

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SIMPSON STRONG-TIE COMPANY INC.  
Petitioner

v.

COLUMBIA INSURANCE COMPANY  
Patent Owner

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Case PGR2019-00063  
Patent No. 10,316,510

**PATENT OWNER'S RESPONSE  
TO THE PETITION FOR POST GRANT REVIEW**

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### **EXHIBIT LIST**

| <b>Exhibit No.</b> | <b>Description</b>                      |
|--------------------|-----------------------------------------|
| 2001               | Declaration of Dr. Reynaud Serrette     |
| 2002               | Curriculum Vitae of Dr. Serrette        |
| 2003               | U.S. Patent No. 537,504                 |
| 2004               | U.S. Patent Appl. Pub. No. 2002/0078656 |
| 2005               | U.S. Patent No. 6,877,291               |
| 2006               | U.S. Patent No. 6,230,466               |
| 2007               | U.S. Patent No. 5,603,580               |
| 2008               | U.S. Patent No. 5,555,694               |
| 2009               | U.S. Patent No. 5,341,619               |
| 2010               | U.S. Patent No. 5,104,252               |
| 2011               | U.S. Patent No. 4,560,301               |
| 2012               | U.S. Patent No. 4,423,977               |
| 2013               | U.S. Patent No. 4,353,664               |
| 2014               | U.S. Patent No. 4,230,416               |
| 2015               | 1994 Timber Construction Manual         |
| 2016               | 2012 International Building Code        |
| 2017               | 2000 International Building Code        |
| 2018               | MiTek FWH Spec. Sheet                   |

| <b>Exhibit No.</b> | <b>Description</b>                                                                                                                          |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 2019               | DU/DHU/DHUTF Drywall Hangers                                                                                                                |
| 2020               | Declaration of Sam Hensen in Support of Opposition to Motion for Preliminary Injunction                                                     |
| 2021               | ICC-ES Evaluation Report ESR-2552                                                                                                           |
| 2022               | New Oxford American Dictionary, 2nd Edition                                                                                                 |
| 2023               | Gypsum Panel Product Types, Uses, Sizes and Standards                                                                                       |
| 2024               | PABCO Gypsum Product Brochure                                                                                                               |
| 2025               | Fire Ratings of Masonry Walls                                                                                                               |
| 2026               | Fire and Concrete Structures                                                                                                                |
| 2027               | Fire Protection and Safety with Concrete                                                                                                    |
| 2028               | Basement Finish/Remodel Code                                                                                                                |
| 2029               | Sample Guide for Finish Basement Requirements in Existing One and Two Family Dwellings                                                      |
| 2030               | Understanding Basements                                                                                                                     |
| 2031               | Moisture Control in Buildings: The Key Factor in Mold Prevention 2 <sup>nd</sup> Edition                                                    |
| 2032               | Wood-Frame House Construction                                                                                                               |
| 2033               | CEL Consulting's Report on the Testing of Joist Hangers per AC13 "Acceptance Criteria for Joist Hangers and Similar Devices" CELC #50-53880 |
| 2034-2041          | Expunged/Withdrawn                                                                                                                          |
| 2042               | Supplemental Declaration of Dr. Reynaud Serrette                                                                                            |

| <b>Exhibit No.</b> | <b>Description</b>                                                                  |
|--------------------|-------------------------------------------------------------------------------------|
| 2043               | Transcript of the May 14, 2020 Deposition of Mr. Fennell                            |
| 2044               | Third Supplemental Declaration of Dr. Reynaud Serrette                              |
| 2045               | Sections 420 and 780 of the 2012 International Building Code                        |
| 2046               | Structural Design for Fire Safety (excerpts)                                        |
| 2047               | ASTM E119                                                                           |
| 2048               | Calculating the Fire Resistance of Exposed Wood Members, Technical Report 10 (2001) |
| 2049               | New Oxford American Dictionary, 2nd Edition                                         |
| 2050               | What You Should Know About the New DGH Fire Wall Hanger Options (2018)              |
| 2051               | Simpson's Opposition to Motion for Preliminary Injunction                           |
| 2052               | Prosecution History of the '409 Application                                         |
| 2053               | Prosecution History of the '531 Provisional                                         |

## **I. INTRODUCTION**

The Petition presents 10 grounds challenging the '510 patent. Grounds 1-3 are based on 35 U.S.C. § 112 written description and indefiniteness arguments,<sup>1</sup> while Grounds 4-10 assert 35 U.S.C. § 103 obviousness arguments.

The Institution Decision found that all but one of Petitioner Simpson Strong-Tie Company Inc.'s ("Simpson") grounds were unconvincing. Ground 6—asserting obviousness of the claims of the '510 patent over Gilb '155 in light of Bundy and Allan—was the only ground upon which this Board determined that Simpson was more likely than not to invalidate any of the claims of the '510 patent.

As first addressed here, Simpson has failed to adequately demonstrate that the combination of references disclose certain claim elements that were required in each of the independent claims. Additionally, as addressed in the Preliminary Response and further explained here, a PHOSITA would not have been motivated to combine the teachings of Gilb '155, Bundy, and Allan.

Simpson's other obviousness grounds (Grounds 4-5 and 7-10) and written description/indefiniteness based grounds (Grounds 1-3) remain unconvincing.

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<sup>1</sup> Ground 3 asserts that certain claims of the '510 patent are not entitled to claim priority to, and thus are anticipate by, an application in the '510's priority family.

Accordingly, Simpson has failed to satisfy its burden of demonstrating that any of the claims of the '510 patent are invalid.

## **II. TECHNICAL BACKGROUND**

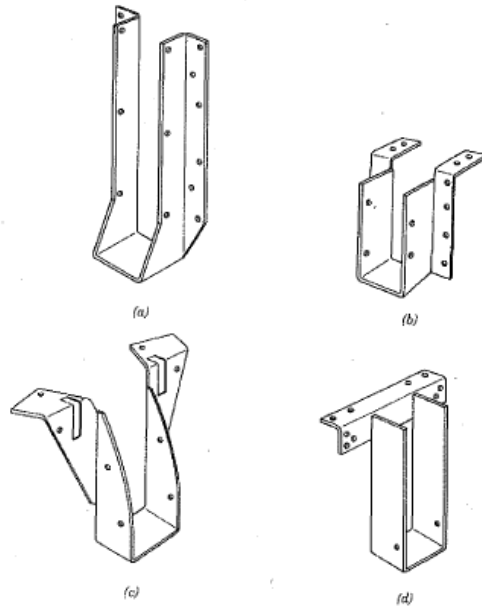
### **A. Conventional Hangers**

The '510 patent pertains to hangers that are used for connecting structural components (e.g., trusses, joists, or beams)<sup>2</sup> to wall framing, and more specifically to firewall hangers that connect such structural components to fire-separation walls. Ex. 2001 at ¶15; Ex. 1001 at Abstract.

Although there have been numerous advancements and modifications, the construction industry has used hangers for connecting joists to wall structures for over a century. Ex. 2001 at ¶¶16-20. The prior art hanger designs routinely comprised a channel supporting the structural component (i.e. the joist) and a part attaching the hanger to a wall. *Id.* at ¶19. Conventional designs frequently had a configuration similar to the devices shown below. *Id.*; Ex. 2015 at 7-564.

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<sup>2</sup> For simplicity, trusses, joists, and beams are collectively referred to as "joists" throughout this Patent Owner's Response.



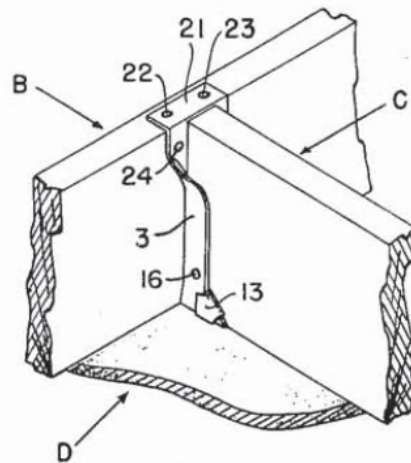
## B. Firewalls

As compared to the walls of single-family homes, multi-family structures require special types of walls between the units (e.g., apartment or condominium units) to retard fires from spreading from one unit to others. Ex. 2001 at ¶21; Ex. 2044 at ¶6; Ex. 2045 at 4-5. For instance, section 706.4 of the 2012 International Building Code ("IBC") specifies that the walls separating units of Residential Group R-1 (hotels and motels) and Residential Group R-2 (apartment houses) structures must meet a two-hour fire rating. Ex. 2001 at ¶21; Ex. 2016 at 17. Building codes have required a two-hour fire resistance rating between separate units within these types of structures since at least 2000. Ex. 2001 at ¶¶22-23; Ex. 2017 at 16.

Dating back to at least 2000, a typical method of achieving a two-hour fire rating for wood stud light framed walls has been to use a double layer of 5/8 inch

thick Type-X Gypsum wallboard<sup>3</sup> on both sides of the wood framed wall. Ex. 2001 at ¶24; Ex. 2017 at 44-45; Ex. 2043 at 27:20-28:6. Other methods of achieving and/or exceeding a two-hour fire rating include the use of walls constructed from non-combustible materials, such as concrete or masonry. Ex. 2001 at ¶25; Ex. 1018; Ex. 2017 at 41.

In using a traditional hanger for connecting a joist to wall framing or a supporting member, the joist butts directly up against the wall framing or a supporting member. Ex. 2001 at ¶28. An illustration of an exemplary installation of a floor joist using a traditional hanger is shown below. *Id.*; Ex. 1024 at Fig. 7.



For standard walls that do not require a fire rating of at least two-hours, a single layer of drywall is typically installed on the wall framing from the floor up to

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<sup>3</sup> Wallboard is also commonly referred to as gypsum board or drywall. Ex. 2001 at ¶24.

the bottom of the joists above the space being finished. Ex. 2001 at ¶26. A ceiling is typically installed either on or below the joists to finish the space. *Id.* It is, therefore, common for there to be no drywall installed on the portion of the stud framing where the joists, and consequently the wall hangers supporting them, intersect the stud framing. Ex. 2044 at ¶8; Ex. 2043 at 107:17-109:7.

In contrast, Section 706.6 of the IBC specifies that the fire resistant partitions separating units of multi-family structures must have vertical continuity extending from the foundation to the roof of the structure. Ex. 2001 at ¶27; Ex. 2016 at 18-19; Ex. 2017 at 18. Accordingly, for fire-separation walls, the double layer of 5/8 inch thick Type-X Gypsum wallboard is installed as a fire barrier on a wood framed wall from the floor to either the next level's subfloor or, for the top level of a structure, to the structure's roof. Ex. 2001 at ¶27; Ex. 2016 at 18-19; Ex. 2017 at 44.

Because the joists butt up directly against the wall framing when traditional hangers are used with a fire-separation wall, cutouts are required in the fire barrier for the entire cross sections of the joists. Ex. 2001 at ¶29. These cutouts for the joists create large discontinuities in the fire barrier, thus decreasing the wall's resistance to fire. *Id.*

Because a fire barrier is only as good as its weakest link, the continuity of fire resistant sheathing—such as Type-X Gypsum—is critical to maintaining a wall's fire rating. Ex. 2044 at ¶9; Ex. 2046 at 361. Accordingly, penetrations through a fire

barrier can greatly compromise the fire barrier's ability to contain a fire. Ex. 2044 at ¶11; Ex. 2046 at 22-23, 122. Since at least 2000, a PHOSITA would have been strongly biased against cutting holes larger than absolutely necessary in the fire resistant sheathing to accommodate a hanger. Ex. 2001 at ¶30. Still, there were no known solutions that avoided cutting out the entire cross sections of the joists from the fire resistant sheathing prior to December 2013. *Id.*

### **III. THE INVENTION CLAIMED IN THE '510 PATENT**

The '510 patent pertains to an improvement in hangers for connecting joists to firewalls, whereby the joist hanger includes: a channel-shaped portion configured to receive the structural component (item 52 in Figs. 2 and 4, below), a connection portion configured for attachment to the top surface of the plate of a wall (collectively, items 66 and 74), and an extension portion interconnecting the channel-shaped portion and the connection portion (item 60). *Id.* at ¶¶31-32; Ex. 1001 at Abstract.

FIG. 2

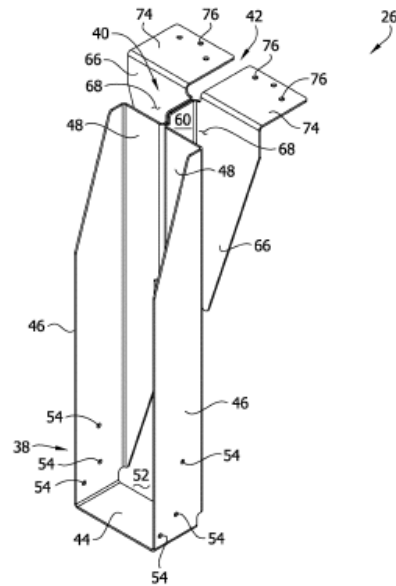
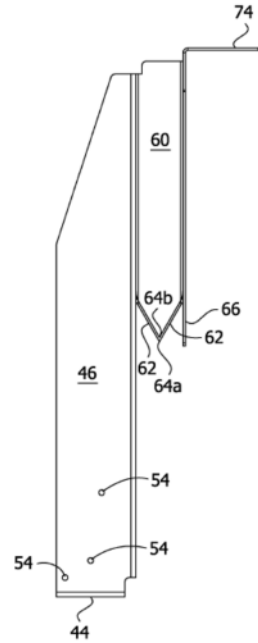


FIG. 4



The extension portion spaces the channel-shaped portion and the back flange of the connection portion apart by a distance sized large enough to permit sheathing to be received between the channel-shaped portion and the back flange. Ex. 1001 at 1:1-67, 4:15-19; Ex. 2001 at ¶33. Specifically, claim 1 requires that "the extension portion spac[e] the side panels from the back flange plane by a distance sized large enough to permit two layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane, but too small to permit three layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane." Claim 13 is similar to claim 1, but instead specifies that the two layers of 5/8 inch thick sheathing are "received in a space bounded by the side panels and the back flange." Claim 20 requires that "the extension portions spac[e] the channel-

shaped portion from the back flange plane by a distance sized large enough to permit the drywall to be received between the channel-shaped portion and the back flange plane." Collectively, these requirements in claims 1, 13, and 20 will be referred to as the "Spacing Requirements."

Because the extension portion spaces the joist a sufficient distance from the wall framing, the fire barrier does not require a cutout corresponding to the entire cross section of the joist. Ex. 1001 at 5:27-31; Ex. 2001 at ¶35. Instead, the extension portion is configured to extend through the sheathing in close conformance with the edges of the opening in the sheathing so as to minimize the gap in the fire barrier. Ex. 1001 at 1:36-38, 4:26-28, 5:27-31, 9:29-33, 11:28-31. The close conformance also renders it unnecessary to apply fire resistant caulking between the hanger and the fire barrier. Ex. 2044 at ¶17. This provides enormous savings in time and material in construction projects like multi-family dwellings requiring two-hour fire ratings, where hundreds or more hangers are used. *Id.*

Accordingly, the firewall hangers as claimed by the '510 patent can achieve significantly improved fire ratings over traditional hangers. Ex. 1001 at 11:51-56; Ex. 2001 at ¶36.

The connection portion includes a top flange configured to attach to a top surface of a top plate of a wall and a back flange extending downward from an edge of the top flange. Ex. 1001 at claims 1, 13, 20; Ex. 2001 at ¶37. As described in the

specification of the '510 patent, the back flanges of the hanger cooperate with the extension portion that passes through the sheathing to stabilize the hanger. Ex. 1001 at 6:53-7:9; Ex. 2001 at ¶38. This construction remarkably resists the moment tending to urge the bottom of the channel-shaped portion to pivot that results from supporting the joist at a distance from the wall. Ex. 1001 at 6:66-7:9 (describing that the pivoting motion of the hanger is resisted by the engagement of the back flange with the interior vertical face of the top plate); Ex. 2001 at ¶¶39-40.

Far higher loads can be carried by the claimed hanger without damaging the sheathing or wall. *Id.* ¶40. For instance, the commercial embodiment of the hanger of the '510 patent is rated for loads up to 2,400 lbs. Ex. 2018 at 2; Ex. 2001 at ¶41. In comparison, Simpson's DHUTF hanger<sup>4</sup>—which lacks an extension portion configured to extend through the sheathing—is only rated for loads up to 1,410 lbs. Ex. 2019 at 5; Ex. 2001 at ¶41. Due to the significantly improved load capacity, the hanger claimed in the '510 patent provides a far superior solution for wood framed, multi-story buildings. *Id.* at ¶42.

Further, because the claimed hanger itself defines a fixed space for receiving sheathing between the channel-shaped portion and the back flange, the hanger may

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<sup>4</sup> Simpson's DHUTF hanger is the commercial embodiment of the Bundy prior art reference.

be installed prior to mounting sheathing on the wall. Ex. 1001 at 7:57-59; Ex. 2001 at ¶43. This allows the building to be completely framed and roofed prior to the installation of the sheathing, as opposed to waiting until after the sheathing is installed to mount the hanger and continue framing the building. Ex. 1001 at 7:59-61; Ex. 2020 at ¶11; Ex. 2001 at ¶43.

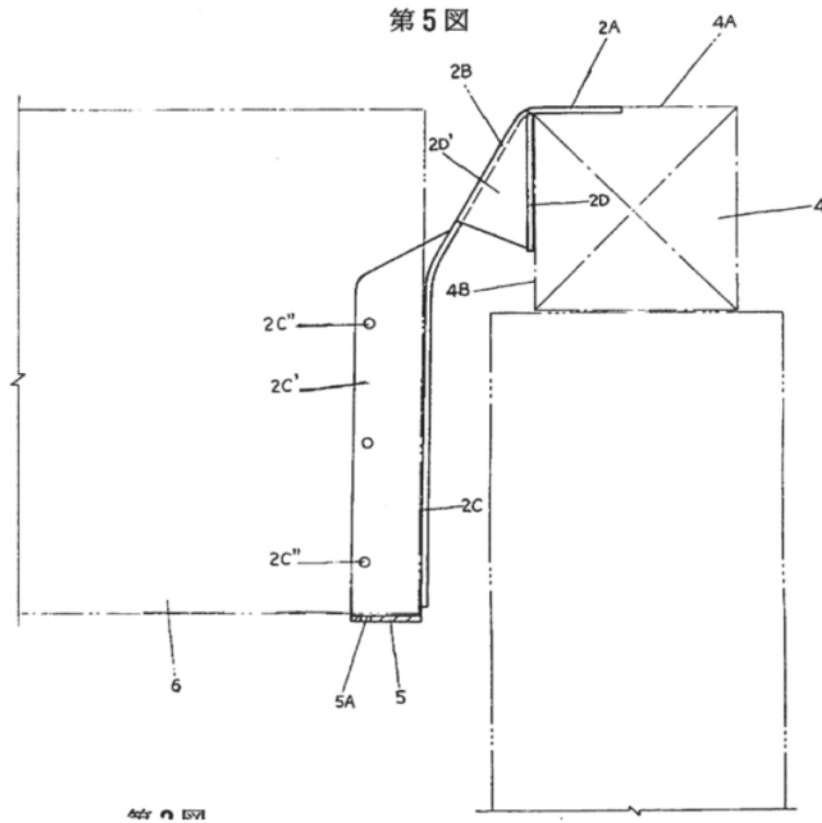
#### **IV. SIMPSON'S ASSERTED PRIOR ART REFERENCES**

##### **A. Japanese Patent No. 1991014482 ("Tsukamoto")**

Tsukamoto discloses a hanger for attaching joists to foundations. Ex. 1009 at 2, 3, Fig. 5; Ex. 2001 at ¶44. Specifically, Tsukamoto attempts to solve specific problems presented when using conventional joist hangers on foundation walls. Ex. 1009 at 2; Ex. 2001 at ¶¶45-46; Ex. 2043 at 75:9-13, 76:3-7. These problems included that foundation walls have inconsistent thicknesses and joists tend to rot due to direct contact with the foundation. Ex. 1009 at 2; Ex. 2001 at ¶46.

As shown in Figure 5 below, Tsukamoto developed a hanger configured to attach to a base member (4) while holding the joist (6) at a distance away from the base member so as to accommodate foundation walls of different thicknesses. Ex. 1009 at 2, 5, Fig. 5; Ex. 2001 at ¶47.

FIG. 5



Tsukamoto does not make any reference to fire rating or resistance. Ex. 1009; Ex. 2001 at ¶52. Similarly, there is no reference to any type of wall coverings. Ex. 1009; Ex. 2001 at ¶51; Ex. 2043 at 76:8-10.

#### **B. U.S. Patent No. 9,394,680 ("Bundy")**

Bundy is a patent assigned to Simpson. Ex. 1007; Ex. 2001 at ¶53. While Bundy is technically a prior art reference to the '510 patent, its December 14, 2013 filing date predates the '510 patent's December 31, 2013 priority date by mere weeks. Ex. 1001; Ex. 1007. Thus, Bundy represents a contemporaneous attempt by Simpson to develop a firewall hanger. Ex. 2001 at ¶¶54-55. While Bundy's and the

'510 patent's inventors both sought to invent a hanger that achieved significantly improved fire ratings over traditional hangers, they took very different approaches to do so. *Id.*

Bundy teaches a simple joist hanger that is capable of being installed over "one or more" drywall panels. Ex. 1007, Abstract; Ex. 2001 at ¶56. As shown below in Figs. 1 and 2, the Bundy hanger is installed on the wood top plate (4) of a wall having drywall panels (6) already mounted thereon. Ex. 1007 at 4:60-61, 6:1-5; Ex. 2001 at ¶57.

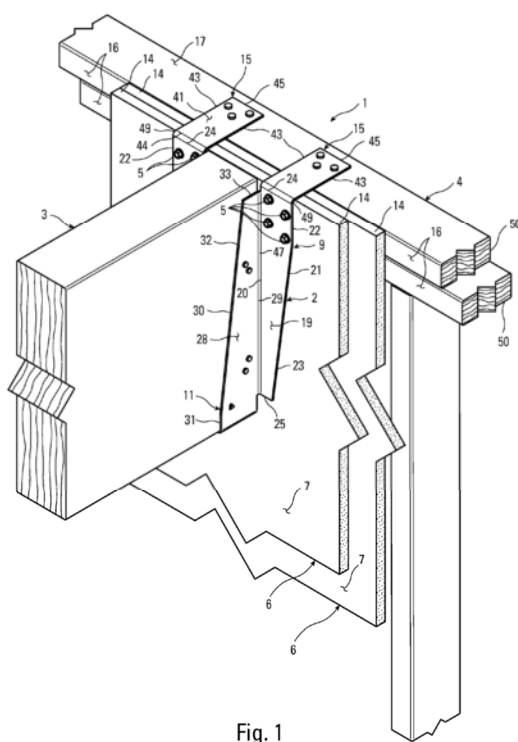


Fig. 1

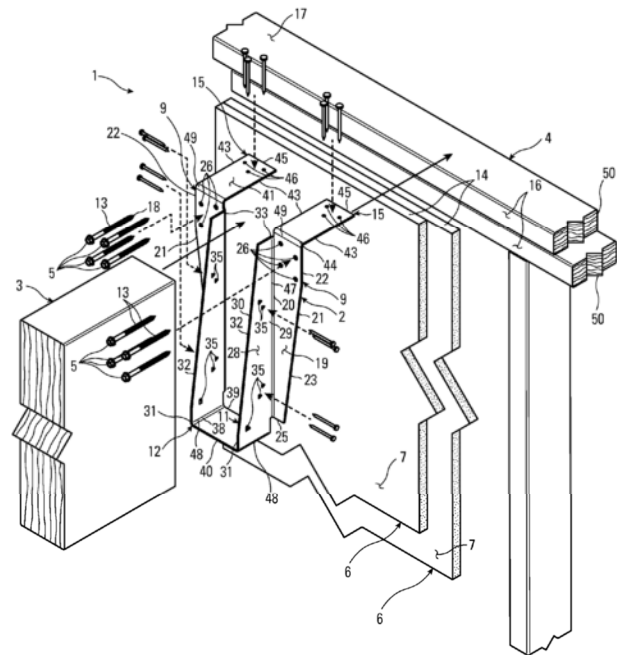


Fig. 2

The joist hanger of Bundy includes a channel for receiving the joist and top flanges extending rearward from the channel-shaped portion for attaching to the top

surface of the wall's top plate. Ex. 1007 at 5:23-26, 5:39-42, Fig. 2; Ex. 2001 at ¶¶58, 60.

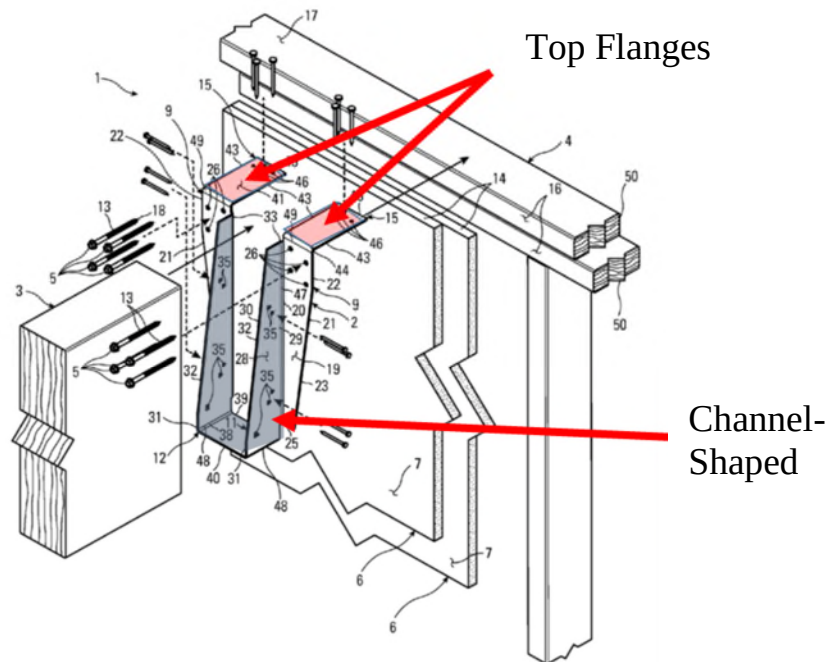


Fig. 2

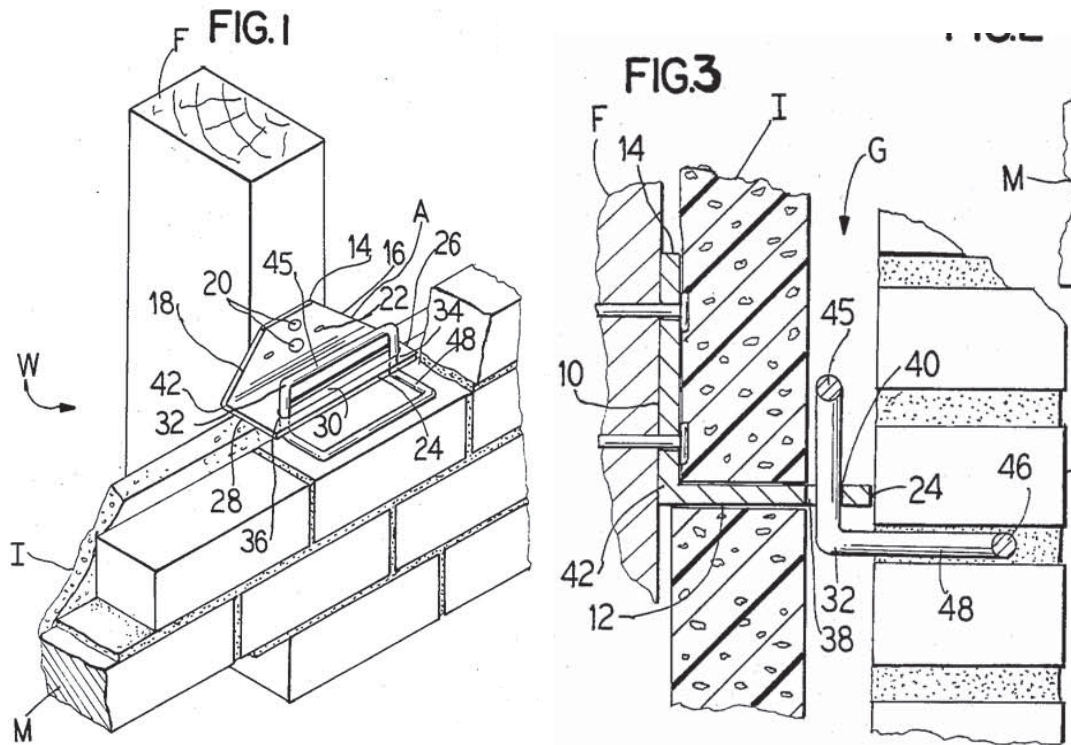
Unlike the hanger claimed in the '510 patent, the Bundy hanger does not include an extension portion configured to extend through sheathing. Ex. 2001 at ¶¶61-63. Nor does the Bundy hanger itself define a fixed spacing capable of receiving sheathing. *Id.* at ¶¶61-66; Ex. 2043 at 104:3-105:19, 105:25-107:3. Rather, Bundy teaches away from including a back flange. Ex. 2001 at ¶67; Ex. 1007 at 5:26-28, 5:42-45.

Accordingly, the physical structure of the hanger of Bundy is no different from the conventional hangers already well known in the construction industry. Ex.

2015 at 7-564; Ex. 2001 at ¶68. The point of novelty of the Bundy hanger is that the disclosed hanger is configured to mount over the drywall, after the drywall panels are installed on the wall. *Id.* at ¶¶61-63; Ex. 1007 at Figs. 1-2.

**C. U.S. Patent No. 4,827,684 ("Allan")**

Allan is directed to a wall anchor used to tie a masonry veneer wall to the frame of a wall structure. Ex. 1012 at Abstract, 1:6-8, 3:12-20, Fig. 1; Ex. 2001 at ¶¶69-70. As shown below in Fig. 3, the wall anchor (A) is an angle iron that includes two legs (10, 12). Ex. 1012 at 3:21-25; Ex. 2001 at ¶70. The wall structure includes an insulation layer (I) disposed between the masonry veneer wall (M) and the building frame member. Ex. 1012 at 3:12-20; Ex. 2001 at ¶70. One leg (10) of the wall anchor is secured to the frame member and the other leg (12) extends through the insulation layer and connects to a vertically adjustable tie (32) which can be embedded into the masonry veneer wall. Ex. 1012 at Fig. 1, 3:28-33, 4:15-18; Ex. 2001 at ¶70.



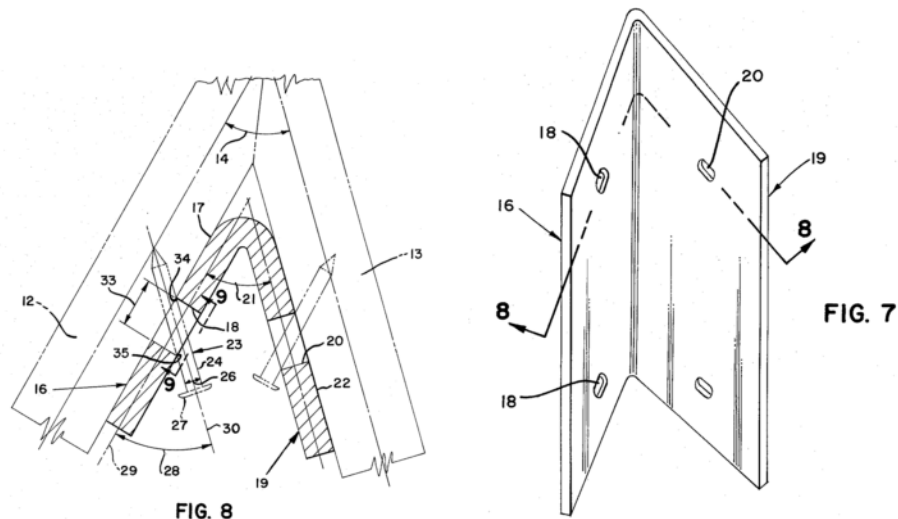
Unlike joist hangers, the anchor disclosed in Allan is not required to support a vertical load. *Id.* at ¶72. Instead, it is merely used to prevent masonry veneer walls from moving horizontally away from the frame member. Ex. 2001 at ¶186.

Allan does not contemplate the use of the disclosed wall anchor to extend through the fire barrier of a fire separation wall. Specifically, Allan does not make any reference to, disclosure of, or suggestion of fire rating or resistance. Ex. 1012; Ex. 2001 at ¶73.

#### **D. U.S. Patent No. 4,230,416 ("Gilb '416")**

Gilb '416 discloses a metal connector for joining support members that intersect at an angle less than 90°. Ex. 1011 at Abstract; Ex. 2001 at ¶74.

While Gilb '416 acknowledges that there were prior art skewed angle connectors, Gilb '416 contributes the use of elongated slots that allow nail fasteners to be more easily driven in. Ex. 1011 at 1:39-2:6; Ex. 2001 at ¶75. Gilb '416 demonstrates this advancement in Figures 8 and 7. *Id.* at ¶76.



Gilb '416 makes no reference to any type of wall coverings. Ex. 1011; Ex. 2001 at ¶77; Ex. 2043 at 84:1-85:2. Nor does Gilb '416 make any reference to, disclosure of, or suggestion of fire rating or resistance. Ex. 1011; Ex. 2001 at ¶78.

#### **E. U.S. Patent No. 4,261,155 ("Gilb '155")**

Gilb '155 discloses an infinite or universal skewed hanger. Ex. 1010; Ex. 2001 at ¶79. The Gilb '155 hanger's intended purpose is "to provide for any known intersection requirement to any amount of skew." Ex. 1010 at 1:7-9, 2:44-50; Ex. 2001 at ¶80. In other words, the hanger's intended purpose is for installations where the joist does not run perpendicular to the supporting structure to which it is

connected, but instead where the joist is installed at an angle relative to the supporting structure. *Id.* at ¶81.

The hanger disclosed in Gilb '155 includes a hinge (18) between a supporting member (2') for attaching to the top of a wall and a connection means (16) for securing the joist, thus allowing the connection means to pivot to accommodate "any amount of skew." Ex. 1010 at Figs. 2 and 8, 4:1-3, 7:9-13; Ex. 2001 at ¶82. The hinge includes a pin extending through tabs (6', 20', and 52') of the supporting member and a gusset-like member (9) of the connection means. Ex. 1010 at Fig. 2, 4:27-36; Ex. 2001 at ¶82.

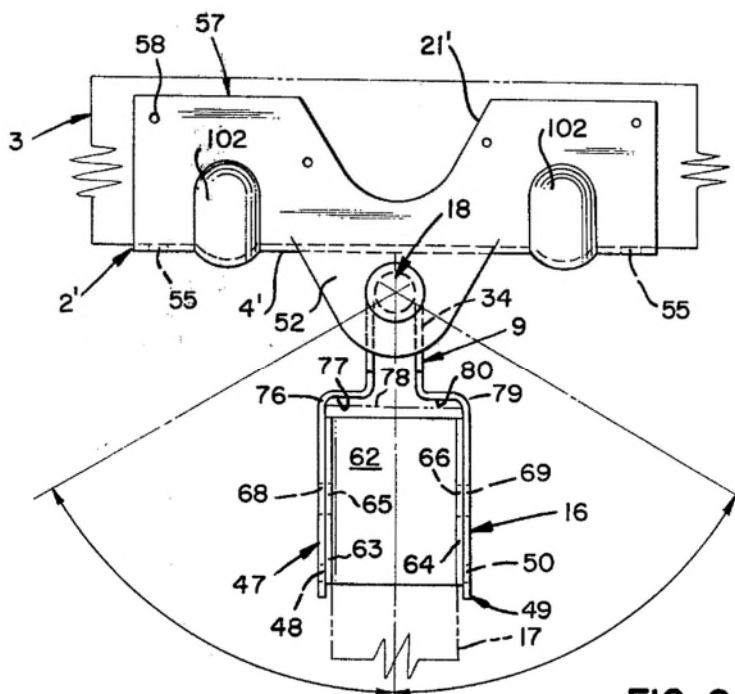


FIG. 8

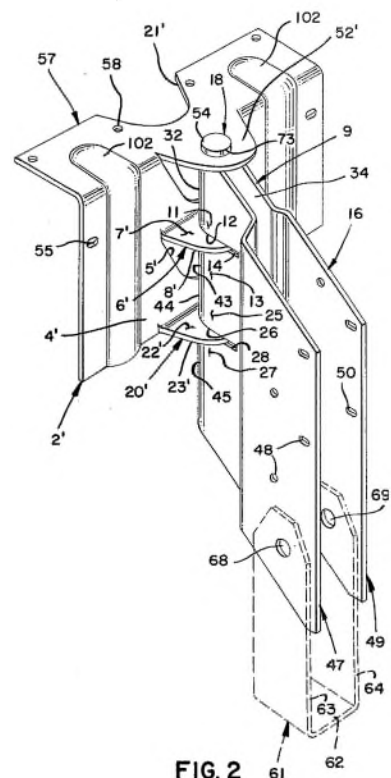
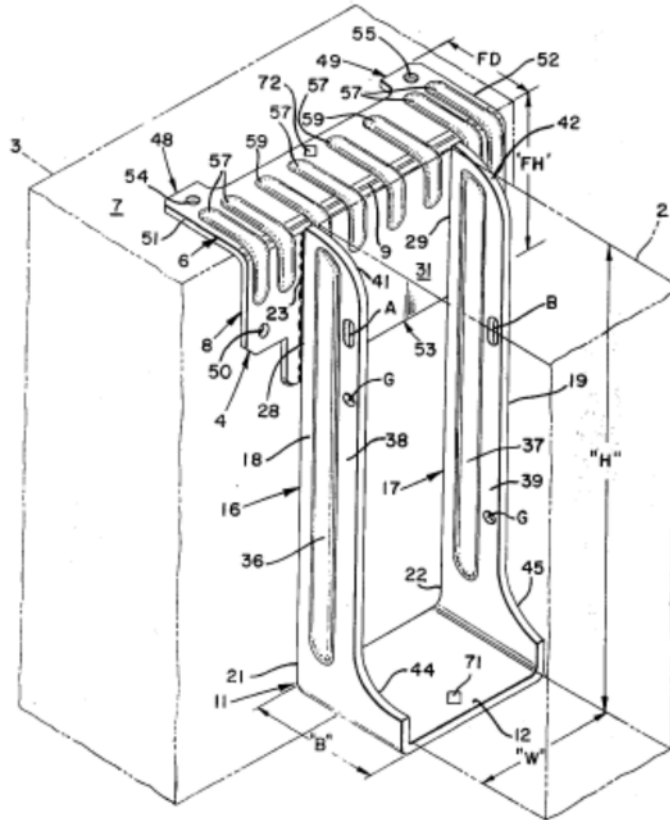


FIG. 2

There is no indication that any portion of the hanger disclosed in Gilb '155 is configured to extend through a fire barrier. Ex. 2044 at ¶76. In fact, Gilb '155 makes no reference to any type of wall coverings. Ex. 1010; Ex. 2001 at ¶83. Similarly, it is not evident that the Gilb '155 hanger was contemplated for installation on a fire-separation wall as Gilb '155 makes no reference to, disclosure of, or suggestion of fire rating or resistance. Ex. 1010; Ex. 2001 at ¶84.

**F. U.S. Patent No. 4,005,942 ("Gilb '942")**

Gilb '942 discloses a conventional hanger constructed by welding the uppermost portions of side flanges (41, 42) of the channel for supporting a joist to a back flange (8) securing the hanger to the wall. Ex. 1032 at Abstract, Fig. 1; Ex. 2001 at ¶85.



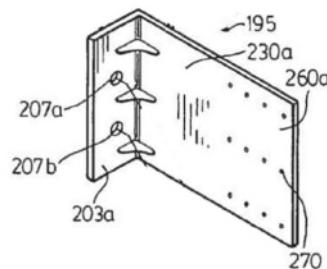
Gilb '942 makes no reference to any type of wall coverings. Ex. 1032; Ex. 2001 at ¶86; Ex. 2043 at 85:3-86:8. Nor does Gilb '942 make any reference to, disclosure of, or suggestion of fire rating or resistance. Ex. 1032; Ex. 2001 at ¶86.

#### **G. U.S. Publication No. 2005/0155307 ("Timony")**

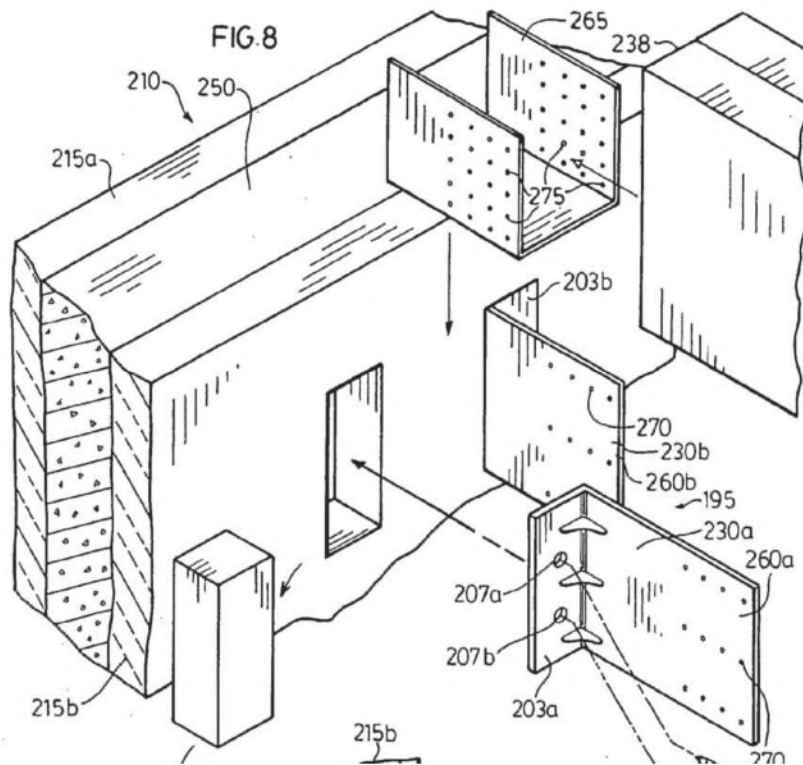
Timony discloses a hanger system for insulated concrete form walls. Ex. 1008; Ex. 2001 at ¶87. As described by Timony, insulated concrete form walls are composite walls constructed using a pair of outer walls formed of rigid foam. Ex. 1008; Ex. 2001 at ¶88. The outer rigid foam walls form a cavity, which is then filled by pouring concrete. Ex. 1008 at ¶[0032]; Ex. 2001 at ¶88.

Timony includes two embodiments: a hanger that is embedded within the concrete core of the composite wall and a retrofit application for use in pre-existing insulated concrete form system walls. *Id.* at ¶¶89-90; Ex. 1008 at ¶¶[0014]-[0017], [0046]. In its obviousness arguments, Simpson relied primarily on the retrofit embodiment. Pet. at 105.

The retro embodiment uses retrofit plates having an L-shaped cross section, with one leg of the L creating a retaining portion (203a, 203b) and the other leg of the L creating a hanging portion (260a, 260b). Ex. 1008 at ¶[0047]; Ex. 2001 at ¶91.



To install the retrofit hanger, portions of the outer foam wall (215b) are cut away at the desired hanging position and the retaining portions are then fastened to the concrete core. Ex. 1008 at ¶[0049]; Ex. 2001 at ¶92. A U-shaped bracket (265) can be attached to the retrofit plates to act as a support for the member being supported by the hanger. Ex. 1008 at ¶[0050]; Ex. 2001 at ¶92. Timony's Figure 8 depicts the retrofit hanger disclosed in this embodiment. Ex. 2001 at ¶92.



Timony's only reference to drywall, wallboard, or gypsum board is in paragraph [0045] which discloses that the hangers can be used to attach partitions (i.e., interior walls) to an outer foundation wall and that once the partition is installed the partitions can be finished by installing drywall on the partition structure. Ex. 1008 at ¶[0045]; Ex. 2001 at ¶93. Timony makes no reference to, disclosure of, or suggestion of fire rating or resistance. Ex. 1008; Ex. 2001 at ¶94.

## V. CLAIM CONSTRUCTION

In a PGR, the Board gives claim terms their plain meaning as understood by a PHOSITA. 37 C.F.R. § 42.200(b); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005). In construing terms, "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which

the disputed term appears, but in the context of the entire patent, including the specification." *Id.* at 1313.

**A. The PHOSITA**

The person having a level of ordinary skill in the art at the time of the earliest filing date of the '510 patent would have acquired a body of knowledge gained through formal education, or practical experience providing an equivalent to, a Bachelor of Science in Mechanical Engineering, Civil/Structural Engineering, or a related/equivalent field, and at least four years of work experience in construction connector design/development.

**B. "Extend Through"**

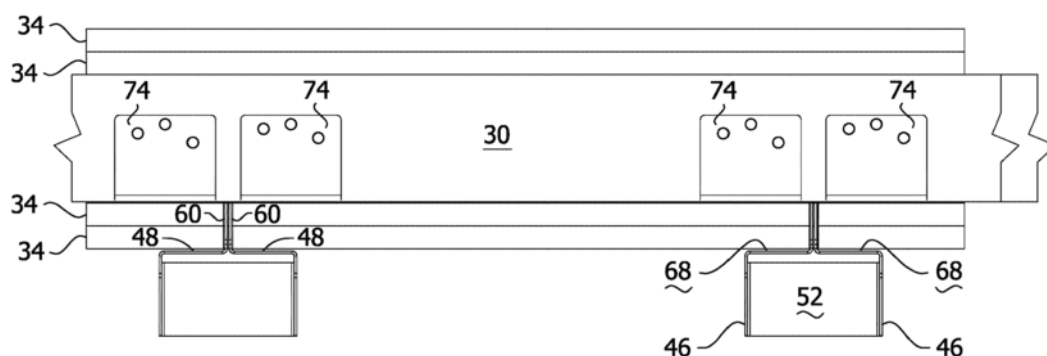
The phrase "extend through" appears in claims 1, 4, 13, and 20. Its usage in claim 1—"an extension portion . . . configured to extend through the sheathing"—is representative of the usage of the phrase throughout the claims. Ex. 2044 at ¶21. Simpson does not advance a proposed construction of "extend through" in its Petition.

The claim phrase "extend through" (*i.e.*, element A "extend[ing] through" element B) should be construed to mean that element A extends into one side and out the other side of element B. *Id.* at ¶22. This definition represents the plain and ordinary meaning of "through" as would be understood by a PHOSITA. *Id.* at ¶¶23-

24; Ex. 2049 at 1758 (through: (1) "moving in one side and out of the other side of (an opening, channel, or location)").

In the context of the '510 patent's claims, this construction would require that the [extension portion (claims 1, 13, and 20) / extension flanges (claim 4)] extend into one side and out the other side of the [sheathing (claims 1 and 4) / fire resistant sheathing (claim 13) / drywall (claim 20)]. Ex. 2044 at ¶25. Such a construction is supported by the specification of the '510 patent. For example, "FIG. 11 is a top plan . . . illustrating the truss hanger extending through the fire retardant sheathing." Ex. 1001 at 3:3-4; Ex. 2044 at ¶26. As shown in Figure 11, the extension flanges (60) extend into one side and out the other side of the sheathing (34). *Id.*

FIG. 11



Elsewhere within the specification, the extension portion necessarily extends into one side and out the other side of the sheathing as it interconnects the channel

shaped portion on one side of the sheathing with the connection portion on the other side of the sheathing. *Id.* at ¶27; Ex. 1001 at 1:61-64 ("An extension portion extends from the channel-shaped portion to the connection portion and interconnects the channel-shaped portion and the connection portion."), 2:5-7 ("An extension portion extends from the channel-shaped portion and is configured to extend through the sheathing to engage the wall at a first location.").

**C. "[Extension Portion/Extension Flanges] . . . Configured to Extend Through the [Fire Barrier]"**

The phrase "an extension portion . . . configured to extend through the [sheathing/fire resistant sheathing/drywall]<sup>5</sup>" appears in claims 1, 13, and 20. Similarly, claim 4 follows that the "extension portion includes extension flanges . . . configured to extend through the sheathing." These phrases should be construed to require that the claimed hanger be specifically designed to accomplish their specified objective—extending through the fire barrier.

While the claimed structure does not itself include the sheathing or drywall recited in the claims, the claims do require an extension portion that is specifically "configured to" extend through such fire barriers. Without addressing what

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<sup>5</sup> For convenience, the requirements for "sheathing," "fire resistant sheathing" and "drywall" appearing in claims 1, 13 and 20, respectively, are collectively referenced hereinafter as "fire barrier."

"configured to" means, Simpson's obviousness arguments incorrectly assume that the claim limitation merely requires a structure that is *capable of* extending through a fire barrier. This improperly ignores the fact that the structure must be "configured to" accomplish a specified objective.

Controlling authority, has established that the "configured to" claim language should be construed to require that the claimed structures are specifically "meant to" or "designed to" perform the claimed function, "not simply that they are capable of doing so." *Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1349 (Fed. Cir. 2012) (finding that "adapted to" should be construed as "designed or *configured to* accomplish the specified objective"); *In re Giannelli*, 739 F.3d 1375, 1379 (Fed. Cir. 2014); *see also*, *Acclarent, Inc. v. Ford Albritton, IV*, IPR2017-00498, 2018 Pat. App. LEXIS 9828, at \*19-22 (P.T.A.B. July 9, 2018) ("The precedent makes clear that the 'configured to' phrase itself connotes the narrower meaning . . . . As such, we construe the term[] 'configured to' . . . as requiring structure designed to . . . accomplish the specified objective, not simply that [the structure] can be made to serve that purpose.") (internal quotation omitted).

In *Giannelli*, the claims covered an exercise machine with a "first handle portion adapted to be moved . . . by a pulling force . . . in a rowing motion." 739 F.3d at 1379. The Patent Office rejected the application as obvious, finding that a prior art exercise machine designed to "simulate [an] outward pushing motion" was

"capable of being used by exerting a pulling force on the handles in a rowing motion." *Id.* at 1378, 1380. Understanding that "anyone who has used exercise machines knows that a sure-fire way to cause injury is to use a machine in a manner not intended by the manufacturer," the Federal Circuit found that the "[handle] adapted to be moved . . . by a pulling force" limitation required more than a mere capability for the handles to be pulled. *Id.* at 1380. Instead, the proper question was whether the prior art apparatus was specifically "'made to,' 'designed to,' or 'configured to'" be used as a rowing machine. *Id.* (emphasis added).

Here, a PHOSITA's understanding of the scope of the "configured to" limitations are driven by the fact that the extension portion will extend through a fire barrier. Ex. 2044 at ¶31. The title of the patent is "Hanger for a Fire Separation Wall." Exhibit 1001. As identified in the '510 patent's Field of the Invention, the claimed invention "relates to . . . a truss hanger for connecting a truss to a wall including fire retardant sheathing." *Id.* at 1:15-17; Ex. 2044 at ¶32. Accordingly, a PHOSITA would conclude that the claimed hanger must be specifically designed to be used with a fire barrier. *Id.* All of the claims, properly construed, pertain to the configuration of a hanger that is used with a fire barrier.<sup>6</sup>

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<sup>6</sup> As stated, all claims pertain to the configuration of hanger for use with a fire barrier, but it is further noted that claims 13 and 20 specifically reference a fire barrier, thus

Because a fire barrier is only as good as its weakest link, the continuity of the fire barrier is critical to maintaining a wall's fire rating. *Id.* at ¶34; Ex. 2046 at 122, 361. While there were no building code requirements pertaining to a joist hanger penetrating the fire barrier, a PHOSITA would be aware that there were building code requirements discouraging large openings through the fire barrier. Ex. 2044 at ¶35. Being aware of the building code requirements for these analogous projections, a PHOSITA would have been strongly biased against creating gaps in the fire barrier to accommodate a hanger. *Id.*; Ex. 206 at 27-29.

Moreover, a PHOSITA would have been resistant to relying on caulking the gaps between the extension portion and the fire barrier to achieve a two-hour fire rating. Ex. 2044 at ¶36. While it is possible up to a point to fill gaps between the fire barrier and any projections with supplemental fire resistant material; the labor, cost, and opportunity for error in large construction projects is substantial. *Id.*

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providing further support that maintaining the continuity of fire barrier is within the objective for which the extension portion must be "configured to" accomplish. Ex. 2044 at ¶33. Specifically, Claim 13 claims "an extension portion . . . configured to extend through the *fire resistant sheathing*." Claim 20, similarly claims "an extension portion . . . configured to extend through the *drywall*." As recognized by Simpson's expert, "'drywall' is a type of 'fire resistant sheathing.'" Ex. 1003 at ¶22.

To this end, the '510 patent repeatedly informs the PHOSITA that the extension portion is constructed to keep disruptions/interruptions of the fire barrier to a minimum. Ex. 1001 at 1:36-38, 7:5-9, 10:13-15, 11:23-28; Ex. 2044 at ¶37. Specifically, the installation of the hanger must "minimally disrupt . . . the continuity of the sheathing [such that it] does not reduce the fire resistive rating of a fire rated assembly." Ex. 1001 at 11:25-28; Ex. 2044 at ¶37. For instance, this is accomplished in one embodiment by configuring the "extension flanges 60, 160 [to] extend through the fire retardant sheathing 34 so that the sheathing is only interrupted by the slot 72 required to receive the flanges." Ex. 1001 at 11:25-31; Ex. 2044 at ¶37. Elsewhere, the '510 patent describes that the gap between the extension portion and the edges of the sheathing/drywall should be "less than or equal to 1/8". Ex. 1001 at 5:27-31; 9:29-33; Ex. 2044 at ¶38. The PHOSITA understands this reference in the context of Section 7.14.3.2 of the 2012 IBC, which limits the size of cutouts in a fire barrier for items such as electrical boxes to those having a 1/8" gap between the edge of the opening in the fire barrier and the electrical box. *Id.*; Exhibit 2016 at 27. If the code is followed, then no fire caulking is required. Ex. 2044 at ¶38. Thus, it is apparent that a close conformance to the edge of the fire barrier opening is required. *Id.* at ¶39.

The opening in the fire barrier will be generally rectangular with straight edges, as confirmed by Simpson's own prior art hanger reconstruction illustrations.

*Id.* at ¶40; Pet. at 37, 70, 104. It is the configuration of the extension portion that achieves only a minimal gap (e.g., 1/8") between the hanger and the exposed edges of the opening in the fire barrier, thus maintaining the integrity of the fire barrier without requiring supplemental treatment. Ex. 2044 at ¶41. Specifically, the extension portions minimize the discontinuity in the fire barrier by being shaped and arranged to follow along the exposed edges of the opening in the fire barrier such that only a very small gap in the fire barrier is exposed next to the hanger. *Id.*; see also e.g., Ex. 1001 at Fig. 11.

To this end, the hanger as claimed would be constructed such that the width of the extension portion would define the necessary width of the opening in the fire barrier. Ex. 2044 at ¶42. Moreover, the extension portion of the claimed invention would be constructed such that a major surface (i.e., not an edge) extends along and conforms to the straight exposed edges of the cutout in the fire barrier. *Id.* In this way, the extension portion itself provides a barrier in place of the removed fire barrier material in the opening. *Id.*

Accordingly, a PHOSITA would understand the "configured to extend through the [fire barrier]" claim limitation to require that the claimed hanger must include an extension portion that is designed to extend through a fire barrier while being in close conformance with the exposed edges of the opening in the fire barrier when installed. *Id.* at ¶43.

#### **D. "Extending From"**

The phrase "extending from" appears in claims 1, 4, 11, 13, 17, and 20. Its usage in claim 1—"an extension portion *extending from* the channel-shaped portion" and "a back flange *extending from* an edge of the top flange"—is representative of the usage of the phrase throughout the claims. Simpson does not advance a proposed construction of "extending from" in its Petition.

The claim phrase "extending from" (*i.e.*, element A "extending from" element B) should be construed to mean that the starting point of element A's extension is on element B. Ex. 2001 at ¶¶95-99.

This definition represents the plain and ordinary meaning of "extending from" as would be understood by a PHOSITA. *Id.* at ¶98; *see also* Ex. 2022 at 676 (from: (1) "indicating the point in space at which a journey, motion, or action starts."). Additionally, this construction is consistent with the specification and the use of the phrase throughout the '510 patent. Ex. 1001 at Figs. 1-8 and 10-14A, 4:36-37, 4:65-66, 5:14-15, 6:33-34; Institution Decision at 47.

#### **E. "Formed as One Piece"**

Within the Institution Decision, the term "formed as one piece" was construed to mean "formed as a single, unitary piece of material." Institution Decision at 43. Patent Owner agrees that "one piece" ordinarily means "a single, unitary piece" and

that this definition is consistent with the teachings of the specification. *See* Ex. 1001 at Figs. 15 and 40, 7:10–17, 10:17–26; Ex. 2044 at ¶45.

**VI. SIMPSON HAS FAILED TO CARRY ITS BURDEN TO PROVE THAT THE CLAIMS OF THE '510 PATENT ARE OBVIOUS IN VIEW OF ITS PROFFERED GILB '155 COMBINATIONS**

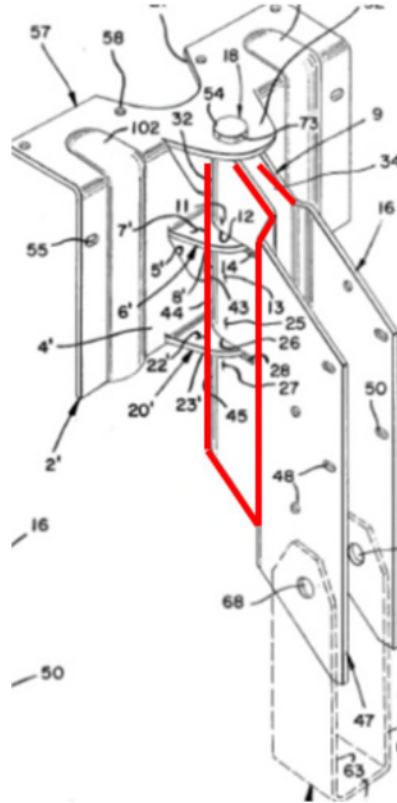
Of the grounds asserted by Simpson, the Institution Decision found that Simpson was only likely to meet its burden of establishing that any of the claims of the '510 patent were unpatentable based on one of the Gilb '155 based obviousness grounds. As addressed below, even the Gilb '155 based obviousness grounds fail as Simpson has not met its obligation of establishing a *prima facie* case of obviousness by identifying each claim limitation within its proffered combination of prior art. Nor has Simpson demonstrated that a PHOSITA would have been motivated to combine the teachings of Gilb '155, Bundy, and Allan to create the patented invention.

**A. Ground 6: Claims 1-20 are Not Obvious over Gilb '155, Bundy, and Allan**

*1. Claims 1, 13 and 20: Gilb '155 Does not Disclose "an Extension Portion . . . Configured to Extend Through the [Fire Barrier]"*

Each of the independent claims of the '510 patent—claims 1, 13, and 20—requires "an extension portion extending from the channel-shaped portion and configured to extend through the [fire barrier]." Attempting to show that the Gilb '155 hanger would meet this limitation, Simpson identifies "gusset-like member 9/9"

as an extension portion that "would extend through the sheathing." Pet. at 77-78 (see Figure 2 as annotated by Simpson below).



But contrary to Simpson's assertion, the gusset-like member (9/9') of Gilb '155 fails to disclose "an extension portion . . . configured to extend through the [fire barrier]" limitation for two reasons: (1) the gusset-like member would not extend into one side and out the other side of fire barrier, and (2) the gusset-like member is not designed to extend through the fire barrier in close conformance with an edge of the opening in the fire barrier.

- i. The gusset like member (9/9') is incapable of extending through the fire barrier

As addressed above, "through" should be construed such that the extension portion must extend into one side and out the other side of the fire barrier.

According to Simpson's obviousness argument, the fire barrier would be installed over the back plate (4') of Gilb '155. Pet. at 72. The version of Figure 8 as annotated by Simpson (below) clearly shows that the gusset-like member (9/9') (highlighted green) extends from the channel-shaped portion, without extending all of the way to the back plate. Ex. 2044 at ¶71. As the gusset-like member does not extend all of the way to the back plate, it would fail to extend into one side and out the other side of the fire barrier. *Id.* Instead, the gusset-like member would terminate within the fire barrier. *Id.* As relied upon by Simpson with respect to claims 5 and 18:

Gilb '155 teaches that the extension portion (gusset-like member 9) includes extension flanges (gusset-like projections 34) . . . configured to engage each other along a juncture positioned within the sheathing – specifically around and behind pivot means 18:

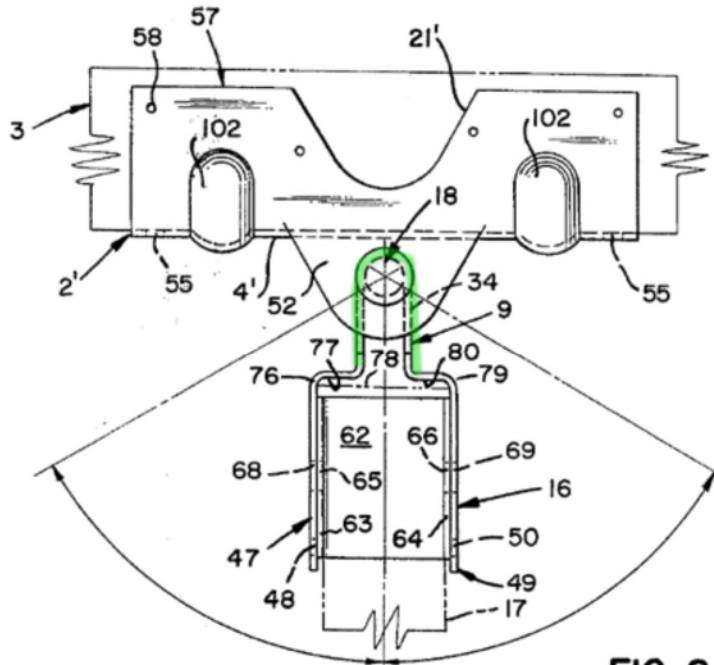


**FIG. 8**

Pet. at 90; *see also* Institution Decision at 38. The juncture described by Simpson is the farthest extent of the gusset-like member 9 toward the back plate 4'. Ex. 2044 at ¶¶72-73. Since the juncture is located within the fire barrier, the gusset-like member cannot extend through the fire barrier as required by all of the claims of the '510 patent. *Id.* at ¶74.

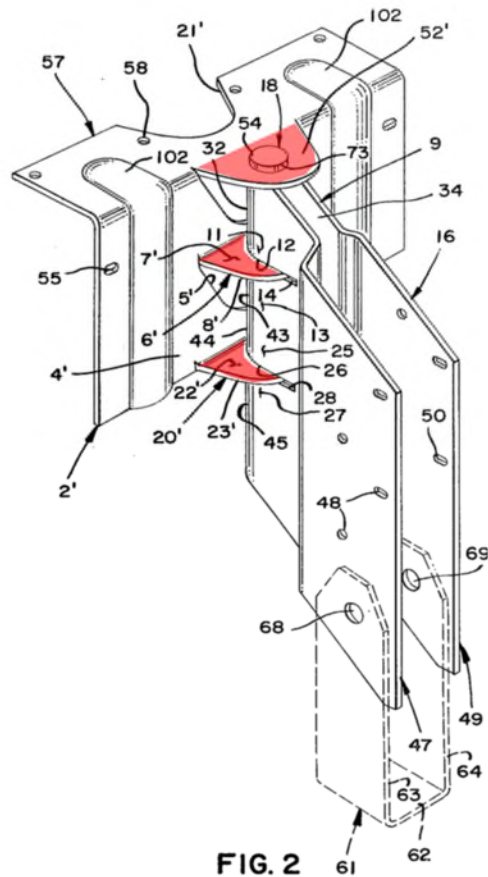
- ii. The gusset like member (9/9') is not designed to extend through the fire barrier in close conformance with the exposed edges of the opening in the fire barrier

Not only is the gusset-like member (9/9') incapable of extending completely through the fire barrier, the gusset-like member is not "configured" for use with fire barriers. As addressed above, the "configured to" language should be construed such that the claimed structures are specifically "meant to" or "designed to" perform the

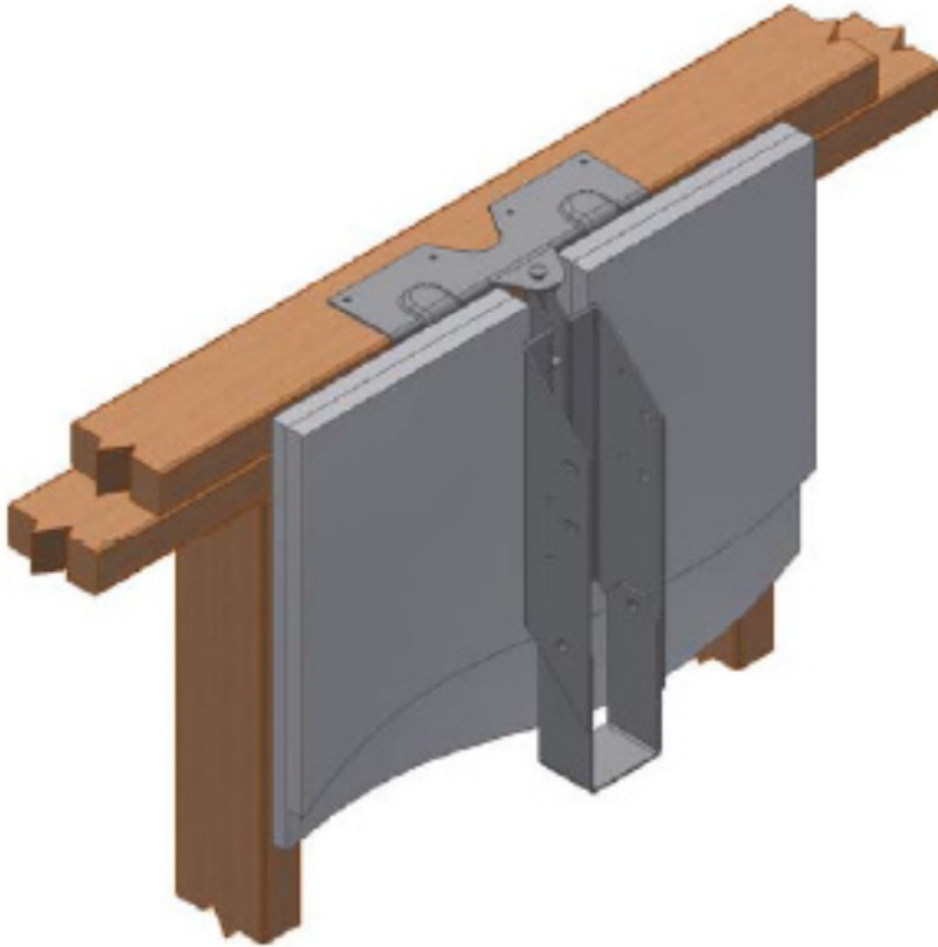
claimed function. *Acclarent*, 2018 Pat. App. LEXIS 9828, at \*8-22 (collecting cases that support construing "configured to" as requiring structure designed specifically to accomplish the specified objective.). In the context of the claims of the '510 patent, the claim limitation "an extension portion . . . configured to extend through the [fire barrier]" requires that the extension portion be specifically designed such that it closely conforms to the exposed edges of the opening formed in the fire barrier through which the extension portion passes. Ex. 2044 at ¶43.

First, nothing in Gilb '155 suggests that the gusset-like member (9/9') is designed or made to extend through a fire barrier. *Id.* at ¶76. This is confirmed in that Gilb '155 is entirely silent regarding any kind of fire barrier, such as sheathing or drywall. *Id.*; Ex. 2043 at 81:25-82:8.

Second, if a fire barrier was installed around the Gilb '155 hanger, the cutout in the fire barrier would need to account for the width of the tabs (20', 6', and 52'). Ex. 2044 at ¶79; Ex. 2043 at 110:1-14. As seen in the annotated Figure 2 below, these tabs are considerably wider than the gusset-like member (9):



Ex. 2044 at ¶79; *see also* Ex. 2043 at 110:15-111:18. Accordingly, the cutout in the fire barrier would need to be considerably wider than the gusset-like member. Ex. 2044 at ¶80. The requirement of such a large cutout is confirmed in Simpson's renderings of its modified Gilb '155 hanger:



Pet. At 70. As shown in the modified Figure 7<sup>7</sup> of Gilb '155 (below), over-sizing of the cutout in the fire barrier to accommodate the tabs (20', 6', and 52') results in the gusset-like member failing to closely conform with the edge of the cutout:

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<sup>7</sup> Figure 7 of Gilb '155 has been modified to more clearly show the gusset-like member (9) by removing the connection portion. Further the support structure has been modified from a generic supporting structure to wood stud light frame wall with a double top plate. Finally, a fire barrier is depicted (translucently) to

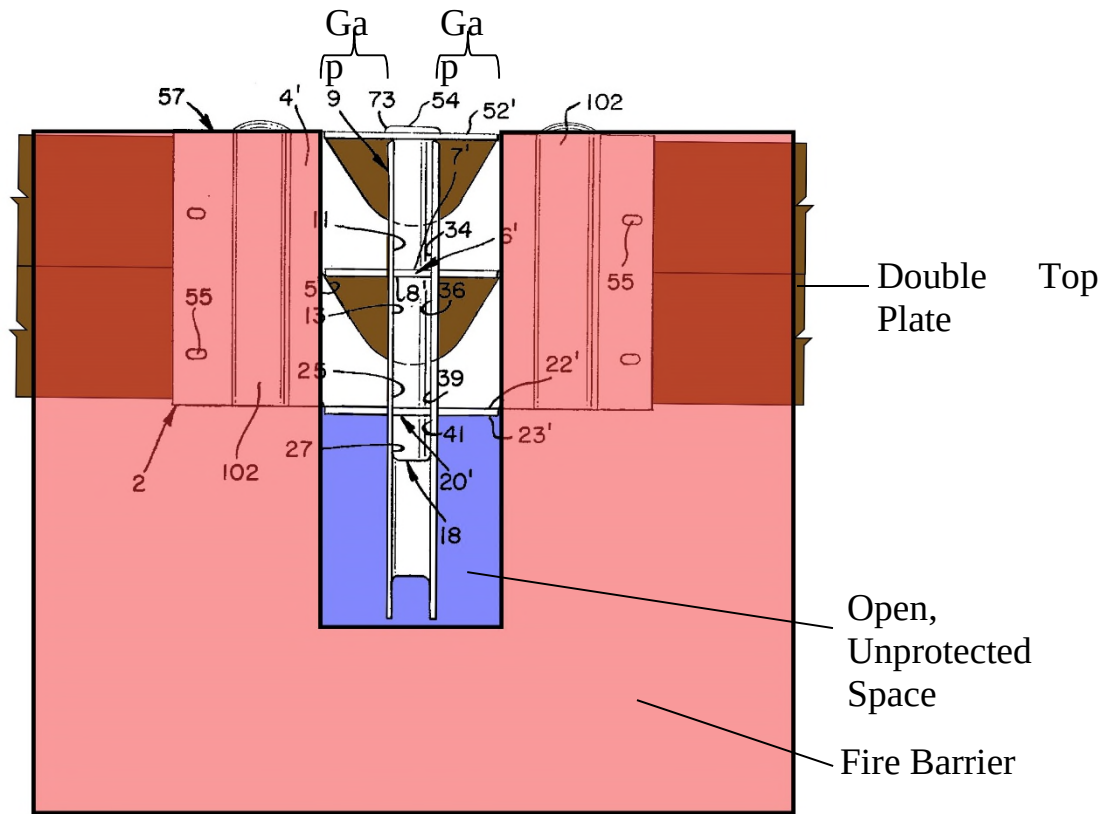


**FIG. 7**

Ex. 2044 at ¶81.

Clearly, the gusset-like member (9) does not closely conform to the edge of the cutout in the fire barrier as required by claims 1, 13 and 20. *Id.* at ¶84. The substantial gaps between the gusset-like members and the edge of the cutout could permit hot gasses and fire to pass through the fire barrier. *Id.* Just as using the prior

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demonstrate the configuration of the cutout that would be required to accommodate the Gilb '155 hanger. Ex. 2044 at ¶82.

art device outside of its intended design could cause injury in *Giannelli*, using the Gilb '155 hanger on a fire separation wall could allow a fire to prematurely breach its fire barrier, thereby endangering lives. *Id.*

Simpson's attempt to rely on Gilb '155 to disclose "an extension portion . . . configured to extend through the [fire barrier]" fails. Nor does Simpson suggest any modifications to the hanger disclosed in Gilb '155 to meet this limitation. As "obviousness requires a suggestion of all limitations in a claim," Simpson has not met its burden of proving that any of the claims of the '510 patent are obvious based on Ground 6 of its Petition. *CFMT, Inc. v. Yildup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003).

2. *A PHOSITA Would Not Have Been Motivated to Modify the Hanger Disclosed in Gilb '155 in View of Bundy to Accommodate a Fire Barrier*

As acknowledged by Simpson, "Gilb '155 does not provide explicit disclosure regarding a fire barrier or the dimensions of its extension portion." Pet. at 67. Simpson attempts to justify adding these claimed features to the Gilb '155 hanger by arguing that it was "nonetheless common and well known for walls to be finished." *Id.* at 67. This argument incorrectly presumes that sheathing is always installed around joists. To the contrary, drywall is typically only installed on a wall up to the ceiling level (i.e. below the joists) for non-firewalls. Ex. 2044 at ¶93.

As Gilb '155 makes no reference to fire ratings or resistance Gilb '155 provides no suggestion that the disclosed infinite skew hanger would have any particular applicability for use with firewalls. Nor does Simpson provide any explanation why a PHOSITA would have considered using Gilb '155 on a firewall.

Figure 7 of Gilb '155 has been modified below to remove the channel shaped portion and to insert the fire barrier according to Simpson's proposed modification.

*Id.* at ¶94.

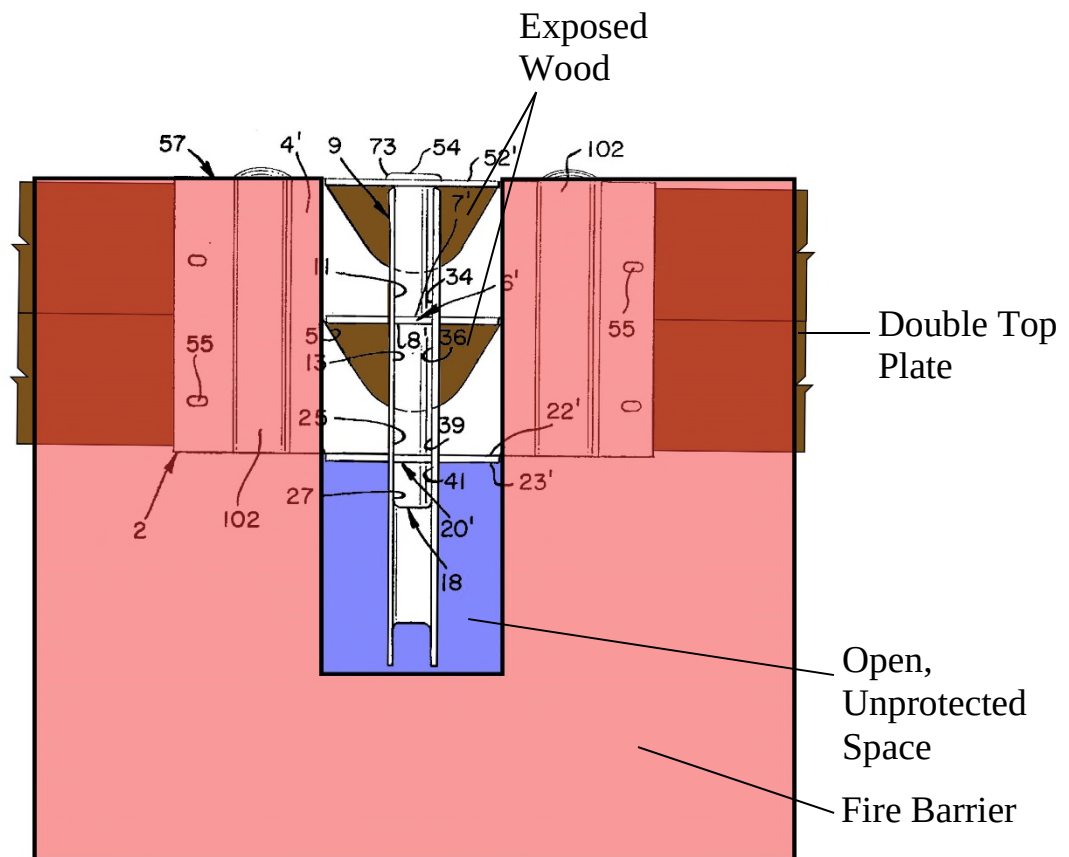


**FIG. 7**

Notably, the figure demonstrates that using the Gilb '155 hanger in conjunction with a fire barrier as suggested in the Petition would leave a portion of

the wood framing exposed and a portion of the wall cavity completely open, unprotected and uncovered.<sup>8</sup> *Id.* at ¶95. Leaving a portion of the wood frame wall exposed negatively impacts, if not eliminates, the entire wall's fire rating. *Id.* at ¶96. Further, leaving the load-bearing framing exposed would be especially problematic from a structural integrity standpoint during a fire. *Id.*

As a fire will find any weakness in a separating barrier, penetrations through a fire barrier can severely reduce the ability of the barrier to contain a fire. *Id.* at ¶97; Ex. 2046 at 22-23. Accordingly, care must be taken to ensure that penetrations do not compromise the performance of the fire barrier. Ex. 2044 at ¶97; Ex. 2046 at 22-23.

With these concerns, a PHOSITA would not even look to modify the hanger disclosed in Gilb '155 to extend through a fire barrier because doing so would compromise the ability of the fire barrier to prevent the spread of a fire. Ex. 2044 at ¶98.

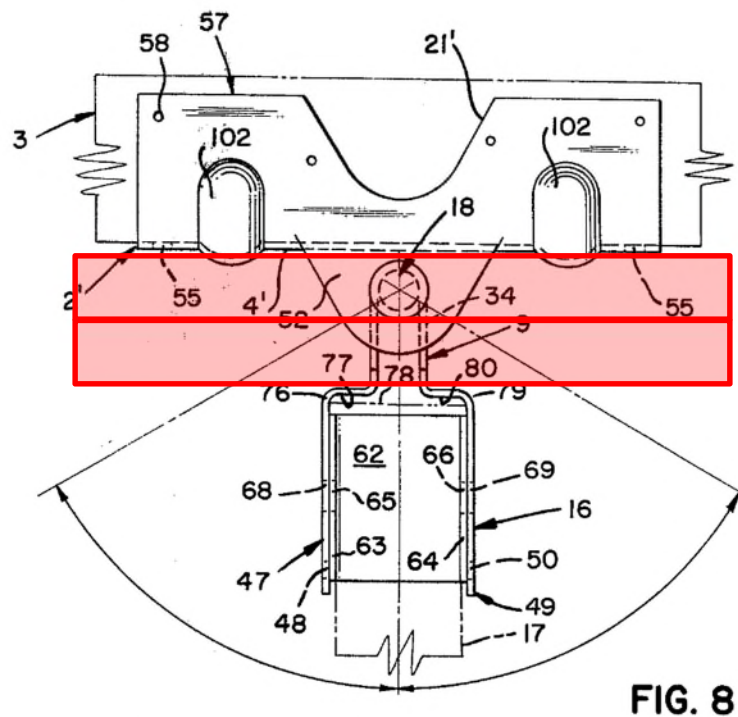
Further, Simpson's proposed modification and application of the Gilb '155 hanger in view of Bundy would have greatly reduced the ability of the hanger to

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<sup>8</sup> The cutout according to Simpson's proffered combination of the Gilb '155, Bundy, and Allan extend below the top plate, thus exposing the wall cavity. Ex. 2044 at ¶83.

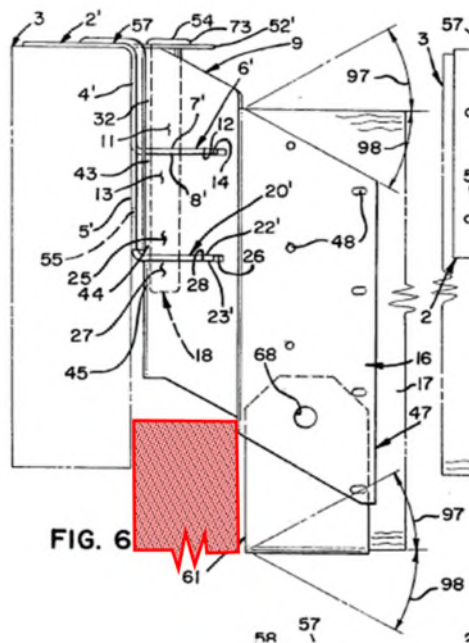
operate according to its intended purpose. *Id.* at ¶100. As discussed above, Gilb '155 discloses an "infinite" or "universal" skewed hanger intended "to provide for any known intersection requirement to any amount of skew." Ex. 1010 at 1:7-9, 2:44-50; Ex. 2044 at ¶101. Compared to the conventional perpendicular hangers that were available at the time, the hanger disclosed by Gilb '155 could accommodate a skew of "up to 60° either right or left and at any angle therebetween." Ex. 1010 at 7:11-13; Ex. 2044 at ¶102.

As seen in the figure below, modifying the hanger of Gilb '155 to accommodate two 5/8" sheets of sheathing, would block the rotation of the gusset-like member/connection means (and ultimately the joist) relative to the supporting member.



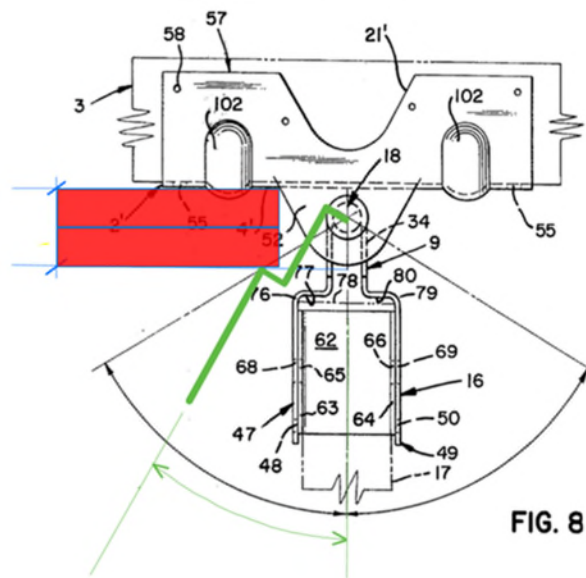
*Id.* at ¶105.

While such an application could still allow for near perpendicular use of the Gilb '155 hanger, a PHOSITA would not have considered using the Gilb '155 hanger for such applications as the multi-component hanger disclosed in Gilb '155 would be considerably costlier than conventional hangers. *Id.* at ¶106. Nor would "cut[ting] or notch[ing] the sheathing" around the gusset-like member render the modified hanger of Gilb '155 pivotable, as the remaining sheathing (disposed below the gusset-like member, but between the end of the joist (17) and the wall structure (3)) would still prevent the joist (which extends below the level of the gusset-like member) from being able to pivot. *Id.* at ¶107; Ex. 2043 at 113:8-114:15. This is illustrated by superimposing drywall into Figure 6 of the '155 patent:



Ex. 2044 at ¶107.

Sizing the gusset 9/9' of Gilb '155 to allow more space than exactly two sheets of sheathing would permit some pivoting of the hanger, but the gusset swivel would still be limited to approximately 30° as shown in the annotated Figure 8 below:



*Id.* at ¶¶108-109.<sup>9</sup>

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<sup>9</sup> Simpson's expert acknowledged on cross examination that a portion of the Gilb '155 hanger would likely encroach into the fire barrier depending on the angle of skew. Ex. 2043 at 111:22-113:7. To the extent that Simpson argues that the cutout in the fire barrier could be cut wider to accommodate a skew and then supplemented with a fire-resistant sealant, such an argument modifies the combination in Ground 6 beyond that presented in the Petition.

A substitution cannot "change the basic principles under which the prior art was designed to operate, or . . . render the prior art inoperable for its intended purpose." *Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 Fed. Appx. 755, 758 (Fed. Cir. 2015) (internal quotation omitted).<sup>10</sup>

The Institution Decision cites *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) as demonstrating that "simultaneous advantages and disadvantages" of a modification to a prior art disclosure do not necessarily obviate a motivation to combine. But *Allied Erecting* is not analogous to Simpson's proposed modifications to the Gilb '155 hanger. In *Allied Erecting*, the PTAB in the underlying IPR had found that the component at issue could still be disassembled "in a simple manner," even though the quick change functionality may have been impeded. *Id.*

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<sup>10</sup> See also *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984); *In re Ratti*, 270 F.2d 810, 813 (CCPA 1959) (combination of prior art is not obvious if it would "change . . . the basic principles under which the [prior art] was designed to operate"); *Tec-Air, Inc. v. Denso Mfg. Mich., Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999) (observing that there is "no suggestion to modify a prior art device where the modification would render the device inoperable for its intended purpose") (citation omitted).

While the intended purpose of the Gilb '155 hanger was to provide for "any amount of skew," the addition of two layers of sheathing would reduce the potential maximum skew of the Gilb '155 hanger from 60° to only 30°. Ex. 1010 at 1:8-9; Ex. 2044 at ¶110. Limiting the skew to only 30° would not merely impede the ease with which the Gilb '155 hanger could be used or installed. As testified to by Simpson's expert, 45° angles are the most common skewed angles used in construction. Ex. 2043 at 96:20-98:6; Ex. 2044 at ¶110. As such, configuring the hanger of Gilb '155 to extend through a fire barrier would make the hanger inoperable as a "universal hanger" and unusable for the most common skewed application (45°). *Id.* at ¶111.

In an obviousness analysis, "the benefits, both lost and gained, should be weighed against one another" when "the motivating benefit comes at the expense of another benefit." *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000).<sup>11</sup> But, the significant reduction in the maximum amount of skew for the Gilb '155 hanger results in the loss of the hanger's ability to reach a 45° skew—the

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<sup>11</sup> This statement by *Winner* forms the legal basis for that statement in *Allied* that "a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine." *See Allied Erecting &*, 825 F.3d at 1381 which cites *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) which in turn cites *Winner*, 202 F.3d at 1349 n.8.

most common skew angle used in construction. Ex. 2043 at 97:6-98:6; Ex. 2044 at ¶112. A PHOSITA would not choose to sacrifice the ability to reach 45° so that the Gilb '155 hanger could extend through a fire barrier—which is not even a purpose of the Gilb '155 hanger or a task for which the Gilb '155 hanger is suitable for. *Id.*

Accordingly, a PHOSITA would not have been motivated to modify the hanger disclosed in Gilb '155 to accommodate a fire barrier.

3. *A PHOSITA Would Not Have Been Motivated to Modify the Hanger Disclosed in Gilb '155 in View of Allan to Accommodate a Fire Barrier*

While Allan explains that slots may be cut into the insulation layer to permit the anchor to extend through the insulation layer toward the masonry veneer wall, Simpson provides no reason why this would have motivated a PHOSITA to extend a hanger through a fire barrier. Ex. 2001 at ¶¶182-184. Instead, Simpson argues that "it would have been obvious to a PHOSITA to" modify a hanger to extend through sheathing, such as drywall, in view of Allan. Pet. at 68. But such conclusory reasoning is insufficient to support a conclusion of obviousness because it fails to provide the "necessary articulated reasoning with some rational underpinning to support a conclusion of invalidity based on these combinations." *InTouch Techs., Inc. v. VGo Commc'ns, Inc.*, 751 F.3d 1327, 1351 (Fed. Cir. 2014) (internal quotation omitted); *see also Heart Failure Techs., LLC v. Cardiokinetix, Inc.*, IPR2013-00183, Paper 12 at 9 (P.T.A.B. July 31, 2013) ("Petitioner must show some reason why a

person of ordinary skill in the art would have thought to combine particular available elements of knowledge . . . to reach the claimed invention.").

Moreover, Allan does not disclose or suggest extending a connector through a fire barrier. Ex. 1012; *see also* Ex. 2044 at ¶113. Instead, Allan relates to a wall anchor that extends through insulation. *Id.* There is a fundamental difference between cutting a narrow slit in insulation and cutting a multiple inch wide hole in a fire barrier. *Id.* at ¶114; Ex. 2043 at 91:1-8, 91:14-18, 91:23-92:15, 92:21-93:1. Where cutting a slit in insulation simply results in a lesser degree of insulation provided, cutting a hole in a fire barrier can result in the complete loss of that fire barrier's fire resistance and rating, thereby endangering the lives of the building's occupants. Ex. 2044 at ¶114.

Accordingly, a PHOSITA would not have been motivated to modify the Gilb '155 hanger in light of Allan.

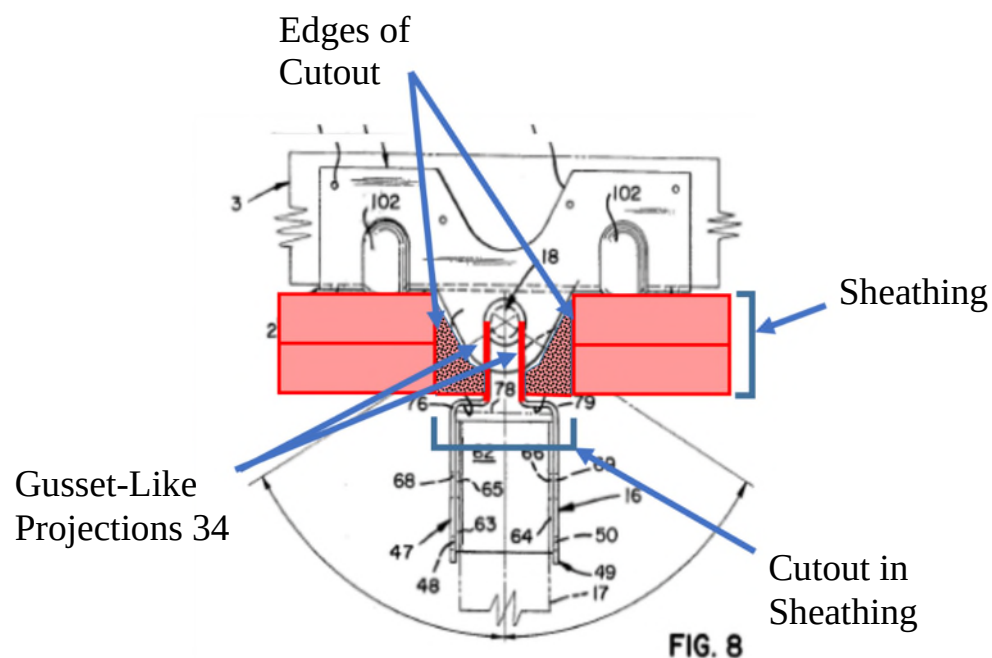
4. *Simpson Failed to Meet its Prima Facie Case of Obviousness with Respect to the Dependent Claims*

i. Claim 4: Gilb '155 Does Not Disclose "Extension Flanges . . . Configured to Extend Through the Sheathing"

Claim 4 requires "extension flanges . . . configured to extend through the sheathing." As discussed above, "through" should be construed such that the extension flanges must extend into one side and out the other side of the sheathing. Further, the requirement that the extension flanges be "configured to extend through

the sheathing" should be construed to require that the extension flanges be designed to extend through an opening in the sheathing in close conformance with an edge of the opening when installed.

Simpson argues that the "gusset-like projections 34" as disclosed by Gilb '155 teach this limitation. But modifying the version of Figure 8 as found on page 90 of the Petition to show drywall makes it evident that the gusset-like projections do not pass into one side and out the other side of the sheathing, nor do they closely conform to an edge of the opening in the sheathing:



Ex. 2044 at ¶86. In fact, Simpson relies on the failure of the gusset-like projections 34 to extend into one side and out the other side of the sheathing with respect to claims 5 and 18:

Gilb '155 teaches that the extension portion (gusset-like member 9) includes extension flanges (gusset-like projections 34) . . . configured to engage each other along a juncture positioned *within* the sheathing . . . .

Pet. at 90 (emphasis added).

Accordingly, Simpson has failed to satisfy its burden of showing that the combination of Gilb '155, Bundy, and Allan disclose "extension flanges . . . configured to extend through the sheathing." Ex. 2044 at ¶88. Simpson therefore has not met its burden of proving that claims 4 and 5-8 (which depend from claim 4) are obvious based on Ground 6 of its Petition. *See CFMT, Inc.*, 349 F.3d at 1342 ("obviousness requires a suggestion of all limitations in a claim").

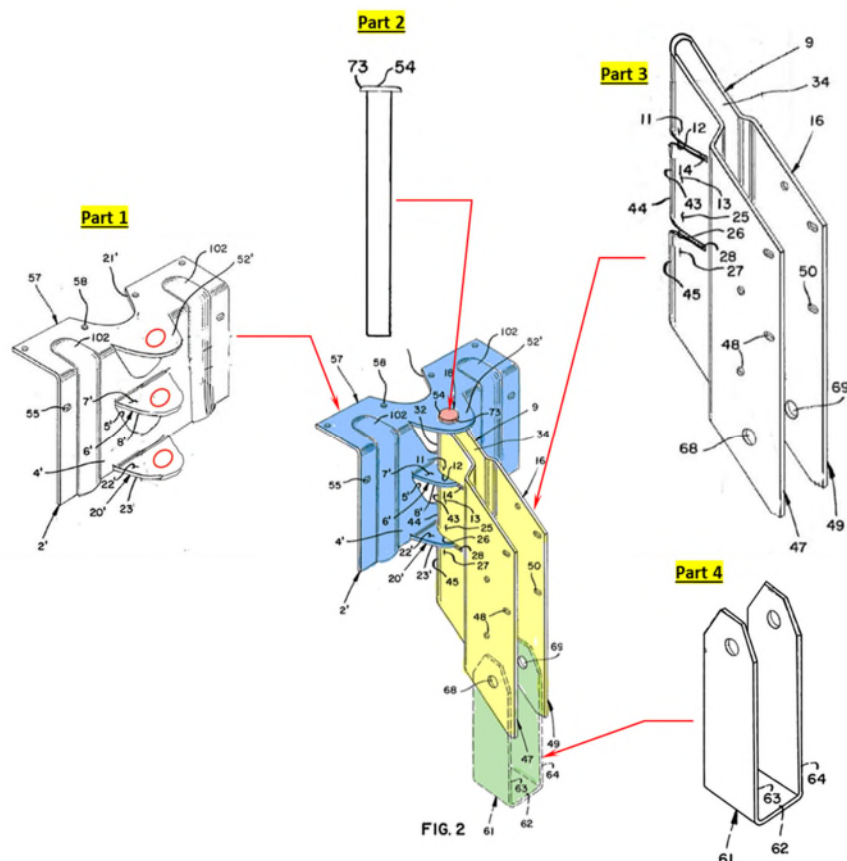
ii. Claims 12 and 19: Neither Gilb '155, Nor the Combination of Gilb '155, Bundy, and Allan, Teach a Channel-Shaped Portion, an Extension Portion, and a Connection Portion "Formed as One Piece"

Claims 12 and 19 require that the channel-shaped portion, the extension portion, and the connection portion of the claimed hanger are "formed as one piece."<sup>12</sup> As recognized in the Institution Decision, and adopted here, "formed as one piece" should be construed as "formed as a single, unitary piece of material." Institution Decision at 43.

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<sup>12</sup> Claim 12 also requires a stop.

As shown by exploding Figure 2 of Gilb '155, the hanger disclosed by Gilb '155 is formed from multiple pieces.



Ex. 2044 at ¶90.

Simpson has failed to show how Gilb '155 or the combination of Gilb '155, Bundy, and Allan teach a channel-shaped portion, an extension portion, and a connection portion formed as a single, unitary piece of material. *Id.* at ¶91.

5. *Secondary Considerations Provide Objective Evidence that the Invention Claimed in the '510 Patent was not Obvious*

In analyzing whether a claimed invention would have been obvious over prior art, objective evidence of non-obviousness "may often be the most probative and

cogent evidence [of non-obviousness] in the record." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983). Such additional considerations include: (1) failure of others; (2) long felt, but unmet demand; and (3) copying of the invention by competitors. *Ecolochem, Inc. v. S. Cal. Edison Co.*, 227 F.3d 1361, 1376-80 (Fed. Cir. 2000).

As testified to by Simpson's own expert, it has been a common fire proofing tactic to use two layers of 5/8" thick drywall on firewalls dating back to at least 1993. Ex. 2043 at 27:20-28:6; *see also* Ex. 2017 at 44-45. Further, "[i]n view of the fire-retardant . . . it has historically been important to maintain the integrity of sheathing." Ex. 1003 at ¶41; Ex. 2043 at 56:2-25. Still despite ongoing concerns regarding interruptions to the sheathing, prior to Bundy and the '510 patent, there were no hangers designed to extend over or receive drywall. Ex. 2001 at ¶270; Ex. 2043 18:6-21:5, 23:10-24:11, 35:24-36:19.

While Bundy's and the '510 patent's inventors both contemporaneously<sup>13</sup> sought to develop a hanger that accommodates drywall, they came up with two vastly different solutions. *Id.* at ¶¶271-272. As shown in Fig. 1 of Bundy, Simpson's

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<sup>13</sup> Bundy has a December 14, 2013 priority date that is less than three weeks prior to the '510 patent's December 31, 2013 priority date. Ex. 1001; Ex. 1007.

solution was to elongate the top flange (15), an existing and well-known component of hangers, to allow the hanger to extend over the drywall. *Id.* at ¶273; Ex. 1007.

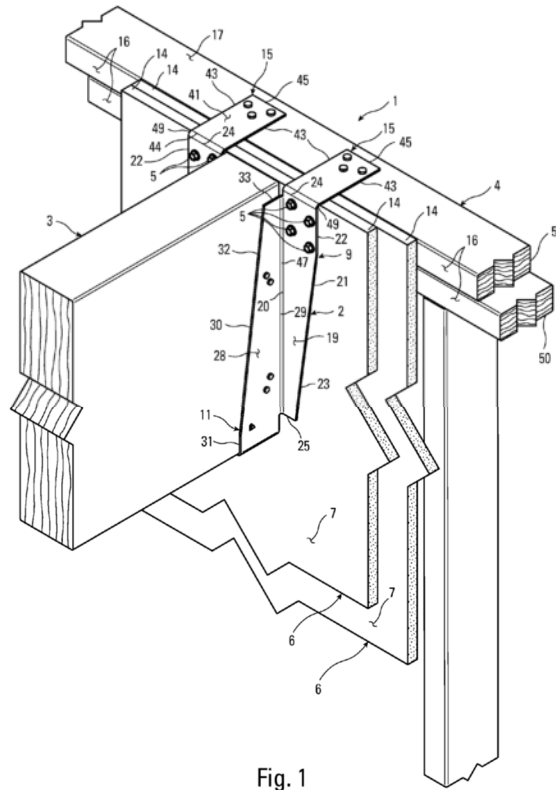


Fig. 1

In contrast, the Patent Owner's solution was to add an additional element to conventional hangers, an extension portion that extends through the sheathing (not over it) and spaces the channel-shaped portion from the connection portion by a distance dimensioned to receive and fit the sheathing. Ex. 2001 at ¶274; Ex. 1001 at Figs 2, 12.

FIG. 2

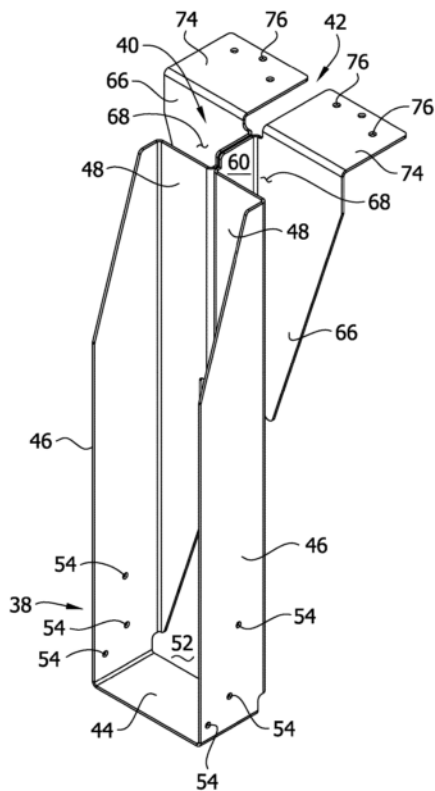
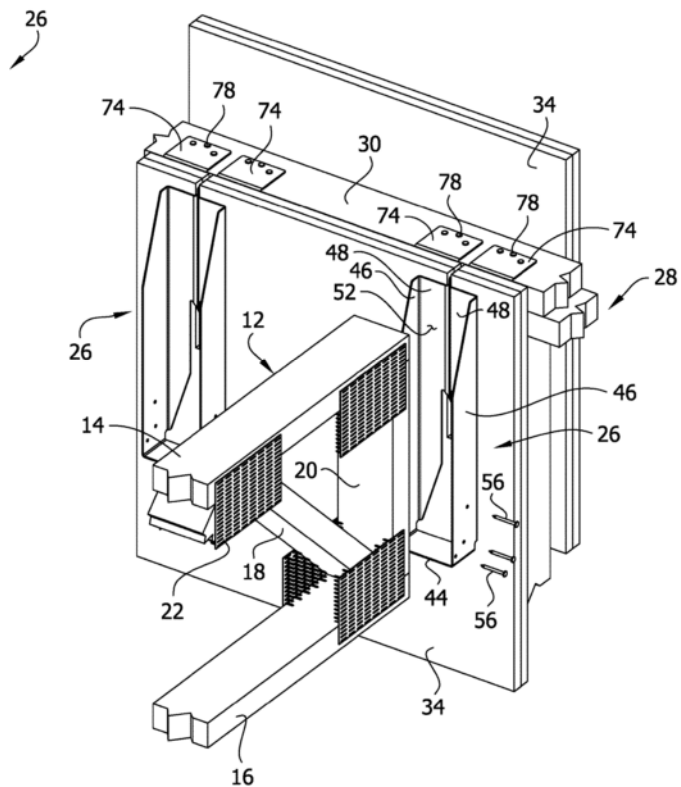


FIG. 12



This situation—where two inventors started with the same goal (*i.e.*, develop a hanger to accommodate drywall) but each contemporaneously came up with a different solution to achieve the goal—is probative of the non-obviousness of the two different solutions. Ex. 2001 at ¶275; *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1574 (Fed. Cir. 1987) (finding the district court erred in finding obviousness where "others aware of the prior art, including the infringer's cable tie designers, did not find the claimed inventions obvious but were proceeding in directions entirely different from that of the inventor").

Having been presented with competing products (Simpson's DHUTF Hangers embodying the Bundy patent and MiTek's FWH Hanger embodying the invention

of the '510 patent), Simpson's customers requested a firewall hanger that could be installed before the drywall. Ex. 2020 at ¶11. This unmet demand is further probative of the non-obviousness of the '510 patent, as "it demonstrates both that a demand existed for the patented invention, and that others tried but failed to satisfy that demand." *Eurand, Inc. v. Mylan Pharms., Inc.*, 676 F.3d 1063, 1082 (Fed. Cir. 2012); *see also* Ex. 2001 at ¶¶276-280.

As MiTek's FWH Hangers embodying the invention of the '510 patent met this demand, Simpson was forced to design a new set of hangers (Simpson's DG Hangers, and subsequently Simpson's DGF Hangers) to achieve this functionality. Ex. 2020 at ¶¶11-12, 17-18. But Simpson did not design these new hangers in a vacuum, as "Simpson was aware of MiTek's FWH Hanger and the fact that Plaintiffs had filed a patent application covering the FWH Hanger [U.S. Pat. Appl. 14/555,049 from which the '510 patent claims priority ]." *Id.* at ¶14.

Simpson purposefully designed around the then pending claims of U.S. Pat. Appl. 14/555,049. *Id.* at ¶¶14, 17. But Simpson nevertheless included two key features in its new design: 1) an extension portion configured to extend through sheathing and 2) a fixed spacing for receiving sheathing between the channel-shaped portion and the back flange sized such that the hanger could receive a double layer of 5/8 inch thick sheathing. Ex. 2001 at ¶¶279-282. Unlike *Pentec, Inc. v. Graphic Controls Corp.*, 776 F.2d 309 (Fed. Cir 1985) (cited in the Institution Decision at

61-62), Simpson has not vigorously denied infringement. Despite having an opportunity and motivation to do so, Simpson did not present a non-infringement argument in response to Patent Owner and MiTek's Motion for Preliminary Injunction in the underlying district court case. Ex. 2051.

Simpson's use of MiTek's FWH Hanger embodying the invention of the '510 patent and the '510 patent's parent patent and applications as a guide in the design of their own hangers is the essence of copying and is further indicia of non-obviousness. *Akamai Techs. v. Cable & Wireless Internet Servs.*, 344 F.3d 1186, 1196 (Fed. Cir. 2003) (citing *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1285 (Fed. Cir. 2000)); *see also* Ex. 2001 at ¶283.

**B. Ground 7: Claims 12 and 19 are Not Obvious over Gilb '155, Bundy, Allan, and Gilb '942**

Recognizing that the limitation "formed as one piece" requires elements to be permanently and rigidly secured together, Simpson's Ground 7 asserts an alternative invalidity basis as to claims 12 and 19. To wit, Simpson applies a new combination of Gilb '942 with Gilb '155, Bundy, and Allan for the purported teaching of welding components of hangers together. Pet. at 99-102. However, Gilb '942 does not remedy the deficiencies of Gilb '155, Bundy, and Allan discussed in Ground 6. Therefore, Ground 7 also fails for the reasons discussed above in connection with Ground 6.

## VII. SIMPSON'S TSUKAMOTO AND TIMONY BASED GROUNDS FAIL TO PROVE THAT THE CLAIMS OF THE '510 PATENT ARE OBVIOUS.

### A. Ground 4: The Claims of the '510 Patent are Not Obvious Over Tsukamoto, Bundy, and Allan

1. *Claims 1, 13, and 20: None of the Prior Art References Cited in Ground 4 Teach a Back Flange Extending From an Edge of the Top Flange*

Each of the independent claims of the '510 patent—claims 1, 13, and 20—requires that the hanger comprise "a connection portion including a top flange configured for attachment to a top surface of a top plate of the wall [and] **a back flange extending from an edge of the top flange.**" (emphasis added). As recognized in the Institution Decision, the combination of Tsukamoto, Bundy, and Allan fails to establish a *prima facie* case of obviousness as none of the references discloses this claim limitation.

An embodiment encompassed within the scope of claims 1, 13, and 20 is shown in Figs. 1 and 2 of the '510 patent, reproduced below. Ex. 2001 at ¶¶122-123. In this embodiment, the hanger includes a connection portion configured for attachment to the top of the wall. *Id.* at ¶123; Ex. 1001 at 6:32-52. The connection portion includes a top flange (74) configured for attachment to the top surface of a top plate (30) of the wall. *Id.*; Ex. 2001 at ¶123. The connection portion also includes a back flange (66) extending from the edge of the top flange. Ex. 1001 at 6:32-52; Ex. 2001 at ¶123. As discussed above, the phrase "extending from" should

be construed such that the starting point of the back flange's extension is on the edge of the top flange. *Id.*

FIG. 1

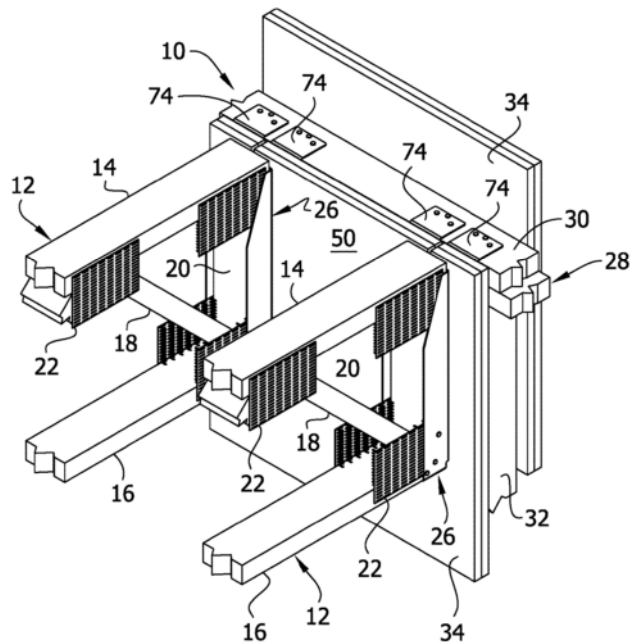
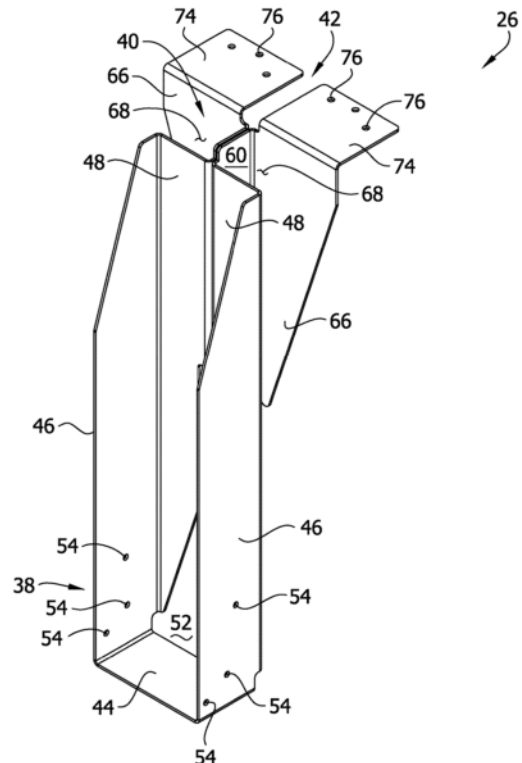


FIG. 2



Simpson incorrectly asserts that Tsukamoto teaches a connection portion having "a back flange ***extending from*** an edge of the top flange." Pet. at 33, 48-49, 63 (emphasis added). In support of this erroneous assertion, Simpson cites Fig. 3 of Tsukamoto, reproduced below. *Id.* at 48-49.

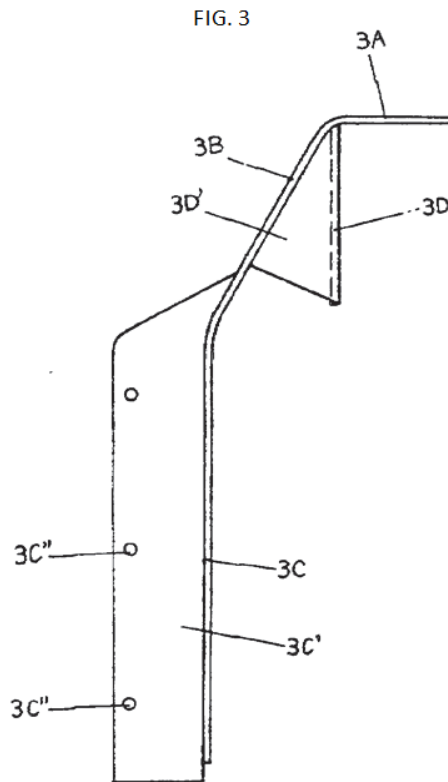
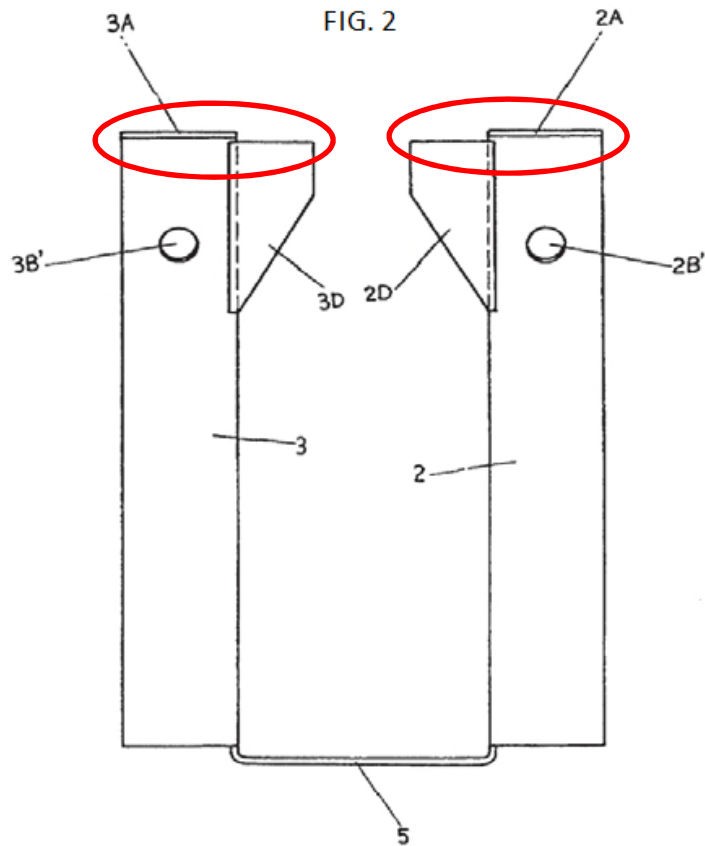
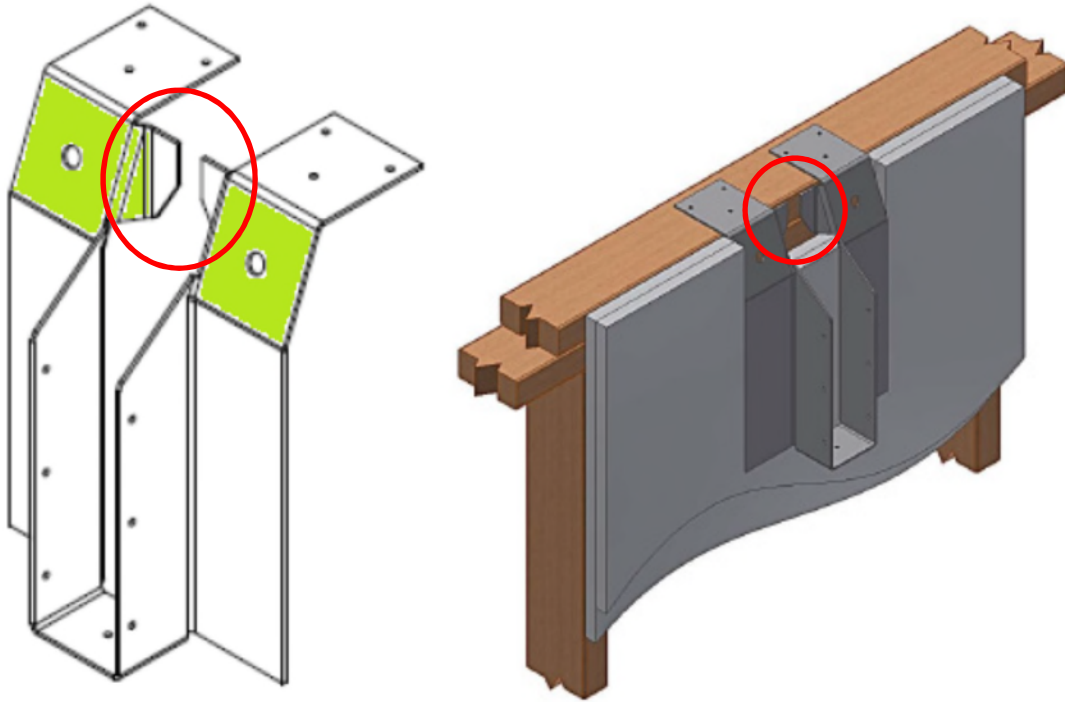


Fig. 3 is a side view that is misleading as to the actual arrangement of the hanger disclosed in Tsukamoto. Ex. 2001 at ¶125. Simpson equates the vertical plates (2D, 3D) of Tsukamoto with the claimed back flange and the horizontal portions (2A, 3A) of Tsukamoto with the claimed top flange. Pet. at 48. However, as shown more clearly in Fig. 2 below, the vertical plates (2D, 3D) of Tsukamoto do not extend from an edge of the horizontal portions (2A, 3A). Ex. 2001 at ¶125.



Instead, the vertical plates (2D, 3D) are "continuously connected to the inclined portions 2B, 3B via connection plates 2D', 3D'," and thus extend from the connection plates (2D', 3D') instead of the horizontal portions (2A, 3A). Ex. 1009 at 2; Ex. 2001 at ¶126.

The configuration of the hanger disclosed in Tsukamoto is carried over into Simpson's hypothetical modifications of Tsukamoto. *Id.* at ¶127. As shown below, Simpson's renderings of its modified Tsukamoto hanger do not depict back flanges extending from the edge of the top flange. Pet. at 46; Ex. 2001 at ¶127.



Moreover, Simpson has not presented any arguments as to why a PHOSITA would have modified the hanger of Tsukamoto to have "a back flange extending from an edge of the top flange." *Id.* at ¶128. Nor has Simpson argued that this deficiency in Tsukamoto is cured by either Bundy or Allan. *Id.* at ¶129.

Indeed, Bundy teaches away from having a hanger with a back flange extending from the top flanges, as the inclusion of a back flange would prevent the hanger from being installed over the drywall panels. Ex. 1007 at 5:26-28 ("[p]referably, no part of the joint hanger 1 contacts the front face 16 of the structural support member 4"), 5:42-45 ("[t]he first and second top flanges 15 preferably extend over the top edge faces 14 of the one or more panels 6 and are the only parts of the joist hanger that contact the structural support member 4."); Ex. 2001 at.

¶¶130-131; *Polaris Indus. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1069 (Fed. Cir. 2018) ("A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant").

Accordingly, Simpson has failed to satisfy its burden of showing that Tsukamoto, Bundy, and Allan disclose "a back flange extending from an edge of the top flange" of claims 1, 13, and 20. *Id.* at ¶132. As "obviousness requires a suggestion of all limitations in a claim," Simpson has failed to meet its obligation of establishing the claims of the '510 patent are obvious as asserted in Ground 4. *CFMT, Inc.*, 349 F.3d at 1342.

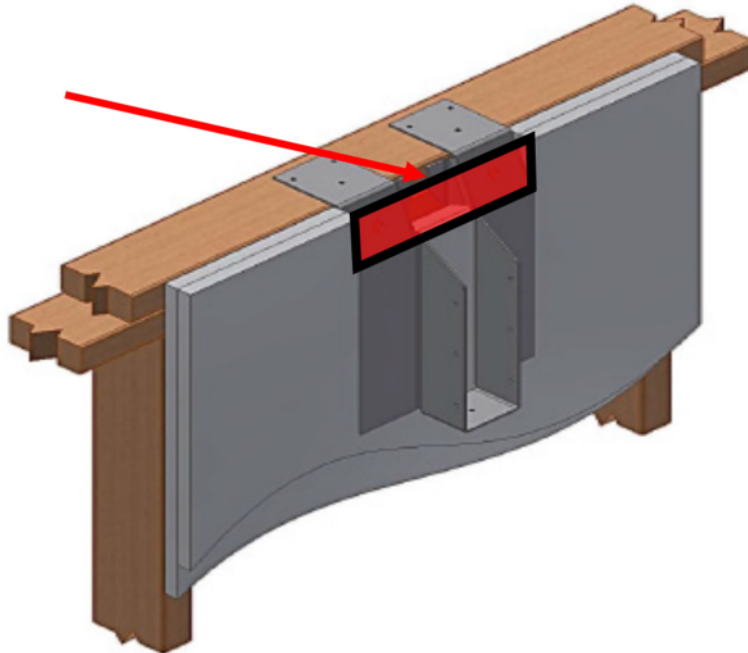
2. *Claims 1, 13, and 20: Tsukamoto Does Not Disclose "an Extension Portion . . . Configured to Extend Through the [Fire Barrier]"*

Each of the independent claims of the '510 patent—claims 1, 13, and 20—also requires "an extension portion . . . configured to extend through the [fire barrier]." As discussed above, the claim language "configured to" should be construed to require that the claimed structures are specifically "meant to" or "designed to" perform the claimed function, "not simply that they are capable of doing so." *Aspex Eyewear*, 672 F.3d. at 1349.

Simpson argues that Tsukamoto teaches this limitation. Pet. at 43-46. To the contrary, Tsukamoto makes no reference to sheathing, drywall, or fire resistant sheathing, much less that any component of the disclosed wall hanger was designed to extend through such wall coverings in close conformance with the edges of the openings formed in the wall coverings. Ex. 1009; Ex. 2044 at ¶¶50-52. Instead, Simpson alleges that "[a] POSITA would have understood that the spacing in Tsukamoto between the channel-shaped portion and the back flange *could* be filled with sheathing such as drywall." Pet. at 44 (emphasis added).

Simpson's argument that the purported extension portion of Tsukamoto—consisting of connection plates 2D'/3D' and 2B/3B—is **capable of** extending through sheathing or drywall falls far short of establishing that these components were actually designed to do such. Specifically, Tsukamoto has wide side flanges (2B/3B) that would require large cutouts in the sheathing. Ex. 2044 at ¶53. Moreover, because these side flanges extend edgewise to the sides, and are inclined from the channel shaped portion to the top flanges, it would be essentially impossible to closely conform the cutouts in the drywall to the extension portion. *Id.* Except where each side flange first passes into the opening, there is an increasingly large gap between the side flange and the edge of the opening as you proceed toward the top of the hanger. *Id.* at ¶54. This gap provides a passage for fire past the fire barrier to the wood of the wall frame. *Id.* Accordingly, the configuration of the connection

plates 2D'/3D' and 2B/3B would be unsuitable for extending through fire resistant sheathing. *Id.* at ¶52.



Simpson has failed to show that its proposed modification to Tsukamoto in light of Bundy and Allan teaches "an extension portion . . . configured to extend through the [fire barrier]" as required by each of the claims of the '510 patent.

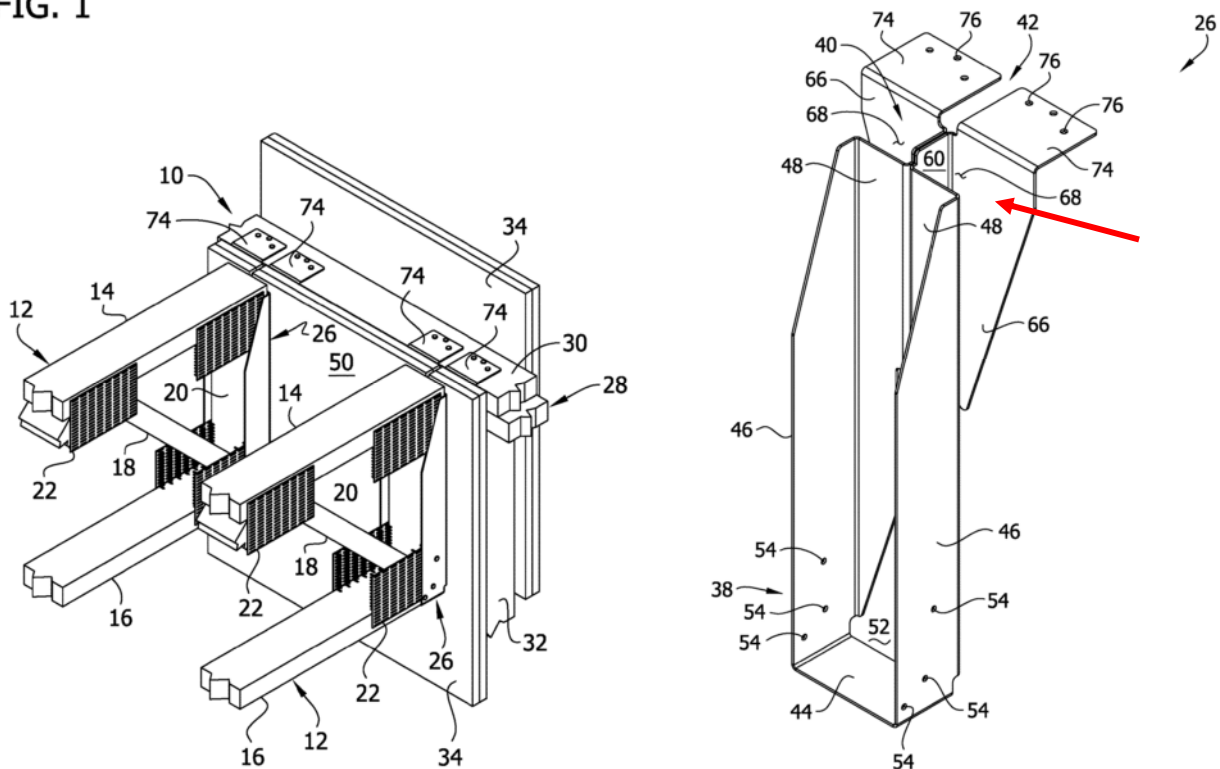
3. *Claim 13: The Combination of Tsukamoto and Bundy Does Not Teach a Space Bounded by the Side Panels and Back Flange that Receives Sheathing*

Claim 13 recites that "the extension portion spac[es] the side panels from the back flange by a distance sized large enough to permit two layers of 5/8 inch thick sheathing to be received in a space bounded by the side panels and the back flange . . . ."

This limitation is demonstrated in the hanger depicted in Figures 1 and 2 of the '510 patent. Ex. 2001 at ¶149. As depicted, the extension portion (40) spaces the side panels (46) from the back flange (66). *Id.*; Ex. 1001 at 5:20-22, Fig. 2. Together the side panels (46) and back flange (66) bound a sheathing channel (68) that is configured to receive the sheathing (34). Ex. 2001 at ¶¶148-149; Ex. 1001 at 5:20-24, Fig. 2. Thus when the sheathing is disposed in the space, the sheathing is directly opposed by the back flange. Ex. 2001 at ¶148; Ex. 1001 at Fig. 1.

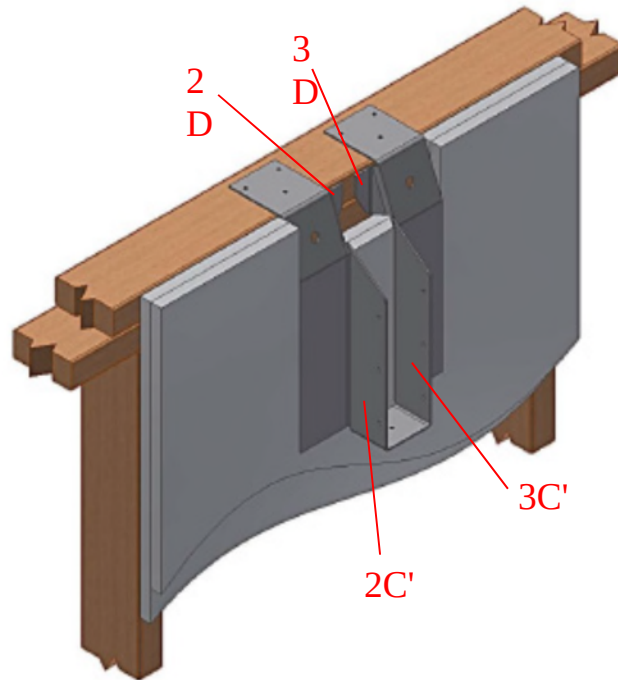
FIG. 2

FIG. 1



Simpson incorrectly asserts that Tsukamoto, as modified by Bundy, teaches "**a space bounded by the side panels and the back flange**" that receives the sheathing. Pet. at 50-52 (emphasis added). In support of this erroneous assertion, Simpson

provides its own hindsight-based creation of a modified Tsukamoto hanger (reproduced below).



*Id.* at 52.

Simpson equates the vertical plates 2D, 3D of Tsukamoto with the claimed back flange and the plates 2C', 3C' of Tsukamoto with the claimed side panels. *Id.* at 50-52. However, as shown above, the sheathing does not extend over the vertical plates 2D, 3D in Simpson's modified Tsukamoto hanger. Ex. 2001 at ¶¶150-151. Accordingly, it cannot be said that the space in which the sheathing was received is bounded by vertical plates 2D, 3D. *Id.* at ¶151. Instead, the sheathing in Simpson's modified Tsukamoto hanger is received in a space bounded by the plates 2C', 3C' and the wall. *Id.*

Simpson has not met its burden of showing that the combination of Tsukamoto and Bundy discloses sheathing received in a space bounded by the back flange, and therefore Simpson has not met its burden of proving the obviousness of claim 13 or any claims depending from it.

4. *Simpson Provides an Insufficient Basis to Combine Tsukamoto, Bundy, and Allan*

In addition to failing to make its *prima facie* case of obviousness, Simpson also fails to demonstrate that a PHOSITA would have been motivated to modify Tsukamoto to incorporate the teachings of Bundy and Allan.

Simpson acknowledges that Tsukamoto does not teach the Spacing Requirements for the purported extension portion as required by the claims of the '510 patent. In an attempt to cure this deficiency in Tsukamoto, Simpson argues it would have been obvious to modify Tsukamoto in view of Bundy to include the missing Spacing Requirements.

Simpson's Petition fails to state why modifying Tsukamoto to include the Spacing Requirement would have been obvious to a PHOSITA. Instead, Simpson merely identifies the features of Tsukamoto, Bundy, and Allan and, in conclusory fashion, asserts that combining these disparate teachings is a simple substitution of one element for another to obtain predictable results. Pet. at 34. But such conclusory reasoning is insufficient to support a conclusion of obviousness because it fails to articulate a "*reason* why a person of ordinary skill in the art would have thought to

combine *particular* available elements of knowledge, as evidenced by the prior art, to reach the claimed invention." *Heart Failure Techs., LLC v. Cardiokinetix, Inc.*, IPR2013-00183, Paper 12 at 9 (P.T.A.B. July 31, 2013).

The basis of Simpson's obviousness argument is essentially the same as the argument that was rejected in *PersonalWeb Techs., LLC v. Apple, Inc.*, 848 F.3d 987 (Fed. Cir. 2017). In *PersonalWeb Techs.*, the Federal Circuit rejected the assertion "that a skilled artisan, once presented with the two references, would have understood that they *could* be combined" for failing to provide "a motivation to pick out those two references and combine them to arrive at the claimed invention." *Id.* at 993-94 (*citing Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015)) ("[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modification of prior art to arrive at the claimed invention.").

Without explanation or support, Simpson's obviousness argument is merely relying on the assertion that Tsukamoto, Bundy, and Allan *could* be combined. But such an argument is merely a hindsight aided reconstruction of the claimed invention. *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) ("It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious."); *see also ATD Corp. v. Lydall, Inc.*, 159 F.3d 534, 546 (Fed. Cir. 1998)

("Determination of obviousness can not be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention. There must be a teaching or suggestion within the prior art, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources of information, to select particular elements, and to combine them in a way they were combined by the inventor.").

In fact, the only reason offered as to why a PHOSITA would allegedly combine Tsukamoto and Bundy is buried within the Fennell Declaration submitted with the Petition. Ex. 1003 at ¶107. As best understood, Mr. Fennell asserts a PHOSITA would have modified the joist hanger of Tsukamoto to include the spacing allegedly taught by Bundy to allow the modified joist hanger to be used in "fire-rated construction" having fire-retardant sheathing mounted on a wall. *Id.* But Mr. Fennell's proffered motivation to combine is deeply flawed. Ex. 2001 at ¶¶158-164.

The hanger of Tsukamoto is intended for use with foundation walls. Ex. 1009 at 2-3; Ex. 2001 at ¶155. Such foundation walls are made of either concrete or masonry, both of which are inherently fire resistant. Ex. 2001 at ¶159; Ex. 1018 at Table 721.1(2); Ex. 2025 at 1; Ex. 2026 at 1; Ex. 2027 at 7. A fire barrier next to a concrete or masonry wall is simply unnecessary. Ex. 2001 at ¶159. Because the foundation wall is *already inherently fire resistant*, there would have been no reason

to add fire resistant sheathing, such as the drywall mentioned in Bundy (Ex. 1007 at 5:18-20) to the foundation wall of Tsukamoto to make the foundation wall fire resistant. Ex. 2001 at ¶159. And as there would have been no reason to add fire resistant sheathing, there would have been no reason to modify the joist hanger of Tsukamoto to include the spacing allegedly taught by Bundy<sup>14</sup> in order to receive the sheathing for "fire-rated construction." *Id.* at ¶¶159-160; *See South-Tek Systems, LLC, v. Engineered Corrosion Solutions, LLC*, 748 Fed. Appx. 1003, 1006-07 (Fed. Cir. 2018) (affirming the Board's non-obviousness determination because "given the redundant functions of [base reference's element] and [the secondary reference's element], the Board found a person of ordinary skill would not have been motivated to add [the secondary reference's element] to [the base reference]").

While it is known to finish foundation walls, like the foundation wall of Tsukamoto, a PHOSITA would have been aware that doing so typically is not done by mounting the sheathing directly on the foundation wall. Ex. 2001 at ¶161; Ex. 2028 at 5; Ex. 2029 at 5; Ex. 2030 at 14-16. Concrete and masonry foundation walls are known to allow moisture migration through them, even when they are above grade. Ex. 2001 at ¶162; Ex. 2030 at 4-5; Ex. 2031 at 8-10, 43-44, 48; Ex. 2042 at ¶2. Further, foundation walls are known to crack, forming undesirable entry points

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<sup>14</sup> As explained above, Bundy does not teach the Spacing Requirements.

for water to flow through the foundation and into the building. Ex. 2001 at ¶162; Ex. 2030 at 10; Ex. 2031 at 44. Were fire-retardant sheathing—such as Bundy's drywall—mounted directly onto a foundation wall, the sheathing would soak up this moisture, potentially causing the sheathing to lose its visual appearance or allowing mold to grow. Ex. 2001 at ¶163; Ex. 2031 at 33-34.

Instead, sheathing is typically mounted on a stud frame or furring strips, which are mounted against the foundation wall. Ex. 2001 at ¶164; Ex. 2028 at 5; Ex. 2029 at 5; Ex. 2030 at 14-16; Ex. 2042 at ¶¶2-3. As a result, in order to modify the hanger of Tsukamoto for use on a foundation wall with sheathing, a PHOSITA would have also had to compensate for the stud frame or furring strips supporting the sheathing. Ex. 2001 at ¶164; Ex. 2042 at ¶4. By compensating for the stud frame or furring strips between the foundation wall and the sheathing, the modified Tsukamoto hanger would require a spacing dimension that is outside the range recited by claims 1 and 13—*i.e.*, "two small to permit three layers of 5/8 inch thick sheathing to be received." *Id.*

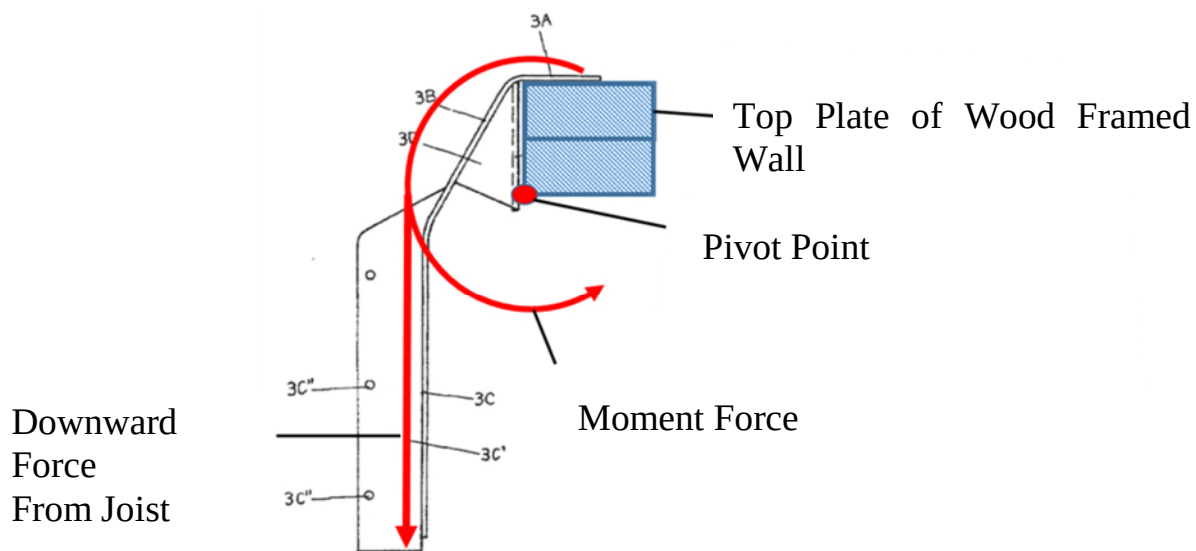
In tacit acknowledgment that a PHOSITA would not have modified Tsukamoto to incorporate the spacing disclosed in Bundy for use on a non-flammable foundation wall, Simpson asserts that a PHOSTIA would have recognized that the hanger of Tsukamoto "is applicable to any kind of wall." Pet. at 37. This conclusory assertion is incorrect. Ex. 2001 at ¶¶165-166. Simply because

Tsukamoto's hanger *could* be used with any kind of wall does not mean a PHOSITA would have been motivated to use the Tsukamoto specifically with a wood frame wall. *Belden Inc.*, 805 F.3d at 1073 ("[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modification of prior art to arrive at the claimed invention.>").

The hanger in Tsukamoto is designed for used with foundation walls having a width greater than the width of the header disposed at the top of the foundation wall on which the hanger is mounted. Ex. 1009 at 2-3, Figs. 5-6; Ex. 2001 at ¶167. The spacing provided by Tsukamoto is to compensate for the difference in widths between the header and the foundation wall. Ex. 1009 at 2-3; Figs. 5-6; Ex. 2001 at ¶167. However, wood frame walls do not have a difference in width between the top plate and the underlying wall supporting the top plate. *Id.* Simpson does not explain, nor could it, why a PHOSITA would have been motivated to use the hanger of Tsukamoto with wood frame walls where hangers mounted on wood frame walls do not have to compensate for any width differences in the wall. *Id.*

Not only would a PHOSITA have had no reason to consider using the hanger of Tsukamoto with wood frame walls in the first place, a PHOSITA would have actually avoided using the hanger of Tsukamoto on a standard wood framed wall without a specific reason to do so. *Id.* at ¶¶169-170. The hanger of Tsukamoto spaces the end of the joist from the wood frame wall. Ex. 1009 at 2-3, Figs. 5-6; Ex.

2001 at ¶169. As the joist is spaced further from the wood framing, the downward force that the hanger is supporting is also spaced from the wall at a location well below the plates 2D, 3D that would resist rotation. *Id.* As illustrated below, this force creates a moment arm that would cause the hanger of Tsukamoto to want to pivot about the bottom-most point where the hanger comes in contact with the top plate of the wood frame wall. *Id.*; Ex. 1009 at Fig. 3.



This subjects the hanger of Tsukamoto and the top plate of the wood frame wall to substantially larger forces than conventional hangers. Ex. 2001 at ¶¶169-171. Where standard hangers are designed to support a load only in shear, the Tsukamoto hanger would require a thicker and more expensive construction to withstand the additional moment forces introduced by its configuration. Ex. 2044 at ¶58; *see also* Ex. 1010 at 1:49-61 (describing designing a hanger to withstand moment forces as "intolerably expensive for general usage in wood frame

buildings"); *Hynix Semiconductor Inc. v. Rambus Inc.*, 645 F.3d 1336, 1353 (Fed. Cir. 2011) ("the fact that a combination is expected to increase cost has some bearing on the obviousness of that combination").

To withstand these larger forces, Tsukamoto depicts a substantial header on top of the foundation wall. Ex. 2001 at ¶171. But unlike with the foundation wall of Tsukamoto, in wood frame walls the top plate is typically made of two 2x4 boards or two 2x6 boards laid one on top of the other. *Id.* at ¶172; Ex. 2032 at 3. If the Tsukamoto hanger were installed on a wood framed wall, the moment arm could cause the top most board of the top plate to twist and fail. Ex. 2001 at ¶¶172-173. The following picture obtained from an internet blog maintained by Simpson depicts a top plate twisting and failing as a result of such forces.<sup>15</sup>

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<sup>15</sup> The photograph appears to show testing of an offset version of Simpson's DGH hanger (a predecessor of Simpson's products subject to the related district court patent infringement litigation). Ex. 2044 at ¶¶60-62; Ex. 2050. Even though Simpson's DGH hanger had a different configuration from Tsukamoto, the photograph demonstrates the legitimate concerns that a PHOSITA would have had concerning the effects that additional rotational forces would place on a top plate in wood light frame construction. Ex. 2044 at ¶65.

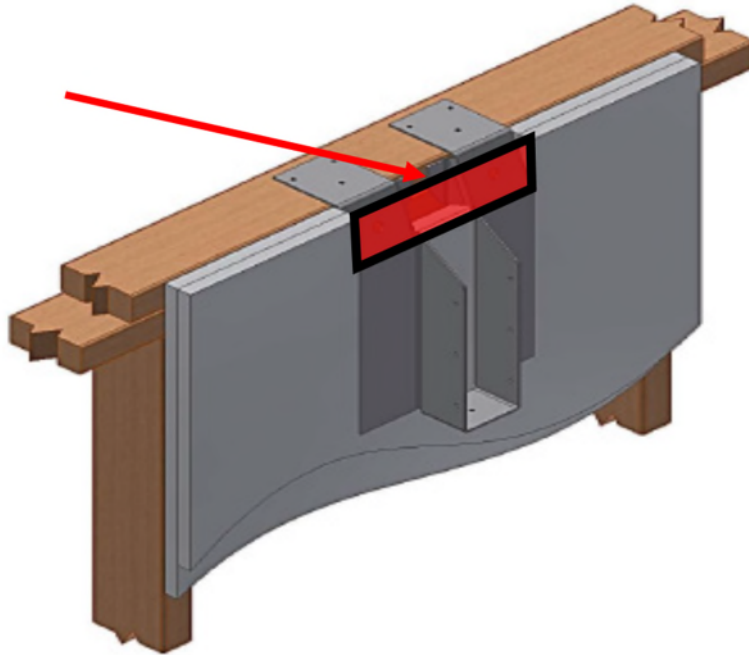


Ex. 2044 at ¶¶59, 64.

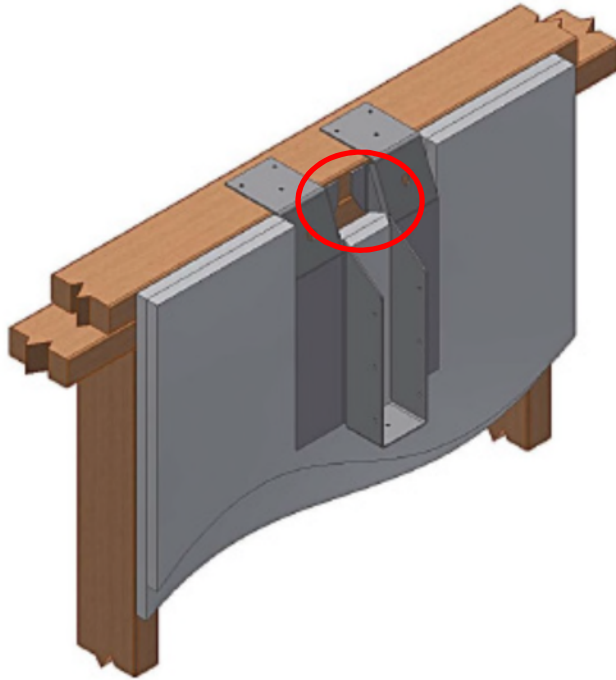
As a result of the moment arm, the total amount of load the hanger of Tsukamoto would be able to carry in wood frame construction is reduced. Ex. 2001 at ¶172. Because of this reduced load, a PHOSITA would have been discouraged from using the hanger of Tsukamoto for applications outside of Tsukamoto's intended use on foundation walls. *Id.* at ¶173.

Further, it is not evident that Simpson's proposal to use the Tsukamoto hanger on a fire separation wall would provide any improvement in fire rating over the use of traditional hangers. *Id.* at ¶¶174-175. Just as with traditional hangers, a large cutout (approximately double the width of the channel alone) in the layers of the fire

barrier would be required in order to accommodate the width of the modified hanger (as shown below). *Id.* at ¶174.



In fact, due to this large cutout and the hanger's configuration, a portion of the wood frame wall is not covered by either the hanger or the fire barrier, leaving this portion of the wood frame wall exposed, as shown below in Simpson's own modified Tsukamoto hanger. *Id.* at ¶176; Pet. at 46.



Leaving a portion of the wood frame wall exposed negatively impacts, if not eliminates, the entire wall's fire rating. Ex. 2001 at ¶¶176-177. As the wood frame walls are load-bearing, the exposure of the top plate would be especially problematic from a structural integrity standpoint during a fire. Ex. 2044 at ¶14.

A PHOSITA would not have considered the joist hanger of Tsukamoto, as modified in view of Bundy, as providing a significant improvement over traditional hangers in terms of maintaining the fire resistance provided by one or more layers of sheathing. Ex. 2001 at ¶¶176-177.

Both Simpson and Mr. Fennell failed to articulate a legitimate reason why a PHOSITA would have been motivated to modify the dimensions of Tsukamoto to accommodate two layers of sheathing. *Id.* at ¶¶153-178. Accordingly, a

PHOSITA would not have been motivated to modify Tsukamoto in light of Bundy and Allan. Simpson's Ground 4 fails for this reason alone.

**B. Ground 5: Claim 3 is Not Obvious over Tsukamoto, Bundy, Allan, and Gilb '416**

Simpson's Ground 5 argues that dependent claim 3 would have been obvious over the combination of Tsukamoto, Bundy, and Allan in further view of Gilb '416. However, Gilb '416 fails to remedy the deficiencies of Tsukamoto, Bundy, and Allan discussed in Ground 4. Therefore, Ground 5 fails for the same reasons discussed above in connection with Ground 4.

**C. Ground 8: Claims 1-4, 6-17, 19, and 20 are Not Obvious Over Timony and Bundy**

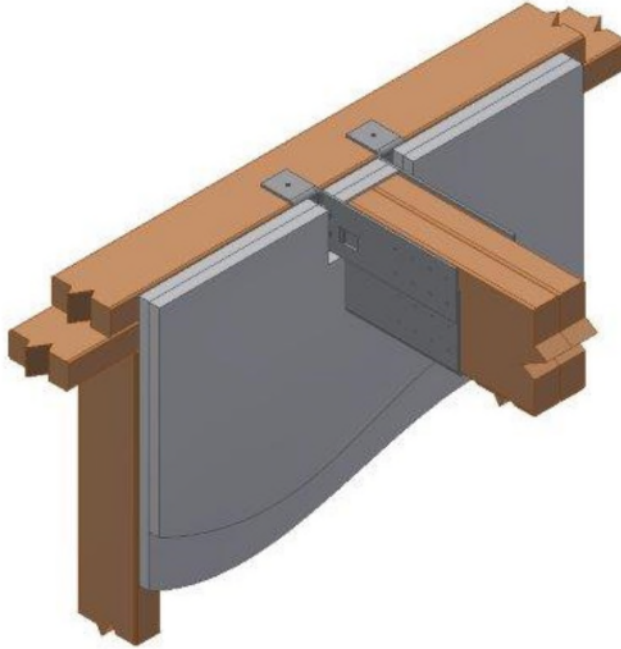
*1. Simpson Fails to Identify a Reason Why a PHOSITA Would Have Been Motivated to Modify Timony to Include a Top Flange*

Each of the independent claims of the '510 patent—claims 1, 13, and 20—requires a top flange configured for attachment to a top plate of a wall. Acknowledging that Timony does not disclose or suggest a top flange, Simpson relies on the teachings of Bundy for this limitation. Pet. at 111. Simpson asserts that a PHOSITA would be motivated to modify the retrofit bracket of Timony to include a top flange as taught by Bundy "to aid in attaching the hanger and to provide added support." Pet. at 104.

As recognized in the Institution Decision, Simpson's proposed modification of Timony in view of Bundy to include a top flange would render the retrofit bracket

of Timony inoperable for its intended purpose. Ex. 2001 at ¶¶258-260; Institution Decision at 53-56. The intended purpose of the retrofit bracket is to be able to hang or connect the joist on a composite wall (210) after the wall has already been constructed. Ex. 1008 at Figs. 8-9, ¶[0049]; Ex. 2001 at ¶261. Because the retrofit bracket installs flush with the face of the concrete core (250), the retrofit bracket can be installed at any position on the composite wall. *Id.* at ¶262. This ability is required in retrofit construction because the existing configuration of building components, such as composite walls (210), may not align or match the changes being made by the retrofit construction. *Id.* Having the ability to attach the retrofit bracket (195) at any position on the composite wall allows the retrofit bracket to be used in any type of retrofit construction of a building, regardless of the existing configuration of the building's building components (*e.g.*, the building structure built on top of the foundation). *Id.*

Adding a top flange to the retrofit bracket would prevent the retrofit bracket from being able to be mounted at any position on the composite wall, making the retrofit bracket inoperable for its intended purpose. *Id.* at ¶263. As shown below in Simpson's hindsight creation of the retrofit bracket (Pet. at 104), adding the top flange restricts the modified retrofit bracket to be mounted only at the top of a newly constructed wall. *Id.*



Thus, a PHOSITA would not look to modify the retrofit bracket in view of Bundy to include a top flange because the top flange would prevent the retrofit bracket from being able to be mounted at any position on a wall (*e.g.*, composite wall 210), thus making the retrofit bracket inoperable for its intended purpose. *Id.* at ¶¶264-265; *see also Plas-Pak Indus.*, 600 F. Appx. at 760 (“[M]odifying [prior art A] to accommodate the spray nozzle of [prior art B] would render [prior art A] ‘inoperable for its intended purpose,’ and a person of ordinary skill would thus not have been motivated to pursue the combination.”). Accordingly, it would not have been obvious to modify the retrofit bracket 195 of Timony to include the top flange of Bundy.

2. *Simpson's Reason as to Why a PHOSITA Would Have Been Motivated to Combine Timony and Bundy Lacks Any Rational Underpinning*

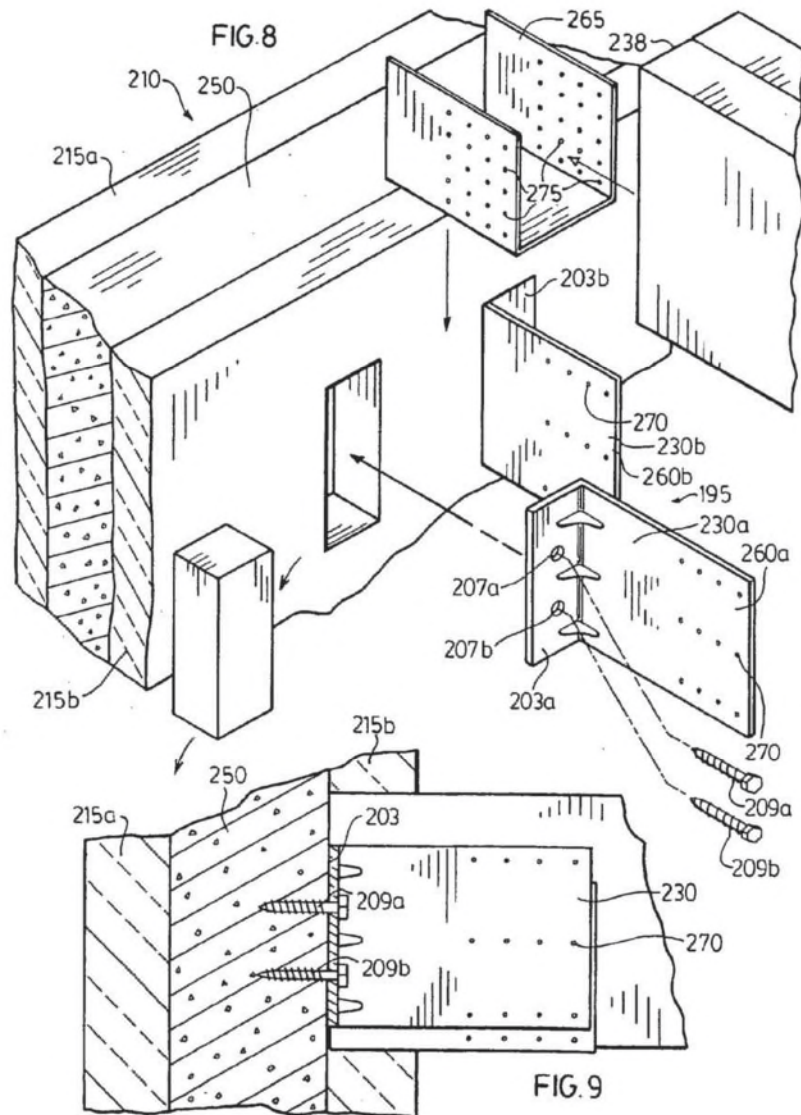
Simpson acknowledges that Timony fails to teach the Spacing Requirements of claims 1, 13, and 20. To cure this deficiency, Simpson argues it would have been obvious to modify the retrofit hanger of Timony in view of Bundy to include the Spacing Requirements.

Simpson's only alleged basis to modify Timony to include the spacing of Bundy is to provide "optimal wall integrity." Pet. at 103. This vague and conclusory allegation by Simpson fails to articulate which property of the wall (*e.g.*, fire, moisture, energy, structural, etc.) is being provided with optimal "integrity" by the proposed modification. Ex. 2001 at ¶¶220-223.

Indeed, Simpson's allegation is inconsistent with the teachings of the references. *Id.* at ¶224. That is, there would have been no reason for a PHOSITA to combine the teachings of Bundy with Timony in order to provide "optimal wall integrity" as the concrete core (250) of the composite wall (210) in Timony already has optimal wall integrity. *Id.*

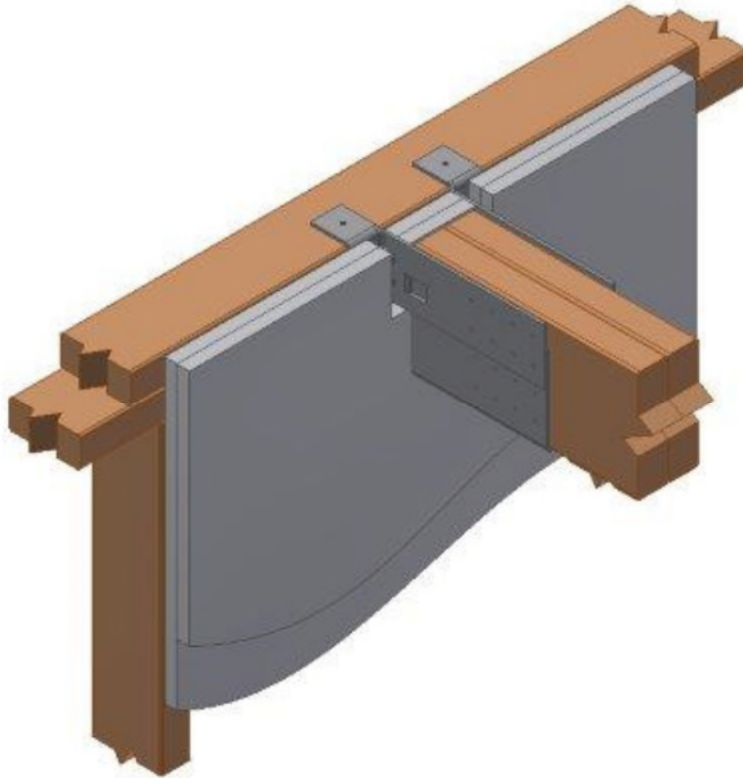
As shown in Figs. 8 and 9, below, the integrity of the composite wall, specifically the concrete core, is intact when the retrofit bracket is mounted to the composite wall. *Id.* The retrofit bracket does not extend through the concrete core or otherwise impair the function of the composite wall (210). Ex. 1008 at Figs. 8-9,

¶¶[0047]-[0049]; Ex. 2001 at ¶224. Nor does Simpson provide any evidence that the function of the concrete core, or composite wall in general, lacks "optimal wall integrity" when the retrofit bracket of Timony is installed. *Id.*



Simpson's proffered motivation of providing "optimal wall integrity" apparently alludes to maintaining the optimal integrity of fire-retardant sheathing

mounted on a wood frame wall, as shown below in its own hindsight-based creation of a modified Timony retrofit bracket. Pet. at 103-104; *see* Ex. 2001 at ¶225.



But the retrofit bracket of Timony is used with concrete construction, not wood frame construction. Ex. 1008 at Abstract, ¶¶[0031]-[0032], ¶¶[0046]-[0047]; Ex. 2001 at ¶226. There would have been no reason for fire-retardant sheathing to be mounted on the concrete composite wall of Timony because the composite wall already includes a concrete core that is itself fire resistant. *Id*; Ex. 1018 at Table 721.1(2); Ex. 2026 at 1; Ex. 2027 at 7. Thus, there would have been no reason to modify the retrofit bracket of Timony to include the spacing allegedly taught by Bundy. Ex. 2001 at ¶227. Therefore, Simpson has failed to articulate a proper

reason why a PHOSITA would have combined the teachings of Timony and Bundy.  
*Id.*

Simpson points to the disclosure in Timony of the retrofit plates (230) extending through the holes cut in the foam wall (215b) for the teaching of extending through sheathing (Pet. at 109-110), but this has nothing to do with fire resistance. Ex. 2001 at ¶229. There is no reason why a PHOSITA would have blithely assumed Timony's disclosure of cutting holes in the foam wall (15b) to accommodate the retrofit bracket (195) could also be done in fire-retardant sheathing while maintaining the fire rating of the wall. *Id.* at ¶228. Cutting a hole in a concrete form (*e.g.*, foam wall 215b) does not suggest cutting a hole in a fire barrier, especially when the material exposed by the hole is inherently fire resistant. *Id.* at ¶¶230-232. On the other hand, cutting a hole in a fire barrier can result in the complete loss of the fire barrier's fire resistance and rating. *Id.* at ¶228.

Thus, there would have been no reason why a PHOSITA would have looked at the retrofit bracket of Timony and think it could be applied to a wood frame wall having fire resistant sheathing thereon. *Id.* at ¶¶232-233. Accordingly, Simpson cannot show that it would have been obvious to combine Timony and Bundy.

3. *Claims 1 and 13: A PHOSITA Would Not Have Been Motivated to Modify Timony to Receive Two Layers of Sheathing*

Claims 1 and 13 require spacing to receive two layers of 5/8 inch thick sheathing. Simpson asserts that the foam wall of Timony, which is used to create

the concrete form that the concrete is poured into to create the concrete core, is equivalent to the sheathing recited in claims 1 and 13. Pet. at 116. However, there would have been no reason for a PHOSITA to modify the retrofit bracket of Timony to receive two layers of the foam wall in view of Bundy. Ex. 2001 at ¶¶234-236. The sheathing disclosed by Bundy is drywall, not rigid foam used in concrete forms. Ex. 1007, 3:59, 5:10-22; Ex. 2001 at ¶236. Bundy discloses using the two layers of 5/8 inch drywall for fire resistance, not for creating concrete forms. Ex. 1007 at 5:10-22; Ex. 2001 at ¶236. Thus, there is no disclosure or suggestion in Bundy to modify the retrofit bracket of Timony to receive two layers of sheathing when Bundy contains no suggestion of making a concrete form out of two layers of the foam wall. *Id.*

Only impermissible hindsight justifies the modification of the retrofit bracket of Timony in view of Bundy. *Id.* at ¶237. Realizing the only way to justify modifying the retrofit bracket of Timony to be able to receive two layers of sheathing is to use the retrofit bracket with frame construction having two layers of fire resistant sheathing, Simpson incorrectly asserts that the retrofit bracket could be used in frame construction. Pet. at 105. However, contrary to Simpson's assertion, a PHOSITA would not use the retrofit bracket of Timony with frame construction. Ex. 2001 at ¶238.

Acknowledging that the hangers disclosed by Timony and Bundy are used in different types of constructions (concrete foundation walls vs frame walls), Simpson asserts that a PHOSITA would have recognized that the retrofit bracket of Timony "*could* be used for a variety of different wall types." Pet. at 105. (emphasis added). However, just because the retrofit bracket of Timony could be used with any kind of wall does not mean a PHOSITA would use the retrofit bracket with any kind of wall. *Belden Inc.*, 805 F.3d at 1073 ("[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modification of prior art to arrive at the claimed invention."). In particular, a PHOSITA would not use the retrofit bracket of Timony with a wood frame wall having sheathing mounted thereon, as taught by Bundy and shown in Simpson's own hindsight imagined creations of a modified Timony retrofit bracket. Ex. 2001 at ¶¶238-240.

The retrofit bracket of Timony spaces the end of the joist (238) from the composite wall (210). Ex. 1008 at Fig. 8; Ex. 2001 at ¶241. This creates a moment arm that causes the retrofit bracket of Timony to want to pivot away from the composite wall. *Id.* This subjects the retrofit bracket of Timony and the composite wall to substantially larger forces than conventional hangers. *Id.* To withstand these larger forces, Timony flush mounts the retaining portions (203) against the concrete

core (250) with concrete fasteners 209 securing the retaining portions to the concrete core. Ex. 1008 at Figs. 8-9; Ex. 2001 at ¶241.

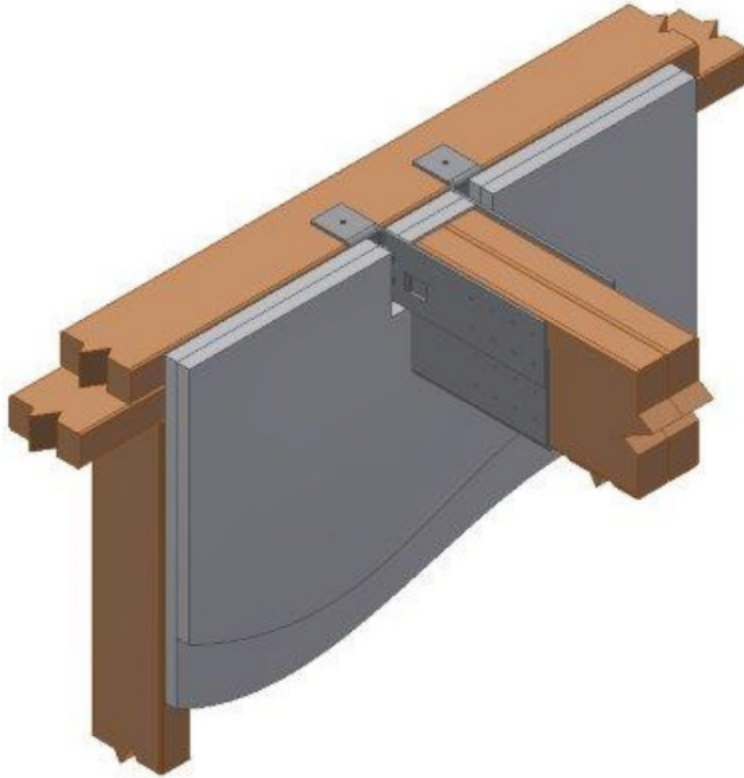
However, in wood frame walls, the top plate is typically made of two 2x4 boards or two 2x6 boards laid one on top of the other. *Id.* at ¶242; Ex. 2032 at 3. As compared to the substantial base provided by the concrete core in Timony, if the retrofit bracket were installed on a wood framed wall the moment arm would cause the top plate to twist. Ex. 2001 at ¶242. Moreover, because the top plate is relatively thin (*e.g.*, only 3 inches tall), the bottom portion of the retaining portions discussed in Timony would not be flush mounted against anything, reducing the ability for the retrofit bracket to resist any pivoting or rotating away from the wall. *Id.* As a result, the total amount of load the retrofit bracket of Timony would be able to carry in wood frame construction is reduced. *Id.* at ¶243. Because of this reduced load, a PHOSITA would have been discouraged from using the retrofit bracket of Timony unless there was a specific reason to do so. *Id.* However, Simpson provides no specific reason, only arguing that the retrofit bracket *could* be used with a wood frame wall. Pet. at 105-106. This is simply not enough to carry Simpson's burden.

Accordingly, Simpson has failed to carry its burden to show that claims 1-4, 6-17, and 19 would have been obvious based on Timony in view of Bundy.

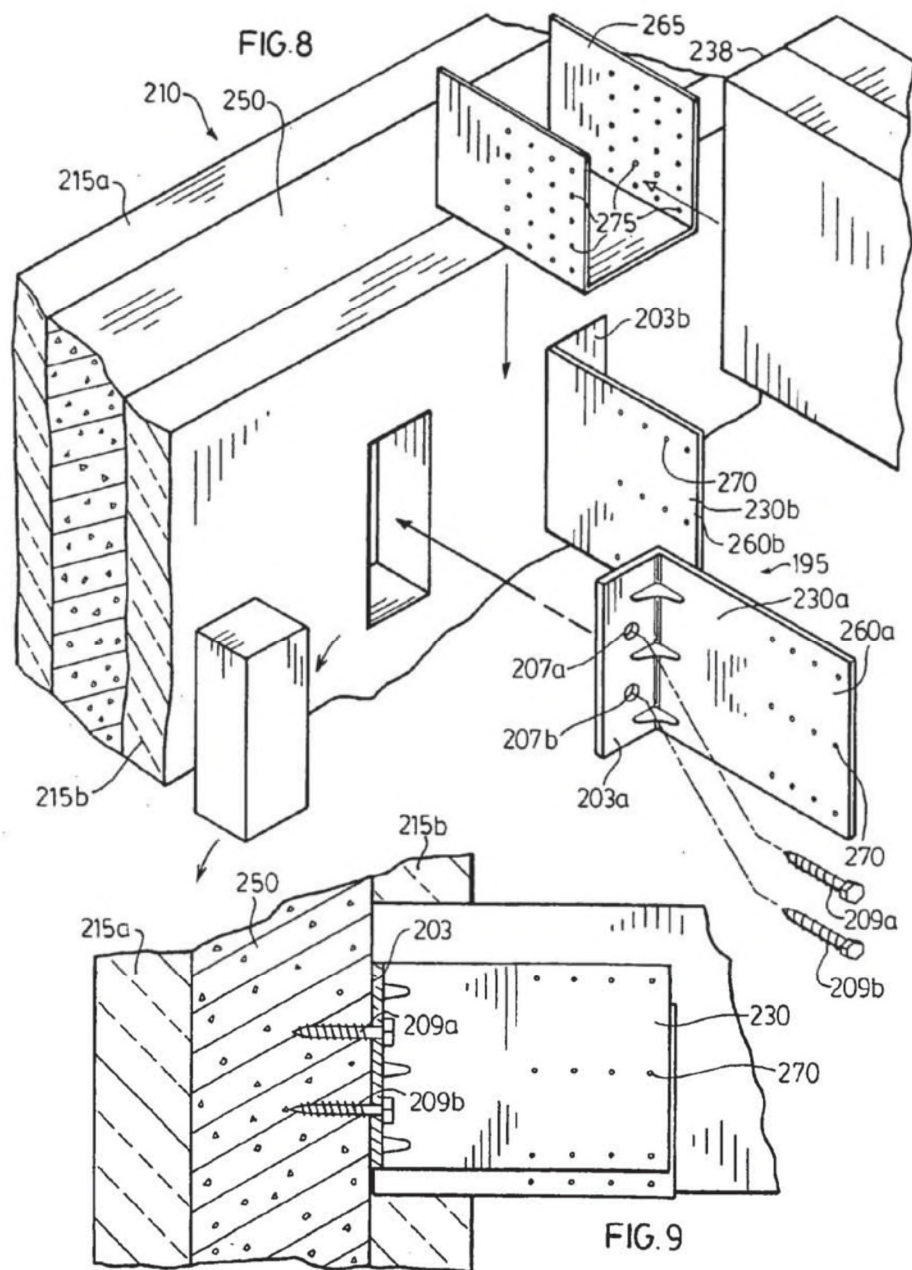
4. *Claim 13: The Combination of Timony and Bundy Does Not Teach a Space Bounded by the Side Panels and Back Flange that Receives Sheathing*

As discussed in Section VII(A)(3), Claim 13 recites the following limitation:

"the extension portion spac[es] the side panels from the back flange by a distance sized large enough to permit two layers of 5/8 inch thick sheathing to be **received in a space bounded by** the side panels and the **back flange**, but too small to permit three layers of 5/8 inch thick sheathing to be **received in the space bounded by** the side panels and the **back flange**." Simpson erroneously asserts that Timony, as modified by Bundy, teaches "**a space bounded by** the side panels and the **back flange**" that receives the sheathing. Pet. at 116-118. In support of this erroneous assertion, Simpson provides its own hindsight-based creation of a modified Timony retrofit bracket, reproduced below. Pet. at 118.



Simpson equates the retaining portion (203) of Timony with the back flange and the vertical sides of the support (265) of Timony with the side panels. Pet. at 108, 110-111.



However, as shown above, the sheathing in Simpson's own modified figure is not received in a space bounded by the retaining portions (203a, 203b) and support (265). Ex. 2001 at ¶¶252-255. Instead, the sheathing is *removed* to receive the retaining portions. *Id.* at ¶256. And the remaining sheathing is bounded by *the wall*

and the support (265). *Id.* In other words, there is no portion of the sheathing disposed between the retaining portions (203a, 203b) and the support (265) in Simpson's own modified Timony retrofit bracket. *Id.* In fact, the retaining portions (203a, 203b) do not bound any space that receives the foam wall (215b) (which Simpson substitutes with fire resistant sheathing according to its reimagined application of Timony) because the retaining portions (203a, 203b) are inserted through cutouts in the foam wall in order to be mounted on the concrete core (250). Ex. 1008 at Figs. 8-9, ¶[0049]; *see also* Ex. 2001 at ¶256.

Accordingly, for this additional reason, Simpson has not met its burden of showing that the combination of Timony and Bundy discloses sheathing received in a space bounded by the back flange, and therefore Simpson has not met its burden of proving the obviousness of claim 13.

5. *Claim 20: A PHOSITA Would Not Have Been Motivated to Modify the Retrofit Bracket of Timony to Accommodate Drywall*

Claim 20 requires "spacing the channel-shaped portion from the back flange plane by a distance sized large enough to permit the drywall to be received." A PHOSITA would not have been motivated to modify the retrofit bracket (195) of Timony to receive drywall because drywall is not directly mounted against concrete walls. Ex. 2001 at ¶¶245-246. The retrofit bracket of Timony is used with a concrete wall (*e.g.*, concrete core (250)). Ex. 1008 at ¶[0049]; Ex. 2001 at ¶246. Any spacing provided by Timony is to compensate for the thickness of the concrete form, in this

case the foam wall (215b), so that the retrofit bracket can be mounted on the concrete core. Ex. 1008 at ¶[0047]-[0049], Figs. 8-9; Ex. 2001 at ¶247. This spacing is not for drywall. *Id.*

Additionally, a PHOSITA would not have been motivated to mount sheathing directly against the concrete core. *Id.* at ¶248. Concrete permits the passage of moisture and typically cracks, forming undesirable entry points for water to flow through the concrete and into the building. *Id.* at ¶¶248-249; Ex. 2030 at 10; Ex. 2031 at 44. A PHOSITA would have understood that any drywall mounted directly onto a concrete wall, such as the concrete core 250 of Timony, would soak up this moisture, causing the drywall to lose its visual appearance and allow mold to grow thereon. Ex. 2001 at ¶249; Ex. 2031 at 33-34. Nor would a PHOSITA have used drywall as the concrete form (in place of the foam wall (215b)) because drywall does not possess sufficient strength to support and hold back the weight of wet concrete before it cures. Ex. 1007 at 5:20-21; *see also* Ex. 2001 at ¶250.

Accordingly, there would have been no reason for a PHOSITA to modify the spacing of the retrofit bracket of Timony to receive drywall. Simpson's Ground 8 fails for this additional reason.

**D. Ground 9: Claim 3 is Not Obvious over Timony, Bundy, and Gilb '416**

Simpson's Ground 9 argues that dependent claim 3 would have been obvious over the combination of Timony and Bundy in further view of Gilb '416. However,

Gilb '416 does not remedy the deficiencies of Timony and Bundy discussed in response to Ground 8. Therefore, Ground 9 fails for the same reasons discussed above in connection with Ground 8.

**E. Ground 10: Claims 12 and 19 are Not Obvious over Timony, Bundy, and Gilb '942**

Simpson argues that dependent claims 12 and 19 would have been obvious over the combination of Timony and Bundy in further view of Gilb '942. However, Gilb '942 does not remedy the deficiencies of Timony and Bundy discussed in response to Ground 8. Therefore, Ground 10 also fails for the reasons discussed above in connection with Ground 8.

**VIII. SIMPSON HAS FAILED TO CARRY ITS BURDEN TO PROVE THAT THE CLAIMS OF THE '510 PATENT ARE INVALID UNDER GROUNDS 1-3 OF THE PETITION**

**A. Ground 1: Simpson's Lack of Written Description Argument Overlooks Clear Written Description Support**

Simpson's lack-of-written-description argument is premised on an assertion that the upper limit of the claim limitations—namely, "a distance . . . too small to permit three layers of 5/8 inch thick sheathing to be received between the rear edge plane and the back flange plane" (or "received in the space bounded by the side panels and the back flange" in claim 13)—does not have written description support. Simpson's argument, however, fails to account for the detailed disclosures contained in the figures of the '510 patent. Ex. 2001 at ¶¶100-109.

Under 35 U.S.C. § 112(a), "[t]he specification shall contain a written description of the invention . . . ." Satisfying § 112(a) does not require describing "exactly the subject matter claimed." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991) (quoting *In re Gosteli*, 872 F.2d 1008, 1012 (Fed. Cir. 1989)). Instead, the written description requirement is met where the specification "allow[s] persons of ordinary skill in the art to recognize that [inventor] invented what is claimed." *Id.* Accordingly, the written description requirement "is most often phrased as whether the application provides 'adequate support' for the claim(s) at issue . . . ." *Id.* at 1560.

The Federal Circuit has unambiguously stated that "*drawings alone may* be sufficient to provide the 'written description of the invention' required by § 112 . . . ." *Id.* at 1564 (emphasis added to "drawings alone", emphasis to "may" in original); *see also Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997) (the written description requirement can be met "by such descriptive means as words, structures, *figures*, diagrams, formulas, etc., . . .") (emphasis added). Yet, Simpson's analysis inexplicably ignores the detailed patent figures.

Figures 1, 10A, 11, 13A, 14A, 35, 36, 38, and 39 of the '510 patent provide drawings of embodiments of the patented invention where two layers of sheathing (34) are shown occupying the fixed space that is bounded by the side panels (46) and

the back flange (66) of the disclosed hanger.<sup>16</sup> Annotated Figs. 10A, 11, and 13A are reproduced below. As stated at Col. 4, Lines 10-19 of the '510 patent, the sheathing is two layers of 5/8 inch gypsum board.

FIG. 10A

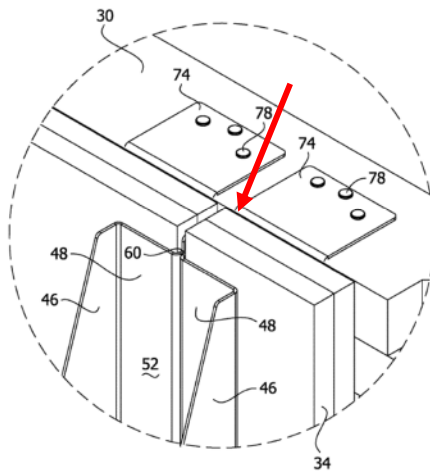


FIG. 13A

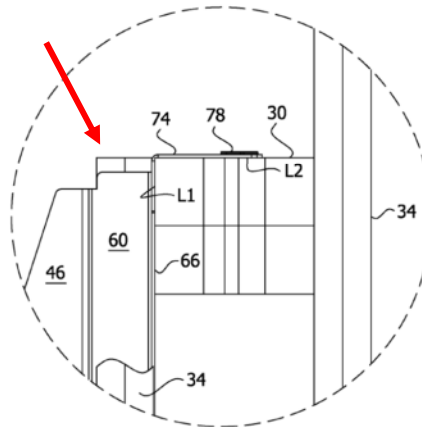
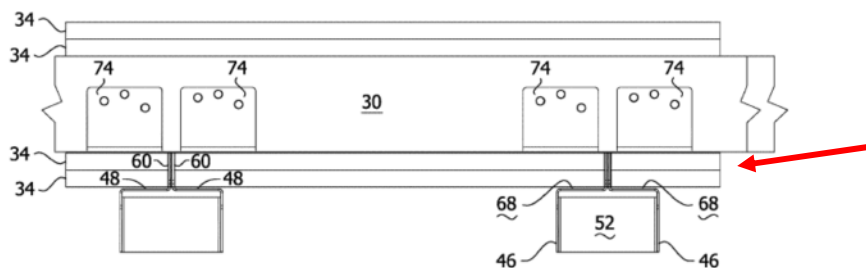


FIG. 11



As is evident from the identified figures, the two layers of 5/8 inch sheathing sufficiently fill the space between side panels (46) and back flange (66) such that the disclosed hanger could not possibly receive a third layer of 5/8 inch sheathing within

<sup>16</sup> The Figures, Background, and Detailed Description of the '510 patent are the same as in the priority '370 application. Ex. 1002 at 0233-0303.

the shown fixed space. Ex. 2001 at ¶104. This disclosure fully supports the claim language that forms the basis of Simpson's written description challenge.

The fact that Simpson's written description arguments address negative claim limitations does not change the analysis. *Yingbin-Nature (Guangdong) Wood Indus. Co. v. ITC*, 535 F.3d 1322, 1334 (Fed. Cir. 2008) (finding negative claim limitations do not require "*in haec verba* support for the claimed subject matter at issue"). Nor do any of the *General Hosp. Corp.*, *Santarus*, *Schechter*, *Purdue*, *Canon Inc.*, *Ex parte Haag*, or *Omega* cases cited by Simpson support that the upper limitation in claims 1 and 13 must have been explicitly disclosed within the text of the written description.

As correctly recognized in the Institution Decision, the specification provides written description support for claims 1 and 13. Institution Decision at 17-19. Accordingly, claims 1-19 satisfy the written description requirement.

**B. Ground 2: Simpson's Argument that Claim 20 is Indefinite is Based on an Unduly Narrow and Legally Incorrect Indefiniteness Standard**

In Ground 2 of its Petition, Simpson argues that claim 20 is invalid because the claim limitation "the extension portion spacing the channel-shaped portion from the back flange plane by a distance sized large enough to permit the drywall to be received between the channel-shaped portion and the back flange plane" is allegedly indefinite under 35 U.S.C. § 112(b). In making its argument, Simpson applies an

erroneously narrow application of the definiteness requirement. When the law is properly applied, claim 20 satisfies 35 U.S.C. § 112(b). *See* Ex. 2001 at ¶¶110-119.

Under 35 U.S.C. § 112(b), "a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). But while clarity is required, courts have acknowledged that "absolute precision is unattainable." *Mentor Graphics Corp. v. EVE-USA, Inc.*, 851 F.3d 1275, 1290 (Fed. Cir. 2017).

The language of claim 20 plainly requires that the extension portion space the channel-shaped portion from the back flange plane "by a distance sized large enough to permit the drywall to be received" there-between. The distance-of-spacing limitation in claim 20 is further sufficiently described in the specification. *See e.g.*, Ex. 1001 at 5:33-36 ("A portion of the fire retardant sheathing 34 extends into each sheathing channel 68 and is secured between the back panels 48 and the back flanges 66."). Similarly, Figures 10A (shown below), 11, 13A (shown below), 14A, 35, 36, 38, and 39 of the '510 patent depict embodiments of the patented invention where the extension portion spacing is "sized large enough" to receive drywall (34).

FIG. 10A

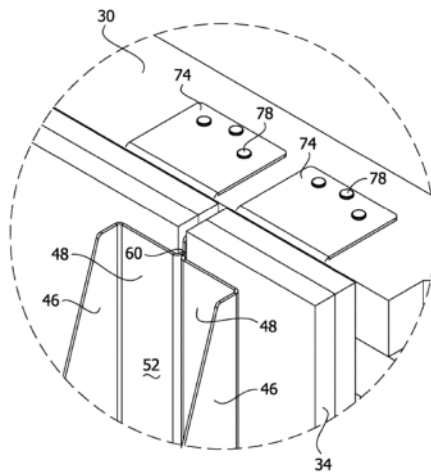
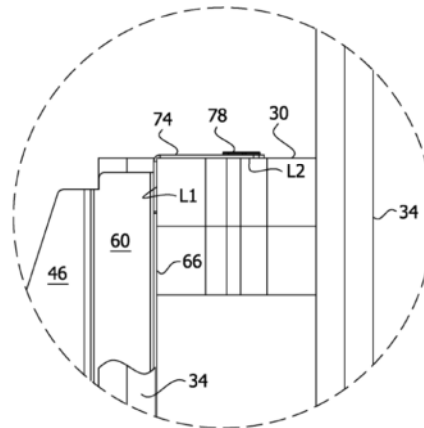


FIG. 13A



In view of the plain language of the claims and the specification's disclosures, a PHOSITA would understand that the standard for measuring the distance of the spacing is that the spacing must be sufficient to receive drywall. Ex. 2001 at ¶¶111-113.

Simpson provides two unconvincing arguments in support of its Ground 2.

First, Simpson argues that the limitation is indefinite because the phrase "large enough" creates a minimum spacing distance with no upper limit. Pet. at 23. In making this argument, Simpson broadly asserts that a range with no upper limit is indefinite. *Id.* at 24. But Simpson's support for this argument—*In re Wertheim*, 541 F.2d 257 (C.C.P.A 1976)—is inapposite as it was addressing "the written description requirement under § 112(a)." *In re Wertheim*, 541 F.2d at 261-62. As recognized in M.P.E.P § 2174, Section 112(a)'s written description requirement and Section 112(b)'s definiteness requirement "are separate and distinct." Thus, Simpson provides no support for the assertion that a range having no upper limit is indefinite.

In fact, the Federal Circuit has expressly found that "no [upper limit] limitation is required as a matter of definiteness." *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1382 (Fed. Cir. 2001).<sup>17</sup> In *Exxon Research*, the Federal Circuit held the limitation of "particles having an average diameter greater than five microns" to be definite, even though there was no upper limit on the particle size. *Id.* The Federal Circuit reasoned that "the claims expressly reach any composition with [] particles having an average diameter greater than five microns, no matter how large the particles may be; as such, there is no indefiniteness as to the scope of that limitation." *Id.* The Federal Circuit further explained:

A patent claim to a fishing pole would not be invalid on indefiniteness grounds if it contained a limitation requiring that the pole be 'at least three feet long,' even though a 50-foot-long fishing pole would not be very practical. By the same token, there is nothing indefinite about the claim language at issue in this case simply because it covers some embodiments that may be inoperable.

*Id.*

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<sup>17</sup> While *Exxon Research* was decided before *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898 (2014) and applied the "insolubly ambiguous" indefiniteness standard, the Federal Circuit's reasoning is equally pertinent under the post *Nautilus* indefiniteness standard.

Simpson's second argument asserts that the limitation is indefinite because the claim does not specify a particular size of drywall. Pet. at 26-27. This argument fails because "one of ordinary skill in the art would easily [be] able to determine the appropriate dimensions" of the spacing based on the size of drywall used. *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986).

Drywall is a well-known building material commonly and routinely used to construct walls, such as stud frame walls. Ex. 2001 at ¶0047; Ex. 1016 at 4-36; Ex. 1017 at 27-86; Ex. 1018 at Table 721.1(2); Ex. 2017 at 44-45; Ex. 2001 at ¶¶116-118. Simpson's Petition and statements in the Declaration by Simpson's expert confirm that drywall is a well-known building material available in well-known standard sizes. Pet. at 24-25, 35, 67-68; Ex. 1003 at ¶¶46, 101, 158. Accordingly, the claim language provides reasonable certainty to the PHOSITA as to the scope of the claimed invention.

Nor does the fact that drywall is commercially available in more than one width render claim 20 indefinite. *Orthokinetics* is directly on point on this issue. In *Orthokinetics*, the Federal Circuit considered whether a claim limitation defining the dimensions of a wheelchair based on the size of automobile door frames was

definite. *Orthokinetics, Inc.*, 806 F.2d at 1568, 1576.<sup>18</sup> Reasoning that "[t]he claims were intended to cover the use of the invention with various types of automobiles" and "[t]hat a particular chair on which the claims read may fit within some automobiles and not others is of no moment," the court found that "[a]s long as those of ordinary skill in the art realized that the dimensions could be easily obtained, [§112(b)] requires nothing more." *Id.*

Here, a PHOSITA, who is already intimately familiar with drywall as described above, could easily obtain the dimension of the spacing distance. Ex. 2001 at ¶117.

As correctly recognized in the Institution Decision, claim 20 meets the definiteness requirement of 35 U.S.C. § 112(b). Institution Decision at 19-23.

**C. Ground 3: Simpson's Argument that Claims 1-19 are Anticipated by Brekke '370 is Incorrect and Does Not Support a Finding of Invalidity**

Piggybacking on its Ground 1 allegations that claims 1–19 are unpatentable under 35 U.S.C. § 112(a) for lack of written description, Ground 3 asserts that claims 1-19 also lack written description support for priority purposes. Relying on this

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<sup>18</sup> The claim limitation at issue in *Orthokinetics* was "wherein said front leg portion is so dimensioned as to be insertable through the space between the doorframe of an automobile." 806 F.2d at 1568, 1568.

incorrect premise, Simpson asserts that the '370 publication, an application in the same priority family, anticipates claims 1-19 of the '510 patent.

As discussed above, the identified limitations in claims 1 and 13 are fully supported under 35 U.S.C. § 112(a). See Section VIII(A). Therefore, no new matter was added to the '510 patent and claims 1-19 of the '510 patent properly claims priority to the '370 publication. As the '370 publication is not prior art to the '510 patent, Simpson's Ground 3 also fails.

## **IX. CONCLUSION**

Simpson has failed to demonstrate that any of the claims of the '510 patent are invalid.

Dated: June 4, 2020

Respectfully submitted,

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## **CERTIFICATE OF SERVICE**

Under 37 C.F.R. § 42.6(e), the undersigned certifies that on June 4, 2020, a copy of the foregoing PATENT OWNER'S RESPONSE, along with the supporting exhibits, were served via email on the following:

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**CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME  
REQUIREMENTS UNDER 37 C.F.R. § 42.24**

Under 37 C.F.R. § 42.24(d), the undersigned certifies that this Patent Owner's Response complies with the type-volume limitation of § 42.24(b)(1) because it contains 18,608 words, excluding the parts of the Patent Owner's Response exempted by § 42.24(a).

This paper also complies with the typeface requirements of 37 C.F.R. § 42.6(a)(2)(ii) and the type style requirements of 37 C.F.R. § 42.6(a)(2)(iii) and (iv).

Dated: June 4, 2020

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