



Petitioner's Presentation

Affordable Wire Management, LLC v.
Cambria County Association For The Blind And Handicapped, Inc.

Case No. IPR2024-00139, Patent 10,177,551

February 11, 2025



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IPR2024-00139
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DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Agenda



- Invalidity Grounds
- Patent Overview
- Technology Background
 - Support Systems
 - Grounding
 - The NEC
- The Prior Art – CAB Website and CAB Whitepaper
- Construction of “multi-function line”
 - Undisputed that under AWM construction, Grounds 2 & 5 render obvious all limitations;
- Grounds 2 & 5 – CAB Website in view of the CAB Whitepaper, further in view of a POSITA knowledge (and further in view of MacLean);
 - Even under CAB construction, Grounds 2 & 5 still render obvious all limitations;
- No nexus for secondary considerations

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Invalidity Grounds

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Invalidity Grounds



Ground	Claims	References	Basis
1	1-12, 18-19	<i>Grushkowitz</i> in view of the knowledge of a POSITA	§103
2	1-19	<i>CAB Website</i> and <i>CAB Whitepaper</i> in view of the knowledge of a POSITA	§103
3	1-19	<i>Petersen</i> in view of the knowledge of a POSITA	§103
4	13-17	<i>Petersen</i> and <i>MacLean</i> in view of the knowledge of a POSITA	§103
5	13-17	<i>CAB Website</i> , <i>CAB Whitepaper</i> , and <i>MacLean</i> , in view of the knowledge of a POSITA	§103

Patent Overview

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US 10,177,551 - Overview



- **Title:** Grounding System
- **Issue Date:** January 8, 2019
- **Priority Date:** October 5, 2017
- **Summary of Invention:**
 - “The grounding system includes a multi-function line assembly and a number of conductive mounting assemblies. Each conductive mounting assembly is structured to be, and is, coupled to the multi-function line and to a conductive pile. This configuration provides a path to ground for a current in the multi-function line assembly. Further, the multi-function line supports the cable hangers (which support the current wires, data wires and other wires).” EX1001, 2:27-35

(12) United States Patent Smith et al.		(10) Patent No.: US 10,177,551 B1 (45) Date of Patent: Jan. 8, 2019
(54) GROUNDING SYSTEM	(58) Field of Classification Search CPC H02G 7/22; H02G 7/053 See application file for complete search history.	
(71) Applicant: Cambria County Association for the Blind and Handicapped , Johnstown, PA (US)	(56) References Cited U.S. PATENT DOCUMENTS 7,057,103 B1 * 6/2006 Peabody H02G 7/14 174:40 R 9,722,405 B2 8/2017 Smith et al. H02S 20/00 174:51 2012/0024563 A1 * 2/2012 Korman B61B 12/00 439:786 2013/0244505 A1 * 9/2013 Hanson F16G 11/046 24:129 R 2014/0237774 A1 * 8/2014 Kline * cited by examiner	
(72) Inventors: Allen Garrett Smith , Johnstown, PA (US); Gregory Stephen Platt , Windber, PA (US); Timothy Joseph Wedding , Johnstown, PA (US)	(21) Appl. No.: 15/725,668	
(73) Assignee: Cambria County Association for the Blind and Handicapped , Johnstown, PA (US)	(22) Filed: Oct. 5, 2017	
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.	(51) Int. Cl. H02G 1/04 (2006.01) H02G 7/22 (2006.01) H01R 4/34 (2006.01) H02G 7/05 (2006.01) H02S 40/36 (2014.01) H01R 11/12 (2006.01) H01R 11/26 (2006.01)	
	(57) ABSTRACT A grounding system, structured to ground a number of cables supported by a support assembly, includes a multi-function line assembly and a number of conductive mounting assemblies. Each conductive mounting assembly is structured to be coupled to the multi-function line and to a conductive pile.	
	(52) U.S. Cl. CPC H02G 7/22 (2013.01); H01R 4/34 (2013.01); H02G 7/053 (2013.01); H01R 11/12 (2013.01); H01R 11/26 (2013.01); H02S 40/36 (2014.12)	
	19 Claims, 10 Drawing Sheets	

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US 10,177,551 - Overview

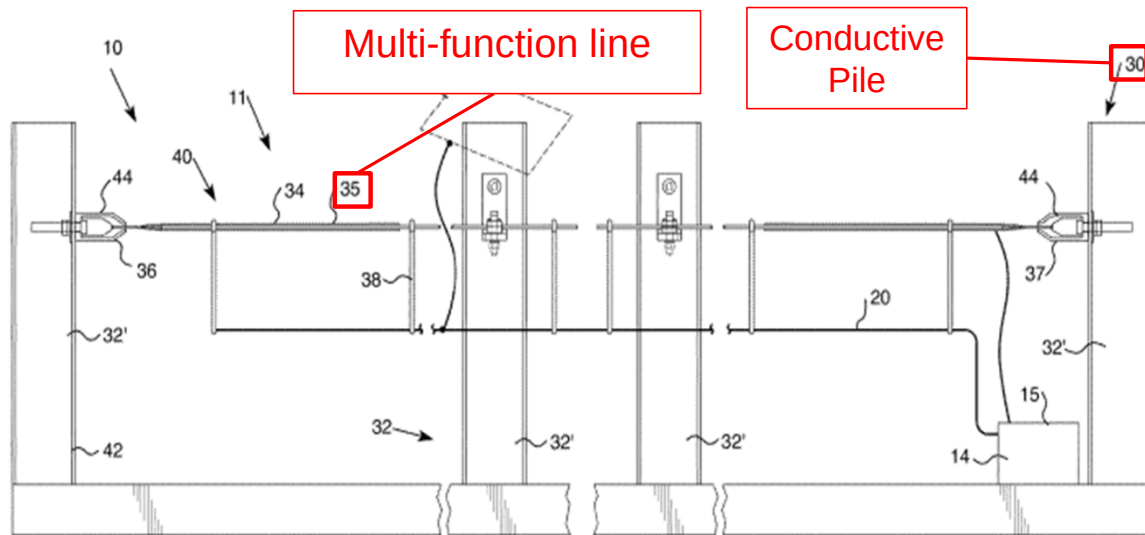


FIG. 1

As used herein, a “conductive” element includes “highly conductive” sub-elements and/or “partially conductive” [...], a “partially conductive” (sub-)element is one that conducts electricity, but with some resistance or wherein electricity does not pass through all portions of that element. For example, galvanized steel or a steel wire with copper cladding are examples of a “partially conductive” elements. EX1001, 8:16-28.

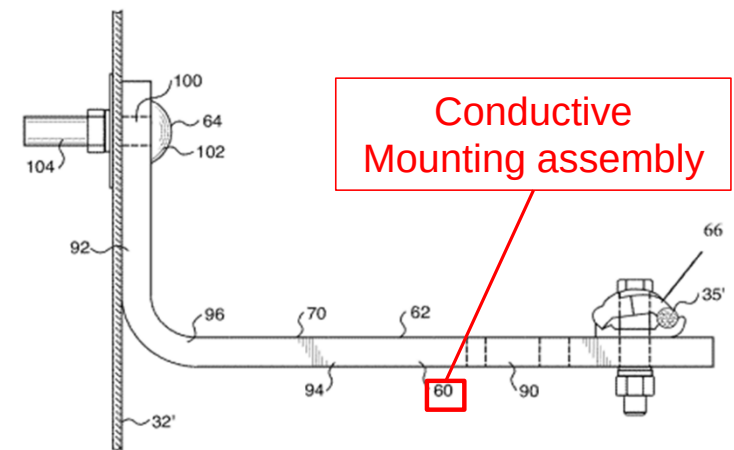


FIG. 8B

US 10,177,551 – Independent Claims



Claim 1

A grounding **system structured to ground a number of cables** supported by a support assembly, said support assembly including a plurality of spaced, conductive piles, said grounding system comprising:

a **multi-function line** assembly including a multi-function line;

a number of **conductive mounting assemblies**, each said conductive mounting assembly structured to be **coupled to said multi-function line and to a conductive pile**; and

wherein said multi-function line assembly is coupled to, and in electrical communication with, said number of conductive mounting assemblies.

Technology Background



EX1012, 1

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Technology Background – Support Systems



- Aerial support systems using metal messengers proliferated in the 1800's with the advent of telegraph/telephone systems, trolley systems, and electricity distribution. EX1015, Fig. 1 (1922); EX1012, 5 (1844); EX1020, Fig. 1 (1930)
- Above ground systems were an obvious way to protect cables from damage, and protect humans from electrocution
 - **Piles;**
 - **Tension members;**
 - **Mounting structures**
- While wooden piles were preferred in the 19th century.
- The use of conductive (metal) piles proliferated in the 1930's



(1930s)* - View of the first steel pole installed on Bureau of Power and Light system, it appears to be standing in front of a distribution station.

(1930s)* - View of the first steel pole

EX1013, 15

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Petition, 6-12

Technology Background - Grounding



- “Grounding” or “grounded” means **providing path to earth** for stray energy. Petition, 5 (EX1002, ¶¶35-36).
- Grounding of electrical systems has been done since at least the 19th century. Petition, 5 (EX1008, 1; EX1002, ¶36).
- A path to ground for stray current helps prevent electrocution

Grounded (Grounding). **Connected (connecting) to ground** or to a conductive body that extends the ground connection.

The 2008 NEC - EX1007, 31

“Grounding in electrical systems is necessary to dissipate the energy of the stray current. If a path is not provided, the energy may dissipate in the air by ionizing the air around it, which sometimes appears as sparks or flashes. **When a human contacts a live ungrounded surface, the stray current passes through the body which may cause electrocution.**”

- Declaration of Dr. Beik (EX1002, ¶35).

Technology Background – The NEC



- Standardized codes **prescribing safe grounding practices** proliferated in the early 20th century, including the National Electrical Code (“NEC”) in 1911. Petition, 5, EX1002, ¶37.
- The NEC applies to electrical systems for residences, commercial and industrial facilities and **provides safe methodologies** for effective electrical grounding. Petition, 5-6, EX1002 ¶37, EX1007, 98 (Article 250).
- Patent Owner, Petitioner, and respective experts agree the NEC guides POSITAs for grounding solutions.
 - The NEC “is the main authority in providing standards for the electrical systems in the U.S. and is sponsored by the National Fire Protection Association (“NFPA”). The NEC, from its conception in 1911 to today, applies to electrical systems for residences, commercial and industrial facilities. [...] [T]he 2008 NEC provides extensive regulations for grounding.” Dr. Beik, EX1002, ¶37.
 - “Grounding and bonding in this manner have been NEC requirements in the vast majority of circumstances since before the time of the invention.” Dr. Phinney, EX2001, ¶30.
 - “An NEC-compliant grounding system protects individuals from electrical shock hazards and against faults.” POR, 1.

Technology Background – The NEC

- Chief among safety considerations are proper grounding methods.
- **Since at least 2008**, the NEC has taught using a messenger wire as a grounding conductor, as well as conductive piles as grounding electrodes.

396.30 Messenger.

(A) Support. The messenger shall be supported at dead ends and at intermediate locations so as to eliminate tension on the conductors. The conductors shall not be permitted to come into contact with the messenger supports or any structural members, walls, or pipes.

(B) Neutral Conductor. Where the messenger is used as a neutral conductor, it shall comply with the requirements of 225.4, 250.184(A), 250.184(B)(7), and 250.186(B).

(C) Equipment Grounding Conductor. Where the messenger is used as an equipment grounding conductor, it shall comply with the requirements of 250.32(B), 250.118, 250.184(B)(8), and 250.186(D).

EX1007, 241

(2) Metal Frame of the Building or Structure. The metal frame of the building or structure that is connected to the earth by any of the following methods:

(1) 3.0 m (10 ft) or more of a single structural metal member in direct contact with the earth or encased in concrete that is in direct contact with the earth

EX1007, 109 (250.52(a)(2) “Electrodes Permitted for Grounding”)

Prior Art – CAB Website and CAB Whitepaper

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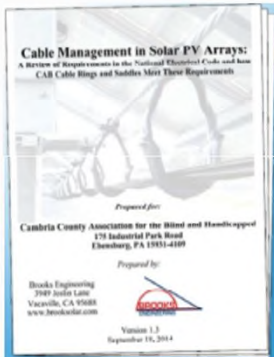
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Prior Art – The CAB Website (EX1005)

- The CAB Website was publicly available at least as early as **February 4, 2015**. EX1026.
 - Tension member with cable hangers supported thereon;
 - Piles driven into the earth;
 - Metal mounting assemblies;
- The CAB Website instructs visitors to read a paper

Bill Brooks Engineering White Paper



"Cable management is critical to the safety and longevity of nearly every Solar PV System. This is primarily due to the extensive use of exposed cables in the PV array.

"Using purpose-built products like CAB Cable Rings and Saddles for exposed cable management in a PV array is well substantiated by NEC and industry installation standards.

"Multiple hanger sections, such as those in various configurations of CAB Cable Rings and Saddles, create effective separation of conductors that allow for dc, ac, and communications cables to be supported with a single ring type." – Bill Brooks, Brooks Engineering White Paper

CAB provides high quality, cost effective wire management solutions. We include here a September 2014 White Paper, published by Brooks Engineering, which reviews requirements of the 2014 updated NEC as it relates to CAB Cable Rings and Saddles.

[Click here to read this important White Paper.](#)

[Click here to read this important White Paper.](#)



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Petition, 16-20, 47-48.

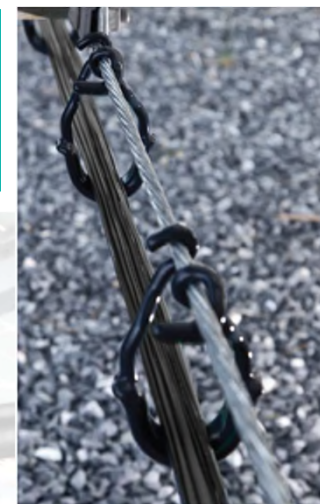
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Prior Art – The CAB Whitepaper (EX1006)

- The CAB Whitepaper discloses the same system depicted on the CAB Website
- The CAB Whitepaper addresses the **NEC, grounding**, and how one can use a “**grounded steel messenger**” with CAB’s components to:
 - Address concerns from code enforcement personnel about grounding metallic parts; and
 - Achieve a system that, even with a damaged conductor cable, “would stay at or near ground potential”
 - “The **CAB Whitepaper** picks up on the marketing challenges of using CAB’s above-ground messenger suspended cable management system in a PV system. It **specifically addresses concerns** in the industry with such a system **being able to comply with** any applicable **NEC requirements**.” Dr. Phinney, EX2001, ¶95.

Version 1.3
September 18, 2014



3 Grounding and Bonding of Cable Supports

The electrical industry, including code enforcement personnel, are heavily focused on grounding and bonding of metallic parts. The primary concern is contact of exposed metal parts with conductors having damaged insulation—thus energizing the metal parts. Consider a metallic cable hanger like the CAB Cable Rings and Saddles shown in Figure 3. These types of cable rings and saddles would fall under that definition of “fitting” in Article 100 of the NEC.

In Figure 5, the hangers are actually in full contact with a grounded steel messenger wire. It could be argued that even if the conductor insulation were ever to be damaged, the cable rings and saddles would stay at or near ground potential.

EX1006, 3, 8-9

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Petition, 18-20; Petitioner Reply, 6-8

Claim Construction “Multi-function line”

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Claim Construction – “Multi-Function Line”



AWM’s proposed construction

a tension member that supports current wires and/or cable hangers, and which is conductive.

CAB’s proposed construction

a tension member that supports current wires and/or cable hangers, as a messenger wire, and, which provides a current path, as a grounding conductor.

Board’s preliminary construction

supports the cable hangers, as a messenger wire, and provides a current path, as a grounding conductor

Claim Construction – “Multi-Function Line”

AWM’s Position



- **Lexicography:** “a tension member that supports current wires and/or cable hangers, and which is conductive.”

The '551 Patent

Accordingly, as used herein, a “multi-function line” means a tension member that supports current wires and/or cable hangers, and, which is conductive. EX1001, 2:37-40.

- When the specification “reveals a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess ... the inventor’s lexicography governs.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005).

Claim Construction – “Multi-Function Line”

CAB’s Construction



- **CAB’s Construction:** a tension member that supports current wires and/or cable hangers, as a messenger wire, and, which ~~is conductive~~ provides a current path, as a grounding conductor [read: equipment grounding conductor per NEC]. Patent Owner’s Response, Paper 29 (“POR”), 25.

The ’551 Patent

Accordingly, as used herein, a “multi-function line” means a tension member that supports current wires and/or cable hangers, and, which is conductive. EX1001, 2:37-40.

Claim Construction – “Multi-Function Line”



- **Multi-function line can be any “partially conductive” material which includes steel.** EX1001, 8:58-64; claim 12.
- **EGCs cannot be made of steel.** EX1041, 65:5-9; EX1007, 118

“Legal error arises when a court relies on extrinsic evidence that contradicts the intrinsic record.” *Profectus Tech. LLC v. Huawei Techs. Co.*, 823 F.3d 1375, 1379 (Fed. Cir. 2016)

“Extrinsic evidence may not be used ‘to contradict claim meaning that is unambiguous in light of the intrinsic evidence.’” *Id.*, 1380 (*quoting Phillips v. AWH Corp.*, 415 F.3d 1303, 1324 (Fed. Cir. 2005)).

Grounds II and V; Motivation to Combine

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Grounds II and V - Motivation to Combine



- **Combination:** Assembly of CAB Website, with the NEC complaint grounded messenger of the CAB Whitepaper
- **Regulation compliance** - EX1006, 3

Dr. Phinney and Patent Owner

Q When you're advising on matters relating to PV plants, do you need to consult the NEC's requirements?

A I think you asked the NEC's requirements? Yes.
EX1041, 44:4-22; 47:14-18

[The NEC] required that non-current-carrying metal components of an electrical power system ... be grounded through the use of a grounding conductor ("grounding"). An NEC-compliant grounding system protects individuals from electrical shock hazards and against faults. POR, 1 (internal citations omitted).

Dr. Beik Transcript

Q Would you agree that the grounding system of the '551 patent, like any grounding system, would need to be NEC code compliant?

A Any grounding system in the United States in application would need to be NEC compliant. I do not know in the patent that it must be as well. [...]

A White paper, as directed by the website, is a part of the website and its website says, Go there to see how we are NEC-compliant. I would be highly encouraged to do that.

EX2004, 45:23-46:3; 99:24-100:3

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Petition, 18 47-48, 53-54, 67; Petitioner Reply, 6-8

Grounds II and V - Motivation to Combine

- **CAB Website: Express instruction**
 - Read an “important” paper regarding “safety” and the NEC

Click here to read this important White Paper.

Bill Brooks Engineering White Paper



"Cable management is critical to the safety and longevity of nearly every Solar PV System. This is primarily due to the extensive use of exposed cables in the PV array.

"Using purpose-built products like CAB Cable Rings and Saddles for exposed cable management in a PV array is well substantiated by NEC and industry installation standards.

"Multiple hanger sections, such as those in various configurations of CAB Cable Rings and Saddles, create effective separation of conductors that allow for dc, ac, and communications cables to be supported with a single ring type." – Bill Brooks, Brooks Engineering White Paper

CAB provides high quality, cost effective wire management solutions. We include here a September 2014 White Paper, published by Brooks Engineering, which reviews requirements of the 2014 updated NEC as it relates to CAB Cable Rings and Saddles.

Click here to read this important White Paper.

Cable Management in Solar PV Arrays:
A Review of Requirements in the National Electrical Code and how
CAB Cable Rings and Saddles Meet These Requirements

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EX1006, 3

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EX1005, 4-5

Petition, 47-48; Petitioner Reply, 6-7

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Grounds II and V - Motivation to Combine

- **Whitepaper: Addresses industry concerns**

- Modifying the CAB Website system with the Whitepaper’s grounded messenger, confirms an NEC compliant system.

3 Grounding and Bonding of Cable Supports

The electrical industry, including code enforcement personnel, are heavily focused on grounding and bonding of metallic parts. The primary concern is contact of exposed metal parts with conductors having damaged insulation—thus energizing the metal parts.



Figure 5: CAB Cable Rings and Saddles Installation

“In Figure 5, the hangers are actually in full contact with a grounded steel messenger wire. It could be argued that even if the conductor insulation were ever to be damaged, the cable rings and saddles would stay at or near ground potential.”

EX1006, 14

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petition, 47-48; Petitioner Reply, 7-8

Ground V - Motivation to Combine

“All messenger supports must be supported where the messenger support terminates in order to maintain the messenger in taught suspension so it can adequately support current carrying cable. Indeed, the NEC specifically provides for messenger wires to be simultaneously used both as structural support for conductors and as the equipment grounding conductor itself. ... [W]hen the messenger wire is used in a support system, the same messenger wire may be used as a grounding conductor and shall be supported at dead ends (terminal supports)” EX1002, ¶214.



Thimbleye®

Thimbleye® bolts eliminate the need for thimbles, shackles, links and guy hooks. The broad radius of the eye provides an excellent attachment point to deadend or guy messenger wire, guy strand or formed wire grips.

EX1027, 14.

396.30 Messenger.

(A) **Support.** The messenger shall be supported at dead ends and at intermediate locations so as to eliminate tension on the conductors. The conductors shall not be permitted to come into contact with the messenger supports or any structural members, walls, or pipes.

(B) **Neutral Conductor.** Where the messenger is used as a neutral conductor, it shall comply with the requirements of 225.4, 250.184(A), 250.184(B)(7), and 250.186(B).

(C) **Equipment Grounding Conductor.** Where the messenger is used as an equipment grounding conductor, it shall comply with the requirements of 250.32(B), 250.118, 250.184(B)(8), and 250.186(D).

EX1007, 241 (Article 396.30).

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Grounds II and V – Expectation of Success



- The NEC says precisely how to use a messenger as an EGC, and both experts agree

396.30 Messenger. [...] (C) Equipment Grounding Conductor. Where the messenger is used as an equipment grounding conductor, it shall comply with the requirements of 250.32(B), 250.118, 250.184(B)(8), and 250.186(D). EX1007, 241

Dr. Beik Declaration

“Indeed, the NEC specifically provides for messenger wires to be simultaneously used both as structural support for conductors and as the equipment grounding conductor itself. For example, Chapter 3 of the NEC, which covers messenger cable supported wiring, provides that when the messenger wire is used in a support system, the same messenger wire may be used as a grounding conductor[.]” EX1002, ¶49 (discussing 396.30(C)).

Dr. Phinney Transcript

Q [...] [D]o you take this subsection C to mean if a messenger complies with these provisions enumerated in subsection C, that that messenger may serve as an equipment grounding conductor?

A It must comply with these to -- to be used as an equipment grounding conductor. [...]

So the articles themselves subsume an entire engineering investigation. So adding that in, I think I could agree that these are the requirements, these articles, for being used as a -- for a messenger wire or, you know, for a wire to be used as an equipment grounding conductor.

EX1041, 62:19-63:20

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Petition, 47-48; Petitioner Reply, 9, 12

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Grounds II and V; Obvious Under All Constructions

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Grounds II and V (CAB Materials)

Under CAB's Construction



- **No dispute:** Claims obvious under Petitioner's or the Board's construction
- **Under CAB's construction:**
 - **No dispute:** the CAB Materials disclose a tension member supporting cable hangers. POR, 30.
 - **Only dispute:** whether CAB materials teach a POSITA an equipment grounding conductor. Patent Owner Reply, 2.
 - **CAB's Position:** NEC requires reading "EGC" into the multi-function line definition. POR, 12.
 - **CAB's Problem:** If the NEC guides multi-function line, NEC cures the CAB's arguments. Pet. Reply, 12

Grounds II and V (CAB Materials)

Under CAB's Construction



- If the NEC guides multi-function line with EGC requirements, then NEC also guides a POSITA to follow the NEC.
 - CAB Whitepaper teaches a system that stays “at or near ground potential” using only a **grounded** messenger
 - Neither reference discloses a separate grounding conductor
 - NEC Article 396.30(C) tells POSITA how to ensure grounding using messenger as an EGC

396.30 Messenger.

[...]

(C) **Equipment Grounding Conductor.** Where the messenger is used as an equipment grounding conductor, it shall comply with the requirements of 250.32(B), 250.118, 250.184(B)(8), and 250.186(D). EX1007, 241

“[I]t would have been obvious to a POSITA at the time of the alleged invention to use a multi-function line that includes copper strands, copper-clad steel strands, galvanized strands, conductive alloy strands, partially conductive, alloy strands, or composite strands because these materials were known in the art. For example, **NEC article 250.118** teaches that ‘copper, aluminum, or copper-clad aluminum’ conductors can be used for grounding purposes.” Dr. Beik, EX1002, ¶150.

Grounds II and V (CAB Materials)

Under CAB's Construction



- **CAB Argument:** Grounded and grounding mean different things
 - **Wrong:** Author of Whitepaper, '551 Patent, and NEC use them interchangeably
 - Distinction without a difference – things that are grounded^{ed} are grounding^{ing} the system.

3 Grounding and Bonding of Cable Supports

The electrical industry, including code enforcement personnel, are heavily focused on grounding^{ing} and bonding of metallic parts. The primary concern is contact of exposed metal parts with conductors having damaged insulation—thus energizing the metal parts.

In Figure 5, the hangers are actually in full contact with a grounded^{ed} steel messenger wire. It could be argued that even if the conductor insulation were ever to be damaged, the **cable rings and saddles would stay at or near ground potential**. EX1006, 14

Grounded (Grounding). Connected^{ed} (connecting^{ing}) to ground or to a conductive body that extends the ground connection. EX1007, 31

Grounds II and V (CAB Materials)

Under CAB's Construction



- **CAB Argument:** CAB specifically defined “structured to” to introduce a *mens rea* requirement, or goal, of a specific component.
- **Case law demonstrates this is improper**
 - “[T]he Board's claim construction of the term 'a non-promotional background object' was improperly based on the subjective views of the user.” *PLR Worldwide Sales, Ltd. v. Flip Phone Games Inc.*, IPR2024-00133, Paper 12 at 7 (Aug. 22, 2024) (on Director Review)
 - “We are not prepared to assign a meaning to a patent claim that depends on the state of mind of the accused infringer.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1353 (Fed. Cir. 2001)
 - “PNC's proposal of introducing a "goal" into the construction is unclear, lacks sufficient support in the intrinsic record, and would tend to confuse rather than clarify the scope of the claims.” *United Servs. Auto. Ass'n v. PNC Bank N.A.*, No. 2:20-CV-00319-JRG, 2021 U.S. Dist. LEXIS 224395, at *57 (E.D. Tex. Nov. 22, 2021)
 - “Accordingly, [Patent Owner's] contention that his structure will be used to dispense popcorn does not have patentable weight if the structure is already known, regardless of whether it has ever been used in any way in connection with popcorn.” *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997)

Grounds II and V (CAB Materials)

Under CAB's Construction



- **CAB Argument:** A POSITA looking at the CAB Website would not have assumed it is a functioning system because (1) it is a mock up, (2) the messenger is running parallel to the panels, (3) POSITA “would have had no reason to assume that the messenger wire was acting as a grounding conductor.
- **Wrong:**
 - It is a functioning solar array. EX1043, 49:12-50:13; EX2061, ¶¶14, 18.
 - The NEC never precluded running conductors parallel to the solar panels. EX1041, 133:7-9; 134:21-135:16.
 - Since at least 2008 it was common knowledge that a messenger can be used as a grounding conductor. EX1007, 241.

Secondary Considerations

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Secondary Considerations

- Burden is squarely on CAB to show a nexus between evidence of alleged secondary considerations of non-obviousness and the patented invention.
 - “In order to accord substantial weight to secondary considerations in an obviousness analysis, the evidence of secondary considerations must have a ‘nexus’ to the claims.” *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (internal quotations omitted).
- Total failure of proof: CAB has failed to show any nexus for secondary consideration of non-obviousness.
 - Patentee has the burden to distinguish between evidence attributable to the challenged claims and evidence attributable to unclaimed features and features claimed in other patents. *Id.*, 1378.

Secondary Considerations – No Technical Nexus

- No “integrated system” – just individual part sales
- No analysis of whether individual parts were “representative” of the identified “exemplary” parts

¹⁰ While I refer to the CAB-9605 copper-clad grounding messenger wire as an exemplary component of CAB’s Integrated Grounding System, I understand that all grounding messenger wires sold by CAB serve both to support cable hangers and cables and to act as an equipment grounding conductor, and therefore meet the definition of the claimed multi-function line as explained in my claim chart, Appendix A.

Dr. Phinney EX2064, 113, n10

Secondary Considerations – No Technical Nexus



- No nexus because multiple CAB patents cover the allegedly practicing products – no analysis by CAB or Dr. Phinney that the patents “generally cover the same invention.”

304. Exemplary CAB product part numbers that constitute its Integrated Grounding System include CAB-9605 (copper-clad grounding messenger wire);¹⁰ CAB-9705 (grounding Mid Pier Kit); CAB-9760 (cable hangers); and CAB-9607 (grounding end-pier attachment kit). EX2054.

EX2064, 113

Cambria County Association
for the Blind and Handicapped

CAB Products

CAB Solar

Vision Services

Employment Services

How to Buy CAB

Library

News

EXHIBIT

EXHIBIT

The following CAB Products are protected by U.S. Patents.

This site is provided to satisfy the virtual patent marking provisions under Title 35 U.S.C. § 287(a) and/or similar laws in other jurisdictions. Additional patents may be pending in U.S. [and elsewhere]. This list might not be all inclusive and other products not listed here may be associated with one or more patents in the United States [or elsewhere].

This list was last updated on July 22nd, 2024.

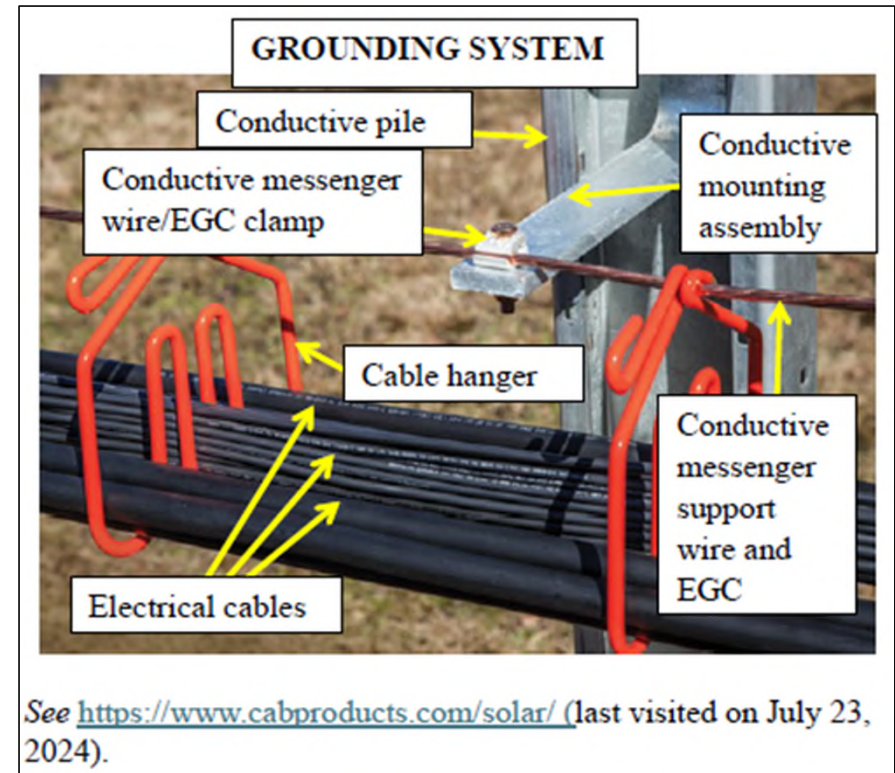
EX1049, 6-7

9605	MESSNGR WIRE .295IN COPPER 11.13KA	10,177,551; 10,461,518, 10,811,859
9705	MID PIER L BRKT 8X2X1/2X5.25 GB CLA .SOL	10,177,551; 10,461,518
9760	HGR 2CH 1D-2.125D .2955OLK OTDL OR .SOL2	9,800,028; D913,493; 10,978,861; 11,349,291; 11,437,790; 11,569,646; D968,596; D968,598

CAB-9607 ???

Secondary Considerations – No Technical Nexus

- Vague claim charts that do not identify allegedly practicing products or features.
 - Not clear what part numbers are being analyzed
 - No depiction of end pier kits in Appendix (CAB-9607)
 - CAB has never sold piles (EX1043, 107:7-8)
 - Per Dr. Phinney, cable hangers (CAB-9760) are not claimed, but included in his “integrated system” (EX1041, 118:10-18)



EX2064, A1

Secondary Considerations – No Commercial Success



- Irrelevant market comparator;
- Fail to disaggregate non-practicing sales;
- Failure to attribute sales to claimed features

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petitioner Reply, 21-23

Affordable Wire Management, LLC - Petitioner
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Secondary Considerations – No Commercial Success

- Irrelevant market comparator (domestic net new capacity growth)
 - Does not use market share or industry revenue. EX1067, 101:1-102:13
 - Irrelevant metric / no profits. EX2044, ¶20; EX1067, 97:11-16.
 - Ms. Doan: “**Dr. Putnam did not establish in his declaration the size of the market that CAB competes in or CAB’s share of the market, even though he identified market share, along with profits, as important indicators of commercial success.**” EX1061, ¶46.
 - Ms. Doan: “While Dr. Putnam claimed to use an industry growth rate as the benchmark to compare to CAB’s sales growth, [...] **this benchmark is not appropriate and suffers from numerous fatal flaws.** In sum, Dr. Putnam once again relies on assumptions and speculation to conclude that there has been “widespread” purchasing of CAB’s products by a substantial number of consumers.” EX1061, ¶48 (see ¶¶51-54) .

“[Patent owner] is not relieved of the burden of proving commercial success simply because it lacks the capability to marshal probative evidence. Just as the number of units sold without evidence of the market share is only weak evidence of commercial success, so too is an assertion of market share lacking in sales data.”

In re Applied Materials, Inc., 692 F.3d 1289, 1300 (Fed. Cir. 2012) (citations omitted)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petitioner Reply, 21-23

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Secondary Considerations – No Commercial Success

- Fail to disaggregate non-practicing sales
 - Improperly includes products Dr. Phinney did not analyze;
 - Includes products that practice other patents;
 - No attempt to show the features claimed in the '551 Patent drove sales

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[.]

It is also impossible to know how much CAB's sales expanded as a result of adding the technology claimed in the '551 patent

EX2044 (Putnam Dec.), ¶¶ 57, 61

Dr. Putnam projected CAB's sales starting from 2015 using CAB's actual sales growth from 2015 to 2023, which includes products sold before the introduction of technology claimed by the '551 Patent.

CAB's 2018 customer-level data, which shows customers purchasing other components (e.g., end-pier kits, mid-pier kits, and hangers) along with galvanized steel messenger wire.

EX1061 (Doan Dec.), ¶¶ 57-58

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petitioner Reply, 23-26

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Patent 10,177,551
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Secondary Considerations – No Commercial Success



- Failure to attribute sales to claimed features

- Dr. Putnam admits he does not know if sales expanded due to patented features;
- Captures sales of products Dr. Phinney did not analyze, and products sold prior to release of “integrated system”
- Captures sales of products CAB says cannot practice the '551 Patent (steel messenger, etc.)
- No attempt to show the features claimed in the '551 Patent drove sales

It is also impossible to know how much CAB's sales expanded as a result of adding the technology claimed in the '551 patent[.] EX2044 ¶61.

The fact that Dr. Putnam always ties the claimed commercial success to both the '291 and the '551 Patent (and never ties commercial success to only the '551 Patent) provides further evidence that Dr. Putnam has not established a nexus between CAB's claimed excess sales (or CAB's sales) and the '551 Patent. EX1061, ¶66.

Secondary Considerations – No Cost Savings



- Unreliable cost savings allegations
 - Savings attributable to products practicing other patents;
 - Relies on pre-”integrated system” evaluations
 - EX2030 and EX2008 evaluate cost savings between trenching/cable tray and messenger.
 - Cost savings by combining four separate projects. EX2049.
 - “Dr. Putnam overstated the savings provided by CAB’s Integrated System relative to CAB’s Standard System on a per installation basis.” EX1061 (Doan Dec.), ¶82.

304. Exemplary CAB product part numbers that constitute its Integrated Grounding System include CAB-9605 (copper-clad grounding messenger wire);¹⁰ CAB-9705 (grounding Mid Pier Kit); CAB-9760 (cable hangers); and CAB-9607 (grounding end-pier attachment kit). EX2054.

EX2064, 113

9605	MESSNGR WIRE .295IN COPPER 11.13KA	10,177,551; 10,461,518; 10,811,859
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9760	HGR 2CH 1D-2.125D .2955OLK OTDL OR .SOL2	9,800,028; D913,493; 10,978,861; 11,349,291; 11,437,790; 11,569,646; D968,596; D968,598

EX1049, 6-7

Secondary Considerations – No Industry Praise



- No attempt to link praise to a specific CAB part
- CAB products practice multiple patents

CAB Solar: Integrated grounding messenger wire cable management system	CAB first introduced the cable management system in 2014 and has now added the grounding function by using a copper composite messenger wire. The company says its solution is already widely accepted in the large-scale project space and has been used in gigawatts of projects worldwide.
This solution from US non-profit Cambria County Association for the Blind and Handicapped (CAB Products) combines cable management and system grounding. The wire hangs below the mounting system, supporting hangers keep cabling neatly organized and also serve as both grounding electrode conductor and equipment grounding conductor.	The system promises significant savings throughout a PV system's life, simplifying the processes of installation, and opera-

EX2025, 60

CAB Solar

CAB Solar Cable Management with Integrated Grounding

CAB Solar now has new grounding equivalency options for its popular cable management system with integrated grounding. CAB #2 Equivalent is for projects with larger fuses, while the redesigned CAB #3 Equivalent provides cost savings. CAB's copper composite messenger wire can provide the EGC and GEC in the solar array.

EX2024

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE
Petitioner Reply, 27-28

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Secondary Considerations – No Industry Praise

- No attempt to link awards to specific parts
- Even if awards are linked to parts identified by Dr. Phinney, those parts are covered by other patents. EX1049, 6-7

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EX2026



EX2027

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petitioner Reply, 27-28

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Secondary Considerations – No Industry Praise

- Awards are for unclaimed features

Now with patented integrated grounding, the Solar Cable Management system's high-quality multi-carrier hangers safely separate bundles of cables to meet NEC requirements. The innovative design, which incorporates a thick plastisol coating, provides a strong, tight grip of the hanger to the messenger wire.

EX2023, 2

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petitioner Reply, 27-28

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Thank you

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

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