



Patent Owner's Oral Argument Presentation

AFFORDABLE WIRE MANAGEMENT, LLC

v.

CAMBRIA COUNTY ASSOCIATION FOR THE BLIND AND
HANDICAPPED, INC.

IPR2024-00139

U.S. Patent No. 10,177,551

Summary of Argument

- **Claim construction**
 - ***“multi-function line”*** means ***“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”***
 - ***“tension member”*** means ***“cable or wire”***
- **Grushkowitz:**
 - rigid metal cable trays do not disclose a “multi-function line” or “conductive mounting assemblies”
- **CAB Website and CAB Whitepaper:**
 - AWM has not properly argued a motivation to combine
 - References do not disclose, either separately or in combination with each other, a “multi-function line” or “conductive mounting assemblies”
- **Petersen:**
 - Does not disclose messenger wire that supports cable hangers and/or current wires
 - Does not disclose a “grounding conductor”
- Evidence of secondary considerations further supports nonobviousness

NEC REQUIREMENTS FOR GROUNDING SYSTEMS

NEC Requirements

- Undisputed by Dr. Beik that a POSITA would understand that the grounding system of the '551 Patent must comply with the NEC

Q Would you agree that the grounding system of the '551 patent would need to be in compliance with the NEC requirements for grounding system?

A ***All grounding systems in the United States would need to be compliant with relevant standards.***

(EX2004, 10:17-21)

Q Is it your opinion that a ***POSITA reading the specification***, and particularly this section of it, would understand that the regulations are applying to codes and standards like the NEC and the IEEE?

A ***A POSITA would conclude NEC and IEEE are some of the regulations.***

(EX2004, 46:20-47:1)

Paper 30 (POR), 3-9; Paper 55 (Sur-Reply), 1-2

Requirements for EGC and Effective Ground Fault Current Path

- NEC requires that exposed metal equipment ***not intended to carry current*** must be ***bonded*** and ***grounded*** using a ***grounding conductor*** intended to carry current in the event of a fault
- NEC requires exposed metallic non-current-carrying components to be bonded together to establish an ***intentionally constructed effective ground fault current path***
 - low impedance ground-fault current path from the point of ground-fault on the wiring system to the electrical supply source
 - in order to cause an overcurrent protection device [located at the inverter] to open the circuit and clear the fault

(EX2064, ¶¶38-39, 42-46, 56-60; EX1007, Art. 250.2, 250.4(A)(4-5), 99)

Paper 30 (POR), 3-9; Paper 55 (Sur-Reply), 1-2

Requirements for EGC and Effective Ground Fault Current Path

- NEC defines two types of grounding conductor:
 - (1) Equipment grounding conductor (EGC)
 - (2) Grounding electrode conductor (GEC)
- EGC bonds metallic non-current-carrying components and provides an **effective ground fault current path**
- “The effective ground fault current path must have sufficiently low impedance (i.e., electrical resistance) to the supply source **so that fault current will quickly rise to a level that will open the circuit overcurrent protection device.**” (EX2064, ¶58)
- The Earth is **not** an **effective ground fault current path**

(EX2064, ¶¶41, 43-49, 58, 61, 67, 141-142; EX2007, Art. 250.4(A)(5), 99)

Requirements for EGC and Effective Ground Fault Current Path

- IEEE Chapter 2 – Equipment Grounding

“2.1.2 General

The term equipment grounding includes the **equipment grounding conductor (EGC)** and refers to the interconnection (bonding) and grounding of the nonelectrical metallic elements of a system.”

“The need for an EGC exists for high-impedance, low-impedance, and effectively grounded systems as well as for ungrounded systems. Examples of components of the equipment grounding system are metallic raceways, motor frames, equipment enclosures, and a grounding conductor (wire). The requirements for equipment grounding are expressly specified in the National Electrical Code® (NEC®) NFPA 701 as follows”

(EX1028, 85)

Requirements for EGC and Effective Ground Fault Current Path

[2.1.2 General (Cont'd)]

“The basic objectives of an equipment grounding system are the following:

- 1) To reduce electric shock hazard to personnel.
- 2) To provide adequate current-carrying capability, both in magnitude and duration, ***to accept the ground-fault current permitted by the overcurrent protection system*** without creating a fire or explosive hazard to building or contents.
- 3) To provide a ***low-impedance return path for ground-fault current necessary for the timely operation of the overcurrent protection system.***”

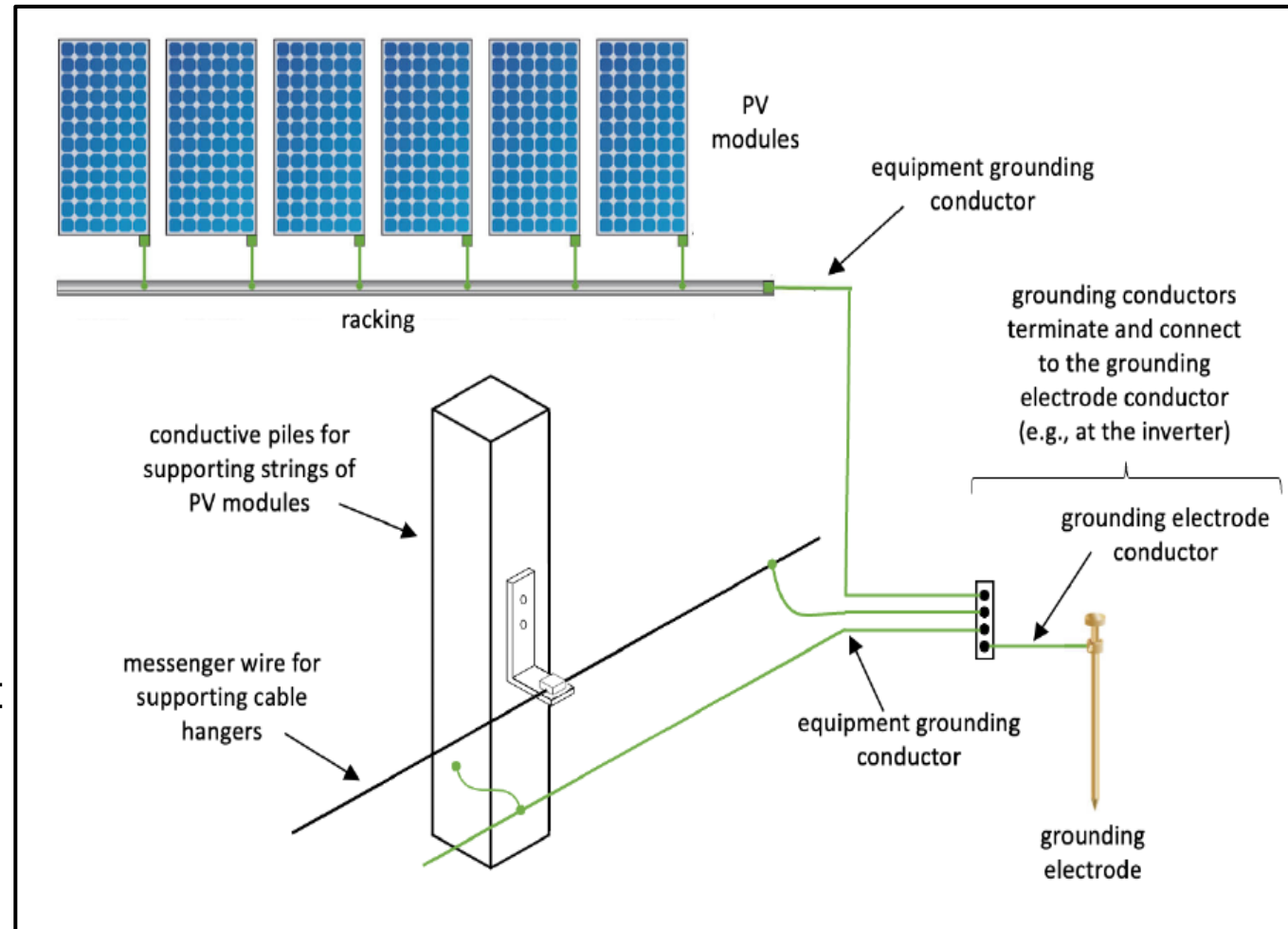
(EX1028, 85)

POSITA Would Understand that Claimed Grounding System Must Comply with NEC and IEEE

IPR2024-00139

Requirements for EGC and Effective Ground Fault Current Path

- Messenger wire, racking, piles, and bracket hardware provide **support** function – **not intended to carry current**
- Support equipment grounded by **EGC** and **GEC**



(EX2064, ¶¶40-41)

Paper 30 (POR), 3-9, 12-13

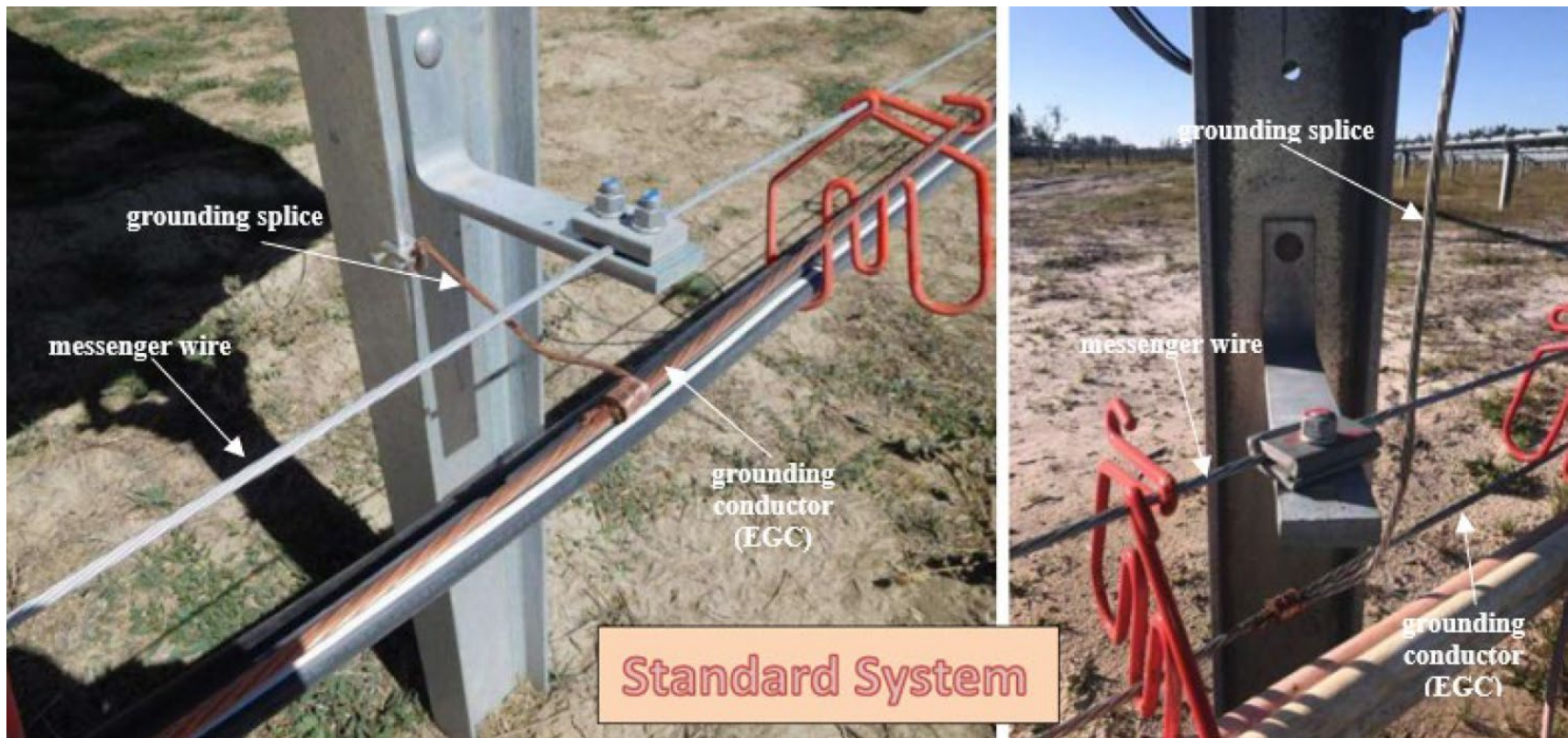
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

POSITA Would Understand that Claimed Grounding System Must Comply with NEC and IEEE

IPR2024-00139

Requirements for EGC and Effective Ground Fault Current Path

- CAB's Standard System shows separate EGC disposed adjacent to messenger wire that provides effective ground fault current path



(EX2064, ¶175)

Paper 30 (POR), 3-9

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

AWM's "Background Prior Art" Does not Disclose Claimed Invention

IPR2024-00139

Williams (U.S. Patent No. 1,754,924)

In devices of this description as heretofore used it has been possible for a lineman to stand on the messenger cable, and as this is
10 always grounded, serious results and frequently fatalities have followed when the lineman has been working on a live cable carried by the pole above the messenger cable.

(EX1020, 1:7-13)

It is the object of the present invention to so equip the metal fixture which carries the messenger cable that it is an utter impossibility for the lineman to stand thereon, and furthermore to provide such a fixture as will enable the latter or one closely resembling it,

(EX1020, 1:36-41)

Paper 30 (POR), 41-42

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

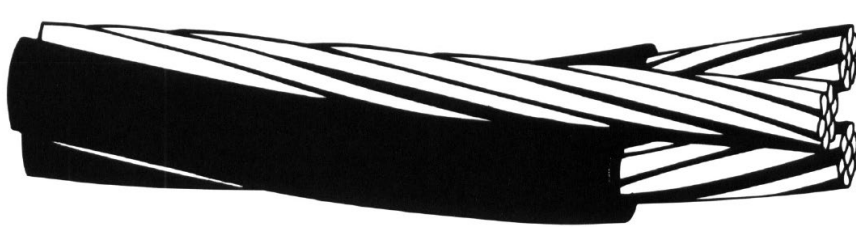
AWM's "Background Prior Art" Does not Disclose Claimed Invention

IPR2024-00139

Southwire

Triplex Service Drop

Aluminum Conductors. Polyethylene or Crosslinked Polyethylene Insulation.



Dr. Beik: "In my experience in this industry, "neutral messenger" refers to a messenger cable that doubles as a grounding conductor."

(EX1002, ¶150)

Dr. Phinney: "Dr. Beik's understanding of the use of the term "neutral messenger" is simply incorrect . . . [NEC Art. 396.30(B)(C)] do not authorize a neutral conductor to double simultaneously as an equipment grounding conductor."

(EX2064, ¶¶241-242)

APPLICATIONS

Used to supply power, usually from a pole-mounted transformer, to the user's service head where connection to the service entrance cable is made. To be used at voltages of 600 volts phase-to-phase or less and at conductor temperatures not to exceed 75°C for polyethylene insulated conductors or 90°C for crosslinked polyethylene (XLP) insulated conductors.

CONSTRUCTION

Conductors are concentrically stranded, compressed 1350-H19 aluminum. Insulated with either polyethylene or crosslinked polyethylene (XLP). Neutral messengers are concentrically stranded 6201, AAC, or ACSR.

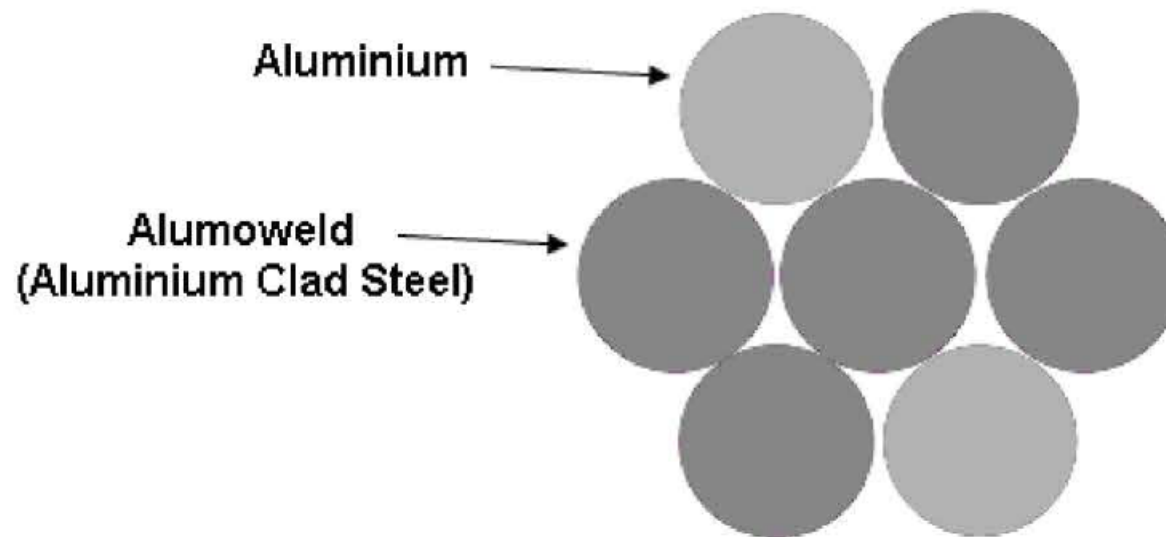
(EX1023, 1)

Paper 30 (POR), 41-42, 54-55

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

3.3 Messenger Wire

The messenger wire (also known as the catenary wire) is the supporting wire in the Hendrix Covered Conductor System configuration. It acts as the 'backbone' of the system because it supports the three phase conductors, breaks the fall of tree branches, acts as a lightning shield and the system neutral.



(EX1024, 13)

Figure 3-2: 052AWA Messenger Wire

'551 PATENT

“Field of the Invention

The disclosed and claimed concept relates to a grounding system for a suspended cable assembly and, more particularly, to a ***grounding system that includes conductive elements whereby grounding cables do not need to be spliced into a conductor wire disposed adjacent a messenger wire***, and, to a system wherein a multi-function line provides support and a current path.”

(EX1001, 1:7-13)

“For example, lightning is known to strike the messenger wires, the current wire(s), the solar electrical equipment, the support piles, or any other construct coupled to these elements. Further, a current wire, or any other wire carrying a current can fail creating a short or other undesirable current in the supported bundle of wires. This is why a **conductor or grounding wire is disposed adjacent the messenger wires; hereinafter, such a wire is identified as a ‘grounding conductor.’**”

(EX1001, 1:60-2:3)

“Presently, the grounding conductor is grounded by splicing a conductor, such as, but not limited to, a copper wire into the grounding conductor and coupling the copper wire to a grounding cable or, if the piles are conductive, to each pile.

That is, the copper wire must be spliced into the grounding conductor, i.e., a “grounding splice,” and, then electrically coupled to the pile or a ground cable. ***The process of installing the conductors, i.e., splicing the copper wire into the grounding conductor and making an electrical coupling with the pile is difficult, time consuming and expensive***

There is, therefore, a need for a grounding system that is less expensive and which can be installed quickly and easily.”

(EX1001, 2:6-18)

FIG. 1

multi-function line

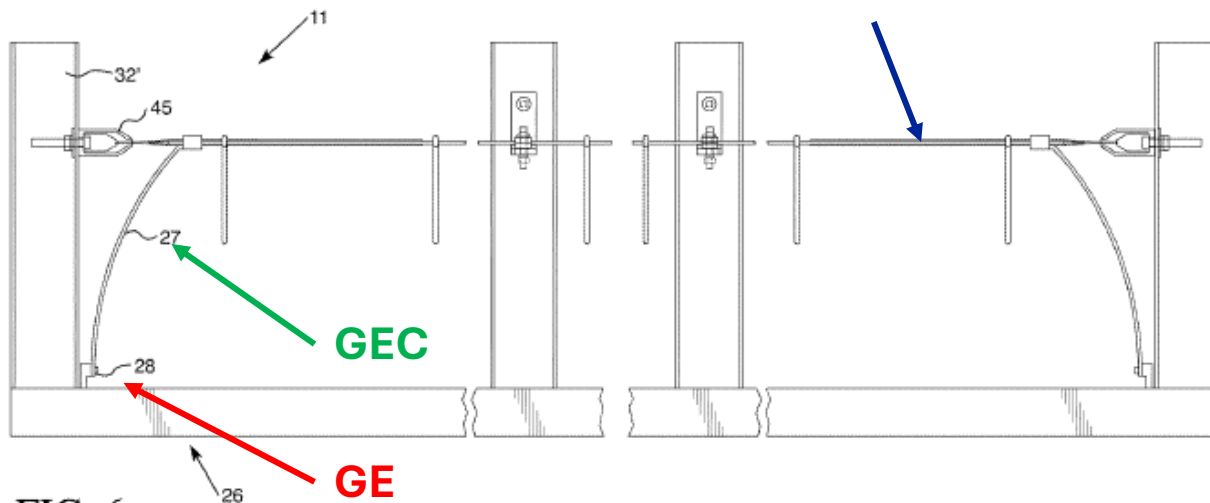


FIG. 6

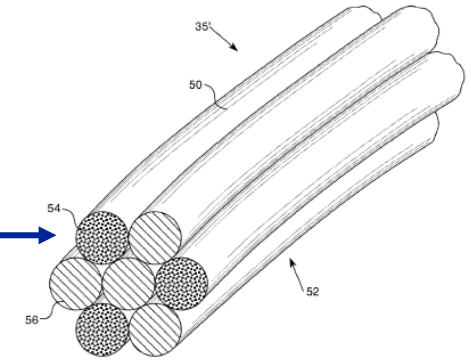
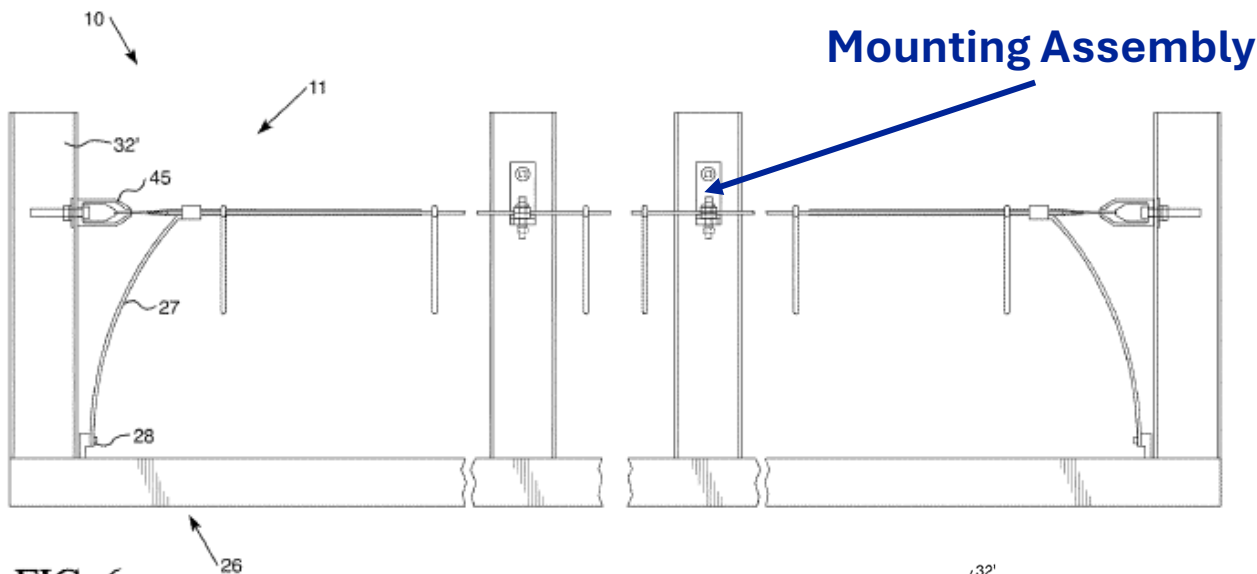


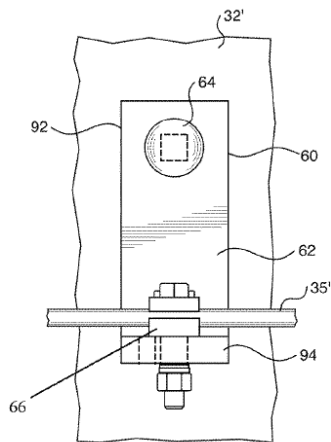
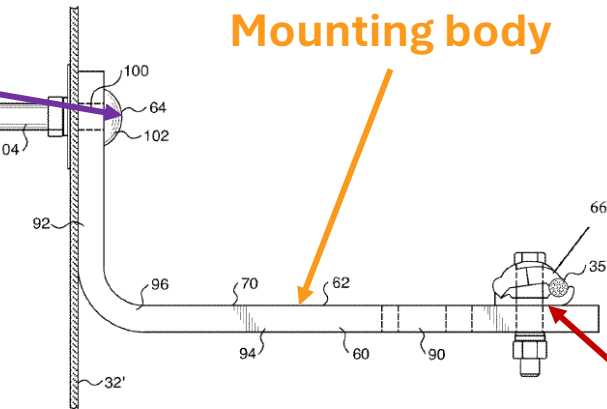
FIG. 7

(EX1001, FIGS. 1, 6 & 7
(annotated))



Support coupling

Mounting body



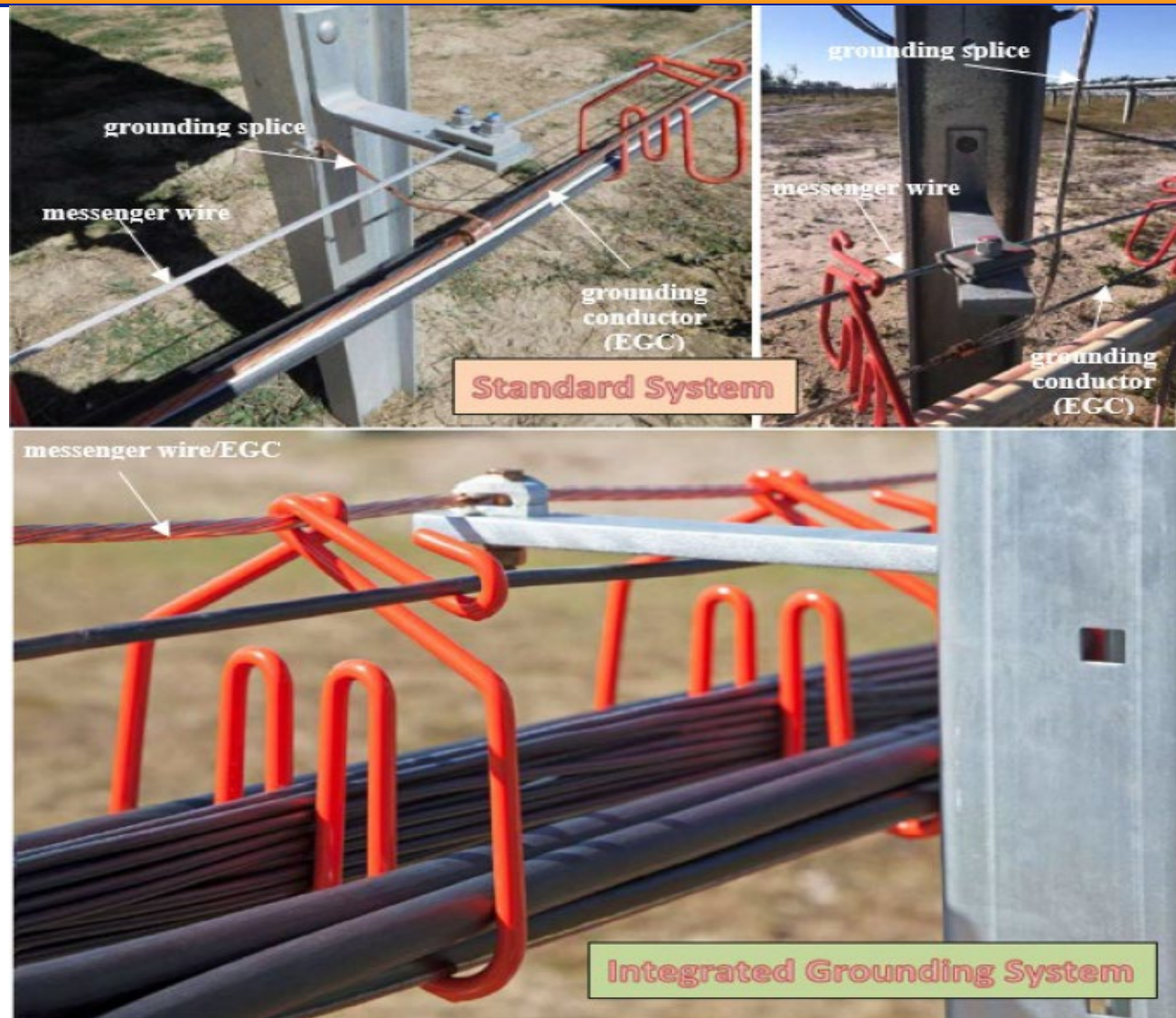
(EX1001, FIGS. 6 & 8B (annotated), 8C)

Paper 30 (POR), 9-16

Specification

- CAB's Integrated Grounding system shows the advantages of the '551 invention over the prior art

(EX2064, ¶75)



Paper 30 (POR), 9-16

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

CLAIM CONSTRUCTION

Multi-function Line – Proposed Construction

- As understood by a POSITA, *in light of the specification*, “multi-function line” means “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***”

(EX2064, ¶182)

Mult-function Line - Specification

US 10,177,551 B1

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GROUNDING SYSTEM
BACKGROUND OF THE INVENTION

Field of the Invention

The disclosed and claimed concept relates to a grounding system for a suspended cable assembly and, more particularly, to a grounding system that includes conductive elements whereby grounding cables do not need to be spliced into a conductor wire disposed adjacent a messenger wire, and, to a system wherein a multi-function line provides support and a current path.

Background Information

In solar, mining, and electrical industries there is a need for electrical cables to extend from a power or signal source to a location of application. Such cables are usually indirectly connected and supported by a support assembly including a number of poles or piles (hereinafter, and collectively, "piles"), a messenger wire, and a number of cable hangers. That is, a number of piles provide elevated support points extending along a selected path. The "messenger wire" is, and as used herein, a robust cable structured to support a number of other wires (hereinafter "supported wires") and which is not structured to carry a signal or power. The support assembly further includes a grounding conductor or a grounding conductor wire that is disposed adjacent the messenger wire and/or among the supported wires. The messenger wire is coupled to the piles at an elevated location. The number of cable hangers are then coupled to the messenger wire. The cable hangers are structured to support the supported wires such as, but not limited to, electrical and signal wires.

For example, solar plants comprise large arrays of solar panels spread out over a large area. The solar panels are supported by a racking assembly coupled to a pile or other support. The solar panels collect the sun's rays causing a current to flow to current wires that are attached to the solar panels. The current flows to other equipment (collectively, along with any equipment downstream of the solar panels, "solar electrical equipment"). For example, in one embodiment, the solar panels generate a direct current that is communicated to combiner boxes before being communicated to power inverters wherein the direct current is converted to alternating current. In another embodiment, each solar panel has a micro-inverter that converts the current to alternating current which is then communicated to other solar electrical equipment. Accordingly, as used herein, any conductor that carries current, direct or alternating, from a solar panel is, as used herein, a "current wire." Each current wire extends away from the associated solar panel and is grouped with a bundle of similar current wires from other solar panels. The bundle of current wires is supported by a series of cable hangers suspended from a messenger wire. The messenger wire is supported by a number of piles extending adjacent the solar panels or which support the solar panels.

While the messenger wire is not structured to carry a current, there are instances wherein the messenger wire does carry a current. For example, lightning is known to strike the messenger wires, the current wire(s), the solar electrical equipment, the support piles, or any other construct coupled to these elements. Further, a current wire, or any other wire carrying a current can fail creating a short or other undesirable current in the supported bundle of wires. This is why a

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conductor or grounding wire is disposed adjacent the messenger wires; hereinafter, such a wire is identified as a "grounding conductor." The grounding conductor must be coupled to a current path to the ground. Further, many regulations require that the grounding conductor be grounded at each pile. Presently, the grounding conductor is grounded by splicing a conductor, such as, but not limited to, a copper wire into the grounding conductor and coupling the copper wire to a grounding cable or, if the piles are conductive, to each pile. That is, the copper wire must be spliced into the grounding conductor, i.e., a "grounding splice," and, then electrically coupled to the pile or a grounding cable. The process of installing the conductors, i.e., splicing the copper wire into the grounding conductor and making an electrical coupling with the pile is difficult, time consuming and expensive. These are problems of the known art.

There is, therefore, a need for a grounding system that is less expensive and which can be installed quickly and easily. There is a further need for the grounding system to be compatible with existing support assemblies.

SUMMARY OF THE INVENTION

These needs, and others, are met by at least one embodiment of the disclosed and claimed concept which provides a grounding system structured to ground a number of cables supported by a support assembly. **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). That is, a single multi-function line supports the cable hangers, as a messenger wire, and provides a current path, as a grounding conductor. Accordingly, as used herein, a "multi-function line" means a tension member that supports current wires and/or cable hangers, and, which is conductive.** That is, a messenger wire is not a "multi-function line." Similarly, a conductor that does not support other constructs is not a "multi-function line."

A grounding system in this configuration, and as discussed below, solves the problems noted above.

BRIEF DESCRIPTION OF THE DRAWINGS

A full understanding of the invention can be gained from the following description of the preferred embodiments when read in conjunction with the accompanying drawings in which:

- FIG. 1 is a schematic side view of an installation.
- FIG. 2 is a schematic top view of an installation.
- FIG. 3 is a top view of a conductive terminal support.
- FIG. 4 is a side view of a conductive terminal support.
- FIG. 5 is a schematic side view of an installation.
- FIG. 6 is a schematic side view of an installation.
- FIG. 7 is an isometric, cross-sectional view of a multi-function line with a partially conductive body.
- FIG. 8A is a top view of a multi-function line coupling with a clamping assembly.
- FIG. 8B is a side view of a multi-function line coupling with a clamping assembly.
- FIG. 8C is a front view of a multi-function line coupling with a clamping assembly.
- FIG. 9A is a top view of a multi-function line coupling with a split bolt. FIG. 9B is a side view of a multi-function line coupling with a split bolt.

Affordable Wire Management, Exhibit No. EX100

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“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 multifunction line assembly. Further, the multi-function line supports the cable hangers (which support the current wires, 35 data wires and other wires). **That is, a single multi-function line supports the cable hangers, as a messenger wire, and provides a current path, as a grounding conductor.** 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, 2:27-40)

Specification Defines “Grounding Conductor” as EGC

“While the messenger wire is not structured to carry a current, there are instances wherein the messenger wire does carry a current. For example, lightning is known to strike the messenger wires, the current wire(s), the solar electrical equipment, the support piles, or any other construct coupled to these elements. Further, a current wire, or any other wire carrying a current can fail creating a short or other undesirable current in the supported bundle of wires. This is why a conductor or grounding wire is disposed adjacent the messenger wires; hereinafter, such a wire is identified as a ‘grounding conductor.’”

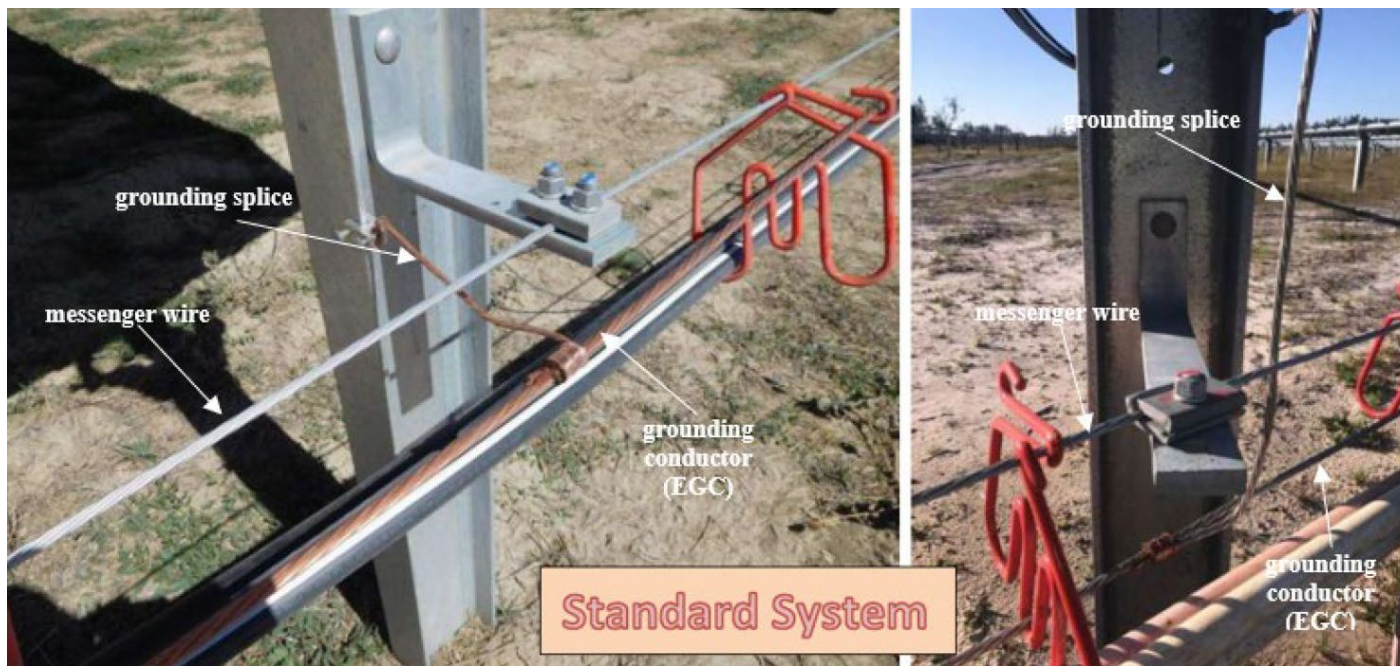
(EX1001, 1:60-2:3; Paper 21 (Inst. Dec.), 7)

Paper 30 (POR), 25-30; Paper 55 (Sur-Reply), 1-4

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

“Grounding Conductor”

- “**Grounding conductor**” – conductor disposed adjacent to the messenger wire



(EX2064, ¶175)

Paper 30 (POR), 26-27; Paper 55 (Sur-Reply), 1-4

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

“Grounding Conductor” is an Equipment Grounding Conductor

- ***NEC requires*** that an equipment grounding system include an EGC that provides an effective ground fault current path (*EX2064, ¶¶38-39, 42-46, 56-60; EX1007, Art. 250.2, 250.4(A)(4-5), 99*)

Paper 30 (POR), 25-28; Paper 55 (Sur-Reply), 1-4

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

“Grounding Conductor” is an Equipment Grounding Conductor

- “**Grounding Conductor**” disposed adjacent to the messenger wire is an **Equipment Grounding Conductor** that provides an effective ground fault current path (*EX2064*, ¶¶50, 87-88)
- Both experts agree that ***in the event of a ground-fault***, EGC provides an ***intentionally constructed***, low-impedance ground-fault current path to facilitate the operation of the overcurrent protection device in order to clear the fault (*EX2064*, ¶46; *EX2004*, 28:2-9)

Paper 30 (POR), 25-30; Paper 55 (Sur-Reply), 1-4

Equipment Grounding Conductor Provides Effective Ground Fault Current Path

- As Dr. Beik also agreed, IEEE confirms that under the NEC an equipment grounding system must include an EGC to provide an effective ground fault current path

“The term **equipment grounding includes the equipment grounding conductor (EGC)** and refers to the interconnection (bonding) and grounding of the nonelectrical metallic elements of a system **The need for an EGC exists for high-impedance, low-impedance, and effectively grounded systems as well as for ungrounded systems The requirements for equipment grounding are expressly specified in the National Electrical Code® (NEC®)**”

“The basic objectives of an equipment grounding system are the following To provide a **low-impedance return path for ground-fault current necessary for the timely operation of the overcurrent protection system.**”

Equipment Grounding Conductor Provides Effective Ground Fault Current Path

- Dr. Beik conceded that CAB’s “multi-function line” must act as a grounding conductor (EX2004, 67:10-68:12)
- Dr. Beik never disputed that the “grounding conductor” must provide an effective ground-fault current path – only maintained that the prior art references that he cited disclose that grounding conductor (EX2004, 147:19-148:9; 24:5-24; 35:6-18; 37:13-38:10; 104:15-25; 120:15-123:3; 131:22-132:11)
- Dr. Beik conceded that it is ***not enough for a metal pile to simply be embedded in the Earth, or for metal components to be simply connected together*** for them to be grounded (EX2004, 17:13-18:4, 24:5-24, 26:13-21)

Paper 30 (POR), 25-30; Paper 55 (Sur-Reply), 1-4

Intrinsic and Extrinsic Evidence Support Construction

- The intrinsic record supports this construction
 - The claimed “multi-function line” is a “**grounding conductor**” in addition to a support structure
 - “Grounding conductor” *as defined in the specification* is an **equipment grounding conductor** that provides an effective ground fault current path
- The NEC, IEEE, and both experts provide further support

Paper 30 (POR), 25-28; Paper 55 (Sur-Reply), 1-4

“Tension Member” is a Cable or Wire

- As the Board preliminarily determined, the intrinsic evidence discloses a “tension member” to be a **cable or wire** (*Paper 21*, 9)
- The **specification** provides definitional language

“The “messenger wire” is, and as used herein, a robust **cable**”

(EX1001, 1:24-28)

“As used herein, a “conductive terminal support” 44 is structured to **draw the multi-function line 35 taut**”

(EX1001, 7:19-23)

Paper 30 (POR), 28-30; Paper 55 (Sur-Reply), 4-5

“Tension Member” is a Cable or Wire

- ***Prosecution history*** further confirms this construction
 - Examiner initially determined that the weight of Korman’s line “creates weight force which is pulling down on the line between connectors 42, 43 and this forms a tension line.”
(EX1037, 141)
 - Examiner’s initial reasoning the same as what Petitioner argued in Petition that “cable tray is a tension member because it is subjected to ***tensile forces*** as a result of ***gravity*** and the ***weight of current wires*** supported thereon” (Paper 1, 28; EX1002, ¶69)

Paper 30 (POR), 29-30; Paper 55 (Sur-Reply), 4-5

“Tension Member” is a Cable or Wire

- To overcome the basis for this rejection, Applicant argued:
 - ***Korman’s pin 60 is not a “Tension Member”*** (EX1037, 143, 178)
 - “Tension Member” is something that is “***substantially flexible***” and “used to describe the ‘multi-function line’ which ***replaces the messenger wire used in the prior art.***” (EX1037, 173)
 - Korman does not disclose a ***cable or wire*** (EX1037, 179-182)
- Examiner withdrew his rejection and issued a Notice of Allowability (EX1037, 207-209)

Paper 30 (POR), 16-18, 28-30; Paper 55 (Sur-Reply), 4-5

CAB WEBSITE
and *CAB WHITEPAPER*

AWM Fails to Adequately Argue Combining References

- ***Institution Decision:*** Board “question[ed] whether Petitioner has adequately advanced arguments for combining the teachings of the *CAB Website* and the *CAB Whitepaper*” (*Paper 21, 14 n.8*)
- Similarity of subject matter is insufficient to establish motivation to combine
- AWM failed in its Petition to articulate any reason as to how directing *CAB Website* visitors to the *CAB Whitepaper* is a ***motivation to combine the references in a manner that would achieve the claimed grounding system***

Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

AWM Fails to Adequately Argue Combining References

- Dr. Beik asserted in his Declaration that ***each reference individually disclosed the claim limitations of the ‘551 Patent*** (EX1002, ¶¶111-112, 116, 119-121)
- Dr. Beik repeated at his Deposition that each reference disclosed all the claim limitations of the ‘551 Patent (EX2004, 101:5-19)
- Dr. Beik never identified any claim limitation missing from one reference that is provided by the other reference

Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

AWM Fails to Adequately Argue Combining References

- In Reply, AWM asserted for the **first time** that a POSITA would **modify** the *CAB Website*'s system with the *CAB Whitepaper*'s grounded steel messenger to achieve an NEC-compliant grounding system (*Paper 47*, 6-8)
 - AWM's new modification is unsupported by any expert testimony
 - Dr. Beik never mentioned anything about any modification that would substitute the *CAB Whitepaper*'s disclosure of a "grounded steel messenger wire" for the *CAB Website* system's messenger wire
- AWM's first-time proposed modification is tacit admission that *CAB Website* alone does not disclose the claimed grounding system

Paper 30 (POR), 35-49; *Paper 55 (Sur-Reply)*, 6-13



(EX1005, 5)

Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

CAB Whitepaper – September 18, 2014

“2 Review of NEC Requirements and Installation Standards

The primary aspects of this review will focus on the installation of the CAB Cable Rings and Saddles used for cable management in a solar PV array.”

“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.”

(EX1006, 8, 14)

Fitting. An accessory such as a locknut, bushing, or other part of a wiring system that is intended primarily to perform a mechanical rather than an electrical function.



Figure 5: CAB Cable Rings and Saddles Installation

Some AHJs may request that exposed metal rings and saddles be evaluated for bonding, but this is not well substantiated in the NEC, nor is there a UL standard for evaluating such equipment. As an example, metallic cable staples for NM cable are not required to be bonded. The NEC simply states in Article 334.30 that, “Nonmetallic-sheathed cable shall be supported and secured by staples, cable ties, straps, hangers, or similar fittings designed and installed so as not to damage the cable...” Clearly, damage to the cable is the issue. Given this line of reasoning, a cable hanger or similar fitting such as CAB Cable Rings and Saddles could be installed without a listing for bonding and grounding. 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.

Combination Fails to Disclose the Claimed Invention

- Regardless, combination of *CAB Website* and *CAB Whitepaper* does not disclose the grounding system of the '551 Patent
- ***AWM's entire argument*** is premised on the CAB Whitepaper's disclosure of a ***“grounded steel messenger wire”***
- A grounded steel messenger wire is different than a ***“grounding conductor” (i.e., EGC, as defined by the Patent)*** that provides an ***effective ground fault current path***

Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

Combination Fails to Disclose the Claimed Invention

- *CAB Whitepaper* only directed to whether a solar cable management systems utilizing **rings and saddles suspended from a messenger wire** would comply with NEC
- Mr. Brooks confirmed that the *CAB Whitepaper* he authored disclosed **nothing to a POSITA about “employing” a messenger wire as an EGC** (EX2033, ¶¶63-65)
- The *CAB Whitepaper* only disclosed that should the cable hangers become energized, they would remain at or new ground potential because they are in full contact with a messenger wire that is grounded (EX1006, 14; EX2033, ¶63)

Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

Combination Fails to Disclose the Claimed Invention

- A POSITA would have understood that the NEC requires that the messenger wire itself be grounded

“396.60 Grounding. The messenger shall be grounded as required by 250.80 and 250.86 for enclosure grounding.”

(EX1007, Art. 396.60, 241)

Combination Fails to Disclose the Claimed Invention

- A POSITA at the time of the invention would have understood that the employment of a separate **grounding conductor** is what causes the messenger wire to be grounded (EX2064, ¶¶57, 161-163)
- It is the employment of a **grounding conductor** that bonds together all exposed non-current-carrying metal components, **including the messenger wire**, and minimizes the voltage differences between those components in the event of a fault (EX2064, ¶¶57, 161-163)

“A POSITA would further understand that a normally non-current carrying metallic support structure such as a messenger wire cannot be left unbonded, with an undefined potential. Rather, the **messenger wire must** be connected (i.e., bonded) together with other normally non-current carrying materials of the supporting structure and **be grounded via an equipment grounding conductor that provides an effective ground fault current path.**”

(EX2064, ¶163)

Combination Fails to Disclose the Claimed Invention

- A POSITA at the time of the invention would have understood that messenger wires utilized in electrical power systems such as in PV solar installations were made of metal (typically steel) (*EX2064*, ¶52)
- Dr. Phinney confirmed that a POSITA would understand that a galvanized steel messenger wire cannot be used as an EGC (*EX1041*, 62:12-17)

Paper 30 (POR), 5-7; Paper 55 (Sur-Reply), 6-13

Combination Fails to Disclose the Claimed Invention

- The NEC refutes AWM’s assertion that a POSITA would assume a galvanized steel messenger wire in the *CAB Website* and *CAB Whitepaper* is an EGC
- ‘551 Patent confirms that a ***messenger wire (understood by a POSITA to be metal)*** that only provides a support function is not a “multi-function line” (*EX1001*, 2:40-41)

Paper 30 (POR), 5-7; Paper 55 (Sur-Reply), 6-13

Combination Fails to Disclose the Claimed Invention

- In Reply, AWM recognizes that a grounding conductor is required
- AWM can only rely on the ***absence*** of any “discussion” of a separate grounding conductor in either reference to argue that a POSITA would assume that the messenger must be serving as the grounding conductor (*Paper 47, 9*)
- AWM attempts to transform its argument into one of inherency, and shift the burden of proof to CAB

Paper 55 (Sur-Reply), 6-13

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

No Reasonable Expectation of Success

- Contrary to AWM's assertion in Reply, the NEC does not instruct using a messenger wire as an EGC (*Paper 47, 9*)
- AWM relies on a single word cherry-picked from Dr. Phinney's deposition testimony (*Paper 47, 9*)

Q So if these requirements were satisfied, a messenger wire can be used as an equipment grounding conductor under NEC Section 396.30(C)?

A I would just add yes, but that includes an engineering investigation in order to have the listing to be used as such.

(EX1041, 63:21-64:4)

Paper 55 (Sur-Reply), 6-13

No Reasonable Expectation of Success

- The entirety of Dr. Phinney’s testimony that AWM ignored belies any notion that the NEC instructs the use of a messenger wire as an EGC
- AWM offers no explanation or support whatsoever for its proposition that modifying the *CAB Website* with the *CAB Whitepaper’s* messenger would have been an “easy and obvious solution that a POSITA would expect to work.”

Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

Metal-to-Metal Contact Insufficient

- Metal-to-metal contact between metal messenger wire, metal brackets, and metal piles in the Earth does not provide the claimed grounding system
- AWM argues:

“The Patent teaches that grounding is the interconnection of conductive components to earth, i.e., a conductor **becomes** a grounding conductor by coupling the conductor to a pile in the Earth, resulting in a ‘grounding system.’”

(Paper 47, 4)

Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

Metal-to-Metal Contact Insufficient

- Even Dr. Beik conceded that metal components connected together and to the Earth is not enough for them to be grounded
- POSITA would need to know much more than simply whether metal components are connected together and to the Earth (*EX2004, 17:13-18:4*)

Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

Metal-to-Metal Contact Insufficient

Q *Would a metal pile, without anything else, that's imbedded in the earth, would that be considered to be grounded?*

A *I have no way of verifying that, sir.*

Q What would you need to know?

A I would need to know the resistance of the earth, the humidity, the resistance of the pipe the dimension of the pipe, all the details that allows me to calculate what would be the specification while in the ground.

Q *So simply looking at a metal pile that's imbedded in the earth, without knowing all of this other information that you just articulated, you wouldn't know whether it was sufficient to ground that metal pile just by virtue of it being imbedded in the earth; is that correct?*

A *That is a fair statement.*

(EX2004, 17:13-18:4)

Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

Metal-to-Metal Contact Insufficient

Q *Are metal components that are simply connected together enough by themselves to provide an effective ground fault current path?*

A *That's a very broad statement. I would not know that.*

Q Is that because, as you were describing a few minutes ago, you would need to know more information about the metallic components and how they're connected together?

A *To provide an effective ground path one must take into account -- the POSITA would take into account from the element to the endpoint all the conductive path, the resistance, the connection, mechanical strength and so on.*

Q And so you would need to know that kind of information to know whether metallic parts connected together would be enough to provide an effective ground fault current path; is that correct?

A That's one of the things that I would need to know.

(EX2004, 24:5-24)

Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

CAB Website - 2014

- Nothing discloses the information necessary to know whether the depicted metal to metal components provide an effective ground fault current path



© 2014, Cambria County Association for the Blind and Handicapped.

(EX1005, 5)

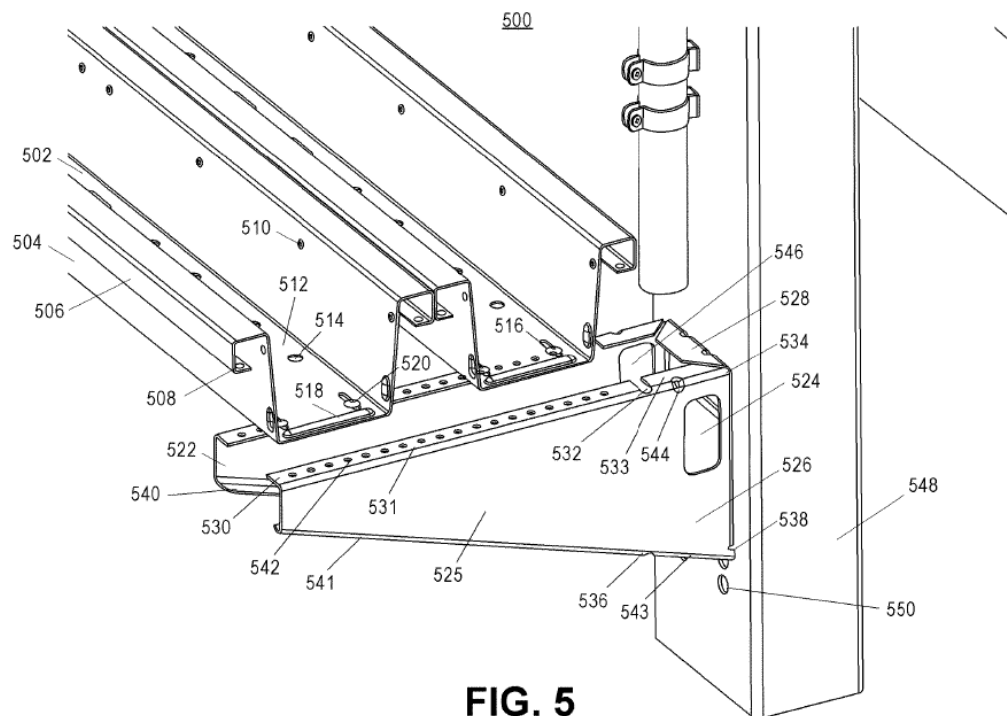
Paper 30 (POR), 35-49; Paper 55 (Sur-Reply), 6-13

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

GRUSHKOWITZ

Grushkowitz Does Not Disclose “Multi-function Line”

- AWM begins its Reply with the assertion that CABs arguments hinge on an incorrect construction that the claimed multi-function line cannot be a cable tray (*Paper 47, 1*)



(EX1003, FIG. 5)

Paper 30 (POR), 31-34; Paper 55 (Sur-Reply), 6

Grushkowitz's Metal Trays Are Not "Tension Members"

- “Multi-function line” recited in ‘551 Patent is a **tension member**, i.e., a **cable or wire** (*Paper 21 (Inst. Dec.)*, 9)
 - A POSITA would not describe a cable tray as a “tension member.” (*EX2064*, ¶¶189-195)
 - A POSITA would know *Grushkowitz's rigid* cable tray structure is not the **tension member** multi-function line disclosed in the ‘551 Patent (*Id.*)
- Merely being subject to gravity does not convert *Grushkowitz's* metal trays into “tension members”
- Argument that a rigid structure is a “tension member” was already rejected during prosecution (*EX1037*, 143, 182, 207-209)

Paper 30 (POR), 31-34; *Paper 55 (Sur-Reply)*, 6

Grushkowitz Fails to Disclose “Multi-Function Line Couplings”

- *Grushkowitz* does not disclose the “multi-function line” and therefore cannot disclose the claimed “multi-function line couplings structured to be [i.e., configured, designed, or intended to be] coupled to said multi-function line.”

Paper 30 (POR), 31-34; Paper 55 (Sur-Reply), 6

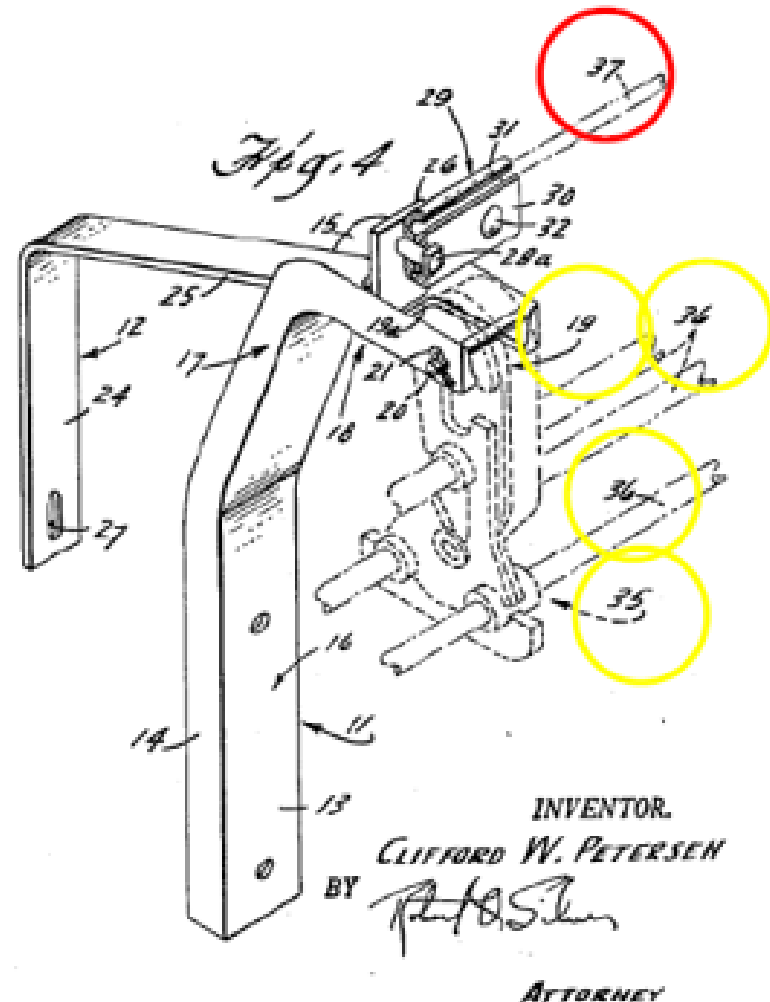
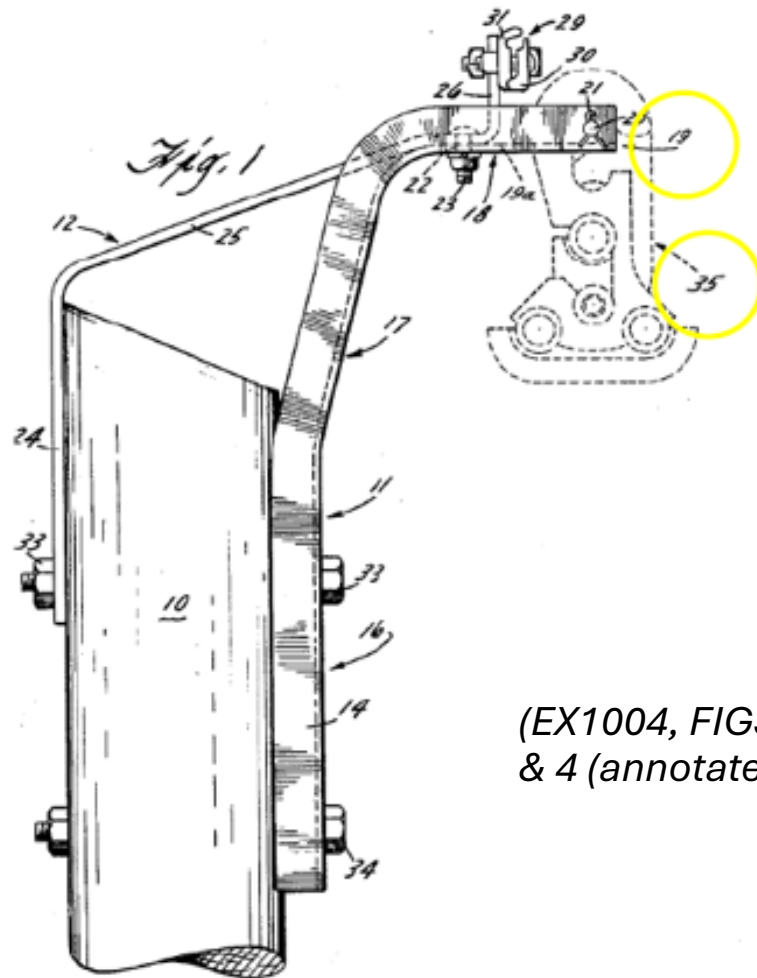
PETERSEN

Petersen Does Not Disclose Any Grounding System or the Claimed “Multi-function Line”

- *Petersen* is directed to a pole-top extension bracket, attached to the top of a wooden utility pole, that supports an aerial cable holder that holds overhead aerial conductors
- *Petersen* is not directed to and in no way discloses any grounding system
- *Petersen* discloses neither a messenger wire that supports cable hangers and current wires, nor a messenger wire that acts as the claimed grounding conductor

Paper 30 (POR), 49-59; Paper 55 (Sur-Reply), 13-14

Petersen Does Not Disclose Any Grounding System or the Claimed “Multi-function Line”



(EX1004, FIGS. 1
& 4 (annotated))

Paper 30 (POR), 49-59; Paper 55 (Sur-Reply), 13

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

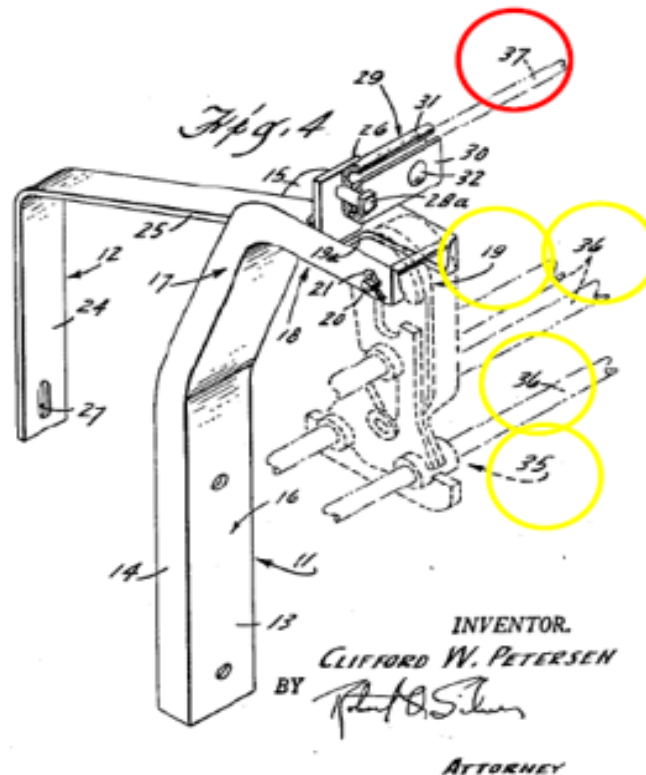
Petersen Does Not Disclose a Grounding System

- AWM relies on *Petersen*'s disclosure of a “ground clamp means” and what it “***implies***”
- *Petersen* discloses only that the ground clamp means is used to “confine and keep a ***neutral messenger cable 37*** in tight supported engagement therewith.” (EX1004, 2:36-40)
- *Petersen* says ***nothing to support*** Dr. Beik's assertion that the ground clamp means keeps the neutral messenger wire ***in a grounded electrical communication*** (EX1002, ¶57; EX2064, ¶247)

Paper 30 (POR), 49-50; Paper 55 (Sur-Reply), 13

Petersen Does Not Disclose the Claimed “Multi-Function Line”

- As the Board has acknowledged, *Petersen’s* neutral messenger cable **does not support cable hangers/current wires** (Paper 21 (Inst. Dec.), 16; EX2064, ¶226)



(EX1004, FIG. 4 (annotated))

Paper 30 (POR), 50-52

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petersen Does Not Disclose A Multi-Function Line That Serves as a Grounding Conductor

- *Petersen's* neutral messenger cable 37 does not serve as a grounding conductor (EX2064, ¶¶235-245)
- *Petersen's* neutral messenger is a “**neutral conductor**,” which is “**intended to carry current under normal conditions**.” (EX2064, ¶237)
- *Petersen's* neutral messenger cable is not a grounding conductor only intended to carry a current in the event of a fault (EX2064, ¶236)
- As Dr. Phinney explained, a neutral messenger cannot simultaneously be a grounding conductor (EX2064, ¶¶242-243)

Paper 30 (POR), 54-56

Petersen Does Not Disclose a Multi-Function Line That Serves as a Grounding Conductor

- The Petition relied on *Petersen*'s metallic neutral messenger cable connected to a metallic coupling that is fixed to a metallic mounting assembly to disclose the claimed grounding conductor (*Paper 1 (Pet.)*, 75; *EX1002*, ¶172)
- More is required to disclose the claimed grounding conductor than metal-to-metal components connected together

Paper 30 (POR), 49-59

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Secondary Considerations

Objective Indicia of Nonobviousness

- “The objective indicia analysis is, therefore, a ***fundamental part of the overall § 103 obviousness inquiry***” and ***must be considered***
- It is well-established that objective evidence are “essential safeguards that ***protect against hindsight bias***”
- Objective evidence “may often be the ***most probative and cogent evidence of nonobviousness.***”

(Liqwd, Inc. v. L’Oreal USA, Inc., 941 F.3d 1133, 1136-37 (Fed. Cir. 2019))

Objective Indicia of Nonobviousness

- Dr. Beik:
 - “Even if evidence of secondary considerations existed, in my opinion, it would be insufficient to overcome the clear obviousness of the challenged claims” (*EX1002*, ¶234)
 - Could not recall whether he even attempted to identify objective indicia (*EX2004*, 154:5-156:17)
- No amount of evidence of secondary considerations would change Dr. Beik’s opinion that the challenged claims are obvious (*EX2004*, 156:18-157:16)

CAB is Entitled to a Presumption of Nexus

- Presumption of nexus appropriate because CAB's Integrated Grounding System embodies the claimed features of the '551 Patent and is **coextensive** with it
 - *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019)



(EX2041, 2)

Integrated Grounding System

Paper 30 (POR), 63-64; *Paper 55 (Sur-Reply)*, 15-18

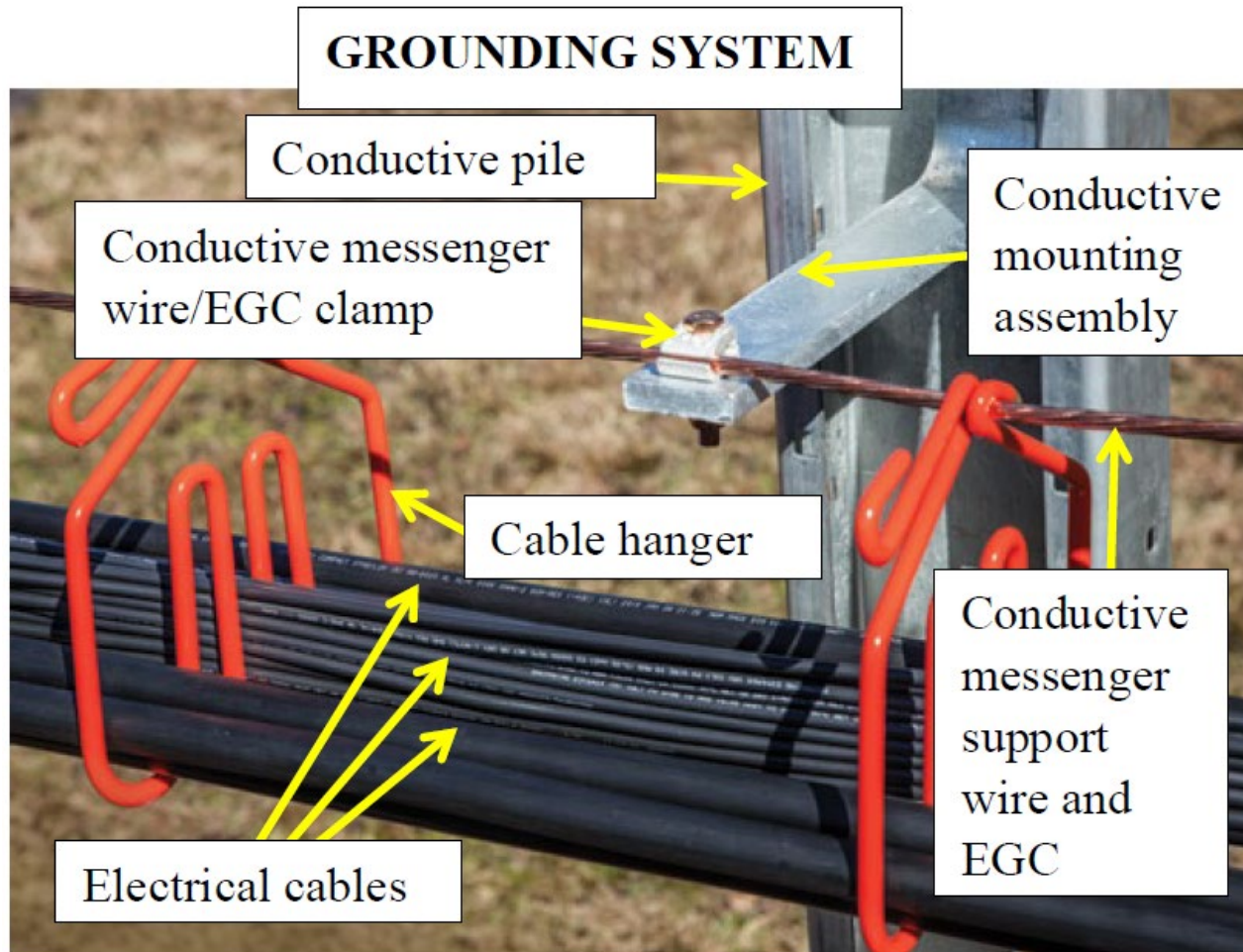
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

CAB is Entitled to a Presumption of Nexus

- CAB has presented ample evidence identifying exemplary parts that comprise the Integrated Grounding System (*EX2064*, ¶¶304-305, 307-308, A3, A5; *EX2058*, ¶¶2-8; *EX2046*; *EX2056*)
- Dr. Phinney:
 - Established that CAB’s Integrated Grounding System embodies the claimed features and is coextensive with them (*EX2064*, ¶¶295-309, *App. A*)
 - Specifically identified and described the Integrated Grounding System’s custom-manufactured copper-clad messenger wire that serves as an EGC in addition to supporting cable hangers and electrical cables
 - Identified exemplary mid-pier kits that are rated for grounding and bonding, end-pier kits, and cable hangers of various configurations for supporting and separating various electrical cables within a PV array (*EX2064*, ¶¶295-309, *App. A*)
 - Analyzed CAB’s Integrated Grounding System as shown in CAB’s installation guide (*EX2064*, ¶299; *EX2041*)

Paper 30 (POR), 63-64; Paper 55 (Sur-Reply), 15-18

CAB is Entitled to a Presumption of Nexus



(EX2064, 129, A1)

Paper 30 (POR), 63-64; Paper 55 (Sur-Reply), 15

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

CAB is Entitled to a Presumption of Nexus

- Only necessary for Dr. Phinney to have confirmed that CAB's Integrated Grounding System is comprised of the claimed messenger wire that both supports cable hangers/cables and acts as an EGC, in addition to the claimed conductive mounting assemblies (*EX2064*, ¶¶304-308)
- Dr. Phinney sufficiently identifies exemplary components of the Integrated Grounding System as shown in CAB's installation guide (*EX2041*)
- Not necessary to identify every other alternative component that could be used in CAB's Integrated Grounding System
- Not necessary to prepare claim charts for each one of hundreds of combinations of dozens of components

Paper 55 (Sur-Reply), 15-17

CAB is Entitled to a Presumption of Nexus

- Integrated Grounding System's cable hangers and end-pier kits are not unclaimed **critical** features
 - Not **critical** to the functionality of the Integrated Grounding System
- AWM is wrong that conductive piles are a claim limitation
- AWM is also wrong that claim 1 requires grounding splices in light of claim 9

Benefits and Advantages of Integrated Grounding System

- Since 2014, prior art grounding systems required separate grounding conductors disposed adjacent to the messenger wire and separate splices from the grounding conductor to each metal pile to provide an effective ground fault current path (*EX1001*, 1:36-2:17; *EX2061*, ¶¶31-32, 65, 67; *EX2033*, ¶¶37-38, 50-53; *EX2028*, ¶¶50-51; *EX2059*, ¶58; *EX2064*, ¶310)
 - “difficult, time consuming, and expensive” (*EX1001*, 2:12-16; *EX2064*, ¶310; *EX2028*, ¶¶51-52)
- Integrated Grounding System eliminates need for separate grounding conductor or grounding jumpers
 - Reduces material and labor costs, and additional costs of purchasing, shipping, staging, and handling (*EX2028*, ¶53; *EX2033*, ¶53; *EX2059*, ¶¶59, 61; *EX2061*, ¶¶67-68)
- Addressed safety concerns with solar arrays by providing adequate grounding to reduce risks associated with potentially dangerous fault (*EX2059*, ¶60)

Paper 30 (POR), 70-71; *Paper 55 (Sur-Reply)*, 27

Industry Praise

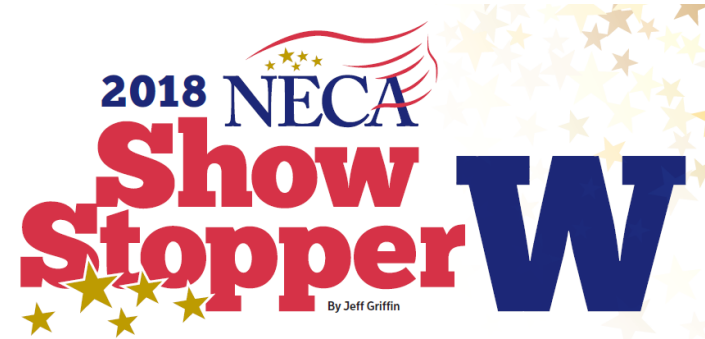
- “CAB’s integrated grounding system became the ***new industry standard*** for solar power plants using an above-ground messenger wire supported cable hanger system.”
 - Mitchel Bowman (*EX2028*, ¶55)
- “The CAB integrated grounding system is ***particularly impressive*** given it addresses the specific needs for adequate grounding of electricity within a solar array, with an ***emphasis on addressing safety concerns***”
 - Joseph William Novak (*EX2059*, ¶60)
- Mr. Bowman and Mr. Novak confirmed that CAB’s Integrated Grounding System provides ***significant cost savings*** (*EX2059*, ¶¶56-61; *EX2028*, ¶53)

Paper 30 (POR), 67-68; Paper 55 (Sur-Reply), 25-26

Industry Praise



(EX2021)



system installations. Its copper-composite messenger wire both suspends hangers for cable management and acts as the equipment grounding conductor and grounding electrode conductor, providing cost and time savings compared to trenching and cable trays, including CAB's current standard cable-management systems.

(EX2022)

CAB (CAMBRIA COUNTY ASSOCIATION FOR THE BLIND) The CAB Solar integrated grounding system is designed for cable management in large-scale solar power

Paper 30 (POR), 66-67; Paper 55 (Sur-Reply), 25-26

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

2019 Top Solar Component Products



What follows are the Top Solar Components for 2019. When something isn't quite a mounting system or quite a software platform, you'll find it here. Take a look at this year's innovative products (listed alphabetically by company) within the solar component category.

See the full list of the 2019 Top Solar Products [here](#).

- Solar Power World 2019 (EX2023)



CAB Solar Solar Cable Management System

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.

Paper 30 (POR), 66-67; Paper 55 (Sur-Reply), 25-26

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

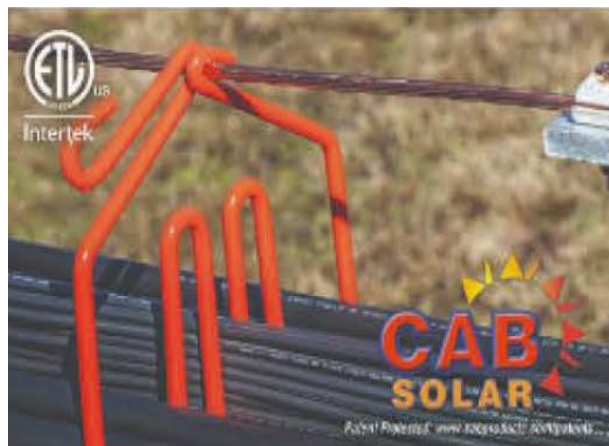
Industry Praise

- Solar Power World 2021 (EX2024)

2021 Top Solar Components and Equipment

What follows are the Top Solar Components and Equipment for 2021. When something isn't quite a mounting system or quite a software platform, you'll find it here. Take a look at this year's innovative products (listed alphabetically by company) within the solar component and equipment category.

See the full list of the 2021 Top Solar Products [here](#).



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.

Paper 30 (POR), 66-67; Paper 55 (Sur-Reply), 25-26

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

industry & suppliers

BOS: Cabling systems key for quality

The category for balance of system (BOS) catches those system-level innovations that support the core components of modules and inverters, and brings cost reductions, boosts to energy yield, and solutions to many PV array challenges. Key trends among this year's entries include artificial intelligence and innovations to enable floating PV and building integrated PV. And the 2021 winner shows that simple and practical solutions can be every bit as valuable as the highest of high technology.

Entries in the BOS category came from a wide range of market segments, reflecting the growing diversity of PV applications, and growing interest in tackling the challenges that remain in developing practical PV applications beyond the usual rooftop and ground mounted installations.

Winner

CAB Solar: Integrated grounding messenger wire cable management system
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.

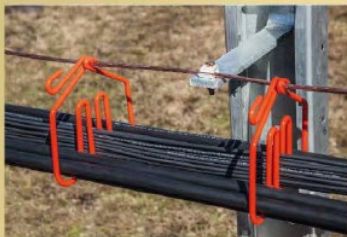
CAB first introduced the cable management system in 2014 and has now added the grounding function by using a copper composite messenger wire. The company says its solution is already widely accepted in the large-scale project space and has saved millions of gigawatts of projects worldwide. The system provides instant savings throughout a PV system, simplifying the processes of installation, commissioning and maintenance. At a project's end of life, the CAB solution can assist with decommissioning by offering a simple solution that keeps cables easily accessible to technicians.

At its manufacturing base in Pennsylvania, United States, the system is produced by people with blindness and other disabilities, aiming to foster independence for disabled people in the community while also producing a range of high-quality products for the solar industry and others. The management system impressed the jury with its simplicity and ease of deployment, and high potential for labor saving impacts in the large-scale solar segment.



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Jury comments:
Lida Jauregui-Rivera: For large-scale utility projects I see tangible results and gains with this product, during both construction and operation. There are some questions with grass cutting etc, but these are likely manageable.
Camila Ramos: Solutions like this are valuable in both installation and operations. And the way it is manufactured is a real bonus.



struction and operation. There are some questions with grass cutting etc, but these are likely manageable.
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The Jury

Nicolas Chouleur:
Nicolas Chouleur is a partner at Evorec, a technical and commercial energy consultancy specializing in renewables, energy storage and flexibility. He has been working on designing, engineering and operating all kinds of PV systems throughout the world since 2006, from residential arrays through to large, utility-scale power plants.



Lida Jauregui-Rivera
Lida Jauregui-Rivera is the director of engineering at RES Americas, where she leads the design and plant performance functions for all projects across the development, pre-construction, and construction stages. She has 15 years of energy industry experience.



Camila Ramos
Camila Ramos has 13 years of experience in the Latin American renewable energy sector. She is the founder and managing director of CELA, which supports clients in developing investment projects, including policy and legal framework analysis.



“Winner

CAB Solar: Integrated grounding messenger wire cable management system

This solution from US non-profit Cambria County Association for the Blind and Handicapped (CAB Products) **combines cable management and system grounding . . .**

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(EX2025, 60, 61)

Industry Praise



(EX2026)

CAB, EX2026
Case No. IPR2024-00139
1 of 1



(EX2027)

Commercial Success

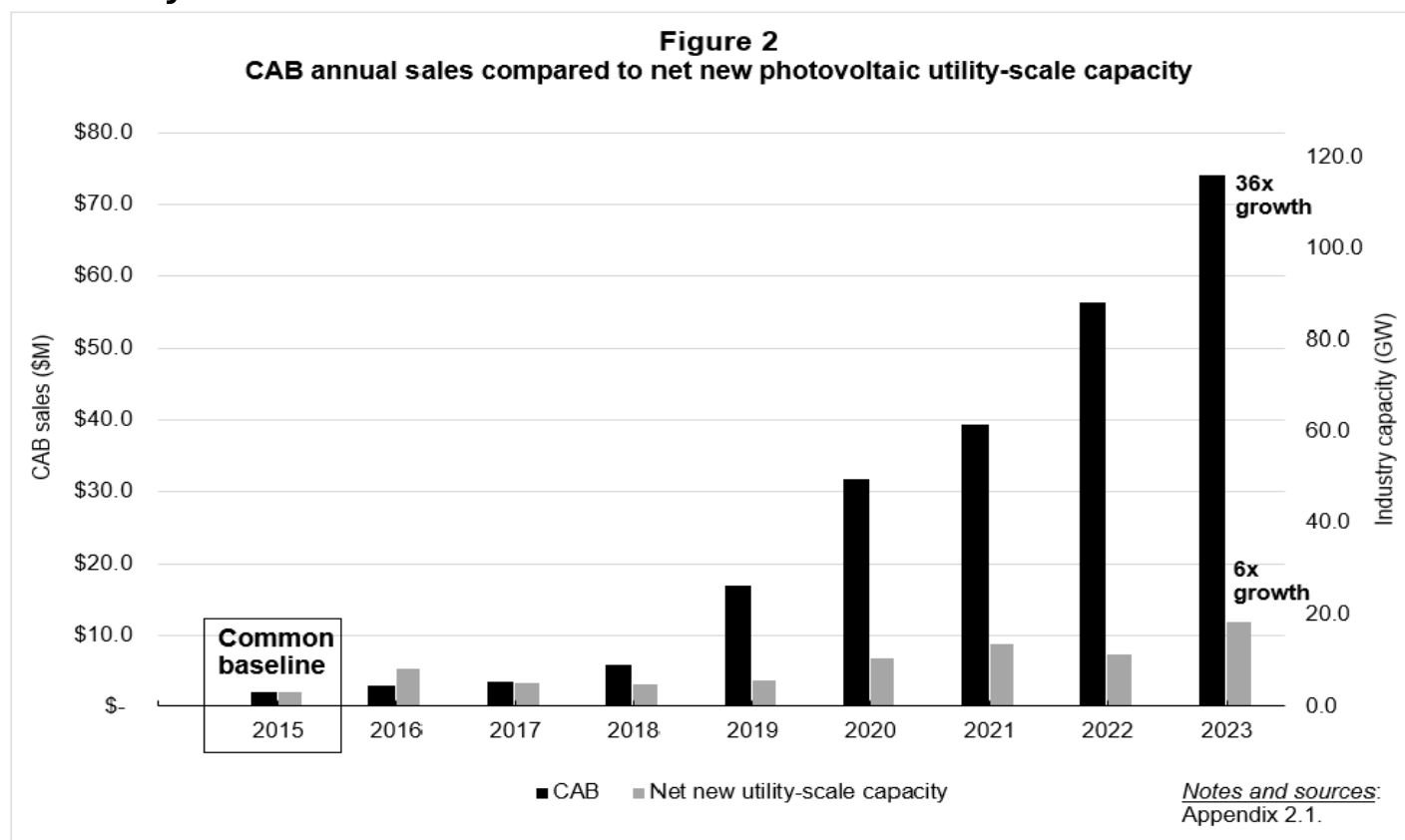
- Commercial success is typically shown with evidence of **“significant sales in a relevant market”**
 - *Chemours Co. FC, LLC v. Daikin Indus., Ltd.*, 4 F.4th 1370, 1378 (Fed. Cir. 2021)
- CAB’s extensive sales of its Integrated Grounding System in the solar industry, alone, indicate commercial success
- CAB’s **excess sales of its Integrated Grounding System over Net New PV Capacity** are even more so evidence of commercial success

Paper 30 (POR), 65-66; Paper 55 (Sur-Reply), 18-19

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Commercial Success

- From 2018 through 2023, CAB's sales and ***excess sales increased exponentially*** with the addition of its Integrated Grounding System to its Standard System

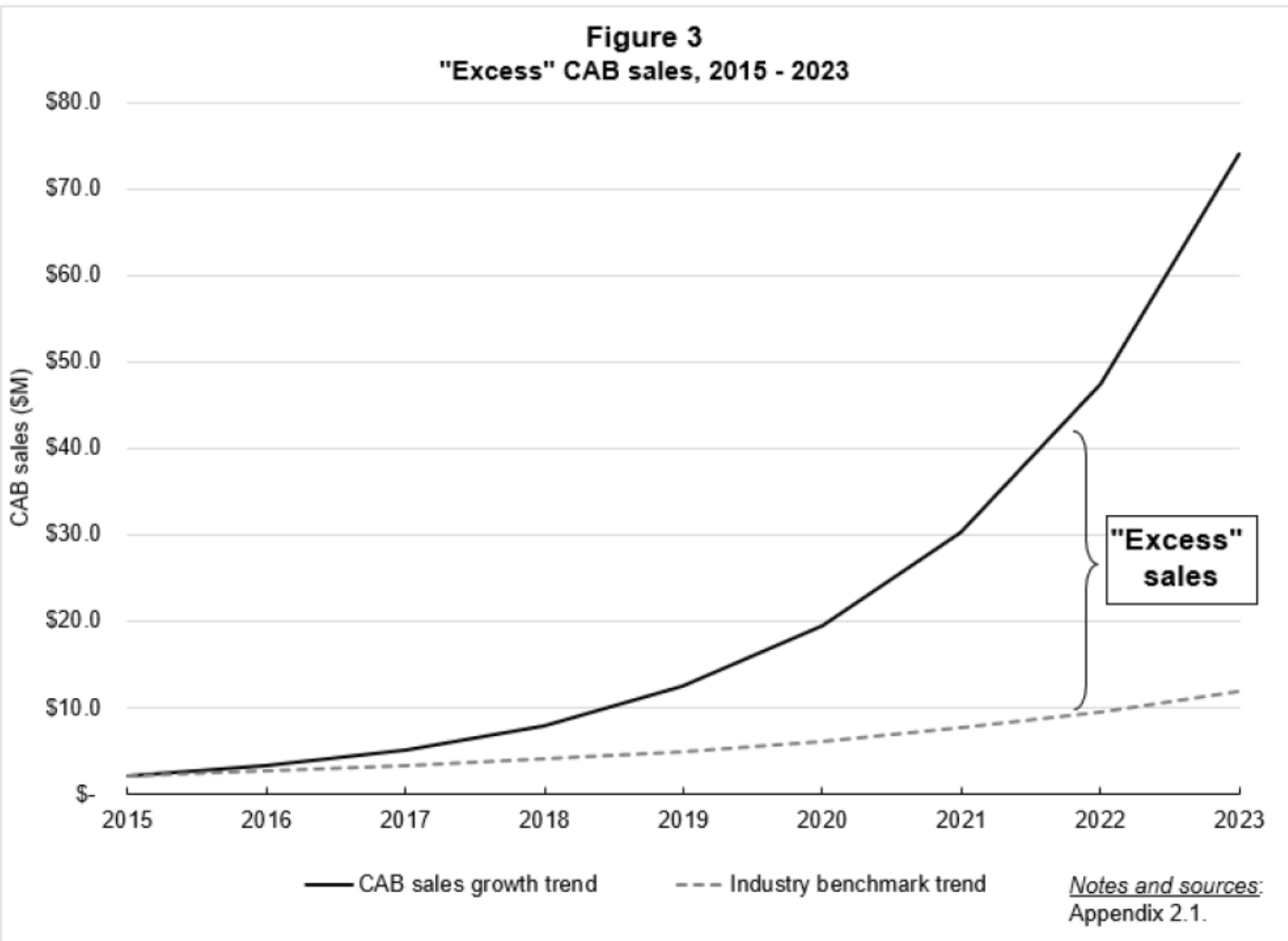


(EX2044, ¶48)

Paper 30 (POR), 65-66; Paper 55 (Sur-Reply), 18-19

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Commercial Success



Paper 30 (POR), 65-66; Paper 55 (Sur-Reply), 18-22, 23-25

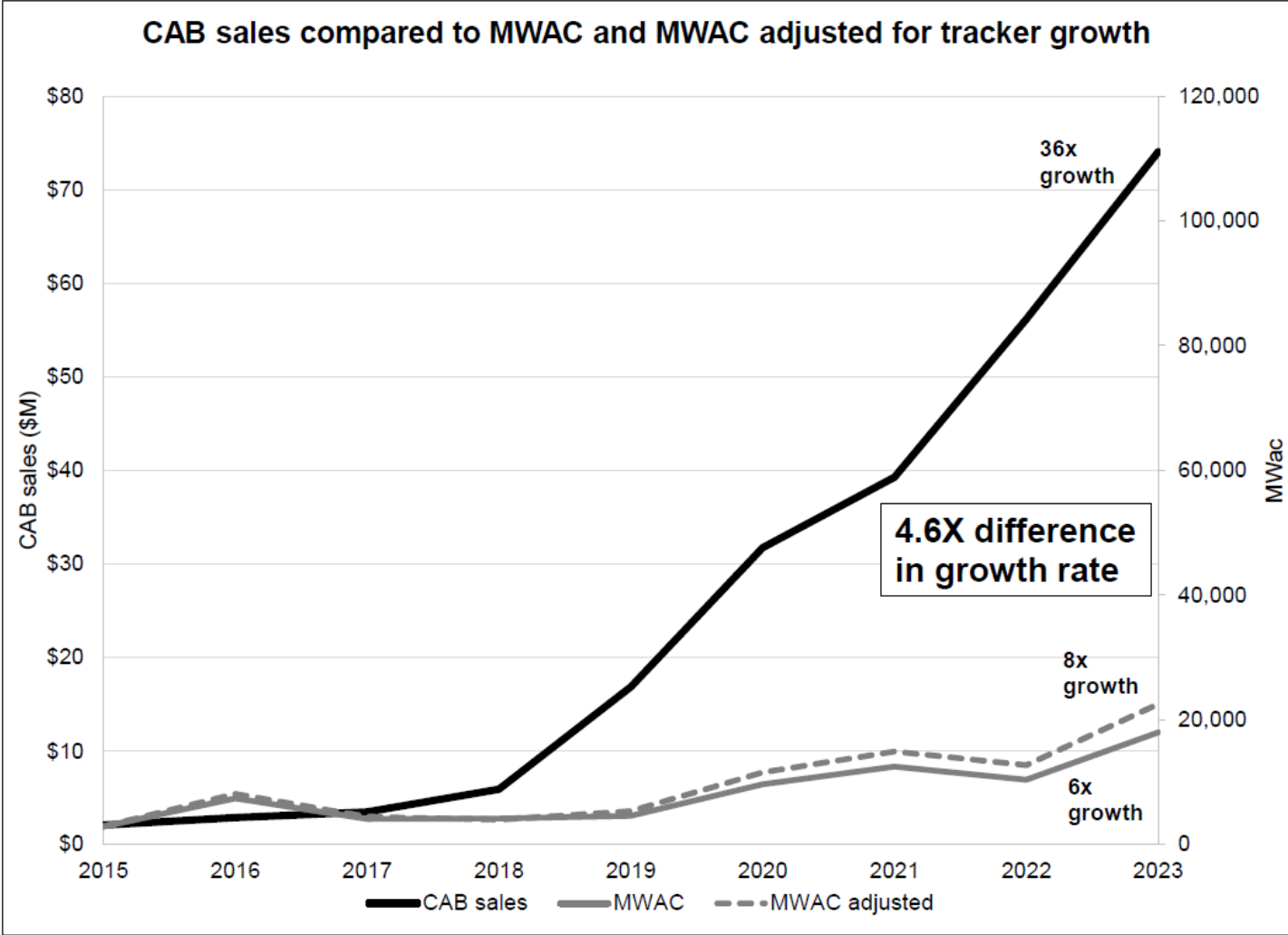
(EX2044, ¶150)

- AWM's criticism of Net New PV Capacity industry benchmark is nothing but speculation about what else ***might*** have driven CAB's sales

Commercial Success

- Increased use of trackers
 - Ms. Doan conceded that she had no understanding of how much increased use of trackers over fixed-tilt would have increased cable management (*EX2071, 50:6-21*)
 - From 2019 to 2023, percentage of new capacity generated by trackers remained relatively steady compared to CAB's sales (*EX1061, Exhibits 5.1 & 5.2*)

Commercial Success – Increased Use of Trackers



Paper 55 (Sur-Reply), 19-20

(EX1061, 112, Exhibit 5.2; EX2071, 72:22-73:11)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Commercial Success

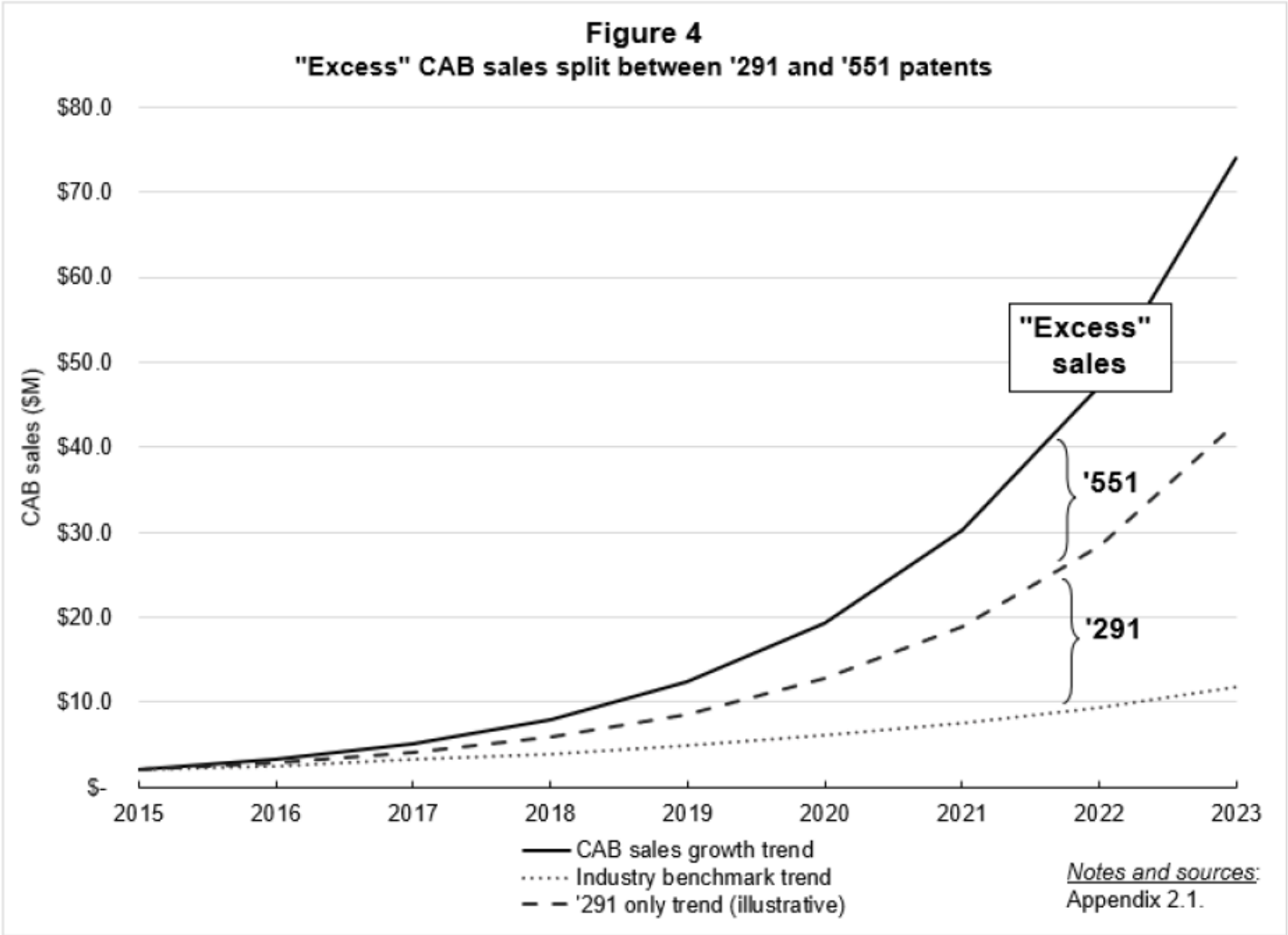
- Inclusion of foreign sales
 - Ms. Doan identified a single year that CAB's revenues that were part of Dr. Putnam's analysis included foreign sales (*EX1061*, ¶54)
 - Negligible impact on Dr. Putnam's overall analysis of excess sales above the industry benchmark for that year that showed -2.2% growth (*EX2044*, App. 2.1; *EX1061*, Ex. 5.2, 112)

- Profitability
 - Not required to show commercial success
 - But Dr. Putnam concluded under all the circumstances that CAB **is** profitable (*EX1067, 121:13-125:1*)
 - Not necessary for Dr. Putnam to have analyzed detailed financial statements for specific metrics

Commercial Success

- Failure to apportion
 - Standard System and Integrated Grounding System are economic complements (*EX2044*, ¶¶58-61; *EX1067*, 186:19-188:1)
 - Commercial success does not require statistical precision
 - Evidence and analysis to show commercial success not the same as what is necessary for apportionment of damages

Commercial Success



Paper 30 (POR), 65-66; Paper 55 (Sur-Reply), 23-25

(EX2044, ¶64)