-212; EX2061, Smith Declaration, ¶¶ 28-29; EX2028, Bowman Declaration, ¶¶ 27-28.

[29] EX2038, Kern Declaration, ¶ 201; EX2061, Smith Declaration, ¶ 29; EX2028, Bowman Declaration, ¶ 28.

installation and maintenance costs and time, as well as environmental impact.[30]

30. I also understand that CAB's above-ground system provides advantages relative to other above-ground systems on the market, such as cable trays, which are expensive, difficult to install, susceptible to rodent nesting, and inefficient for use in utility-scale projects.[31]

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[30] EX2038, Kern Declaration, ¶¶ 81, 201, 212; EX2061, Smith Declaration, ¶ 29, 58; EX2028, Bowman Declaration, ¶¶ 28-29, 36-37; EX2059, Declaration of Joseph William Novak, P.E., MSE, MBA, S.P. in Support of Patent Owner's Response, July 25, 2024 ("Novak Declaration"), ¶ 54.

[31] EX2038, Kern Declaration, ¶¶ 54-55, 202, 212; EX2061, Smith Declaration, ¶¶ 26-27, 30; EX2028, Bowman Declaration, ¶¶ 29, 36. *See also*, "CAB Solar." Available at: https://www.cabproducts.com/solar/. Last accessed on July 24, 2024. *See also*, EX2047, "Comparison of Solar Cable Management Systems", 2016; EX2048, "Compare CAB Solar vs. Trenching or Cable Tray", 2022. I also understand that, relative to cable trays, CAB's systems cost less to ship and store. They also allow for custom

31. CAB's integrated grounding system augments these cost-saving benefits. In addition to the cost-saving advantages of CAB's standard system, having the messenger wire act as both a support for the cable hangers and as a grounding conductor obviates the need for separate grounding conductors, saving both material and labor costs.[32]

32. The cost and other advantages of CAB's standard system over prior art systems that use trenching and cable trays, and of CAB's integrated system over prior art systems that use separate grounding conductors and grounding splices, form an essential part of CAB's pitch to prospective customers. For example, a flyer titled "Compare CAB® Solar vs. Trenching or Cable Tray" lists the "Engineering Benefits in Large Scale Solar PV Arrays" of the three approaches to

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configuration, which is harder for cable trays. *See* EX2047, "Comparison of Solar Cable Management Systems", 2016; CAB, EX2048, "Compare CAB Solar vs. Trenching or Cable Tray", 2022.

[32] EX2028, Bowman Declaration, ¶¶ 51-53; EX2061, Smith Declaration, ¶¶ 67, 68.

cable management.[33] CAB lists the following advantages for its standard system:

- Cost
    - **Large cost savings** on labor and materials
    - **Standardized cable management** across entire portfolio of projects greatly reduces engineering costs
    - **More predictable costs**. No overruns due to unforeseen construction issues, hard rock, high water table, etc.
- Installation time
    - **Very easy to install**. No special tools or heavy machinery required
    - **No expensive delays** from flooded trenches, deep mud
- Maintenance and repairs
    - **Rodents won't nest** in cabling, causing potential fires
- Flexibility

[33] EX2047, "Comparison of Solar Cable Management Systems", 2016.

- **Ideally suited** for brownfields, landfills, rocky sites, high water table locations, ballasted installations
- **Custom configurations** easily manufactured to meet specific project requirements

- Environmental impact
  - **Benefits environment**. Less digging and soil run-off. Less disruption to endangered species, archaeological sites.[34]

33. In addition to the benefits listed for the standard system, for the integrated system specifically, CAB advertises:

- **Quicker installation time.** Speeds project completion.
- **Integrated Grounding option can provide both EGC [Equipment Grounding Conductor] and GEC [Grounding Electrode Conductor].** Eliminates separate grounding conductor and jumpers.
- **All wiring easily accessible.** Simplifies upgrades, maintenance and troubleshooting for life of project.

[34] *Id.*

- **Lower shipping cost** and smallest storage footprint.
- **Decommissioning** requires no special equipment; no environmental impact. Much lower cost.[35]

The elimination of separate grounding conductors and jumpers contributes to several of the other advertised advantages, such as reduced labor and materials costs and quicker installation time.[36]

(2) Economic impact

34. The substantial installation cost savings enabled by CAB's above-ground, messenger wire-supported cable management systems were evident to customers from the outset. For example, in 2014, SunEdison evaluated CAB's standard system against a direct-bury system using cable conduit.[37] According to SunEdison, the CAB standard system had "lots of advantages over alternative cable routing solutions: Reduced BOS Costs; Faster Installation and Cycle Times; Simplified Maintenance; Simplified project planning." For a

[35] EX2048, "Compare CAB Solar vs. Trenching or Cable Tray", 2022.

[36] *Id.*

[37] EX2061, Smith Declaration, ¶ 37; EX2028, Bowman Declaration, ¶¶ 35-39; EX2030, SunEdison, "CAB Prototyping at SolarTac", June 25-27, 2014.

standardized 30-row installation, the projected cost of a direct-bury system was [redacted], or [redacted]. For the CAB standard system, the same installation was projected to cost [redacted], or [redacted]. In other words, apart from its other advantages, the CAB standard system was projected to cut the installation costs by [redacted]. These included a [redacted] reduction in labor hours. and a [redacted] reduction in cycle time (a measure of installation speed). Overall, labor costs were expected to fall from [redacted] to [redacted], a reduction of [redacted].[38]

35. Similarly, SunPower evaluated the use of CAB's standard system in place of a cable tray system, and concluded that CAB's system resulted in "Cost reduction due to reduced material costs, shipping and installation labor."[39] According to a detailed cost breakdown, CAB's system promised savings of about [redacted], which

[38] EX2030, SunEdison, "CAB Prototyping at SolarTac", June 25-27, 2014, at pp. 1, 13.

[39] EX2008, SunPower, Field Process Change Review 1: Development Review: MESSENGER CABLE ("SunPower FPCR-1"), at p. 7.

further reduced the total cost per standardized installation from [redacted] to [redacted], a reduction of [redacted].[40]

36. Further studies showed that CAB's integrated system yielded further savings over CAB's standard system. For example, in a "Cost Comparison of CAB Standard vs New Ground Max Cable Management System," CAB compared the costs saved by its integrated system over the cost of its standard system in a 298-megawatt installation. The estimated savings were [redacted], or about [redacted] over the entire installation. But these savings "do[] not reflect other savings that would be realized in: Purchasing; Shipping; Staging; Handling; Tooling and supplies for bonding jumpers."[41]

C. EVIDENCE OF CUSTOMER DEMAND

37. Several prominent players in the solar power production industry have employed CAB's systems for their solar projects and/or released

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[40] *Id.* at pp. 7, 8. In addition, SunPower expected additional benefits in field construction ("Improved") and logistics ("Shipping Savings"). *Id*. at p. 7.

[41] EX2049, Cost Comparison of CAB Standard vs New Ground Max Cable Management System.

studies and reports that analyze the benefits of CAB's systems. I understand that CAB has received endorsements of the benefits of its systems from solar companies and industry participants, including Sun Edison[42] and Brooks Engineering,[43] among others.

38. Certain documents that evidence customer demand link specifically to CAB's standard and integrated grounding systems. For example, customer Requests For Proposals ("RFPs") demonstrate interest in CAB's systems and request pricing information. Such RFPs typically specify the desired system and its corresponding features. I reviewed a sample of customer RFPs to examine the extent to which CAB customers specifically requested the patented features.[44]

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[42] EX2061, Smith Declaration, ¶¶ 37, 43-45, 63; EX2028, Bowman Declaration, ¶¶ 35-41, 44-47.

[43] EX2028, Bowman Declaration, ¶ 43.

[44] I reviewed RFPs from various energy contractors and infrastructure construction companies such as [redacted] and [redacted]. These RFPs specify part numbers that correspond with components of CAB's patented systems.

39. Appendix 3 summarizes exemplary RFPs, which specify, by CAB part number, the components that enable the claimed features and that, when assembled together, constitute the standard and integrated grounding systems. One can readily see that

(a) customers demanded components having the claimed features;

(b) customers did not demand extraneous components or unclaimed features.

D. THE GENERIC USE OF "CAB" TO DENOTE THE CLAIMED INVENTIONS

40. A common problem that highly successful brands must confront is the potential "genericization" of their trademarks. Genericization means that the brand name becomes a shorthand for an entire product category. Whether such "shorthand" usage has occurred depends on what it signifies to the relevant public.[45] The simplest way to

[45] "The primary significance of the registered mark to the relevant public rather than purchaser motivation shall be the test for determining whether the registered mark has become the generic name of goods or services on or in connection with which it has been used." 15 U.S.C. § 1064.

understand such signification is to distinguish between the product in question, and its source.[46]

41. The path to genericization generally involves an "appropriation" by the relevant public of the owner's goods-specific mark to stand for an entire product category.

> Over time, the holder of a valid trademark may become a "victim of 'genericide.'" Genericide occurs when the public appropriates a trademark and uses it as a generic name for particular types of goods or services irrespective of its source. For example, ASPIRIN, CELLOPHANE, and THERMOS were once protectable

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[46] We have often described this as a "who-are-you/what-are-you" test. If the relevant public primarily understands a mark as describing "who" a particular good or service is, or where it comes from, then the mark is still valid. But if the relevant public primarily understands a mark as describing "what" the particular good or service is, then the mark has become generic. In sum, we ask whether "the primary significance of the term in the minds of the consuming public is [now] the product [and not] the producer.

Elliott v. Google, Inc., 856 F.3d 1225, 1230 (9th Cir. 2017) (internal citations omitted).

> as arbitrary or fanciful marks because they were primarily understood as identifying the source of certain goods. But the public appropriated those marks and now primarily understands aspirin, cellophane, and thermos as generic names for those same goods.[47]

42. A tendency towards genericization exists when express consumer demand for the trademarked good becomes implicit demand for the product category. For example, if consumers explicitly reference a "CAB hanger" but do not intend to refer to "the hanger made by CAB," then the process of genericization has begun.

43. For example, for the [redacted] project, the engineering drawings reference "AWM CAB SUPPORT – CABLES" and "AWM CAB HANGER." Here, "AWM" refers to a source of goods, while "CAB SUPPORT – CABLES" and "CAB HANGER" purport to refer to categories of goods, through their generic usage of CAB's trademark as a shorthand for "above-ground cable management system."[48]

44. From such evidence, I conclude that prominent members of the relevant public use "CAB" as a generic term for "above-ground cable

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[47] *Id.* at 1229-30 (internal citations omitted).

[48] EX2057, Drawings for the [redacted] Project, at p. 9.

management systems" in the solar industry. Such usage does not demand "an above-ground cable management system made by CAB," but "an above-ground cable management system of the type disclosed in CAB's patents." This is a strong indicator that CAB's patented system has become sufficiently standardized as to stand for products that practice the '291 and '551 patents, regardless of source.

45. In short, express marketplace demand for "CAB" is equivalent to "demand for products that practice the CAB patents."

VII. THE SUCCESS OF CAB'S PRODUCTS, AND ITS CAUSES

A. "EXCESS" SALES

46. As I have explained, CAB's annual sales of the patent-practicing products grew more than [redacted] per year since 2015 (Appendix 2.1), and approximately [redacted] per year since 2018. But since the solar industry has also grown rapidly over this period, a threshold question is whether CAB's sales can be explained by industry growth, or whether CAB has exhibited "excess growth" relative to the industry baseline.

47. To answer that question, I obtained data from the National Renewable Energy Laboratory (NREL) on net new installed photovoltaic capacity

for the years 2015 to 2023.[49] Because CAB sells to utilities (not commercial or residential customers), I focused on net new capacity in the "utility-scale" segment.

48. Figure 2 compares the growth of CAB's sales to the growth of industry PV capacity, starting from a common baseline in 2015. While industry capacity growth has been impressive – increasing at 24.2% per year, or from 3.3 gigawatts (GW) to 18.4 GW (almost a factor of 6) over this period – that growth was dwarfed by the growth in CAB's sales, which increased by a factor of more than [redacted] over the same period. Between 2018, when CAB began selling its integrated system, and 2023, CAB's sales [redacted], which is [redacted] the industry's annual growth rate of 30% over the same timeframe. As shown in Appendix 2.1, CAB's growth rates were already exceeding the industry's growth

[49] EX2036, National Renewable Energy Laboratory, "Spring 2024 Solar Industry Update – U.S. Installation Breakdown Annual: EIA (GWac)." May 14, 2024, at p. 24. *See* "PV Capacity by Segment." Available at: https://public.tableau.com/app/profile/jarett.zuboy/viz/PVCapacitybySegment/Dashboard1. Last accessed on July 24, 2024.

rates from 2016 to 2017, when only its standard system was on the market. From 2018 onwards, when the integrated grounding system was introduced, CAB's growth rates exceeded industry growth rates even more so.

[redacted]

49. To translate that comparison into predicted CAB sales, I projected CAB's annual sales under two assumptions:

(a) CAB sales growth at the observed average annual rate ([redacted] per year)

(b) Industry sales growth at the industry benchmark rate (24.2% per year)

The difference between these two growth curves is CAB's "excess sales" – that is, sales over and above what would have been predicted from industry growth.

50. Figure 3 plots the results.

[redacted]

51. One can readily see that CAB's annual sales increasingly diverged from what would have been expected had they grown only at the industry benchmark rate. By 2018 (when the integrated grounding system was introduced), CAB's actual sales were about [redacted] more than its predicted sales had they merely grown with new

industry capacity. By 2023, when CAB's actual sales were [redacted], its sales were predicted to be only about [redacted], implying excess sales of [redacted], or about [redacted] more than predicted. In other words, as Figure 3 shows, from 2018 to 2023 (*i.e.*, after the introduction of the integrated system), CAB's integrated grounding system generated "excess" sales that were significantly higher than the "excess sales" that were already being generated by the standard system.

52. All told, CAB's excess sales are predicted to be more than [redacted] over the period 2015 – 2023. This is unmistakable and unambiguous evidence of the commercial success of CAB's standard and integrated systems.

B. NEXUS OF EXCESS SALES TO THE ASSERTED PATENTS

53. Finally, to tie this success to the '291 and '551 patents, I have adopted a three-step approach: (1) examine the underlying reasons for CAB's sales, as evidenced by decisions made on the supply and demand sides of the market; (2) investigate possible alternative explanations for either supplier or customer decisions; (3) determine whether the causes of CAB's excess sales can be further decomposed as between the '291 and '551 patents.

(1) Underlying reasons for CAB's supply and customer demand

54. As I have explained, the economic fundamentals that underlie CAB's decision to offer its standard and integrated systems are not hard to identify: the systems substantially reduced customer installation and maintenance costs and time, while providing superior performance (like flexibility and reduced environmental impact) over the product lifecycle, all without reducing quality or increasing risk. Such unambiguous productivity improvements usually cause a significant segment of customers to switch from the old way of doing things to the new way. That is the case here.

(2) The absence of alternative causes of customer demand

55. In theory, there could be other reasons for CAB's success. For example, CAB might sell ancillary equipment that led to efficiencies and savings in BOS material and labor costs. But the record is void of any such benefit, either advertised by CAB or demanded by its customers. On the contrary, the benefits of the CAB systems are directly traceable to the inventions claimed in the '291 and '551 patents. It is these benefits that CAB and its customers catalogued qualitatively, and quantified financially, when evaluating the CAB

systems. On the record evidence, there is simply no reason to believe that any unclaimed "hidden factor" drove demand for CAB's systems.

56. Given the strong evidence that both CAB and its customers traced the desirability of CAB's systems to the claimed inventions, and the absence of any alternative explanation for that desirability, I conclude that the excess sales of the CAB standard and integrated systems were caused by the claimed inventions.

(3) Decomposition of causation between the '291 and '551 patents

57. I investigated whether the excess sales made possible by the '291 and '551 patents could be further decomposed into separate causes and quantified. I conclude that they cannot, for the following reasons.

58. The '291 and '551 patents are economic complements. Complements are goods that are consumed together, like a left shoe and a right shoe, or peanut butter and jelly. An increase in demand for one complement increases demand for the other.

59. At the same time, complementary combinations may *substitute* for one of the goods. Thus, a peanut butter and jelly sandwich is a substitute for a peanut butter sandwich. Many customers who would have chosen a peanut butter sandwich will choose a peanut butter and

jelly sandwich instead, if it is offered. Other customers, who might have chosen a tuna sandwich over a peanut butter sandwich, might choose peanut butter and jelly over tuna. In short, the availability of a complementary good – here jelly – has both substitutionary effects (reducing the demand for peanut butter-only sandwiches) and market expansion effects (as more customers choose peanut butter and jelly).

60. These everyday economic observations also apply to the more idiosyncratic facts of this case. Here, every CAB system embodies the claims of the ’291 patent – the “peanut butter” of the CAB story. The integrated CAB systems also embody the claims of the ’551 patent – the “jelly.” When CAB introduced its integrated system in 2018, its sales growth accelerated, growing at an even higher rate than when the standard system was introduced. That acceleration encompassed two effects: (1) the substitution of the ’291+’551 (integrated) system for the ’291-only (standard) system, and (2) the expansion of CAB’s market, as the ’291+’551 combination offered even better value, relative to the alternatives, than did the ’291-only system.

61. Because the integrated system (’291+’551 combination) is a nearly perfect substitute for the standard system (’291-only), it is impossible

to know the "true" number of standard systems that CAB would have sold had it not introduced the further improved integrated system, which includes both the benefit of the standard system and the benefit of the integrated system claimed in the '551 patent. It is also impossible to know how much CAB's sales expanded as a result of adding the technology claimed in the '551 patent (although one can recognize that there was an even more significant increase in sales after the integrated grounding system was introduced in 2018). Finally, it is impossible to allocate the gains from those additional sales between the '291 patent and the '551 patent, because the integrated system claimed in the '551 patent builds on, and renders more valuable, the standard system claimed in the '291 patent.

62. For example, sales of CAB's standard system declined about [redacted], from about [redacted] in 2017 (when it accounted for [redacted] of CAB's sales) to [redacted] in 2018 (when it accounted for only [redacted] of sales), even as CAB's total sales increased [redacted], to [redacted].[50]

[50] EX2056, Solar 2018-Mar2024. There are part numbers that are not assigned exclusively to either the '291 or the '551 patent (*i.e.*, assigned to nothing or both), in which case I use the sales split for those part numbers

Had CAB not introduced the integrated system, its 2018 standard system sales would have fallen somewhere in the range of [redacted] to [redacted], but it is impossible to say where. It is similarly impossible to determine the expansion of sales from that hypothetical '291-only level up to the level CAB actually attained [redacted], because this hypothetical exercise must account for both the removal of the substitution effect (thus increasing ’291-only sales) and the removal of the sales expansion effect (thus decreasing total sales).[51] The same indeterminacy afflicts the interpretation of CAB sales in subsequent years.

63. For strict symmetric complements, like a pair of shoes, one can reasonably assign a fraction of the total value (50%) to each member of the pair (even though each is worthless without the other). Here, where the ’551 patent claims a complementary improvement in addition to the technology claimed in the ’291 patent, there is no such

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with exclusive assignment information available as proxy for splitting the corresponding sales.

[51] In statistical parlance, the true share of ’291-only sales is said to be “non-identified.”

reasonable instrument, other than to observe from the record evidence that both the ’291 patent and the ’551 augmentation of it each contribute substantially to the financial gain a CAB customer receives, and thus to CAB’s total sales.

64. For illustrative purposes only, Figure 4 reproduces Figure 3, with an assumed 50% division of CAB’s total gains attributable to each patent. While the non-identification of the true share is problematic from a statistical point of view, from a substantive point of view that

[redacted]

indeterminacy is irrelevant. CAB’s *total* excess sales [redacted], whether either patent’s true share is [redacted] the conclusion –

that [redacted] in excess CAB sales are attributable to each of the ’291 and ’551 patents – remains unaltered. And because it is impossible to read the record evidence and conclude that only a sliver of CAB’s excess sales is attributable to one patent or the other, the only available interpretation of this evidence is that there exists a strong nexus between each of the patents and CAB’s excess sales.

65. For the foregoing reasons, I conclude that the ’291 patent and the ’551 patent each caused CAB’s substantial commercial success, which strongly supports CAB’s position that each of the patents was not obvious at the time it was invented.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine, imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Jonathan D. Putnam

Dated: 08/07/2024

Appendix 1

List of Materials Considered

Websites

Cambria County Association for the Blind and Handicapped. "CAB Products." Available at: https://www.cabproducts.com/. Last accessed on July 24, 2024.

Cambria County Association for the Blind and Handicapped. "CAB Solar." Available at: https://www.cabproducts.com/solar/. Last accessed on July 24, 2024.

Tableau Public. "PV Capacity by Segment." Available at: https://public.tableau.com/app/profile/jarett.zuboy/viz/PVCapacitybySegment/Dashboard1. Last accessed on August 6, 2024.

Case Law and Proceedings

Apple Inc. v. Samsung Elecs. Co., 839 F.3d 1034, 1055 n.17 (Fed. Cir. 2016).

ClassCo, Inc. v. Apple, Inc., 838 F.3d 1214, 1220 (Fed. Cir. 2016).

Elliott v. Google, Inc., 856 F.3d 1225, 1230 (9th Cir. 2017).

Fox Factory, Inc. v. SRAM, LLC, 944 F.3d 1332, 1366, 1374 (Fed. Cir. 2019).

Georgia-Pacific Corp. v. U.S. Plywood Corp., 318 F. Supp. 1116 (S.D.N.Y. 1970).

Graham v. John Deere Inc., 383 U.S. 1, 18-19 (1966).

Grain Processing Corp. v. Am. Maize-Prods. Co., 185 F.3d 1341, 1350-51 (Fed. Cir. 1999).

Polaris Indus., Inc. v. Arctic Cat, Inc., 882 F.3d 1056, 1071 (Fed. Cir. 2018).

PPC Broadband, Inc. v. Corning Optical Commc'ns RF, LLC, 815 F.3d 734, 747 (Fed. Cir. 2016).

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1538-39 (Fed. Cir. 1983).

WBIP, LLC v. Kohler Co, 829 F.3d 1317, 1329 (Fed. Cir. 2016).

U.S. Code

15 U.S.C. § 1064

Exhibits

EX2008
EX2012
EX2028
EX2030
EX2036
EX2038
EX2042
EX2045
EX2046
EX2047

EX2048
EX2049
EX2050
EX2051
EX2052
EX2053
EX2054
EX2056
EX2057
EX2059
EX2061
EX2064

Appendix 2.1
CAB sales vs. net new utility-scale photovoltaic capacity

[redacted]

Appendix 2.2
CAB sales by component, 2015 - 2023

[redacted]

Appendix 3
Customer demand for CAB's patented features

	Customer					
	Standard			Integrated Grounding		
	[redacted] [1]	[redacted] [2]	[redacted] [3]	[redacted] [4]	[redacted] [5]	[redacted] [6]
Core patent practicing features						
Pier kits						
End-pier kits [redacted]	X	X	X	X	X	X
Mid-pier kits [redacted]	X	X	X	X	X	X
Messenger wire [redacted]	X	X	X	X	X	X
Ancillary features						
Hangers						
2-carrier [redacted]		X				X
3-carrier [redacted]	X	X	X	X		
4-carrier [redacted]					X	

Notes and sources:

[1] The bid is for [redacted] project. *See* EX2042, CAB Solar - [redacted]. *See also* EX2042, Email from Tim Wedding to [redacted] RE: Request for quotation for client PV projects [redacted] There is no quantity mentioned for 3-carrier hanger [redacted] but it has been included in both exhibits.

[2] The bid is for [redacted] project. *See* EX2050, CAB Solar - [redacted]_328 MW. *See also* EX2050, Email from [redacted] to Timothy Wedding RE: [redacted] - CAB.

[3] The bid is for [redacted] project. *See* EX2051, CAB Solar - [redacted] *See also* EX2051, Email from [redacted] to Tim Wedding re: [redacted] Projects - CAB RFQ.

[4] The bid is for [redacted] project. The customer requested a [redacted] messenger wire but the CAB quote contains a [redacted] messenger wire. I understand that this is because at the time of the quote, [redacted] was the new [redacted] messenger wire equivalent for the integrated grounding system. *See* EX2052, CAB Solar - [redacted]. *See also* EX2052, Quote Request Form - EE-PM.

[5] The bid is for [redacted] project. *See* EX2053, CAB Solar - [redacted] BOMquote. *See also* EX2053, [redacted] form.

[6] The bid is for [redacted] project. *See* EX2054, CAB Solar - [redacted]. *See also* EX2054, [redacted].