

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SIMPSON STRONG-TIE COMPANY INC.,
Petitioner

v.

COLUMBIA INSURANCE COMPANY,
Patent Owner

Case PGR2024-00050
U.S. Patent No. 11,920,339

**DECLARATION OF W. ANDREW FENNELL IN SUPPORT OF
PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE AND
PETITIONER'S OPPOSITION TO PATENT OWNER'S CONTINGENT
MOTION TO AMEND**

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Simpson Strong-Tie Company EX1068
Simpson v. Columbia
PGR2024-00050

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I, W. Andrew Fennell, declare as follows:

I. INTRODUCTION

1. I have been asked by Simpson Strong-Tie Company Inc. (“Petitioner,” or “Simpson”) to provide my opinions in the above-captioned post-grant review (“PGR”) proceeding involving U.S. Patent No. 11,920,339 (“the ’339 patent,” EX1001), which is titled “Method of Constructing a Fire-Resistive Wall Assembly.” I previously submitted a declaration (EX1003) in support of the Petition for post-grant review of the ’339 patent. This declaration is in support of Petitioner’s Reply to Patent Owner’s Response and Petitioner’s Opposition to Patent Owner’s Contingent Motion to Amend in the same proceeding, PGR2024-00050.

2. I understand that Patent Owner Columbia Insurance Company (“PO” or “Mitek”) submitted a Patent Owner Response (Paper 18) (“POR”).

3. I understand that Patent Owner submitted declarations from several witnesses in support of its POR, including declarations from Richard Kaczkowski (EX2050), Paul Tucker (EX2051), Tom Irmiter (EX2052), Andrea Baranyk (EX2053), Michael Alley (EX2054), Dwight Duncan (EX2055), Matt Church (EX2056), Joe Dunkle (EX2057), Ryan Holmes (EX2058), Michael Nelson (EX2059), and Chris Horwitz (EX2060).

4. I understand that Patent Owner submitted additional exhibits, such as email communications from Simpson and Mitek, product literatures, and technical documentation, in support of its secondary considerations of non-obviousness.

5. I understand that Patent Owner also submitted a Contingent Motion to Amend (Paper 19) (“MTA”). In the MTA, Patent Owner proposed to substitute claims 32-51 in place of issued claims 1-31 of the ’339 patent if the Board finds the original claims unpatentable. I have been asked to provide my technical review, analysis, insights, and opinions regarding the POR and MTA.

6. My background and qualifications were provided in paragraphs 6-10 of my original declaration, Exhibit 1003, and my CV was submitted as Exhibit 1028. My statements in my original declaration regarding my review of the ’339 patent and related materials remain unchanged. In reaching my opinions, I carefully reviewed the POR and MTA, the Petition for post-grant review of the ’339 patent, my original declaration, and the materials reviewed as part of my original declaration. EX1003, ¶11 (listing references considered in my prior declaration). In addition, I reviewed and refer to the following materials:

Paper	Description
11	Institution Decision
18	Patent Owner’s Response
19	Patent Owner’s Contingent Motion to Amend

Exhibit No.	Description
1047	Declaration of Sam Hensen
1048	Declaration of Tom Evans
1049	Michael Nelson Deposition Transcript
1050	Ryan Holmes Deposition Transcript
1051	Mike Alley Deposition Transcript
1052	Richard Kazckowski Deposition Transcript
1053	Dwight Duncan Deposition Transcript
1054	Thomas Irmiter Deposition Transcript
1055	Paul Tucker Deposition Transcript
1056	Chris Horwitz Deposition Transcript
1057	Matt Church Deposition Transcript
1058	Andrea Baranyk Deposition Transcript
1059	“outward” definition, <i>Merriam-Webster Dictionary</i>
1060	“close” definition, <i>Merriam-Webster Dictionary</i>
1061	“conformance” definition, <i>Merriam-Webster Dictionary</i>
1062	U.S. Patent No. 4,464,877 to Gebhardt et al. (“Gebhardt”)
1063	U.S. Patent App. Pub. No. 2012/0219785 to Yu et al. (“Yu”)
1064	US 10,024,049
1065	US 11,649,626

Exhibit No.	Description
1066	<i>Simpson Strong-Tie Company, Inc. Columbia Insurance Co., PGR2023-00047, Final Written Decision, Paper 14 (P.T.A.B. Feb. 28, 2025).</i>
1067	<i>Simpson Strong-Tie Company, Inc. Columbia Insurance Co., PGR2021-00109, Final Written Decision, Paper 73 (P.T.A.B. Mar. 15, 2023).</i>
1071	Japanese Design Patent No. D1226744 to Kanai (Kanai) with attached certified English-language translation
1072	Wayback Machine Screenshot of Gypsum Association Website showing Fire Resistance Design Manual (GA-600-12) (November 12, 2012)
1073	Simpson Email (SST0012139) ATTORNEY EYES ONLY
1074	Simpson Email (SST0037770) ATTORNEY EYES ONLY
1075	Simpson Email (SST0087068) ATTORNEY EYES ONLY
1076	Simpson Email (SST0087225) ATTORNEY EYES ONLY
1077	Simpson Email (SST0087439) ATTORNEY EYES ONLY
1078	U.S. Patent No. 8,789,341 to Shepard
1079	Simpson Photos of Prototype Joist Hangers ATTORNEY EYES ONLY
1080	Simpson Email: forwarding IIC Complaint
1081	U.S. Gypsum Company, “Pre Dry-In construction: The Evolution of Construction Starts From Within,” White Paper (2014)
1082	Simpson Email (SST0012140) ATTORNEY EYES ONLY
1083	Simpson Email (SST0012141) ATTORNEY EYES ONLY
1084	Simpson Email (SST0087474) ATTORNEY EYES ONLY

Exhibit No.	Description
1085	Simpson Email (SST0037834) ATTORNEY EYES ONLY
1086	<i>Simpson Strong-Tie Company, Inc. Columbia Insurance Co.,</i> PGR2021-00109, Patent Owner's Response, Paper 45 (P.T.A.B. Jun. 9, 2022).
1087	<i>Simpson Strong-Tie Company, Inc. Columbia Insurance Co.,</i> PGR2019-00063, Patent Owner's Response, Paper 27 (P.T.A.B. Jun. 4, 2020).
1088	Patent Owner's Response to Office Action mailed July 17, 2017 of U.S. Application No. 14/555,049 (the '049 patent)
2001	Declaration of Richard Kaczowski
2002	Curriculum Vitae of Richard Kaczowski
2003	U.S. Patent No. 11,142,902
2004	U.S. Patent No. 11,225,787
2005	U.S. Publication No. 2021/0396000
2006	U.S. Publication No. 2022/0243455
2007	DGT/DGHT Fire Wall Hangers
2008	"Mass Timber and Wood Framing," Architectural Record Magazine, McGraw Hill Construction, November 2012, pp. 165-169
2009	Top Flange Hangers LBV/BA/B/HB
2010	Merriam-Webster's Collegiate Dictionary – Definition of Bound
2011	New Oxford American Dictionary – Definition of Bound
2012	U.S. Patent No. 11,065,667
2013	U.S. Publication No. 2019/0136520

Exhibit No.	Description
2014	U.S. Patent No. 4,560,301
2015	U.S. Patent No. 6,112,495
2016	Simpson Strong-Tie: New Fire Wall Hangers Optimized for Power Nailers
2017	Simpson Strong-Tie: DGHT Top-Flange Fire Wall Hanger
2018	Simpson Strong-Tie: DGT Top-Flange Fire Wall Hanger
2019	Simpson Strong Tie Co., Inc. Design No. SST/WPCF 120-01 Fire Resistant Joist Hanger DG Series Fire Wall Hanger
2020	Simpson Strong-Tie: Your Go-To, Load-Rated Fire Wall Hanger
2021	Simpson Strong-Tie: Allowable Loads for the DG and DGH hanger installed on walls over wood structural panel sheathing
2022	Simpson Strong-Tie: DGH Fire Wall Hanger Now Available Skewed or with Offset Top Flange
2023	Simpson Strong-Tie: DG/DGB/DGH Fire Wall Hangers
2024	Merriam-Webster's Collegiate Dictionary – Definition of Outwardly
2025	New Oxford American Dictionary – Definition of Outward
2026	U.S. Publication No. 2002/0104279
2027	U.S. Patent No. 11,560,707
2028	U.S. Publication No. 2002/0148191
2029	U.S. Publication No. 2013/0133284
2030	Merriam-Webster's Collegiate Dictionary – Definition of Close
2031	New Oxford American Dictionary – Definition of Close

Exhibit No.	Description
2032	Merriam-Webster's Collegiate Dictionary – Definition of Conform
2033	New Oxford American Dictionary – Definition of Conformance
2034	U.S. Patent No. 9,938,709
2035	U.S. Patent No. 5,237,613
2036	U.S. Patent No. 6,135,687
2037	Transcript of the May 25, 2022 Deposition of Mr. Fennel
2038	2012 International Building Code – Table 721.1(2)
2039	Fire Ratings of Masonry Walls
2040	Fire and Concrete Structures
2041	Fire Protection Safety with Concrete
2042	2012 International Building Code: Definition of “Fire Wall”
2043	Structural Design for Fire Safety
2044	Press Releases – MiTek Residential Construction Industry
2045	MiTek Releases FWH Fire Wall Hanger, A New USP Structural Connector Product
2046	USP Structural Connectors 2015-2016 Product Catalog
2047	Wood-Frame House Construction
2050	Second Declaration of Richard Kaczowski
2051	Declaration of Paul Tucker
2052	Declaration of Tom Irtmer [sic]

Exhibit No.	Description
2053	Declaration of Andrea Baranyk
2054	Expert Report of Michael Alley
2055	Declaration of Dwight J. Duncan, CFA
2056	Declaration of Matt Church
2057	Declaration of Joe Dunkle
2058	Declaration of Ryan Holmes
2059	Declaration of Michael Nelson
2060	Declaration of Chris Horwitz
2061	May 14, 2025 Deposition of William Andrew Fennell
2062	May 25, 2022 Deposition of William Andrew Fennell
2063	October 5, 2022 Deposition of William Andrew Fennell
2073	Declaration of W. Andrew Fennell in Support of Petitioner's Reply to Patent Owner's Response and Petitioner's Opposition to Patent Owner's Contingent Motion to Amend (PGR2021-00109)
2074	Declaration of Sam Hensen in Support of Opposition to Motion for Preliminary Injunction
2075	Expert Report of Kenneth S. Serwin, PH.D.
2076	Expert Report of Nathan Hoffmann, PE
2077	U.S. Patent No. 537,504
2078	U.S. Patent No. 3,885,363
2079	U.S. Patent No. 6,230,466
2080	U.S. Patent No. 9,790,684

Exhibit No.	Description
2081	U.S. Publication No. 2012/0285020
2082	U.S. Publication No. 2013/0047539
2083	File History of U.S. Application No. 18/492,460
2084	New Oxford American Dictionary – Definition of Open
2085	Merriam-Webster’s Collegiate Dictionary – Definition of Opening
2086	Simpson Design File for Gypsum Board Cantilever Hanger
2087	Simpson Emails Re: DHU vs. USP’s FHW (1/2)
2088	Simpson Emails Re: USP Gypsum Hanger (1/4)
2089	Simpson Emails Re: USP Gypsum Hanger (2/4)
2090	MiTek Emails Re: FWH
2091	USP: FWH Fire Wall Hanger Testing
2092	Simpson Emails Re: USP Gypsum Hanger (3/4)
2093	MiTek Emails Re: Cantilevered Hanger (Highly Confidential – Prosecution Bar)
2094	Simpson Emails Re: Status of DHU/DHUTF
2095	Simpson Emails Re: New DHT Drywall Hanger – Forecast Estimate
2096	Simpson Emails Re: Fire Rated Hanger
2097	Simpson Emails Re: Group Field Trial in Baltimore
2098	Simpson Emails Re: USP FWH
2099	Simpson Emails Re: Firewall Hanger (1/2)

Exhibit No.	Description
2100	Simpson Emails Re: USP Fire Wall Hangers FWH Series
2101	Simpson Emails Re: DGF/DGHF and DGBF
2102	Simpson Emails Re: Fire Wall Hangers
2103	Simpson Emails Re: DU – DHU – DHUTF Challenge
2104	Simpson Emails Re: FWH USP (1/4)
2105	Simpson Emails Re: DHU
2106	Simpson Emails Re: USP FWH Hanger Talking Points
2107	Simpson Emails Re: FWH USP (2/4)
2108	Simpson Emails Re: Drywall Hanger
2109	Simpson Emails Re: Mitek FWH Meeting
2110	Simpson Emails Re: DHU vs. USP's FWH (2/2)
2111	Simpson Emails Re: Confidential Drywall Hanger
2112	Simpson Emails Re: Hanger Team Meeting Minutes
2113	Photograph of Initial Simpson FWH and MiTek FWH
2114	Simpson Emails Re: Baltimore Summary / Patent Meeting
2115	July 21, 2017 Simpson Hanger Team Minutes
2116	Simpson Emails Re: DGH/DGB Firewall Hanger is Now Available (1/2)
2117	Simpson Emails Re: DGH/DGB Firewall Hanger is Now Available (2/2)
2118	MiTek Emails Re: USP FWH Fire Wall Hanger

Exhibit No.	Description
2119	MiTek Emails Re: FWH Fire Wall Hanger for 2 Hour Envelope
2120	MiTek Emails Re: Fire Wall Hanger – UFP
2121	MiTek Emails Re: Fire Wall Hanger
2122	MiTek Emails Re: Question? FWH Series – Fire Wall Hangers
2123	MiTek Emails Re: FWH3518
2124	Simpson Emails Re: New Fire Wall Hanger
2125	MiTek Emails Re: Standard Pricing – Reliable- Los Angeles Apts – Laurence Hovenier 1-27-15.xlsx
2126	Simpson Emails Re: Rumbings
2127	Simpson Emails Re: Top Flange Hanger Over 2 Layers of Gypsum Board
2128	Simpson Emails Re: B/HB Style Hanger for Wall with 2-Layers of Gyp
2129	Simpson Emails Re: FWH USP (3/4)
2130	Simpson Emails Re: FWH USP (4/4)
2131	Technical Bulletin: FWH Series Fire Wall Hangers
2132	Fire Wall Hangers FWH Series
2133	DG/DGB/DGH Product Literature: Your Go-To, Load- Rated Fire Wall Hanger
2134	DGF/DGHE/DGBF Product Literature: Your Go-To, Load-Rated Fire Wall Hanger
2135	DGT/DGHT Fire Wall Hanger
2136	Simpson Emails Re: DHU/DHUTF

Exhibit No.	Description
2137	Simpson Emails Re: Firewall Hanger (2/2)
2138	Simpson Cantilever Drywall Hanger Testing
2139	Mitek Emails Re: Revised Firewall Hanger Sales Sheet – Correction to Narrower Width Allowable Loads
2140	Simpson Emails Re: MiTek USP FWH Fire Wall Hanger
2141	Simpson Emails Re: USP Gypsum Hanger (4/4)
2142	Curriculum Vitae of Paul Tucker
2143	April 15, 2025 Deposition of William Andrew Fennell
2144	2012 International Building Code: Chapters 6 and 7
2145	2000 International Building Code
2146	FW Hangers Top Mount
2147	1994 Timber Construction Manual
2148	DU-DHU-DHUTF Drywall Hangers
2149	1967 Uniform Building Code
2150	Performance Standard for Wood-Based Structural-Use Panels
2151	April 17, 2025 Deposition of Kenneth Serwin
2152	The Evolution of Engineered Wood I-Joists
2153	Performance Standard Considerations for I-Joists Used in Residential Floor Construction
2154	Fire Rated Systems
2155	ICC-ES Evaluation Report: ESR-3444
2156	ICC-ES Evaluation Report: ESR-4464

Exhibit No.	Description
2157	ASTM E814
2158	FWH Fire Wall Hanger Installation Instructions
2159	Simpson Emails Re: USP – FWH Fire Wall Hanger
2165	Simpson Emails Re: Do You Have a Match for This?

7. I have also reviewed all other materials cited herein.

8. My work on this case is being billed at a rate of \$475 per hour, with reimbursement for actual expenses. My compensation is not contingent upon the outcome of this post-grant review.

II. LEVEL OF ORDINARY SKILL IN THE ART

9. I incorporate by reference my understanding of the person of ordinary skill in the art (“POSA”) as set forth in paragraph 15 of my previous declaration. I understand that Patent Owner has proposed additional requirements to the skillset of a POSA. Specifically, Patent Owner suggests the POSA have work experience in (1) construction connector design, development, or use, (2) drywall construction practices/sequencing, and (3) performance requirements related to fire-rated drywall construction. I believe that such additional experience is unnecessary given the lack of complexity presented by the subject matter of the ’339 patent. That being said, individuals with experience in construction connector design, development, or use generally have knowledge of how their designed connectors

will be installed and the performance requirements associated with their designs.

As such, I do not believe there is a significant difference in how either POSA would address the '339 patent claims.

III. UNDERSTANDING OF THE LAW

10. I incorporate by reference my understanding of the legal principles, including my discussion of claim construction and obviousness, as set forth in my previous declaration. EX1003, ¶¶12-34. I include here certain additional legal understandings.

11. As stated in my prior declaration, I understand that a patent claim can be considered obvious to a POSA at the time the application was filed and that the teachings of two or more prior art references may be combined if that combination would have been obvious to a POSA. EX1003, ¶¶26-34.

12. I further understand that whether a prior art reference teaches away from the claimed invention is a factor to be considered in determining obviousness. I also understand that it is improper to combine references that teach away from their combination. I understand that though 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, the mere disclosure of alternative designs does not teach away.

13. As stated in my prior declaration, I understand that the proper construction of any term is how a person of ordinary skill in the art would have understood the term based on the term's use in the claims, specification, and file history of the patent. EX1003, ¶¶16-17.

14. I further understand that while claims are construed in view of the specification, limitations from the embodiments in the specification should not be read into the claims, unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of exclusion.

15. I understand that using the term “comprising”, for example, in the transition between the preamble and the body of the claim indicates that the claim does not preclude the presence of components or steps that are in addition to, though not inconsistent with, those recited in the limitations that follow.

16. I understand that a patent must include a written description that makes clear the full scope of the claimed invention in such full, clear, concise, and exact terms as to enable a person of ordinary skill in the art at the time of the invention to make and use the claimed invention without undue experimentation.

17. I understand that a substitute claim in a PGR must be supported by the original disclosure of the patent application and cannot introduce what is referred to as “new matter,” and that whether new matter is introduced depends on whether

the disclosure in the original application as filed satisfies the written description test stated above.

18. I understand that one way to determine if this written description requirement is satisfied is if a POSA would recognize from reading the patent specification that the inventor possessed the full scope of the subject matter claimed.

19. I understand that when performing an analysis of written description that the knowledge of a POSA may not be used as support to teach limitations that are not in the specification, even if those limitations would be rendered obvious by the disclosure, that written description is not a question of whether a POSA might be able to construct the subject matter claimed from the teachings of the disclosure, but whether the application necessarily discloses that subject matter, and further that the disclosure must actually or inherently disclose the claimed subject matter.

20. I understand that the disclosure must demonstrate that the inventor possessed the subject matter of a particular claim as a whole and further that it is insufficient to separately analyze written description as a collection of independent limitations, but that rather, such analysis must show that the inventor possessed the particular claimed combination of elements in order to constitute written description support for such a claim.

IV. OVERVIEW OF THE '339 PATENT

21. I previously discussed and stand by my overview of the '339 Patent, including my discussion of the technology background, the prosecution history, and the alleged invention of the '339 patent, as set forth in my previous declaration. EX1003, ¶¶32-66.

V. CLAIM CONSTRUCTION

22. I maintain my understanding of claim construction, including my discussion of the particular terms set forth in my previous declaration. EX1003, ¶¶16-23.

23. I understand that Patent Owner proposes constructions of the terms discussed below. Patent Owner's Response (POR), 4-20. In my opinion, Patent Owner's proposed claim constructions are improper, as explained below.

A. "Bounding"

24. It is my understanding that Patent Owner asserts in its Response that the limitation "bounding" means "to fully or partially limit, enclose, or confine." POR, 6. In my opinion, Patent Owner's proposed construction is not proper. As explained in my previous declaration, the term "bounding" means "to enclose" all sides or surround. EX1003, ¶98. As explained in my previous declaration, "[b]ounding,' when used as a transitive verb, means to 'enclose' or 'confine.'" EX1003, ¶98. Given that the '339 patent specification does not use the word

“bound,” it is my understanding that the term “bound” should be given its ordinary and plain meaning, which, in this case, is to “enclose” all sides or surround.

B. “Planar Extension Plates”

25. It is my understanding that Patent Owner asserts in its Response that the limitation “planar extension plates” should be construed to include portions of bends at the ends of the plate connecting the planar extension plates to other elements. POR, 10; EX2050, ¶¶28-29; EX2051, ¶¶82-83. I disagree.

26. The ’339 patent specification discloses the bends as separate elements connecting the extension plate to the channel-shaped portion and back flange. EX1001, 14:45-54.

27. As explained in my previous declaration, a POSA would have understood the term “plate” to mean “a smooth flat thin piece of material.” EX1035, 6. Therefore, a POSA would understand the term “planar extension plates” to mean “a flat portion of the extension flange between any bent portions.” EX1003, ¶23. Given that the plain language of the claims introduces the planar extension plates as separate elements from the bends, it is my opinion that a POSA would have construed the “planar extension plates” to be a distinct element from the recited “bends.” As explained in my previous declaration, “to the extent an extension flange includes a bent portion, such bent portion is not part of an extension plate.” EX1003, ¶23.

C. “Opening Outwardly”

28. It is my understanding that Patent Owner contends that the phrase “opening outwardly,” as recited in claims 1 and 27, corresponds to an opening or open top that “provides access to the outside for the opening from the edge of the fire-retardant sheathing.” POR, 10, 15; EX2050, ¶¶35-36. It is my understanding that the phrase “opening outwardly” is not used in the specification and should be construed according to its plain and ordinary meaning. Accordingly, the phrase “opening outwardly” should be construed to define an opening on or toward the outside of the exterior edge. EX1059 (Merriam-Webster’s Collegiate Dictionary – definition of “outward.”).

D. “Close Conformance”

29. It is my understanding that Patent Owner asserts in its Response that the limitation “close conformance” means that “the edge of the fire-retardant sheathing is within a short distance away and corresponding in form or shape to the exterior face of the extension portion.” POR, 16; EX2051, ¶¶99-103. In my opinion, Patent Owner’s proposed construction is not proper.

30. It is my understanding that because the phrase “close conformance” is not used in the specification, the term should be construed according to its plain and ordinary meaning. The limitation “close conformance” should be construed as the drywall is near and corresponds in shape to the exterior face of the extension

portion. EX1060 (Merriam-Webster’s Collegiate Dictionary – definition of “close.”); EX1061 Merriam-Webster’s Collegiate Dictionary – definition of “conform.”). The terms “close” and “near” are relative terms of degree that, without further context from the specification, could be open to different meanings. As explained in my previous declaration, “[n]owhere does the specification use the phrase ‘close conformance’ or provide any context to a POSA so that any aspect of ‘close conformance’ is applied.” EX1003, ¶123.

VI. CLAIMS 1-31 LACK ADEQUATE WRITTEN DESCRIPTION

A. Claims 1 and 27: “inserting” and “moving”/“arranging” steps.

31. I have been informed that recited method steps may occur simultaneously. I have also been informed that separately recited steps in a claimed method are two distinct actions that must be supported by the written description. Because the steps of “inserting” and “moving”/“arranging” in claims 1 and 27 are recited as separate elements, the ’339 patent specification must adequately support these two distinct steps. As explained in my previous declaration, the ’339 patent specification does not describe these two separate steps. EX1003, ¶96.

32. Patent Owner contends that the ’339 patent disclosure supports the recited “inserting” and “moving”/“arranging” steps of claims 1 and 27 because these method steps do not have to occur sequentially. POR, 102. In my opinion, the ’339 patent fails to adequately support the recited “inserting” and

“moving”/“arranging” steps of claims 1 and 27, regardless of whether steps are performed simultaneously or sequentially.

33. The '339 patent disclosure describes only one step associated with the handling of the sheathing: “*moving* the sheathing upward into place.” *See* EX1001, 8:16-21 (emphasis added), 11:26-31; EX1003, ¶96. Nowhere does the '339 patent specification distinguish a first step of inserting sheathing between the channel-shaped portion and the frame wall from a second step of moving/arranging the sheathing relative to the extension portion.

34. Attempting to show support these claimed steps, Patent Owner contends that the '339 patent's description at 8:19-21, “the sheathing is positioned in the sheathing channels 68 between the back flanges 66 [attached to the frame wall 28] and the back panels 48,” correlates to the “inserting” step. POR, 103. Patent Owner further contends that the '339 patent's description at 8:16-21, “moving the sheathing upward into place so that the extension flanges 60 of the hanger 26 extend through the slot 72 of the sheathing,” correlates to the “moving/arranging” step.

35. I disagree because the '339 patent's description at 8:16-21, “the sheathing is positioned in the sheathing channels 68,” is merely the *result* from completing the step of “moving the sheathing upward into place,” as described in 8:16-21. Once the sheathing is moved “upward into place” (8:16-21), the sheathing

is “positioned” (i.e., located) in the sheathing channels. The ’339 patent specification never describes the second step of “moving” or “arranging” the sheathing after it has been moved “upward into place.”

36. Patent Owner’s expert declarant Paul Tucker acknowledged during his deposition that this section of **the ’339 patent specification (i.e., 8:16-21) only describes one step**. Specifically, when asked “[c]an you identify where in the specification inserting the sheathing behind the channel-shaped portion is described separately from moving the sheathing into place around the extension flange,” Mr. Tucker replies “[t]he only thing I see is in column 8 [I]t’s below line 15 and it talks about moving the sheathing upward into place and **it kind of omits the step of inserting.**” EX1055, 78:24-79:14 (emphasis added). Mr. Tucker further clarifies that the specification “**doesn’t discuss step one**” and “goes straight to step -- step two.” EX1055, 79:14-16 (emphasis added). I agree with Mr. Tucker that the ‘339 patent specification only describes one of the two sub-steps of claims 1 and 27.

37. For the reasons set forth in my First Declaration and herein, all the claims of the ’339 patent lack adequate written description for failing to describe two distinct “inserting” and “moving”/“arranging” steps.

B. Claim 1: “Bounding.”

38. Patent Owner alleges that Figures 9-12 and 13A show an edge of the sheathing bounding the opening. (POR, 105) I disagree. Figures 9-12 and 13A illustrate an edge of sheathing defining an opening, not enclosing or confining the opening. EX1003, ¶¶97-98; EX1035, 5. Because the '339 patent never describes an edge of sheathing that bounds—surrounds all sides of—an opening, claim 1, along with its dependent claims, lack adequate description support.

C. Claim 9: “area” of opening relative to structural component’s end.

39. Patent Owner alleges that the “2x4” and “5/8-inch” dimensions disclosed in the '339 patent specification provides sufficient scale information to show the size of the opening relative to the structural component’s end. POR, 109-110. Patent Owner’s analysis is improper because the '339 patent specification notes that the slot 72 “can be any suitable length,” meaning that slot’s area could potentially be larger than an area of the structural component’s end. EX1001, 7:33-34; EX1003, ¶99.

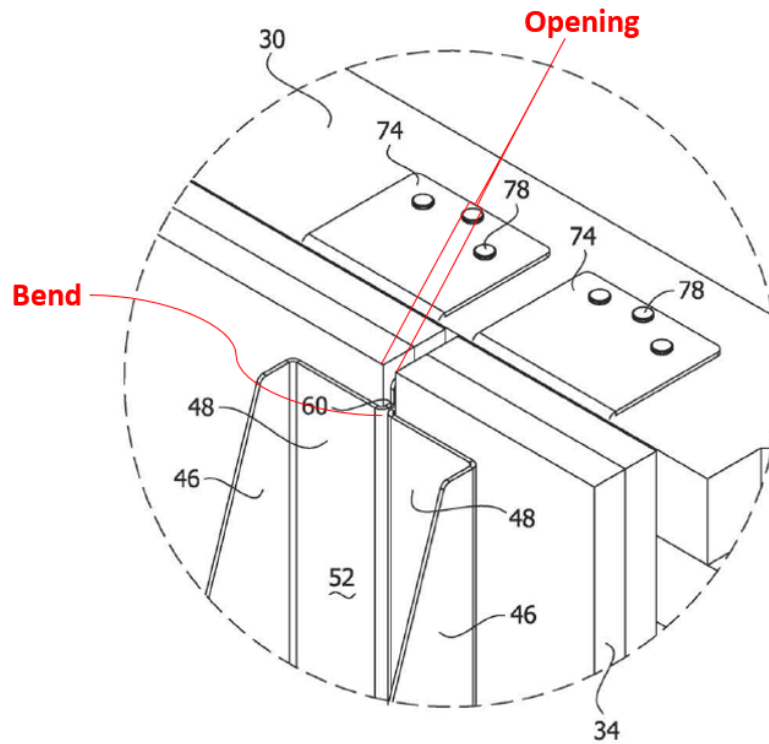
D. Claims 20-23: “Planar Extension Plates.”

40. I am aware that Patent Owner’s support for the limitation “only first and second planar extension plates ... extend through the opening in the fire retardant sheathing” depends on whether the claim construction for “planar extension plates” includes the bends of the extension portion. POR, 115. In my opinion, the “planar extension plates” cannot be construed to include the bends of

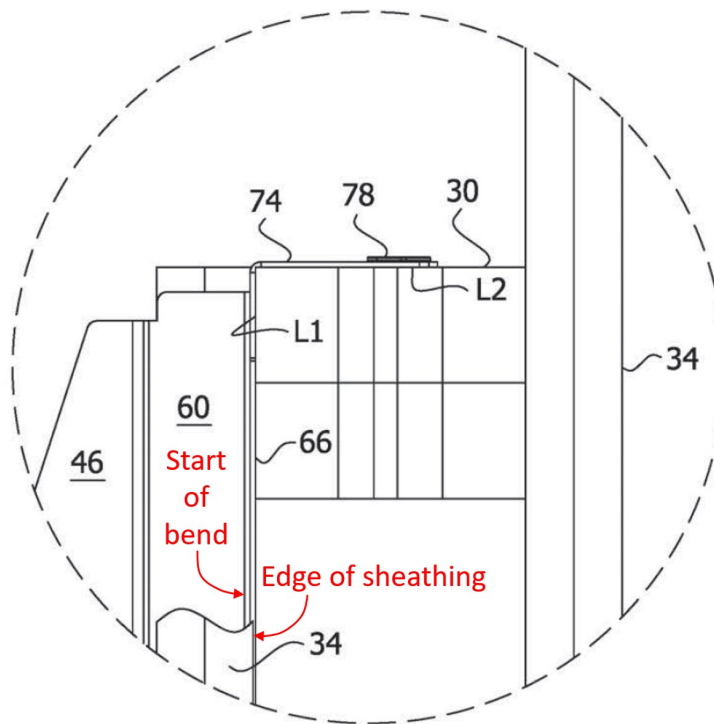
the extension flange because claim 23 distinguishes a “bend” from the “extension plate.” EX1001, 14:45-54. Construing “planar extension plates” to include a bend would make the limitations of claim 23 redundant. Patent Owner’s expert declarant Mr. Kaczkowski agreed during his deposition that a “planar extension plate” is not bent, but instead, “exists in one plane.” EX1052, 64:16-18 (“So I think the term planar extension plate is used to mean that this is not a bent plate. This is not a curved plate. That it is a plate that exists in one plane.”).

E. Claim 20: “only first and second planar extension plates ... extend through the opening.”

41. Even under Patent Owner’s standard for negative limitations (POR, 115), the ’339 patent specification fails to support the “only” limitation. The phrase “planar extension plate” is never recited in the ’339 patent specification. Figure 10A shows the bends in the extension flange start within the opening of the extension flange. Without providing any annotations, Patent Owner alleges that Figures 11, 13A, and 36 show only the planar extension plates extending through the opening in the sheathing. POR, 116. But as shown in Figures 10A and 13A, reproduced below, the bends extend through the opening of the sheathing 34. The drawings of the ’339 patent do not show only the planar extension plates extending through the opening.



EX1001, FIG. 10A (annotated).



EX1001, FIG. 13A (annotated).

F. Claim 26: “the back flange and the top flange being entirely disposed outward, in the second direction, of the inner face plane.”

42. Patent Owner alleges that the term “entirely” is used to positively state the position of elements relative to other elements. POR, 119. I disagree because the term “entirely” is a negative limitation that excludes portions of the back flange or top flange from being disposed inward of the first extension flange. *Compare* EX1003, ¶113 *with* POR, 119. I understand that a limitation is considered a “negative limitation” if it is defined by what it does not include or what a claim element does not do. PO’s reliance on the ’339 patent specification (EX1001, 5:23-25, describing that the “back flange 66 extends generally perpendicular from the extension flange 60”) does not support its notion that an *entire* portion of the back flange or the top flange extends in a particular direction from an inner face of the extension flange. Indeed, the top flange can extend perpendicular from the back flange but still include a portion that extends in a first direction of the inner face plane.

VII. CLAIMS 1-31 ARE INDEFINITE

A. Claims 1 and 27: “fire wall hanger.”

43. It is also my understanding that Patent Owner contends that the term “fire wall hangers” is definite because the elements forming the fire wall hanger—“channel-shaped portion, “connection portion” and “extension portion”—are defined by the claims. POR, 120-121. I disagree because the recitation of hanger’s

“channel-shaped portion,” “connection portion,” and “extension portion” in claims 1 and 21 does not distinguish a firewall hanger from other types of joist hangers. For example, these claim elements are found in prior art joist hangers that Patent Owner alleged were not suitable for firewall assemblies. *See, e.g.*, EX1086, 105-107; EX1087, 34-39.

44. I am aware that Patent Owner’s declarant Mr. Nelson, a global product portfolio manager and national account director at Mitek, acknowledged that a POSA would have understood that there are a variety of hangers that could be used in both fire-resistive and non-fire-resistive wall assemblies. EX1049, 29:8-11 (“Q. But you would agree that hangers not specified for firewall use were used in firewalls before introduction of the FWH; is that correct? A. That’s correct.”); EX1012. I agree that there are variety of joist hangers, whether or not designated for fire resistive wall assemblies, that are suitable for securing a joist to a fire-resistive wall. Because the scope of what hangers constitute “fire wall hangers” would not be evident to a POSA, the term is indefinite. EX1003, ¶¶114-115.

45. It also my understanding that the term “fire wall hanger” is not technically accurate. As explained during his deposition, Patent Owner’s declarant Mr. Church noted “there are firewalls and there are fire barriers, and by code those are -- those are different.” EX1057, 29:10-14. Mr. Church explained that “a firewall assembly has to run all the way up the building vertically uninterrupted,

and it has its own [code] requirements.” EX1057, 29:16-18. In contrast, “when we’re talking about exterior walls and Type III construction, we’re talking about fire barriers,” which “is inclusive of the wood framing” such that “the stud walls are part of the assembly.” EX1057, 29:10-30:16. Mr. Church further elaborates “that’s where the hanger comes in as being important because we’re framing to the actual assembly, wherein a firewall you’re not.” EX1057, 30:18-21. After providing this context, Patent Owner’s declarant Mr. Church acknowledged that the term “firewall hanger” is “incorrect” and “should be [called] fire-barrier hanger.” EX1057, 31:4-7.

46. I agree with Mr. Church that the term “fire wall hanger” is technically inaccurate, further showing that the term “fire wall hanger” is indefinite. This is especially in view of the specification, which never recites the term “fire wall.” Rather, the ’339 patent specification refers to a “fire-rated wall assembly” (EX1001, 4:29-34), which includes multiple types of assemblies, including Fire Walls, Fire Barriers, and Fire Partitions, which are defined in the 2012 IBC. EX1034. Given that the claims of the ’339 patent do not define a particular fire-resistance rating, any known wall assembly with a fire resistance greater than zero is relevant to the claimed “fire-resistive wall assembly.” But as explained by Mr. Church, the term “fire wall” has a specific meaning in local codes modeled after the 2012 IBC that is not inclusive as the claimed “fire-resistive wall assembly.”

Given this inconsistency between the term “fire-resistive wall” and “fire wall,” it is unclear how the term “fire wall hanger” further limits the claim. Accordingly, in my opinion, all the claims are indefinite by reciting the term “fire wall hanger.”

B. Claims 1 and 27: “opening outwardly from the exterior edge”

47. Patent Owner’s construction—“opening outwardly” means to provide access to the outside—is improper because it does not clarify the scope of the claims. POR, 121-122.

48. The term “outwardly” identifies the directionality of space created by the cutting step. EX1003, ¶117. It is unclear how an opening can open outwardly from an exterior edge of a sheathing when the opening was cut “into” the edge of the sheathing. It is also unclear which edge of the fire-retardant sheathing is “opening outwardly.” *See* Institution Decision, 42. The exterior edge can be disposed along the front face, the rear face, or the top side of the sheathing. The opening can extend from any one of these edges of the sheathing.

49. Furthermore, the specification of the ’339 patent fails to provide any guidance as to how an opening can open outwardly from an exterior edge. *See generally* EX1001. The ’339 patent specification never mentions the term “outwardly,” as admitted by Patent Owner’s expert declarant Mr. Kaczkowski. EX1052, 58:20-22 (“[T]he term opening outwardly does not appear in the specification nor in a designation within the figures.”). Without any guidance from

the '339 patent specification, a skilled artisan would not be able to reasonably understand how an opening cut inwardly into the sheathing can open in a direction outwardly from the sheathing.

C. Claim 1: “bounding”

50. Being subject to alternative interpretations, Patent Owner’s proposed construction for the term “bounding” shows that it is unclear how a sheathing edge bounds an opening. POR, 128. A POSA would not have understood whether the sheathing edge must fully enclose or at least partially enclose the opening.

D. Claim 13: “close conformance”

51. Patent Owner contends that the measurements provided in the '339 patent specification provide “objective boundaries” to determine whether a sheathing is in close conformance with the face of the extension portion. POR, 128-129.

52. I disagree. The '339 patent specification’s preferred gap of 1/8 inches is meaningless because sheathing can still closely conform to the extension flange’s face even if the gap between the sheathing and the extension flange is greater than 1/8 inches. It is my understanding that Patent Owner’s expert declarant Mr. Kaczkowski admitted there would be tolerances beyond the 1/8-inch gap described in the '339 patent and admitted that values outside of the described range, such as 3/16 inches, would closely conform to the extension flange. EX1052, 69:18-76:10.

Specifically, Mr. Kaczkowski noted “I don’t know that I would define a numerical boundary for the term close conformance.” EX1052, 69:24-25. I agree that a skilled artisan could not define a numerical boundary for the term “close conformance,” and therefore, could not reasonably understand how sheathing would be in close conformance with the exterior face of the extension portion.

53. Further, it is my understanding that Patent Owner construes “close conformance” as “the edge of the fire-retardant sheathing is within *a short distance away* and corresponding in form or shape to the exterior face of the extension portion.” POR, 16. In my opinion, the term “a short distance” is similarly vague and indefinite, and does not bring the claim any closer to definiteness.

VIII. THE PRIOR ART COMBINATIONS RENDER ALL THE CLAIMED STEPS OBVIOUS.

A. The prior art combinations disclose the recited “installing,” “inserting,” and “moving”/“arranging” steps of independent claims 1 and 27.

54. Patent Owner contends that the recited “installing,” “inserting,” and “moving”/“arranging” steps of independent claims 1 and 27 are missing in the prior art. POR, 57; EX2001, ¶299; EX2051, ¶207. I disagree. Patent Owner’s arguments address the references individually and do not consider what the combination of the references would have suggested to a skilled artisan.

55. I have been informed that a finding of obviousness cannot be overcome by attacking references individually where the rejection is based upon the

teachings of a combination of references. Furthermore, it is my understanding that a claimed invention may be obvious even when the prior art does not teach each claim limitation, so long as the record contains some reason that would cause one of skill in the art to modify the prior art to obtain the claimed invention.

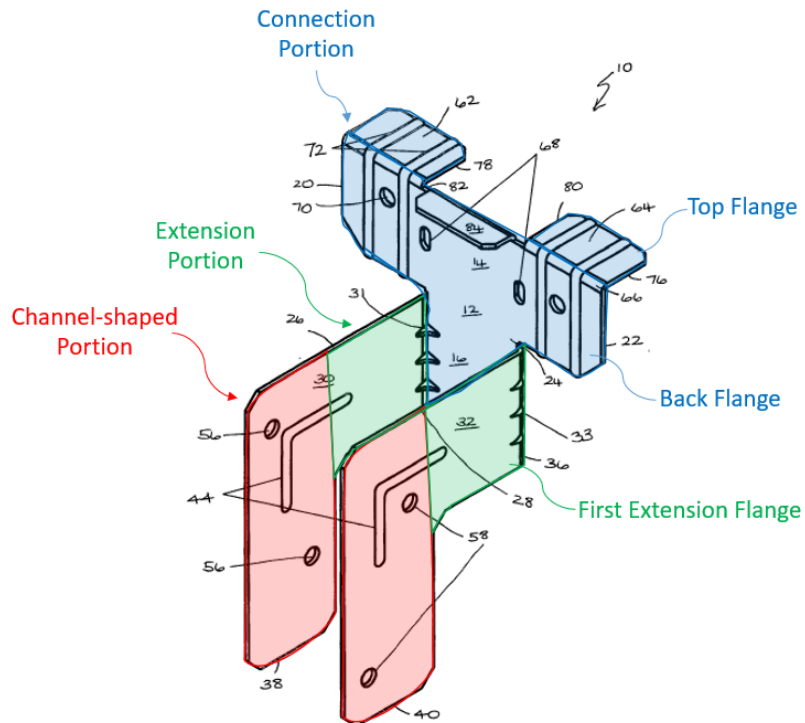
1. Cullen's, Yamaguchi's, and Robinson's hangers must be mounted before installing Bundy's drywall to access the hangers' back flange mounting holes.

56. Patent Owner alleges that Bundy teaches installing drywall before mounting a hanger, so combining the teachings of Bundy with Yamaguchi's, Cullen's, and Robinson's hangers would not have resulted in installing drywall after mounting the hanger. POR, 58, 64-65; EX2001, ¶310; EX2051, ¶218. Patent Owner's arguments are improper because they fail to take into account how Cullen's, Yamaguchi's, and Robinson's hangers are secured to the wall frame.

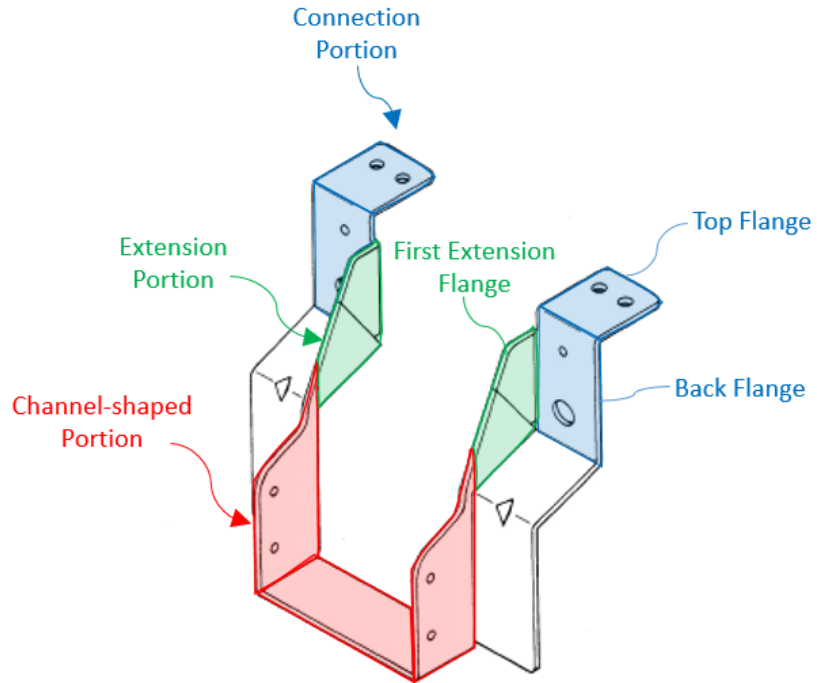
57. Cullen's, Yamaguchi's, and Robinson's hangers include mounting holes on their back flange to receive fasteners installed into the wall frame. EX1004, 16:7-10 ("The bracket 10 can then be attached to the sill 88 by inserting fasteners 94 through apertures 70 on the bearing plates 62, 64 to engage the sill 80. Fasteners can be used through the apertures 68 if it is desired that additional support is required."); EX1007, 2 (Perspective and Front Views), 5 (Usage View showing back flange secured directly to still by a fastener); EX1011, 4:31-5:3 ("Each flange 130, 132 includes holes, for example designated by the numeral 134, for receiving

fasteners.”). Furthermore, Cullen, Yamaguchi, and Robinson each describe mounting the back flange of their hangers directly against the wall member.

EX1004, 16:7-10, EX1007, 5 (Usage View); EX1011, 5:10-11 (“In use, the hanger 100 is suspended such that the second surface 122 abuts the masonry.”).



EX1004, FIG. 1 (annotated).



EX1007, Front View (annotated).

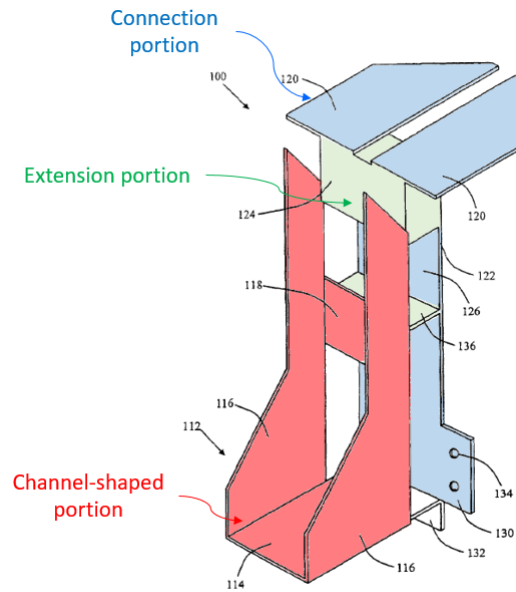


Figure 2

EX1011, FIG. 2 (annotated).

58. A POSA would have understood that access to these mounting holes is critical for securing the hanger in Cullen, Yamaguchi, and Robinson to the wall frame. The hangers in Cullen, Yamaguchi, and Robinson are designed to be mounted to a top plate of the frame wall without drywall or drywall between it. Access to the mounting holes ensures that the hanger is properly secured to the top plate so that the framing, including the joists, is securely installed prior to installing the drywall. A POSA would have understood that without accessible mounting holes, it would be difficult or impossible to properly fasten the hanger, which could compromise the structural integrity or safety of the firewall assembly. Access to the mounting holes also ensures that the firewall assembly passes inspection. Further, as discussed below, Allan discloses cutting drywall around an already-installed connector. Accordingly, a POSA would have been motivated to mount Cullen's, Yamaguchi's, and Robinson's hangers before installing the drywall so that the installer would have clear access to the back flange mounting holes.

59. It is my understanding that Patent Owner's declarants Richard Kaczkowski and Paul Tucker contend that in combining the teachings of Bundy with Cullen's, Yamaguchi's, and Robinson's hangers, a skilled artisan would lengthen the top flange over the drywall and arrange the back flange of their hangers on the "front face of the drywall." EX2051, ¶139; EX2050, ¶94. Mr.

Tucker further contends that when the hangers are modified this way, a skilled artisan would still have access to the openings in the back flange. EX2051, ¶140.

60. I disagree because a skilled artisan would not want to deviate from the intended attachment interface between the back flange of Cullen's, Yamaguchi's, and Robinson's hangers and the wall member. EX1004, 16:7-10, EX1007, 5 (Usage View), EX1011, 5:10-11. Based on my experience in the field, a POSA would have understood that securing the back flange of Cullen's, Yamaguchi's, and Robinson's hangers directly against the wall member provides the most stability for the hanger by having the back flange abut against a sturdy wall member, rather than brittle drywall. Moreover, a POSA would have been motivated to secure the back flange of Cullen's, Yamaguchi's, and Robinson's hangers directly against the wall member, rather than indirectly through the drywall, to reduce the length of fasteners needed for securing the hanger to the wall.

2. Allan teaches installing drywall after mounting a structural connector to a wall.

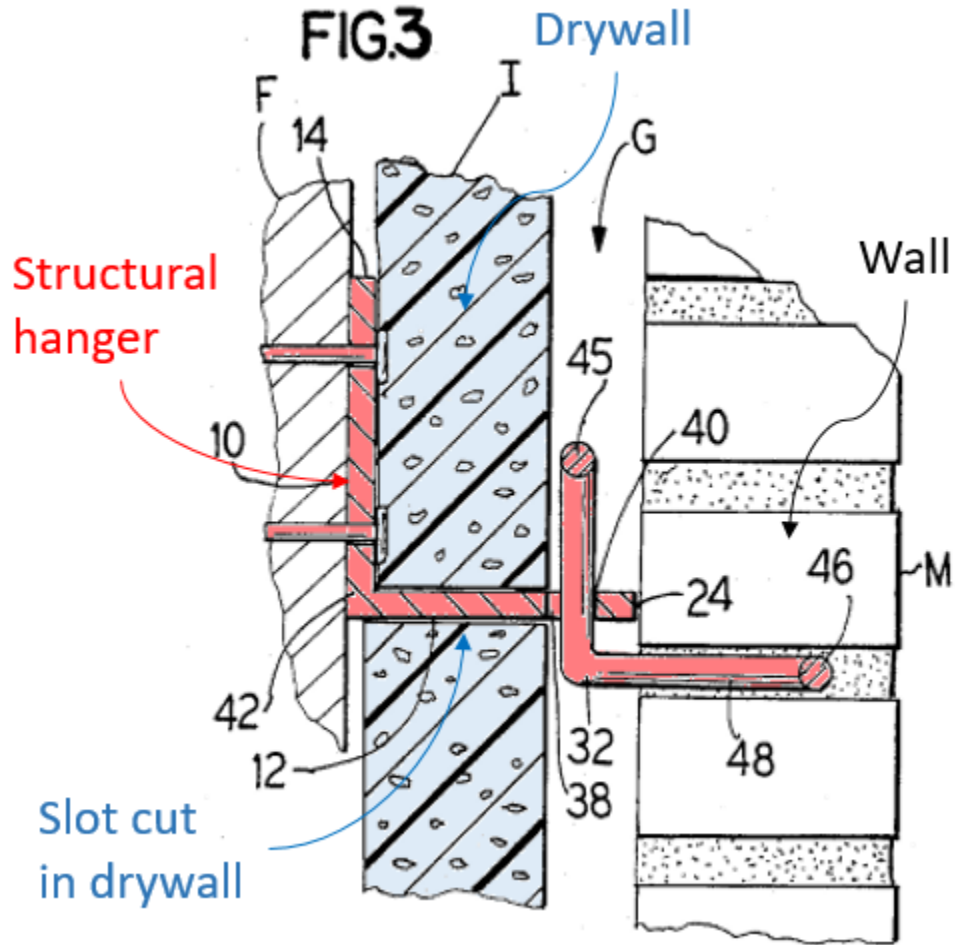
61. Patent Owner alleges that Allan fails to teach inserting the drywall between the frame wall and a component of the wall anchor because Allan inserts the insulation layer before securing anchor's outstanding leg to the masonry veneer wall. POR, 44-49, 62-63; EX2001, ¶¶282-284; EX2050, ¶¶141-146; EX2051, ¶¶60, 181. Here, Patent Owner appears to focus on attachment to the masonry

veneer wall M rather than Allan's frame wall F. But the independent claims of the '339 patent only require that the hanger be mounted to the frame wall. As such, Patent Owner's arguments about the veneer wall seem irrelevant to whether the hanger is attached to the frame wall. And in Allan, the anchor is mounted to the frame wall F before the drywall is installed. EX1006, 3:28-42, 4:1-14.

62. In my opinion, Patent Owner's arguments are additionally improper because Patent Owner disregards how my First Declaration combines the teachings of Bundy's drywall placement and Allan's installation sequence with the hangers disclosed in Cullen, Yamaguchi, and Robinson.

63. First, as explained in my First Declaration, "Bundy teaches receiving drywall between a hanger's channel-shaped portion and the front surface of a top plate to shield a frame wall, up to the top of the top plate, and disclosed advantages for accommodating two layers of 5/8-inch-thick drywall between a wall frame and a structural member held by a hanger for fire resistance in a fire separation wall." EX1003, ¶136. Bundy explains that it is advantageous to position drywall over frame walls because "[d]rywall is naturally fire resistant and can be used to cover and protect the structural members of a building." EX1003, ¶136. Bundy also explains that it is advantageous to install such drywall over top plates and headers of a wall frame to shield these components. EX1003, ¶136.

64. Second, my First Declaration relies on Allan to teach cutting an opening into an exterior edge of the drywall and installing the drywall after mounting a hanger. As explained in my previous Declaration, Allan discloses a structural hanger (anchor) mounted on a wooden building frame member that connects a wall to the frame member. EX1003, ¶¶143-156; EX1006, 3:12-20. Allan also discloses one or more drywall layers interposed between the frame F and the wall, and that drywall is inserted around the “outstanding leg” – meaning that the connector is mounted by the time the drywall is inserted. EX1006, 3:12-20, 4:1-14. Allan teaches that “slots may be cut into the” drywall layers so that a leg of the hanger can extend through the drywall while also coupled to the wall. EX1006, 4:1-14. An example of this is shown in Figure 3 below. In sum, Allan teaches the sequence of mounting a hanger, cutting drywall, and sliding drywall around the mounted hanger.



EX1006, FIG. 3 (annotated).

65. Notably, Allan's hanger (wall anchoring means A) has a similar fastener hole arrangement as in Cullen's, Yamaguchi's, and Robinson's hanger. As shown above in Figure 3, the back flange of Allan's hanger (i.e., anchoring leg 10) has fastener holes that allow Allan's anchoring leg 10 to be fastened directly to the building frame member F. Given that these fasteners do not extend through plasterboard sheet I, a POSA would have understood that Allan's wall anchor A must be mounted before cutting and inserting plasterboard sheet I in Allan's wall

assembly. Furthermore, Allan's teaching of notching would occur after mounting a hanger to ensure a more accurate notch in the drywall and to ensure proper alignment of the drywall with the mounted hanger such that the hanger extends through the drywall. Accordingly, in combining these teachings with Cullen's, Yamaguchi's, and Robinson's hanger, a POSA would have understood to insert the notched drywall taught by Allan between the hanger's channel-shaped portion and the wall frame, as taught by Bundy.

66. Mr. Kaczkowski attempts to discredit Allan's teaching of the installation sequence by contending that the outstanding leg 12 of Allan's wall anchor A is not secured to the masonry wall M when the plasterboard sheet I is inserted around the wall anchor's leg 12. EX2050, ¶¶147-149. This argument is flawed because the timing of securing Allan's anchor's outstanding leg 12 to the masonry veneer wall M is not relevant to the rationales for combining Allan's and Bundy's teachings with Cullen, Yamaguchi, or Robinson. A POSA would have recognized that the combination of Allan's wall anchor A and building frame member F, without wall anchor A being secured to masonry veneer wall M, is analogous to the wall frame assembly disclosed in Bundy. Specifically, as shown in Figure 1 of Allan, reproduced below, wall frame member F is a wooden stud, just like the wooded studs in Bundy's wall assembly. Allan's plasterboard sheet I is similar or equivalent to the drywall panels 6 of Bundy. Given these similarities between

cutting and inserting drywall around a mounted hanger. A skilled artisan would have found these teachings applicable to Cullen's, Yamaguchi's, and Robinson's hangers in Bundy's wall assembly, whether or not Allan's wall anchor A supports a vertical load during the plasterboard installation process.

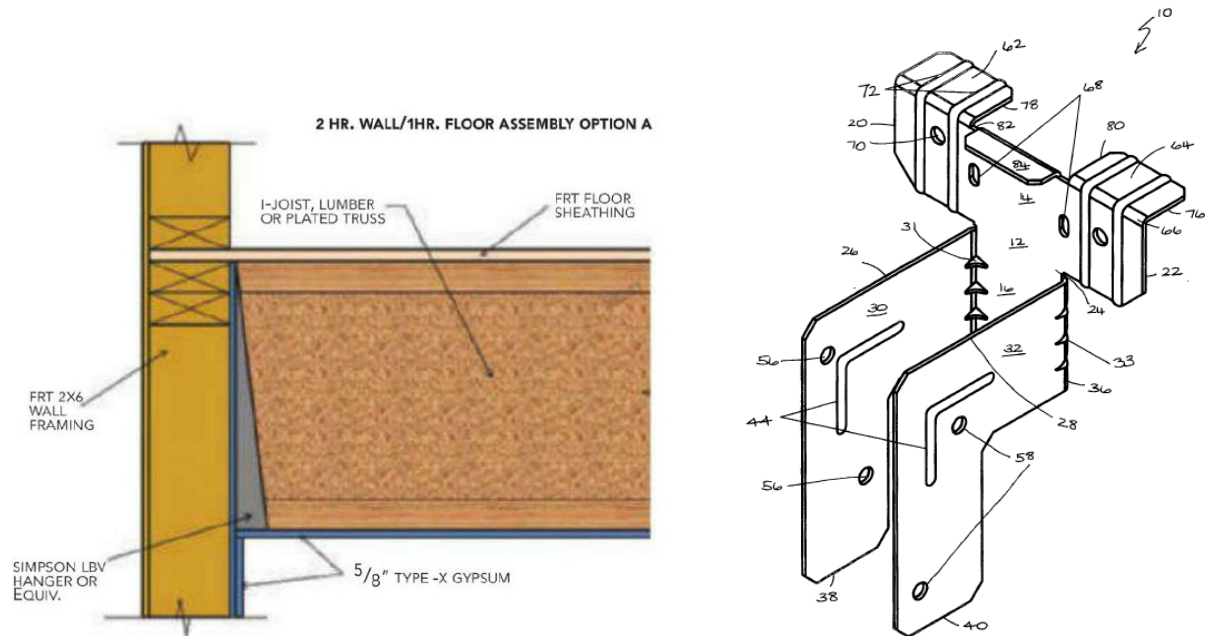
3. The ArchRecord-Commins-Cullen combination renders all claim limitations obvious.

68. Patent Owner alleges that “[n]one” of ArchRecord, Commins, and Cullins teaches installing a hanger first, and subsequently inserting drywall between the mounted hanger and the wall assembly. POR, 49-54. I disagree because PO again fails to recognize what is taught by the combination of the references—ArchRecord, Commins, and Cullen. Further, Commins does disclose this order of assembly.

a. In replacing the joist hanger in ArchRecord's Option A with Cullen's hanger, a POSA would have been motivated to adapt the installation sequence according to Cullen's hanger.

69. As explained in my First Declaration, a POSA would have been motivated to replace the hanger in Option A of ArchRecord with the functionally equivalent hanger of Cullen. EX1003, ¶¶426-433. In doing so, a POSA would have understood that Cullen's hanger would have to be installed before the drywall to access apertures 68 on the hanger's back plate. EX1003, ¶434. That is, a skilled

artisan would have recognized that the installation sequence of the hanger and drywall is adapted according to the hanger used in the assembly process.

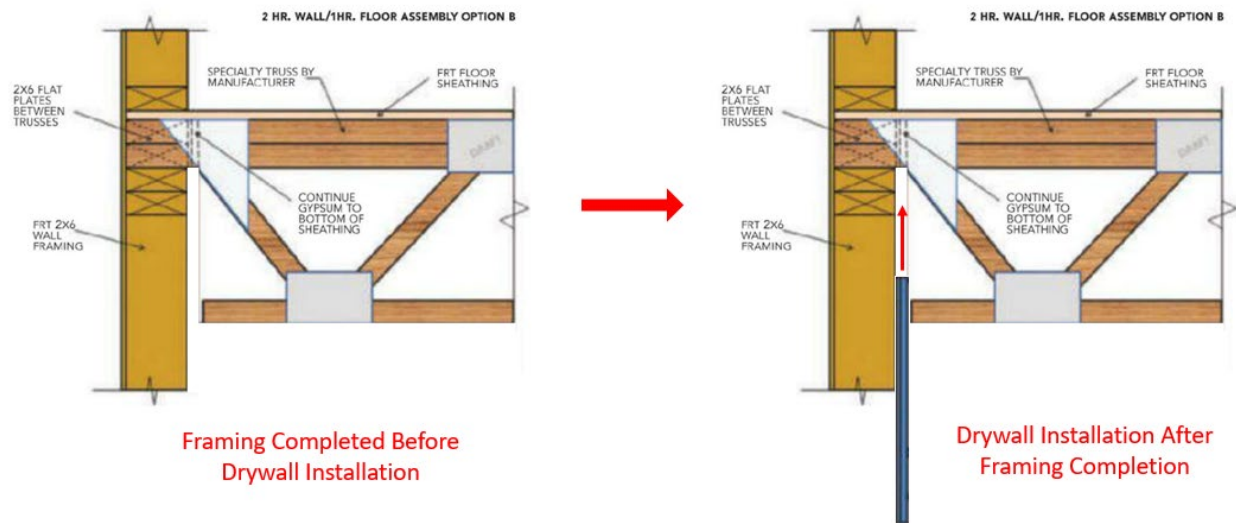


EX1031, 166 (Option A); EX1004, FIG. 1.

- b. ArchRecord's Option B discloses: (1) mounting a joist's structural connector before installing drywall, (2) cutting drywall to fit around the joist and its structural connector, and (3) inserting the cut drywall between an end of the joist and the wall frame.**

70. Moreover, Option B further shows that it was well-known to cut or notch the drywall around a structural connector for a chord of a joist such that the structural connector and the chord extend through the drywall. EX1031, 166; EX1003, ¶420. Specifically, the dashed lines in the drywall of the cross-sectional view of the wall assembly indicate that the gypsum has been notched to extend around the chord of the truss. EX1031, 166; EX1003, ¶419. To install the gypsum

around the structural connector and the chord of the joist, the assembly process for ArchRecord's Option B includes positioning the notched gypsum behind the end of the lower chord of the joist and moving the notched gypsum upward into the chord of the joist, as shown below. It was routine practice to complete framing before installing the drywall. Patent Owner's expert declarant Mr. Tucker acknowledged that it was "common to complete the framing to dry-in status before installing drywall" before 2013. EX1055, 31:16-21. Thus, a POSA would have understood in view of ArchRecord's Option B that the drywall was mounted after the framing was completed—the drywall was installed after the joist was secured to the wall frame.



EX1031, 166: Option B (annotated)

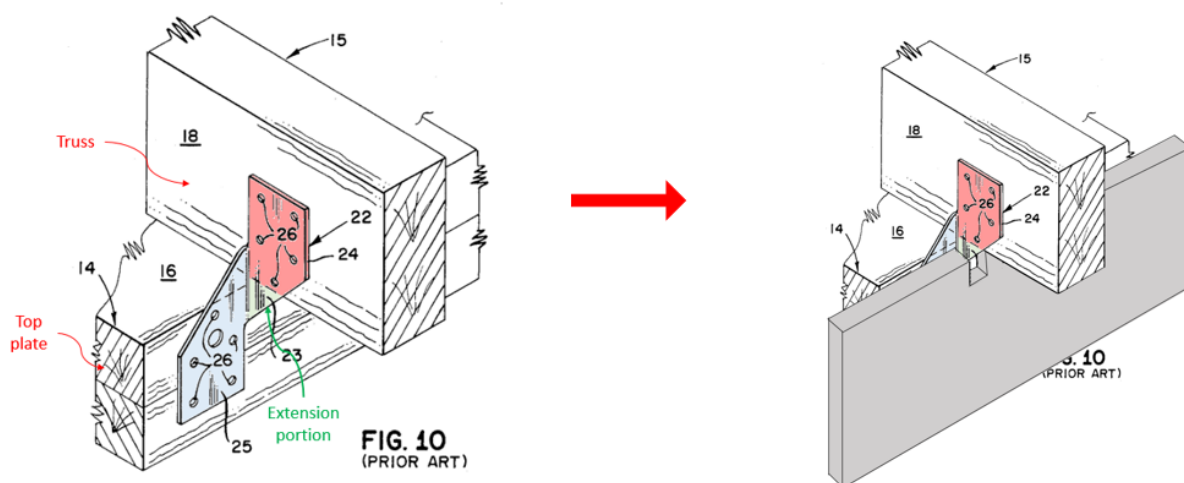
71. In sum, ArchRecord's Option B discloses: (1) installing the joist with its structural connector before installing drywall, (2) cutting the drywall, and (3)

sliding the notched drywall up into the gap between the end of the lower end of the joist and the wall so that the drywall is between the end of the joist and the wall and the truss plate or nailing plate (a structural connector) extends through the drywall. Furthermore, the fact that ArchRecord teaches two techniques (Options A and B) for coupling a truss to wall with gypsum board indicates that alternating the installation sequence is well within the level of ordinary skill in the art. A POSA would have recognized that the gypsum notched around the triangular-shaped nailing plate shown in Option B applies to other types of structural connectors, including the joist hanger disclosed in Cullen. EX1003, ¶420. Thus, Patent Owner's assertion that the asserted ground in my First Declaration combines two disparate and inconsistent teachings (POR, 49-54) is contradicted by the disclosure of the prior art.

72. It is my understanding that Mr. Hensen, who has worked as a Research and Development Engineer for Simpson Strong-Tie from 2000 to 2014, agrees with my assessment of ArchRecord's Option B. EX1047, ¶18. When looking at Option B in ArchRecord, a skilled artisan would have understood that it would be obvious to secure the joist first, and then, notch and mount the drywall around the joist. I am also aware that Patent Owner's expert declarant Mr. Tucker admitted that the wall assembly shown in Option B suggests that the truss is installed first, and then, the drywall is installed to fit around the truss. EX1055, 33:12-38:5.

c. Commins discloses notching and installing drywall to fit around a mounted structural connector.

73. As noted in my First Declaration, Commins further discloses “if it were desired to sheet rock the inside wall, a notch would have to be made in the gypsum board around extension 23 of the hanger tie member 24.” EX1032, 4:27-41; EX1003, ¶¶421-423. “Also, if the prior art tie was installed on the outside of the wall, and sheathing boards were placed up against the bottom chord 15 of a truss, the drywall board would have to be notched in the vicinity of the extension portion 23 of the hurricane tie 24.” EX1032, 4:27-41. In sum, Commins shows that the prior art included installing a structural connector (i.e., hurricane tie) before cutting drywall and sliding the drywall into place so that a portion of the structural connector extends through the drywall. Thus, notching drywall to fit around mounted structural connectors was common practice prior to 2013.



EX1032, FIG. 10 (annotated).

74. In view of Commins and Option B in ArchRecord, a POSA would have understood to notch the exterior edge of the drywall to receive the drywall around Cullen's hanger. EX1003, ¶¶418-425; EX1031, 166; EX1032, 1:63-68, 4:27-41. A POSA would have understood that mounting the drywall after securing the joist provides the benefit of having the framing completed before the installation of drywall.

B. Patent Owner disregards the background knowledge in the art showing that it is well known to cut and install drywall around penetrations in the wall assembly.

75. Patent Owner contends that the prior art combinations asserted in my First Declaration fills "missing limitations" by using a common sense of a POSA. POR, 65-67.

76. I disagree. In addition to showing how all the claim limitations are disclosed by the asserted prior art, my declaration cites additional references, such as International Building Code, Standards on gypsum board, Rice, Harrison, and Ferguson, to show that cutting openings into drywall and inserting notched drywall around a portion of a mounted structural connector were well known. EX1003, ¶¶152-155; EX1009, 1:12-17; EX1010, ¶¶2-3; EX1029, 42.

77. First, my First Declaration showed, by citing model building codes (International Building Code) and standards on gypsum board (ASTM) and the gypsum industry (USG and the Gypsum Association), that mounting a joist hanger

before installing drywall was well known. EX1003, ¶¶60-67, 154; EX1033, 6.2; EX1034, 38; EX1038, 361. Concerned about the adverse effects temperature and humidity have on gypsum products, the construction industry typically completed the framing of structures before installing drywall. EX1003, ¶65; EX1038, 352; EX1033, 4.2. Doing so protected the drywall from the potentially damaging weather conditions.

78. Similarly, Patent Owner's declarants also agreed that wall framing, including mounting joist hangers, were typically completed before installing drywall. For example, Patent Owner's declarant Mr. Kaczkowski agreed that there was a "strong preference" prior to 2013 to complete framing before installing drywall. EX1052, 35:17-22 ("Q. Okay. Because of that mold issue you would agree that the strong preference was for -- prior to 2013 was for framing to be complete to dry-in status before installing drywall. Is that correct? A. I would say that certainly was the preference."). Mr. Kaczkowski also acknowledged that installing sheathing before completing dry-in status was "not the preferred approach." EX1052, 41:8-18 ("Q. Given this ASTM specification would a skilled artisan install sheathing in an environment that would be exposed to these weather elements? A. Yeah ... I would agree that a skilled artisan should know that that is not the preferred approach.").

79. Patent Owner's declarant Mr. Nelson agreed that it was "common practice frame and roof a building before installing drywall." EX1049, 27:5-10 ("Q. And wasn't it a common practice to frame and roof a building before installing drywall? ... A. Yes.").

80. Patent Owner's declarant Mr. Holmes admitted that joist hanger were routinely mounted before installing drywall, despite being a "laborious" and "time consuming" process. EX1050, 27:14-28:12 ("Q. Okay. Let's just go in order. So when you're framing a building you would complete the framing of the building. Is that right? A. Uh-huh. Q. And that would include the installation of the hangers with the joists or trusses. Is that right? A. Yes, ma'am. **Q. And then you would at a later point go in and install the drywall? A. Uh-huh. Yes, ma'am.**" (emphasis added)). Mr. Holmes further acknowledged that framers would typically complete "[t]he dry-in part" of the installation sequence before installing drywall. EX1050, 43:7-22.

81. Second, my First Declaration showed, by citing to Rice, Harrison, Ferguson, and other references, that installing pre-cut drywall around already mounted structural connections was well known in the art. EX1003, ¶152. As explained in my First Declaration, Rice teaches to cut openings in drywall sheets to receive around fixtures that extend beyond the wall support structure. EX1009, 1:12-17. Harrison teaches that cutting drywall to fit around already installed

structural elements is “a standard element of commercial and residential construction.” EX1010, ¶¶2-3. Ferguson discloses that “[i]t’s not often that you hang a piece of drywall without have to make some sort of cut,” specifically noting the need to “make an opening for an electrical outlet box, a window, or a door.” EX1029, 42. Cutting drywall to fit around penetrations, including structural members, such as joists, was common practice in the construction industry. EX1034, 40. For example, the 2012 International Building Code recognized that penetrations through fire-resistance-rated walls were permissible so long as the penetrations were “protected by an approved fire-stop system ... in accordance with ASTM E 814.” EX1034, 40.

82. Patent Owner’s declarant Mr. Kaczkowski “agree[d] that penetrations through firewall assemblies were permissible under this [2012 IBC] Code.” EX1052, 45:23-46:7 (“Q. And you would agree that penetrations through firewall assemblies were permissible under this Code so long as the penetrations were protected by an approved fire stop system and could pass testing. Is that correct? ... A. Yeah. I mean don’t know if there is other dimensional restrictions that are in here. But yes. I would agree that the Code did permit that subject to the requirements of the Code.”).

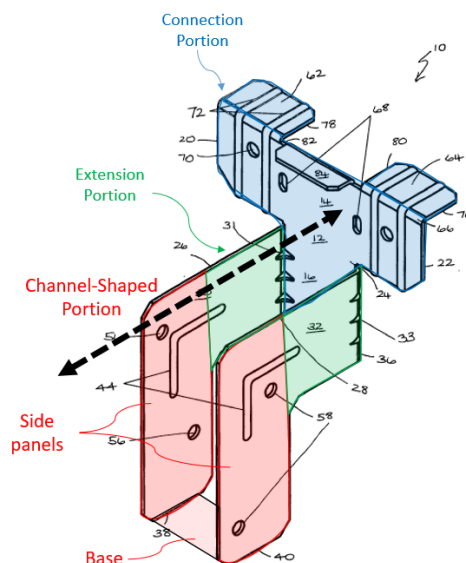
83. A POSA would have possessed the knowledge of this pertinent background art when combining the teachings of Bundy and Allan with Cullen’s,

Yamaguchi's, and Robinson's hanger and when combining the teachings of Cullen and Commin with ArchRecord's wall assembly.

C. Claim 25.

1. Cullen discloses claim 25.

84. Patent Owner contends that an axis cannot both extend along Cullen's sidewall 30 and normal to Cullen's back plate 12 due to a bend defined between Cullen's sidewall 30 and back plate 12. POR, 68-71. I disagree. It is my understanding that Patent Owner previously contended that "planar" plates include "*de minimis* bends at the ends of the plate." POR, 10. If "planar" plates include *de minimis* bends at the ends of the plate, as purported by Patent Owner (POR, 115), then the axis extending along Cullen's sidewall 30 must extend normal to the planar surface of its back plate.



Cullen, FIG. 2 (annotated).

2. Robinson discloses claim 25.

85. As explained in my First Declaration, a POSA would have understood in view of Figures 2 and 4 of Robinson that mount 124 includes side extension plates having flat, parallel surfaces, as shown below. EX1003, ¶396. These plates are “parallel, *planar* extension plates because they each have surfaces coincident with respective parallel planes.” EX1003, ¶396.

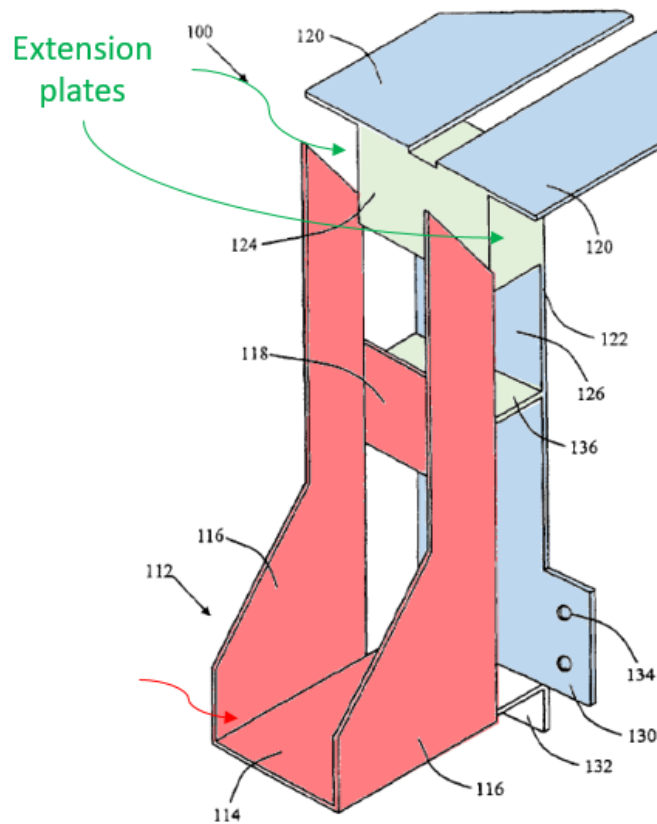
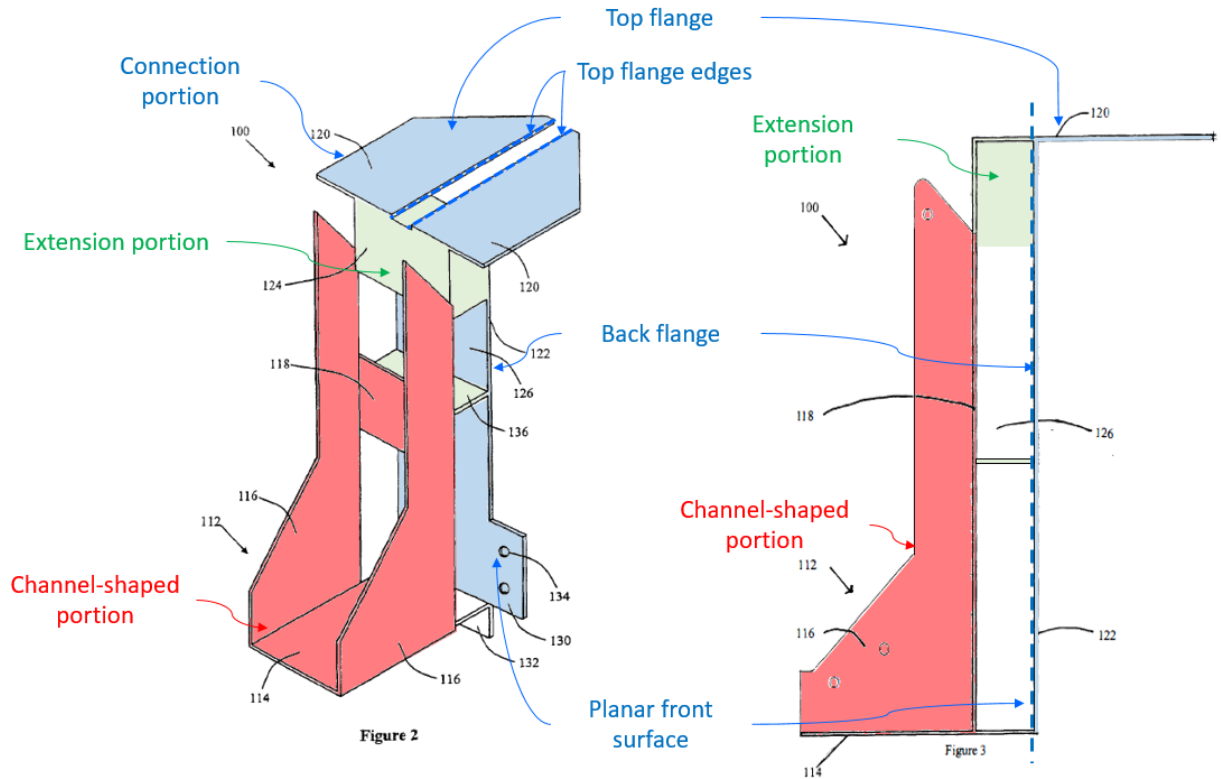


Figure 2

EX1011, FIG. 2.

86. A POSA would have also understood in view of Figures 2 and 3 of Robinson that its back flange 122 extends from an edge of its top flange 120, as shown below.



EX1011, FIGs. 2-3 (annotated).

IX. A SKILLED ARTISAN WOULD HAVE BEEN MOTIVATED TO COMBINE THE TEACHINGS OF THE PRIOR ART WITH A REASONABLE EXPECTATION OF SUCCESS.

A. Patent Owner misrepresents the prior art combinations asserted in my First Declaration by contending that Bundy's hanger is the starting point.

- 1. The prior art combinations of my First Declaration rely on the hangers disclosed in Cullen, Yamaguchi, and Robinson.**

87. Patent Owner contends that there would have been no expectation of success in installing drywall after mounting a hanger because Bundy's hanger is intended to be mounted after installing drywall. POR, 23-32. Patent Owner's declarants Mr. Kaczkowski and Mr. Tucker refer to internal testing by Simpson in an attempt to support Patent Owner's assertion that a skilled artisan would be deterred from mounting a joist hanger holding a joist's end offset from the wall before installing drywall. EX2050, ¶¶75-81, 108-112; EX2051, ¶¶127, 153, 160, 164, 171; EX2086.

88. I disagree that there would be no expectation of success because none of the grounds asserted in my First Declaration uses Bundy's hanger or the hangers shown in Simpson's testing in the prior art combinations. EX1003, ¶¶133, 238, 328. It is clear from my First Declaration that the asserted prior combinations use the hangers disclosed in Cullen, Yamaguchi, or Robinson with the wall assembly taught in Bundy. EX1003, ¶¶133, 238, 328. For example, my First Declaration explains that "a POSA would have found it obvious to configure *Cullen's joist hanger* to be installed in conjunction with one or more layers of drywall, as taught by Bundy." EX1003, ¶133 (emphasis added). My First Declaration further mentions that "a POSA would have found it obvious to adapt *Yamaguchi's joist hanger* to be installed in conjunction with one or more layers of drywall, as taught by Bundy." EX1003, ¶238 (emphasis added). My First Declaration also explains

that “a POSA would have found it obvious to configure *Robinson’s joist hanger* to be installed in conjunction with one or more layers of drywall, as taught by Bundy.” EX1003, ¶328 (emphasis added). Thus, Patent Owner’s discussion about Bundy’s hanger and Simpson’s tested hangers is not relevant to the asserted prior art combinations.

89. Patent Owner attempts to disregard these applications of Cullen’s Yamaguchi’s, and Robinson’s hangers by asserting that there is no disclosure in these references about extending a hanger through drywall. POR, 23. Based on my experience in the field, skilled artisans often use joist hangers marketed for one particular type of wall for another type of wall assembly. It is my understanding that Mitek’s own marketing manager Mr. Michael Nelson acknowledged that “hangers not specified for firewall use were used in firewalls before introduction of [Mitek’s] FWH.” EX1049, 29:8-11. It is also my understanding that the Board has already found that Yamaguchi’s hanger and Robinson’s hanger are suitable for wood-framed firewall assemblies. EX1066, 40-43; EX1067, 143-153. Patent Owner’s declarant Mr. Kaczkowski admitted that “joist hangers were used in fire rated construction before 2013.” EX1052, 28:24-29:2. Thus, a skilled artisan would have understood that the hangers disclosed in Cullen, Yamaguchi, or Robinson are suitable for extending through drywall when secured to wood-framed wall assemblies.

2. **Simpson's Internal Testing of its DHU/DHUTF Hangers would not deter a skilled artisan from mounting Cullen's, Yamaguchi's, and Robinson's hangers before installing drywall.**

90. Furthermore, Patent Owner's assertion that the internal tests performed by Simpson would deter a skilled artisan from mounting a hanger first is flawed because [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

91. [REDACTED]

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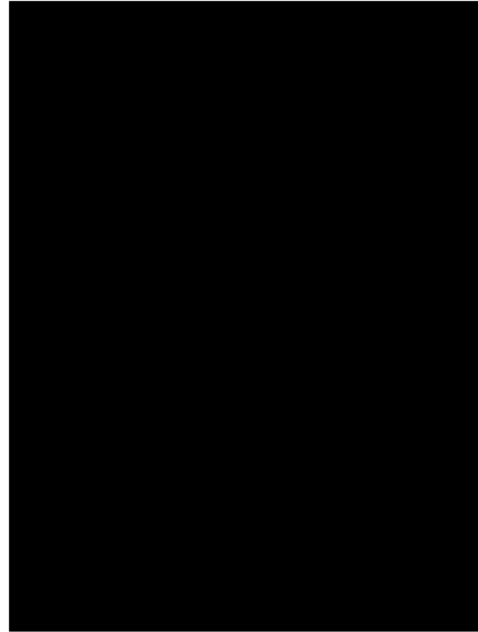
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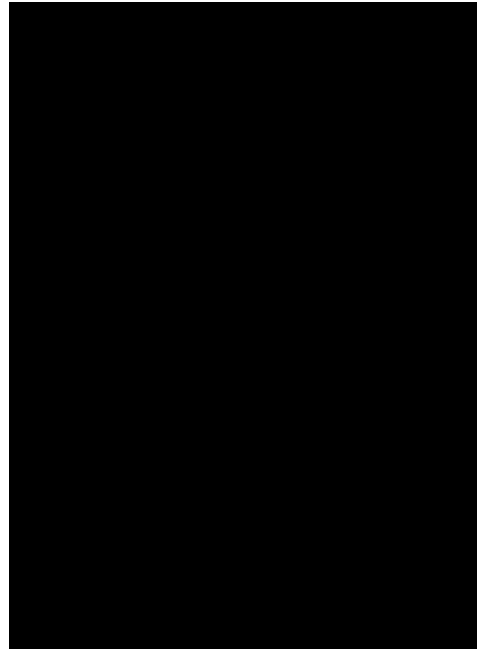
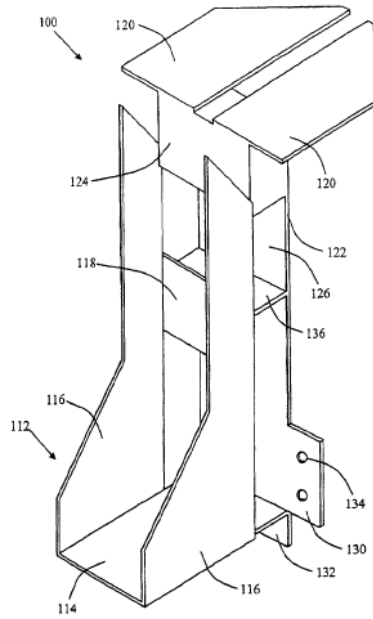
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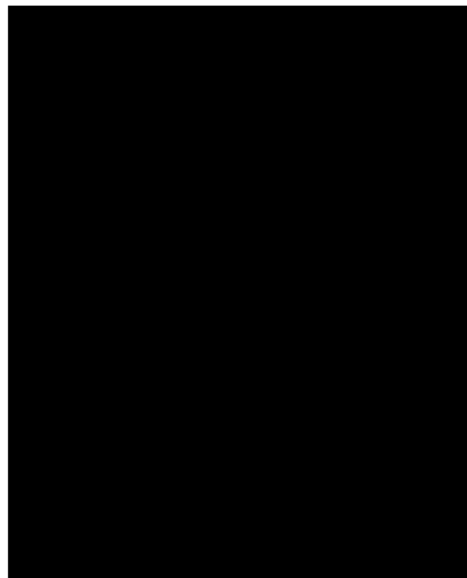
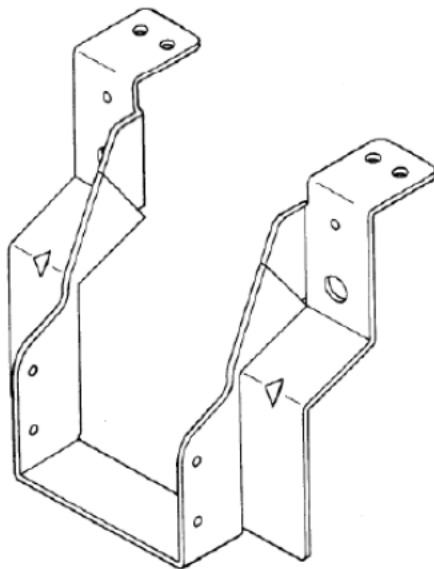
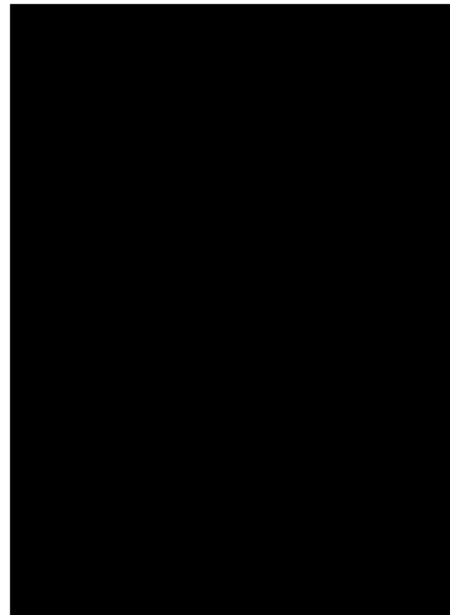
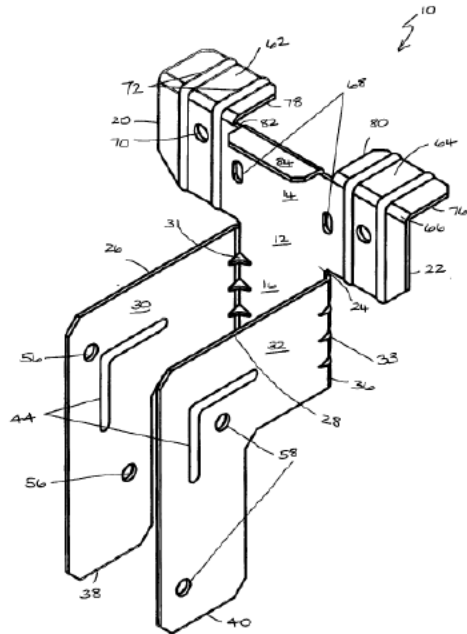
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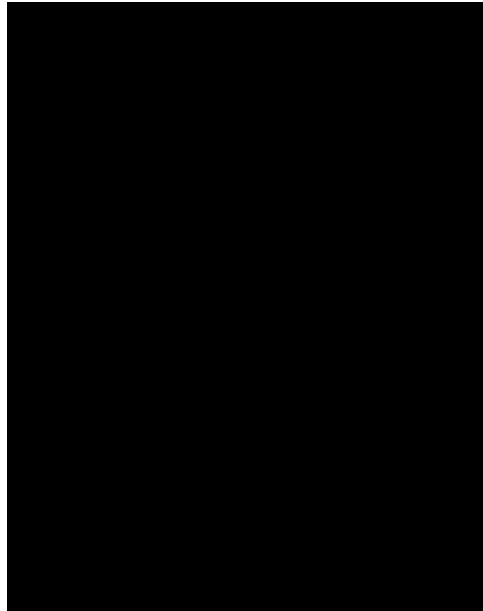
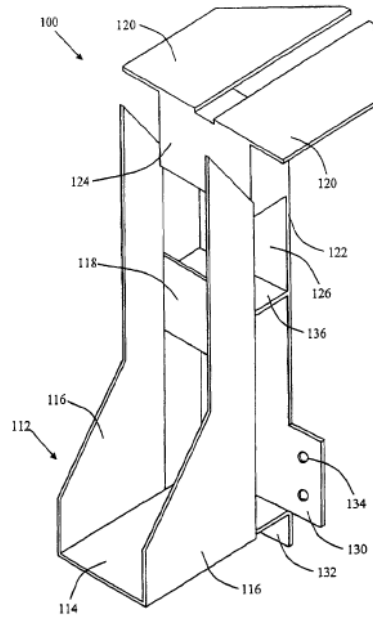
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94. In sum, Patent Owner's reliance on Simpson's internal testing of prototype hangers (i.e., Simpson's DHU hangers) to show lack of expectation of success for mounting other types of hangers (i.e., Cullen, Yamaguchi) under different operating conditions (e.g., top plate without a bearing wall above compared to a top plate with a bearing wall above and clipped to the studs) is flawed. Given the differences between the prior art hangers and Simpson's hangers as well as the difference between the operating conditions of Simpson's test and the field (e.g., the amount of load applied by the joist's end, the presence of a counter load applied to top plate), Simpson's internal tests are not relevant to the operability of prior art combinations asserted in my First Declaration.

3. Cullen's and Yamaguchi's hangers would not buckle or deform when holding a joist's end offset from a wall frame without the installation of drywall.

95. Patent Owner's declarants Mr. Kaczkowski and Mr. Tucker's assertion that a POSA would be concerned about Cullen's and Yamaguchi's hangers buckling or deform based on Simpson's internal testing of the DHU/DHUTF hangers is wrong. EX2050, ¶¶65-81, 105-114; EX2051, ¶¶152-154. In raising these assertions, Mr. Kaczkowski and Mr. Tucker improperly imply that the loads applied during Simpson's internal tests would be the same loads applied to Cullen's, Yamaguchi's, and Robinson's hangers when used in the field. A skilled artisan would have understood that each hanger is designed for a specific load

rating. While Simpson applied a 1,700-pound load to its tested hangers (*See* EX2086), Cullen's, Yamaguchi's, and Robinson's hangers may be rated for a different load, as recognized by Mr. Kaczowski. EX1052, 79:15-18 ("Q. Wasn't it common for joist hangers to be designed to carry specific loads such that different hangers might have different load ratings? A. I would agree with that."). Accordingly, a skilled artisan would have understood to use Cullen's, Yamaguchi's, and Robinson's hangers for their rated load, not necessarily the load applied in Simpson's internal testing.

96. Notably, it is my understanding Mr. Kaczowski contradicted his prior position about Cullen's buckling concerns during his deposition by admitting that Cullen's hanger could be commercially used for loads lighter than a load that would cause buckling. EX1052, 97:13-17 (Q: "Could the concern about the buckling of side walls be mitigated in this assembly shown on Page 37 by using a load that is lighter than a load that would otherwise cause buckling? A. Well, it could be, again, if that is a commercially viable capacity. **So, yes.**"). Mr. Kaczowski did not even know what applied load to Cullen's hanger would cause buckling. EX1052, 97:22-98:2 (Q: "Do you actually know what total amount of force applied to this hanger would make the side walls buckle? **A: No. I don't.**") (emphasis added).

97. Furthermore, it is well within the level of ordinary skill in the art to modify the dimensions of the hanger, such as the gauge of the hanger or the height of the extension portion, to provide a different load rating. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

98. Patent Owner's declarant Mr. Nelson agreed that a "designer of the individual hangers" would be aware of all these modifications to hanger to "account for different load value requirements." EX1049, 42:9-43:1 ("Q. How would a hanger account for different load value requirements? ... A. The hanger could be made with a thicker gauge of steel. There could be various design considerations within the particular hanger itself as far as geometry is concerned. There could be additional fasteners required in the use of that hanger as well. Q. So that's something that the designer of the individual hangers would account for the

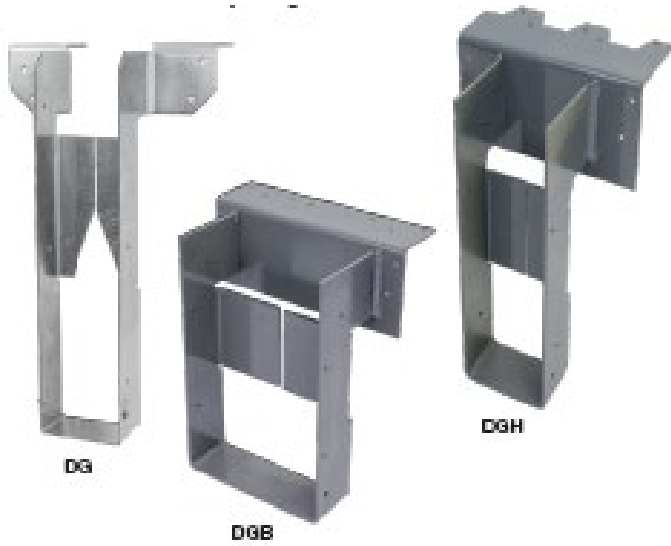
in the final hanger product; is that correct? ... A. Yes. When we design a hanger we consider the load value requirements of the hanger.”).

99. Patent Owner’s expert declarant Paul Tucker admitted that it was “common for engineers like [himself] to design and build [their] own connectors.” EX1055, 23:6-8. In designing his own hanger, Mr. Tucker explained that he would “look at the load path that I need and then I look at the materials that I need to adequately get my load through that path and design something that meets that need.” EX1055, 23:15-21. I agree with Mr. Tucker’s admission that it was common for engineers (i.e., a skilled artisan) to design their own hangers and select materials and designs to meet the hanger’s intended load path. Accordingly, a POSA would not be deterred from modifying the dimensions of the hangers disclosed in Cullen, Yamaguchi, and Robinson to meet a particular load rating.

100. Patent Owner’s declarants Mr. Kaczkowski and Mr. Nelson acknowledged that there is commercial value in the industry for heavy duty hangers. EX1052, 95:19-96:4 (“Q: And as evidenced by the fact that there are sales even in 2025 of heavy duty hangers that means that a heavier gauge hanger does have a commercial value in the industry. Is that correct? ... A: Well, the Answer to your question is yes it does.”); EX1049, 45:13-20 (“Q. So why do you need a firewall hanger with a higher load value such as the ones designated with a BP? ... A. To meet the unique engineering requirements as specified by an engineer of

record when designing a structure.”). Accordingly, a POSA would not be deterred from increasing the thickness of the hangers disclosed in Cullen, Yamaguchi, and Robinson to increase their load rating.

101. In addition, Patent Owner disregards that Cullen’s and Yamaguchi’s hangers are similarly shaped as Simpson’s commercial hangers that have successfully held a joist’s end offset from a wall without installing drywall. For example, Simpson’s DG/DGB/DGH hangers correspond to the shape of Cullen’s hanger. Specifically, as shown below, both Cullen’s hanger and Simpson’s DG/DGB/DGH hangers have L-shaped legs that extend from a back flange of the hanger. Both Cullen’s hanger and Simpson’s DG/DGB/DGH hangers have a top flange extending from the top edge of the back flange. Just as the L-shaped sidewalls in Simpson’s DG/DGB/DGH hangers counter moments applied by the joist’s end, a POSA would have understood that Cullen’s similar-shaped sidewalls would counter moments applied by the joist’s end as well.



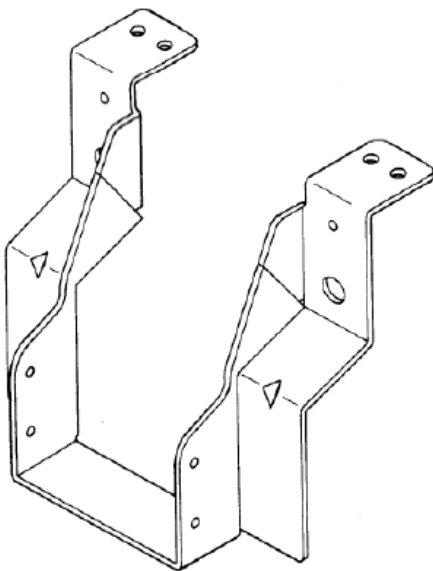
EX1004, FIG. 1 vs. EX2020, (showing Simpson's DGH/DGB Hanger).



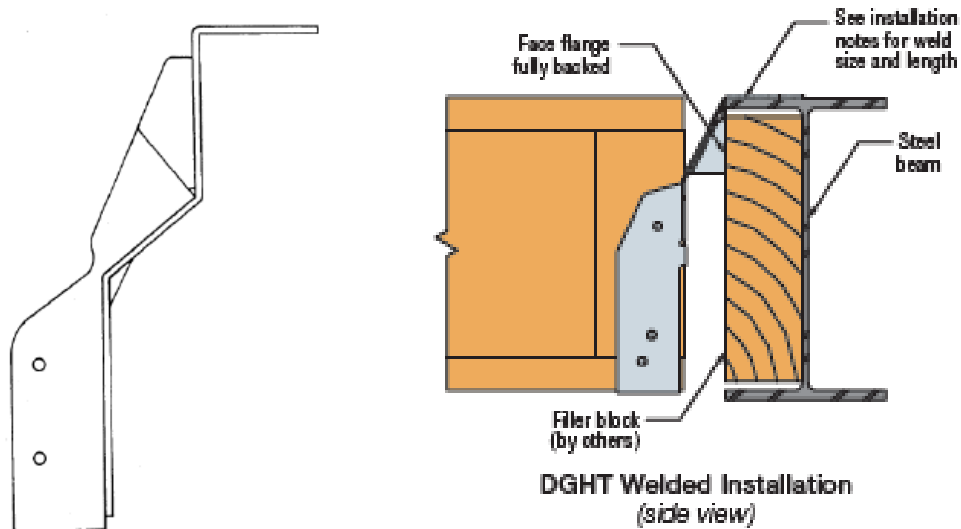
EX1004, FIG. 1 vs. EX2020, (showing Simpson's DGH Hanger).

102. As another example, Simpson’s DGT hanger corresponds to the shape of Yamaguchi’s hanger, as shown below. Specifically, both Simpson’s DGT

hanger and Yamaguchi's hanger have an extension portion that includes a triangular-shaped vertical plate that extends toward the connection portion and an inclined plate extending from an edge of the triangular-shaped vertical plate. Just as the triangular-shaped vertical plate in Simpson's DGT hanger counters a moment applied by the joist's end, a POSA would have understood that Yamaguchi's triangular-shaped vertical plate would counter the moment as well.



EX1007, Perspective View vs. EX2051, 289 (showing Simpson's DGT Hanger).



EX1007, Right Side View vs. EX2007 (showing Simpson's DGHT installation)

103. I have been informed that Patent Owner has accused Simpson's DG/DGB/DGH and DGT hangers of infringing the claims of the '339 patent. Given that Simpson's accused hangers do not crumple or buckle, Patent Owner's assertion that a POSA would have presumed that Cullen's or Yamaguchi's hanger would not be a viable option has no credible factual support.

B. Bundy does not teach away from cutting drywall.

104. Patent Owner contends that Bundy's preference for mounting the hanger over the drywall constitutes a teaching away from Allan's teaching to cut insulation to receive an extension of a structural connector. POR, 30, fn. 2; EX2050, ¶133. Patent Owner's characterization of Bundy's preference for mounting the hanger over the drywall as a teaching away is wrong in view of the

background and development of Simpson’s DU hanger—the commercial embodiment of the hanger disclosed in Bundy. *See generally* EX1047, EX1048.

105. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

106. Furthermore, skilled artisans would have understood, for example, in view of Section 714 of the International Building Code, that penetrations through firewall assemblies were permissible so long as the penetrations were fire-stopped. EX1034, 40 (“Section 714: Penetrations”). For example, Section 714 of the 2012 IBC recites:

714.3.1 Through penetrations. Through penetrations of fire-resistance-rated walls shall comply with Section 714.3.1.1. or 714.3.1.2.

714.3.1.1 Fire-resistance-rated Assemblies. Penetrations shall be installed as tested in an approved fire-resistance-rated assembly.

714.3.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved penetration firestop system as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water and shall have an F rating of not less than the required fire-resistance rating of the wall penetrated.

EX1034, 40 (emphasis removed).

107. I am aware that Patent Owner's expert declarant Mr. Tucker agreed that "penetrations are permissible" in fire-resistance rated wall assemblies. EX1055, 53:15-20 ("Q. Okay. So as far as section 714 talking about penetrations is concerned, penetrations are permissible as long as it's protected by an approved firestop system and you could pass testing with it; is that correct? A. Yes."). Given this context, a POSA would have understood that Bundy's preference to extend the top flange over the drywall as one alternative over other solutions outlined in Mr. Evans's and Mr. Hensen's declarations (EX1047, EX1048) to mount a joist hanger in a firewall assembly, without any hesitation to penetrate the fire-resistive wall assembly.

108. Furthermore, prior to 2013, it was common practice to cut openings in the drywall to be received around structural connectors or other essential penetrations. A POSA would have understood in view of Allan, ArchRecord, and Commins that cutting drywall to fit around mounted structural connectors was a common, alternative solution to Bundy's method. Notably, Patent Owner's declarants acknowledged that it was common to cut openings in drywall to fit around penetrations in the firewall assembly and admitted that joist hangers were installed before drywall installation prior to 2014. EX1050, 27:14-28:12, 46:2-12. For example, Patent Owner's declarant Mr. Holmes, who has more than 20 years of experience with Type III construction, admitted that when using prior art hangers, such as "HU hangers," a skilled artisan would "complete the framing ... and then you would cut holes in the drywall ... and [then] slide the drywall into place." EX1050, 46:2-12. While describing this process as requiring "a tremendous amount of effort" and creating "a patchwork quilt," Holmes admitted that it was common to initially mount joist hangers and then install drywall thereafter. EX1050, 27:14-28:12; 46:2-12. Mr. Nelson also acknowledged that joist hangers were "installed before drywall installation." EX1049, 27:1-4, 27:20-23.

109. Patent Owner's declarant Mr. Kaczkowski admitted that a skilled artisan would have understood how to fire-stop openings in drywall to pass local code. EX1052, 46:14-17 ("Q. And prior to 2013 would a skilled artisan have

understood that those fire stop materials [caulks and sealants] could be used to seal gaps that prevented the passage of fire and smoke? **A.** Yes.”), 47:3-11 (“**Q.** And before 2013 it was well known to fill the void spaces in the firewall assembly with fire resistant material to pass testing. Is that correct? ... **A.** It was a Code requirement. So to the extent that it occurred yes, I think a person of ordinary skill in the art would be aware of that.”). **Mr. Kaczkowski acknowledged that he “ha[s] seen a lot of drywall being cut in the field” and “ha[s] seen drywall being cut with a relatively high degree of precision.”** EX1052, 78:4-6. Thus, drywall was commonly cut in the field with a high degree of precision to fit around penetrations or obstacles.

110. Recognizing the state of the art and common practices in the construction industry, a skilled artisan would have never considered Bundy’s preference for mounting a hanger over drywall as teaching away from cutting a slot in the drywall to receive a portion of hanger, as taught in Allan.

C. The hangers in Cullen, Yamaguchi, and Robinson are all configured to extend through drywall.

111. Patent Owner contends that “none of Cullen, Yamaguchi, or Robinson show or suggest using the disclosed hangers to extend through drywall, let alone the fire-retardant drywall of a fire wall.” POR, 35. I disagree.

A POSA would have understood that each of Cullen’s Yamaguchi’s, and Robinson’s hangers are configured to extend through drywall because the

extension portion of each hanger defines a space between the hanger's channel-shaped portion and connection portion that would receive drywall. For example, Cullen's sidewalls 30/32, Yamaguchi's extension portion, and Robinson's dividing wall 136 are flat sections of sheet metal with a thin profile that separate the hanger's connection portion from its channel-shaped portion. Due to their shape and material, Cullen's sidewalls 30/32, Yamaguchi's extension portion, and Robinson's dividing wall 136 are configured to extend into one side of drywall and out of the other side while maintaining the integrity of the hanger. Patent Owner's expert declarant Mr. Kaczkowski admitted that "you could cut a narrow slot around the sidewalls of [the] Cullen hanger" to allow Cullen's extension portion to extend through sheathing. EX1052, 162:3-6. It is also my understanding that Board has found in previous decisions that the extension portions Yamaguchi's and Robinson's hangers are configured to extend through drywall. EX1066, 20-48, EX1067, 143-151. Given the similarities between Cullen's hanger and Yamaguchi's and Robinson's hangers, a POSA would have understood that Cullen's hanger is configured to extend through drywall.

112. Because Cullen's, Yamaguchi's, and Robinson's hangers are configured to extend through drywall, a POSA would have had a reasonable expectation of success using Cullen's, Yamaguchi's, and Robinson's hangers in

the wall assembly taught by Bundy or ArchRecord and cut openings in the drywall to fit around the hangers as taught by Allan, Commings, or ArchRecord.

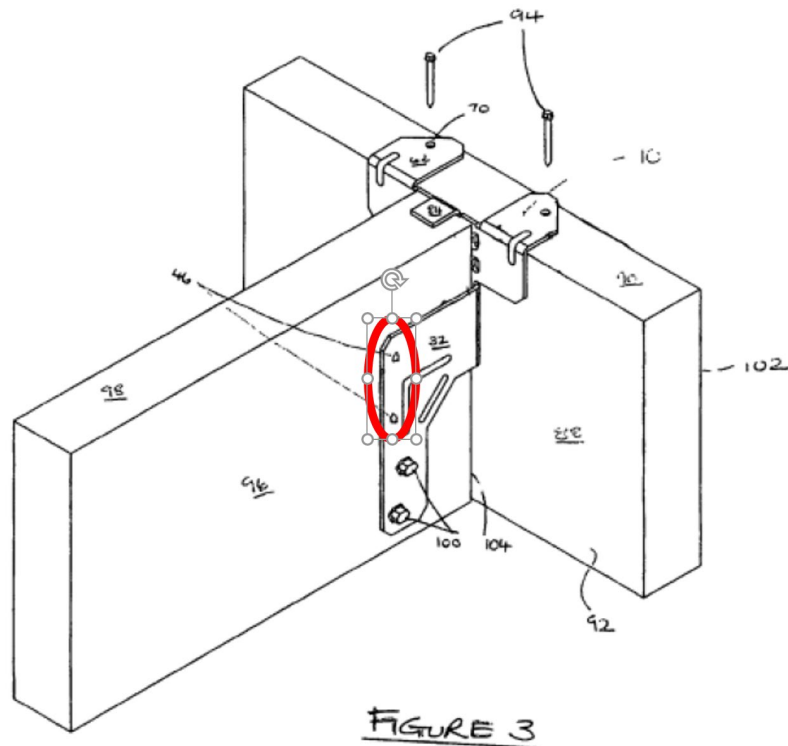
D. The rationales in my First Declaration for adapting Cullen's, Yamaguchi's and Robinson's hangers to extend through drywall are premised on the prior art.

113. Patent Owner contends that the selection of Cullen, Yamaguchi, and Robinson to perform the claimed method of constructing a firewall is “hindsight.” POR, 34-36. I disagree because Petitioner's rationales for extending Cullen's, Yamaguchi's, and Robinson's hangers through drywall are based on facts gleaned from the prior art. Bundy discloses advantages for accommodating drywall between a wall frame and a structural member held by a hanger for fire resistance. EX1005, 5:10-22; EX1003, ¶¶134-142, 66-71, 102-108. Allan teaches cutting “slots” through drywall to be received around mounted structural connectors. EX1006, 4:1-14; EX1003, ¶¶134-142, 253-260, 340-349. Extending Cullen's, Yamaguchi's, and Robinson's hangers through drywall would have been straightforward in view of Bundy's placement of drywall relative to a hanger in a firewall assembly and Allan's installation of drywall around a mounted structural connector.

E. Patent Owner mischaracterizes the references to support its arguments against motivation-to-combine.

- 1. Holding a joist's end away from Cullen's back flange would not change Cullen's principle of operation.**

114. Patent Owner alleges that Cullen's hanger is solely intended to hold a joist against its back plate, not away from its back plate. POR, 36-39. I disagree. Nowhere does Cullen describe that a joist must abut the back flange of the hanger to mount the joist to the wall assembly. *See* EX1004. Patent Owner's argument relies on Cullen's disclosure of "barbs," but ignores that "[a]lternatively, the one or more barbs are arranged on an inner face of the side walls." EX1004, 4:11-12. The very figure Patent Owner relies upon for support actually shows barbs 46 at nearly the farthest point from the back flange:



POR, 37.

115. Further, Cullen's principle of operation is to secure a joist in a timber construction that ensures aligning the joist's top surface with the top surface of the frame's top plate. EX1039, Abstract, 13:1-5, 16:29-30. Combining the teachings of Bundy's drywall placement with Cullen's hanger would still allow Cullen's modified hanger to align the top surface of the wall frame's top plate with the joist's top surface. EX1003, ¶¶136-141.

116. Furthermore, as I explained above in §IX.A.3, Patent Owner's assertion that Cullen's sidewalls would "buckle" without drywall extending between its channel-shaped portion and the wall frame is not technically accurate. POR, 38-39. A POSA would have understood to adjust the height and thickness of Cullen's sidewalls to allow the hanger to securely hold the joist's end away from a wall frame without drywall, just as Petitioner's similarly-shaped DGH hangers secure a joist's end away from wall frame without drywall.

2. Using Yamaguchi's hanger to secure a joist to a wood-frame wall member would not change Yamaguchi's principle of operation.

117. Patent Owner alleges that the joist received in Yamaguchi's hanger must be abutted against a foundation wall to prevent rotation of Yamaguchi's hanger. POR, 40-41. I disagree. Nowhere does Yamaguchi describe that the joist must abut the back flange of the hanger to mount the joist to the wall assembly. *See* EX1007. A POSA would have understood to adjust the thickness of Yamaguchi's

hanger and the height of its extension flanges to securely hold a joist's end away from a wall without drywall, just as Petitioner's similarly-shaped DGT hanger secures a joist's end away from a wall without drywall.

118. Furthermore, a POSA would have understood that Yamaguchi's hanger would have been suitable for firewall assembly, not just for a sill of a foundation wall. POR, 39; EX1003, ¶240. Indeed, drywall is commonly attached to walls, such as foundation walls for a variety of reasons, including to protect and cover the wall. EX1003, 242; EX1005, 5:17-21. Accordingly, a POSA would not have been deterred from using Yamaguchi's hanger in wood construction.

3. Receiving drywall in Robinson's hanger would not change Robinson principle of operation.

119. Patent Owner alleges that receiving drywall in Bundy's passage would change Robinson's principle of operation by obstructing the passage of cables. POR, 41-43. I disagree. As explained in my first declaration, a POSA would have understood to tune the dimensions of Robinson's hanger to receive drywall while still permitting cables to pass through its ventilation passage. EX1003, ¶388. Specifically, a POSA would have understood how to size the gap between first and second surfaces 118, 122 to additionally accommodate piping if such spacing was required. EX1003, ¶338;

X. PO'S SECONDARY CONSIDERATIONS EVIDENCE IS NOT COMMENSURATE WITH THE SCOPE OF THE CLAIMS

120. The '339 patent broadly claims the concept of installing drywall after mounting a fire wall hanger on a frame wall—a common practice in the construction industry—without reciting critical features of the invention that materially impact the functionality of PO's FWH hanger and installation method.

121. I have been informed that objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support. I have been informed that secondary considerations require a nexus to the merits of the invention that results from something that is both claimed and novel.

A. There is not a nexus between the claimed invention and Patent Owner's products and installation method.

122. I have been informed that a nexus between the secondary considerations evidence and the claims is presumed when the patentee's product embodies the claimed features, and is coextensive with them. I have been informed that the coextensive requirement is not met simply by showing that the patent claims broadly cover the product that is the subject of the evidence of secondary considerations. I have been informed that a patent claim is not coextensive with a product that includes a critical unclaimed feature that is claimed by a different patent and that materially impacts the product's functionality.

123. I do not believe that Patent Owner should be entitled to a presumption of nexus to its secondary considerations evidence because its FWH product and installation method are not coextensive with the patented invention. Based on my review of Patent Owner's evidence of secondary considerations, it was not the installation sequence alone that drove the demand for Mitek's FWH hanger. Instead, it was the ability to install drywall after mounting the hanger without creating disruptions in the firewall assembly, which is attributable to the unclaimed feature of cutting a slot in the drywall to receive the hanger's back-to-back extension flanges. It is my understanding that Mr. Kaczkowski acknowledged during his deposition that this unclaimed spatial arrangement of the extension flanges is what allows the hanger to hold a joist's end offset from a wall without buckling by "significantly increas[ing] the moment resistance provided by the hanger." EX2050, ¶70; *see also* EX2131 (FWH's Technical Bulletin noting that its "advanced design allows you to install the hangers before the drywall is attached.") (emphasis removed).

124. Furthermore, the back-to-back extension flanges allows the hanger to minimize disruptions in the drywall despite penetrating the drywall. EX1001, 11:33-41. When asked during his deposition if "it's important for the extension flanges to be back to back for this [339] hanger to work in a firewall," Mr. Kaczkowski answered, "yes, I think the **back to back extension flanges and the**

narrow width of these flanges enables the installation sequence that is being taught in the 339 patent while at the same time minimizing the amount of fire-rated drywall that needs to be removed.” EX1052, 52:3-25 (emphasis added).

When asked why he did not share the same concerns of the '339 patent hanger buckling compared to the prior art hangers, Mr. Kaczowski answered “[t]he hanger that’s shown in Figure 3 -- Figure 2 of the 339 patent has those extension portion consisting of **two separate flanges in a back to back configuration**. The extension portion of the Cullen-Bundy combination that I show on Page 37 consists of individual plates that are separated.” EX1052, 84:21-85:13. It is my understanding that Patent Owner’s other declarants confirmed this significance of the hanger’s shape. EX1050, 28:17-30:24 (Mr. Holmes describing the “bent together” extensions flanges as a “unique” design that allows “drywall” to “just notch[] around that piece of metal.”).

125. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

126. Notably, Patent Owner’s other patents, US 10,024,049 and U.S. 11,649,626, positively recite the back-to-back extension flanges feature. Specifically, the only independent claim of the ’049 patent recites “**the major surfaces of the extension flanges being in opposed face-to-face relation and directly engaging each other along a juncture** between the connection portion and the channel-shaped portion.” EX1064, 11:40-48. The only two ’626 patent claims that survived from the 105-claim PGR proceeding recites “**the first and second extension flanges engaging each other along a juncture.**” EX1065, 15:27-33, 21:41-46. It is my understanding that the patent protection sought for the back-to-back extension flanges is probative of the feature’s significance.

127. The challenged claims omit another critical feature: cutting a slot through the drywall. While the challenged claims simply require cutting an opening in the drywall, the ’339 patent specification specifies cutting a “slot.” *See generally* EX1001 (describing to cut a “slot” sixty times while never reciting the term “opening”). The ’339 patent’s use of the term “slot” is significant because the ’339 patent already admitted that it was known to provide a “cutout for the entire cross section of the truss” in the firewall assembly. EX1001, 1:41-42.

128. It is my understanding that Patent Owner's own expert declarants admitted that the significant aspect of the '339 patent's invention is minimizing the penetration through the drywall to a size of a narrow slot. Specifically, Mr. Kaczkowski noted that a "person of ordinary skill in the art would recognize that **an opening in this case [the '339 patent] is simply this narrow slot that is being taught by the specification.**" EX1052, 51:5-17. Mr. Kaczkowski further elaborated that the "**opening [through drywall] should be minimized**, and there are specific guidelines and dimensions provided in the 339 patent in order to accomplish that." EX1052, 49:24-50:2. For example, when asked if "there would be a penetration through the drywall caused by the extension flange of the 339 hanger," Mr. Kaczkowski answered, "[w]ell, **there would be a slot there.** The slot would exist between the edge of the fire resistant drywall and the extension flange. So that would be **a minimal dimension**, which is called out in the patent as being less than or equal to one-eighth of an inch." EX1052, 50:6-10 (emphasis added).

129. As another example, when asked why "[t]here's no penetration in the FWH hanger ... when you're putting those two layers" of drywall around the hanger, Patent Owner's declarant Mr. Church replied "[i]t's **very clean, single cut**, and so **there's not really any notching that has to go on for the FWH hanger.** So when you slide that up there you're just cutting a slit in the sheathing at each

hanger location so it just slides up behind the hanger.” EX1057, 51:8-52:18.

(emphasis added).

130. Furthermore, in his deposition, Patent Owner’s declarant Mr. Irmiter acknowledged the importance of limiting the penetration of the FWH hanger to a “slot.” When asked whether “the MiTek FWH that embodies the ‘339 patent ... also requires penetrations in the firewall,” Mr. Irmiter replied “I wouldn’t call it a penetration. **It does require a slit. It does require a cut. Not a hole. We’re not cutting away a large section of sheetrock or drywall.** We’re doing a simple cut slit and sliding it up into place.” EX1054, 50:6-14. Mr. Irmiter further explains “that’s **what’s unique about this**” and the ability to slide the hanger through the slot is “important for the ease of installation.” EX1054, 50:16-20, 52:19-23. Mr. Irmiter also mentions “that little slit that they’re making is protected by the design of the hanger, the backside of that hanger, the metal on the hanger. It’s just really unique.” EX1054, 53:4-7. This purported “unique” feature of sliding the FWH hanger through a slot is not recited in the claims of the ’339 patent.

131. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

132.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

133. As shown above, Mitek’s installation instructions recites six steps for assembling a fire-resistive wall assembly. Notably, none of the steps shown in Mitek’s installation instructions state “cutting an opening into an exterior edge of the fire retardant sheathing,” as recited in claim 1 of the ’339 patent. Instead, Mitek’s installation instructions recite “cut an 8” slot in the gypsum board using Mitek’s FWH-T fire Wall Template.” EX2158. A skilled artisan would have understood that cutting an opening of indiscriminate size into the sheathing, as claimed in the ’339 patent, would not comply with Mitek’s installation instruction because doing so would disrupt the firewall assembly.

134. As another example, Mitek’s FWH bulletin (EX2132) emphasizes that “the penetration of the MiTek FWH Fire Wall Hanger through the gypsum wallboard will not reduce the fire resistive rating of the 2 hour fire resistive assembly.” EX2132, 1. A skilled artisan would have understood that the ability to penetrate wallboard without reducing the fire rating is attributed to the unclaimed “slot” in the drywall for receiving the hanger’s extension flange. Mitek’s FWH bulletin does not instruct users to cut an “opening” in the gypsum wallboard. Instead, Mitek FWH’s bulletin instructs users to cut a “slot,” as shown below. Moreover, Mitek’s FWH bulletin attributes its installation sequence to its “advanced design.” EX2132. A skilled artisan would have understood that this advanced design is the back-to-back flanges, which helps support the load applied

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

135. Based on my review of the record, none of Patent Owner's evidence of secondary considerations is linked to simply cutting an opening of indiscriminate size into sheathing to receive any portion of the hanger. Accordingly, the features emphasized in Patent Owner's evidence of secondary

considerations are not in commensurate with scope of the '339 patent claims, which cover installation sequences that do or do not maintain the fire-resistive rating of the wall assembly.

136. Second, Patent Owner does not establish a nexus between its evidence of secondary considerations and the claim invention because its evidence of secondary considerations rely on a feature that was already well known in the art—cutting and installing drywall after mounting a structural connector.

137. I have been informed that objective evidence of nonobviousness lacks a nexus if it exclusively relates to a feature that was known in the prior art.

138. Allan, ArchRecord, and Commins each teach that it was known to notch drywall around a mounted structural connector so that the structural connector extends through the drywall. EX1006, 4:10-14; EX1031, 166; EX1032, 1:63-168, 4:27-41. Moreover, the background of the '339 patent admits that it was known to cut openings in drywall to accommodate trusses or joists.

139. Patent Owner's declarant Mr. Holmes admitted that when using prior art hangers, such as "HU hangers," a skilled artisan would "**complete the framing ... and then you would cut holes in the drywall** ... and [then] slide the drywall into place." EX1050, 46:2-12, *see also* 27:14-28:12. Mr. Holmes further acknowledged that "it was pretty common for framing to be completed before drywall was installed." EX1050, 34:17-22.

140. In agreement, Mr. Irmiter noted during his deposition that “**prior to the use of hangers we would simply cut out gypsum around each one of those joists, slide it up into place, and that would essentially be** – back in the day in the seventies and even in the eighties, that would be your – **your two-hour firewall.**” EX1054, 27:9-15. Mr. Irmiter also admitted to seeing installers “notching [drywall] around a hanger” prior to the release of the FWH hanger. EX1054, 46:11-22.

141. Thus, the broadly claimed sequence of installing drywall after mounting a hanger in the ’339 patent was well-known, and therefore, lacks a nexus to the secondary considerations.

142. Furthermore, claims 1 and 27 of the ’339 patent do not recite any unique structural features for the claimed “hanger.” The only recited structural features of the claimed “hanger” in claims 1 and 27 were already found unpatentable in its Final Written Decisions issued in PGR2023-00047, PGR2023-00048, and PGR2023-00049. I agree with the Board’s Final Written Decisions, indicating that there is nothing new about the claimed “hanger” of the ’339 patent.

B. Patent Owner’s commercial success is not tied to claimed installation sequence alone.

143. I have been informed that commercial success is not relevant to the obviousness inquiry when the evidence of secondary considerations is tied to an unclaimed feature or a feature that was already known in the art. Based on my

review of Patent Owner’s evidence of secondary considerations, the commercial success achieved by Mitek’s hanger is strongly linked to its unclaimed features—back-to-back extension flanges and cutting a slot to minimize drywall disruption and maintain the fire-resistive rating of the wall assembly. POR, 75-82.

144. While some of Patent Owner’s evidence indicates a preference for the installation sequence associated with Mitek’s FWH product, Patent Owner’s assertion that the installation sequence, *alone*, was the “primary driver” for consumer demand is wrong. POR, 83. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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148. [REDACTED]

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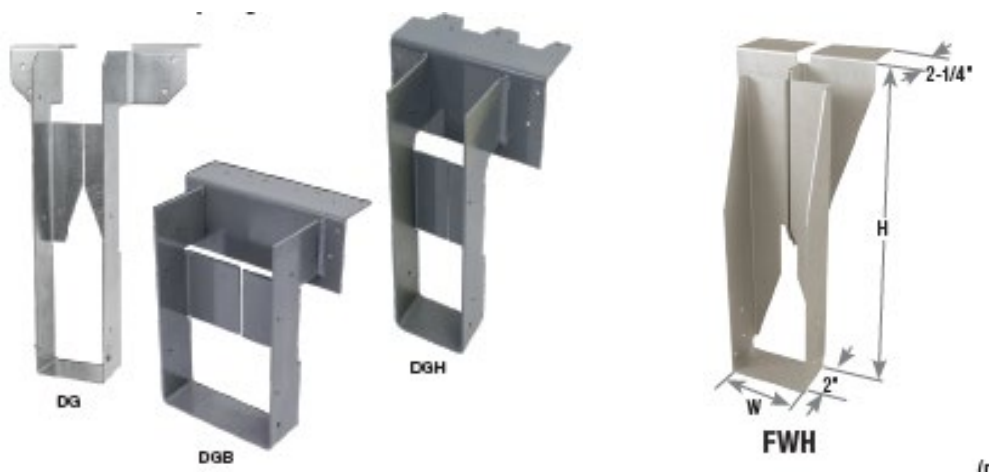
149. Moreover, Patent Owner’s attempt to coin the FWH hanger as notable, ground-breaking invention in the industry is overplayed in view of its own expert declarant’s testimony. For example, when asked “why doesn’t the ’339 penetration cause an issue for fire rating,” Mr. Tucker responded “**I had never seen that product, the FWH product, until I was involved in this proceeding.**” EX1055, 44:14-20 (emphasis added). While admitting to be involved with “hundreds” of firewall assemblies through his work as a principal and structural engineer (EX1055, 15:1-15), Mr. Tucker had never seen the FWH hanger until 2025—more than 10 years after the initial release of the FWH hanger in 2014. In my opinion, Mr. Tucker’s testimony about Patent Owner’s evidence of secondary considerations should be given little weight because Mr. Tucker had never seen the FWH product until he was involved with this proceeding.

C. Petitioner did not copy Patent Owner’s invention.

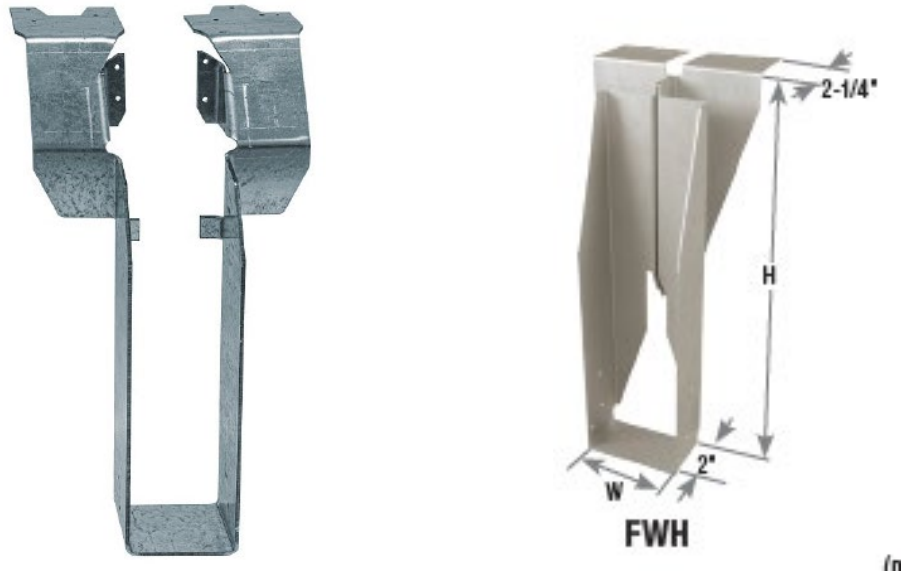
150. Patent Owner alleges that Petitioner copied inventive aspects of its hanger with the release of Petitioner’s DG series hangers. POR, 85-86.

151. It is my understanding that not every competing product that falls within the scope of a patent is evidence of copying. It is also my understanding that copying requires replication of a specific product.

152. Patent Owner's own evidence confirms that Petitioner did not copy PO's hanger design. In his declaration, Mr. Kaczkowski correctly acknowledged that Petitioner "refrained" from adopting FWH's design. EX2050, ¶265. It also my understanding that Mark Rolf, the named inventor of the '339 patent, admitted that Simpson's DGT hanger and MiTek's FWH hanger were "**completely different.**" EX2070, 86:10-13 (emphasis added). Specifically, when asked if there were any differences between Simpson's DGT hanger and MiTek's FWH hanger, Mark Rolf noted "[a]s far as, you know, **physical differences, quite a bit.**" EX2070, 86:2-11. Mark Rolf further noted that "the Simpson hanger, requires a bigger notch in the drywall." EX2070, 86:13-18.



EX2020, (Simpson's DG/DGH/DGB hangers); EX2131 (MiTek's FWH hanger).



EX2017 (Simpson's DGHT hanger) vs. EX2131 (MiTek's FWH hanger).

153. Furthermore, Simpson's engineers confirmed that their DG series hangers were developed internally without copying MiTek's FWH hangers. EX1047; EX1048. Tom Evans, a licensed civil engineer who worked at Simpson from 1997 to 2020, noted that when developing the DG series hangers, "Simpson made significant efforts to design away from MiTek's patent claims," specifically not to "pursue a product that had a 'fin plate' that extended through the drywall." EX1048, ¶22. Sam Hensen, a manager of Simpson's connector and lateral system product lines from 2014 to 2023, explained that "[n]ot only did the Simpson hangers look different than the FWH hangers, particularly in terms of the extension portions and stops of the hangers, but these differences resulted in different installation methods." EX1047, ¶54. For example, one difference was the way that the drywall had to be cut to be installed between the channel-shaped portion of the

hangers and the wall assembly. EX1047, ¶54. Unlike MiTek’s FWH hangers, Simpson’s DG series hangers require either a larger-sized opening or two notches to receive the spatially separated extension portions.

154. These significant differences between Simpson’s DG series hangers and MiTek’s FWH hangers indicate that Simpson did not copy MiTek’s invention described in the ’339 patent.

D. Patent Owner’s industry praise is not tied to the claimed installation sequence alone.

155. I am aware that Patent Owner cites Simpson and MiTek emails to show industry praise. POR, 88-89. Based on my review of the email exchanges submitted by Patent Owner, most of these “praises” have no connection to a feature recited in the ’339 patent claims.

156. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

157. [REDACTED]

[REDACTED]

[REDACTED]

158.

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161. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

163. Moreover, PO ignores other evidence suggesting that customers preferred mounting Petitioner's DU hanger over installed drywall for its cost-effectiveness. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

E. There was no industry skepticism, nor were there failures by others.

164. Patent Owner alleges that Petitioner's engineers were skeptical of extending a hanger through drywall and avoided cutting cutouts into fire-resistant drywall. POR, 89-91. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Simpson's pursuit of one design choice over another to reduce costs and follow an emerging practice does not constitute skepticism or failure to develop FWH's design. Based on my experience in the field, costs and customer demand strongly influence the design choice of product developers. And it is not uncommon for product developers to develop alternative product lines to meet different customer needs, such as Simpson's choice to develop the DG series hangers in conjunction with its DU series hangers.

165. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] It was well known how to design a hanger that could hold a joist's end offset from a top plate of a wall assembly, as evidenced by Robinson, Tsukamoto, and Yamaguchi. Accordingly, it was expected that Mr. Daudet and Mr. Evans recognized how FWH's extension flange allowed the hanger to counter the moment applied by the joist's end.

166. Moreover, Simpson developed hangers based on prior art designs that allowed the hanger to be mounted before drywall installation. As I described above in Section IX.A.3, Simpson's DG/DGB/DGH hangers correspond to the shape of Cullen's hanger, and Simpson's DGT hanger corresponds to the shape of Yamaguchi's hanger. *See* EX2116; EX2018. It is not surprising that Simpson's DG series hangers mimic prior art hanger designs because the concept of creating a gap between the end of the joist and the wall is straightforward. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Prior to the FWH hanger, Simpson included hangers, namely JCT Steel-Joist Hanger and CJTZ Concealed Joist Tie, that employed

vertical elements extending from the hanger's connection portion to attach to a joist. EX1047, ¶47. Thus, Simpson developed a hanger through a typical research and design process that permitted drywall to be installed after mounting the hanger.

F. Patent Owner's invention did not involve a long-felt need.

167. Patent Owner asserts that “[a]lthough building trends may have brought it to the forefront in the late 2000s, the need for the firewall solution presented by the ’339 Patent had been long present.” POR, 91. I disagree.

168. The need to provide fire-rated resistance assemblies in multi-story construction was not prevalent until in the mid-to-late 2000s. EX2046, ¶¶5-19. At this time, the wood-construction industry pushed for the use of wood instead of steel or masonry for Type III multi-family structures. EX1031 (noting that “[m]ulti-family construction in particular has grown, increasing 46 percent between 2009 and 2011” and that “[w]ood has a key role to play in mid-rise construction ... proven to be more affordable than concrete or steel.”); EX2067, 46:3-9, 57:25-58:9; EX1052, 25:1-3; EX1047, ¶¶7-9. In his declaration, Mr. Hensen mentioned that organizations, such as WoodWorks and the American Wood Council, worked with municipalities to adopt changes in the IBC related to the use of wood in Type III construction and educated the industry about best practices for the use of wood in Type III construction. EX1047, ¶7. Patent Owner's declarant Thomas Irmiter agreed that “there was not a lot of demand for type three

construction before the late 2000s when industry groups like Woodworks or others like Woodworks started to really push for the higher use of wood generally and more wood in type three structures.” EX1054, 41:14-12.

169. Given that wood is less expensive than concrete and steel, the industry started constructing more multi-family, mid-rise out of wood. EX1047, ¶7; EX1031. The rise in wooden-frame mid-rise construction naturally raised the demand for constructing fire-rated wall assemblies to comply with local building codes. EX2067, 51:1-10; EX1047, ¶8.

170. In response—around 2011 to 2012—the two players in the industry, MiTek and Simpson, started developing “firewall hangers” to meet the higher demand for firewall assemblies. EX1047, ¶¶10-24. Simpson introduced the DU/DHU/DHUTF product series (the “DU Hangers”) in December 2013. EX1047, ¶21. MiTek released the FWH to the market in 2014 a few months after the DU Hangers were released. EX1047, ¶23. [REDACTED]

[REDACTED]

171. In my opinion, MiTek’s FWH hanger was the result of the rising demand for firewall assemblies in wooden-frame mid-rise construction that started in the mid-to-late 2000s. While joist hangers had been around for over a century, there was not a high demand for installing joist hangers in 2-hour fire-resistant wall

assemblies until the growth of wooden-frame Type III construction. Accordingly, MiTek's FWH hanger was not a solution to a long-felt need.

172. It is my opinion that Patent Owner has not demonstrated that any secondary considerations outweigh Petitioner's obviousness showing.

XI. SUBSTITUTE CLAIMS

173. I understand that Patent Owner proposes if the challenged claims are found to be unpatentable, to replace claims 1-31 with substitute claims 32-51. MTA, 2-3. I understand that Patent Owner proposes that such substitute claims would be amendments to issued claims as shown in the table below. To aid my understanding of the differences between the substitute claims and the original claims, I listed in the right-hand column of the table below elements of the original claims that are similar or correspond to elements of the substitute claims.

Substitute Claims	Original Claims
Claim 32 A method of constructing a fire-resistive wall assembly, the method comprising:	[1.P] A method of constructing a fire-resistive wall assembly, the method comprising:
32.a.1-2 mounting a fire wall hanger on a frame wall, the frame wall including a top plate and a plurality of studs extending down from the top plate, and	[1.A] mounting a fire wall hanger on a frame wall, the frame wall including a top plate and a plurality of studs extending down from the top plate,
32.a.3 the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component, a connection portion configured for attachment to the frame wall and an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,	[1.B] the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component, a connection portion configured for attachment to the frame wall and an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,
32.a.4 said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall,	[1.C] said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;

Substitute Claims	Original Claims
32.b.1-3 cutting an opening into an exterior <u>perimeter</u> edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing and [the opening] opening outwardly from the exterior <u>perimeter</u> edge of the fire retardant sheathing,	[1.D] cutting an opening into an exterior edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing and opening outwardly from the exterior edge of the fire retardant sheathing; and
32.b.4 <u>the exterior perimeter edge extending from the front face of the fire retardant sheathing to the rear face of the fire retardant sheathing; and</u>	
32.c.1 after mounting the fire wall hanger on the frame wall and after cutting the opening into the exterior <u>perimeter</u> edge of the fire retardant sheathing, installing the fire retardant sheathing with respect to the frame wall so the rear face of the fire retardant sheathing faces <u>rearward</u> toward the studs of the frame wall <u>and the front face of the fire retardant sheathing faces forward away from the studs of the frame wall</u>, said step of installing the fire retardant sheathing includes:	[1.E] after mounting the fire wall hanger on the frame wall and after cutting the opening into the exterior edge of the fire retardant sheathing, installing the fire retardant sheathing with respect to the frame wall so the rear face of the fire retardant sheathing faces toward the studs of the frame wall,
32.c.2 inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and	[1.F] said step of installing the fire retardant sheathing includes: inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and
32.c.3 moving the fire retardant sheathing relative to the fire wall hanger mounted on the frame wall so that an edge of the fire retardant sheathing bounding the opening moves alongside the extension portion and the fire wall hanger extends through the opening in the fire retardant sheathing.	[1.G] moving the fire retardant sheathing relative to the fire wall hanger mounted on the frame wall so that an edge of the fire retardant sheathing bounding the opening moves alongside the extension portion and the fire wall hanger extends through the opening in the fire retardant sheathing.
33.a.1 The method of claim <u>32</u>, wherein said step of mounting the fire wall hanger includes: engaging a front face of the frame wall with a <u>first</u> back flange of the connection portion of the	Claim 2: wherein said step of mounting the fire wall hanger includes engaging a front face of the frame wall with a back flange of the connection portion of the fire wall hanger.

Substitute Claims	Original Claims
fire wall hanger;	
33.a.1 <u>engaging the front face of the frame wall with a second back flange of the connection portion of the fire wall hanger.</u>	
33.a.2 <u>the second back flange being spaced apart from the first back flange; and</u>	
33.a.3 <u>engaging an upper surface of the top plate with a top flange of the connection portion of the fire wall hanger; and</u>	Claim 3: wherein the step of mounting the fire wall hanger further includes engaging an upper surface of the top plate with a top flange of the connection portion of the fire wall hanger
33.b <u>wherein said step of inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall includes positioning the fire retardant sheathing over and in front of a first front face of the first back flange of the connection portion of the fire wall hanger and over.</u>	Claim 4: wherein said step of inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall includes positioning the fire retardant sheathing over and in front of a front face of the back flange of the connection portion of the fire wall hanger
33.b <u>[positioning the fire retardant sheathing] in front of a second front face of the second back flange of the connection portion of the fire wall hanger</u>	
Claim 34.a <u>The method of claim 33, wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing so that a first extension flange and a second extension flange of the extension portion of the fire wall hanger extend through the fire retardant sheathing.</u>	Claim 15: wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing so that a first extension flange of the extension portion of the fire wall hanger extends through the opening in the fire retardant sheathing. Claim 16: wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing so that a second extension flange of the extension portion of the fire wall hanger extends through the

Substitute Claims	Original Claims
	fire retardant sheathing.
34.b <u>wherein the fire wall hanger is formed as one-piece of sheet metal.</u>	
34.c <u>the first extension flange being directly connected to the channel-shaped portion by a single generally 90-degree sheet metal first bend formed by the first extension flange and the channel-shaped portion, the second extension flange being directly connected to the channel-shaped portion by a single generally 90-degree sheet metal second bend formed by the second extension flange and the channel-shaped portion.</u>	
35.a <u>The method of claim 34, wherein the channel-shaped portion includes a base arranged to receive an end portion of the structural component thereon to support the structural component, the base having an upper surface arranged to contact the structural component, the upper surface lying in a base plane.</u>	[25.D] wherein the channel-shaped portion of the fire wall hanger includes a base configured to receive an end portion of the structural component thereon to support the structural component,
35.b <u>the base comprising a one-piece sheet metal panel, the one-piece sheet metal panel forming the upper surface.</u>	
35.c <u>the channel-shaped portion including first and second side panels extending from the one-piece sheet metal panel in an upward direction.</u>	
35.d <u>wherein the first and second bends each have an upper-most end and a lower-most end, the first bend extending from the upper-most end of the first bend to the lower-most end of the first bend in a first direction, the first direction being perpendicular to the base plane, the second bend extending from the upper-most end of the second bend to the lower-most end of the second bend in</u>	

Substitute Claims	Original Claims
<u>the first direction.</u>	
36.a The method of claim 35, wherein said step of installing the fire retardant sheathing includes placing the rear face of the fire retardant sheathing against the front face of the frame wall,	Claim 5: wherein said step of installing the fire retardant sheathing includes placing the rear face of the fire retardant sheathing against the front face of the frame wall.
36.b <u>wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes moving the fire retardant sheathing upward relative to the fire wall hanger so that an exposed bottom edge of the second extension flange is a first part of the fire wall hanger to move into the opening in the fire retardant sheathing, the bottom edge being free of direct attachment to any other component.</u>	
37.a The method of claim 36, wherein said step of placing the rear face of the fire retardant sheathing against the front face of the frame wall includes engaging the rear face of the fire retardant sheathing with the top plate and the plurality of studs, the top plate and the plurality of studs forming the front face of the frame wall,	Claim 6: wherein said step of placing the rear face of the fire retardant sheathing against the front face of the frame wall includes engaging the rear face of the fire retardant sheathing with the top plate and the plurality of studs, the top plate and the plurality of studs forming the front face of the frame wall..
37.b <u>wherein the fire wall hanger is free of welding.</u>	
38 The method of claim 32, further comprising positioning the structural component on an upper surface of a base of the channel-shaped portion of the fire wall hanger before said step of installing the fire retardant sheathing, said step of positioning the structural component including engaging the structural component with a stop of the fire wall hanger to space an end of the structural component from the frame wall to permit the fire retardant sheathing to be received between the end of the structural component and the frame wall, and wherein said step of inserting the fire retardant sheathing between the channel-	Claim 8: The method of claim 1, further comprising positioning the structural component on an upper surface of a base of the channel-shaped portion of the fire wall hanger before said step of installing the fire retardant sheathing, said step of positioning the structural component including engaging the structural component with a stop of the fire wall hanger to space an end of the structural component from the frame wall to permit the fire retardant sheathing to be received between the end of the structural component and the frame wall,

Substitute Claims	Original Claims
shaped portion of the fire wall hanger and the frame wall includes inserting the fire retardant sheathing between the end of the structural component and the frame wall.	and wherein said step of inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall includes inserting the fire retardant sheathing between the end of the structural component and the frame wall.
39.a The method of claim <u>32</u> , wherein said step of cutting the opening into the exterior <u>perimeter</u> edge of the fire retardant sheathing includes cutting the opening to have an area less than an area of an end of the structural component facing toward the frame wall, the area of the opening being taken at and parallel to the front face of the fire retardant sheathing,	Claim 9: The method of claim 1, wherein said step of cutting the opening into the exterior edge of the fire retardant sheathing includes cutting the opening to have an area less than an area of an end of the structural component facing toward the frame wall, the area of the opening being taken at and parallel to the front face of the fire retardant sheathing.
39.b <u>wherein the extension portion includes first and second planar extension plates, the first and second planar extension plates each include opposite first and second ends, the first end of the first planar extension plate being connected to the channel-shaped portion by a first bend, the second end of the first planar extension plate being connected to the connection portion by a second bend, the first end of the second planar extension plate being connected to the channel-shaped portion by a third bend, and the second end of the second planar extension plate being connected to the connection portion by a fourth bend.</u>	Claim 23: wherein the first and second planar extension plates each include opposite first and second ends, the first end of the first planar extension plate being connected to the channel-shaped portion by a first bend, the second end of the first planar extension plate being connected to the connection portion by a second bend, the first end of the second planar extension plate being connected to the channel-shaped portion by a third bend, and the second end of the second planar extension plate being connected to the connection portion by a fourth bend.
40.a The method of claim <u>35</u> , wherein said step of cutting the opening into the exterior perimeter edge of the fire retardant sheathing includes cutting the opening to have: an area less than an area of an end of the structural component facing toward the frame wall, the area of the opening being taken at and parallel to the front face of the fire retardant sheathing;	Claim 9: The method of claim 1, wherein said step of cutting the opening into the exterior edge of the fire retardant sheathing includes cutting the opening to have an area less than an area of an end of the structural component facing toward the frame wall, the area of the opening being taken at and parallel to the front face of the fire retardant sheathing.
40.b a height less than a height <u>of a channel</u> of the channel-shaped portion of the fire wall	Claim 10: wherein said step of cutting the opening into the exterior edge of the fire retardant sheathing includes cutting the

Substitute Claims	Original Claims
hanger, <u>the channel configured to receive the structural component; and a width less than a width of the channel of the channel-shaped portion of the fire wall hanger.</u>	opening to have a height less than a height of the channel-shaped portion of the fire wall hanger. Claim 11: wherein said step of cutting the opening into the exterior edge of the fire retardant sheathing includes cutting the opening to have a width less than a width of the channel-shaped portion of the fire wall hanger.
41 The method of claim <u>35</u>, wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing so that first <u>and second</u> extension <u>flanges</u> of the extension portion of the fire wall hanger extends through the opening in the fire retardant sheathing.	Claim 15: wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing so that a first extension flange of the extension portion of the fire wall hanger extends through the opening in the fire retardant sheathing. Claim 16: wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing so that a second extension flange of the extension portion of the fire wall hanger extends through the fire retardant sheathing.
42P. <u>A method of constructing a fire-resistive wall assembly, the method comprising:</u>	[1.P] A method of constructing a fire-resistive wall assembly, the method comprising:
42.a.1-2 <u>mounting a fire wall hanger on a frame wall, the frame wall including a top plate and a plurality of studs extending down from the top plate, and</u>	[1.A] mounting a fire wall hanger on a frame wall, the frame wall including a top plate and a plurality of studs extending down from the top plate,
42.a.3 <u>the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component, a connection portion configured for attachment to the frame wall and an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the</u>	[1.B] the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component, a connection portion configured for attachment to the frame wall and an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,

Substitute Claims	Original Claims
<u>connection portion.</u>	
<u>42.a.4 said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;</u>	[1.C] said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;
<u>42.b.1-3 cutting an opening into an exterior perimeter edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing and opening outwardly from the exterior perimeter edge of the fire retardant sheathing.</u>	[1.D] cutting an opening into an exterior edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing and opening outwardly from the exterior edge of the fire retardant sheathing; and
<u>42.b.4 the exterior perimeter edge extending from the front face of the fire retardant sheathing to the rear face of the fire retardant sheathing; and</u>	
<u>42.c.1 after mounting the fire wall hanger on the frame wall and after cutting the opening into the exterior perimeter edge of the fire retardant sheathing, installing the fire retardant sheathing with respect to the frame wall so the rear face of the fire retardant sheathing faces rearward toward the studs of the frame wall and the front face of the fire retardant sheathing faces forward away from the studs of the frame wall, said step of installing the fire retardant sheathing includes:</u>	[1.E] after mounting the fire wall hanger on the frame wall and after cutting the opening into the exterior edge of the fire retardant sheathing, installing the fire retardant sheathing with respect to the frame wall so the rear face of the fire retardant sheathing faces toward the studs of the frame wall,
<u>42.c.2 inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and</u>	[1.F] said step of installing the fire retardant sheathing includes: inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and
<u>42.c.3 moving the fire retardant sheathing relative to the fire wall hanger mounted on the frame wall so that an edge of the fire retardant sheathing bounding the opening moves alongside the extension portion and the fire wall hanger extends</u>	[1.G] moving the fire retardant sheathing relative to the fire wall hanger mounted on the frame wall so that an edge of the fire retardant sheathing bounding the opening moves alongside the extension portion and

Substitute Claims	Original Claims
<u>through the opening in the fire retardant sheathing;</u>	the fire wall hanger extends through the opening in the fire retardant sheathing.
42.d.1 wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing relative to the extension portion of the fire wall hanger so that only the extension portion of the fire wall hanger extends through the fire retardant sheathing,	Claim 18: wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing relative to the extension portion of the fire wall hanger so that only the extension portion of the fire wall hanger extends through the fire retardant sheathing.
42.d.2 <u>the extension portion including first and second planar extension plates, the first and second planar extension plates being parallel to one another,</u>	[26.B] wherein the extension portion of the fire wall hanger includes first and second planar extension plates, the first and second planar extension plates being parallel to one another,
42.d.3-4 <u>each of the first and second planar extension plates including an inner face and an outer face, the inner faces of the first and second planar extension plates facing one another, the inner face of the first planar extension plate facing in a first direction toward the inner face of the second planar extension plate and the outer face of the first planar extension plate facing in a second direction that is opposite the first direction, the inner face of the first planar extension plate lying in an inner face plane;</u>	[26.C] each of the first and second planar extension plates including an inner face and an outer face, the inner faces of the first and second planar extension plates facing one another, the inner face of the first planar extension plate facing in a first direction toward the inner face of the second planar extension plate and the outer face of the first planar extension plate facing in a second direction that is opposite the first direction, the inner face of the first planar extension plate lying in an inner face plane,
42.e.1 <u>wherein the connection portion and the channel-shaped portion are rigidly fixed with respect to one another, and</u>	[26.A] wherein the connection portion and the channel-shaped portion are rigidly fixed with respect to one another,
42.e.2 <u>wherein the connection portion includes a back flange and a top flange, the top flange extending from an edge of the back flange, the back flange extending from an edge of the first planar extension plate in the second direction, the back flange and the top flange being entirely disposed outward, in the second direction, of the</u>	[26.D] wherein the connection portion includes a back flange and a top flange, the top flange extending from an edge of the back flange, the back flange extending from an edge of the first planar extension plate in the second direction, the back flange and the top flange being entirely disposed outward, in the second direction, of the inner face plane;

Substitute Claims	Original Claims
<u>inner face plane;</u>	
42.f <u>wherein said step of mounting the fire wall hanger includes engaging a front face of the top plate with the back flange of the connection portion of the fire wall hanger and includes engaging an upper surface of the top plate with the top flange of the connection portion of the fire wall hanger; and</u>	[26.E] wherein said step of mounting the fire wall hanger includes engaging a front face of the top plate with the back flange of the connection portion of the fire wall hanger and includes engaging an upper surface of the top plate with the top flange of the connection portion of the fire wall hanger; and
42.g <u>wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing relative to the extension portion of the fire wall hanger so that the first planar extension plate of the extension portion of the fire wall hanger is disposed in the opening in the fire retardant sheathing.</u>	[26.F] wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing relative to the extension portion of the fire wall hanger so that only the first and second planar extension plates of the extension portion of the fire wall hanger extend through the opening in the fire retardant sheathing.
43 The method of claim 35, wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing relative to the extension portion of the fire wall hanger so that only first and second extension flanges of the extension portion of the fire wall hanger extend through the fire retardant sheathing.	Claim 19: The method of claim 1, wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing relative to the extension portion of the fire wall hanger so that only first and second extension flanges of the extension portion of the fire wall hanger extend through the fire retardant sheathing.
44.a The method of claim 32, wherein said step of installing the fire retardant sheathing comprises positioning first and second Type X gypsum panels of the fire retardant sheathing, the first and second Type X gypsum panels each being 5/8-inch-thick, the first Type X gypsum panel having a front face and an opposite rear face, the second Type X gypsum panel having a front face and an opposite rear face, the rear face of the first Type X gypsum panel forming the rear face of the fire retardant sheathing and the front face of the second Type X gypsum panel forming a front face of the fire retardant sheathing, the	Claim 24: The method of claim 1, wherein said step of installing the fire retardant sheathing comprises positioning first and second Type X gypsum panels of the fire retardant sheathing, the first and second Type X gypsum panels each being 5/8-inch-thick, the first Type X gypsum panel having a front face and an opposite rear face, the second Type X gypsum panel having a front face and an opposite rear face, the rear face of the first Type X gypsum panel forming the rear face of the fire retardant sheathing and the front face of the second Type X gypsum panel

Substitute Claims	Original Claims
rear face of the second Type X panel being in contact with the front face of the first Type X gypsum panel,	forming a front face of the fire retardant sheathing, the rear face of the second Type X panel being in contact with the front face of the first Type X gypsum panel.
<u>44.b wherein the method further comprises: filling the frame wall with mineral wool insulation; and</u>	
<u>44.c installing additional fire retardant sheathing with respect to the frame wall so that the frame wall is disposed between the fire retardant sheathing and the additional fire retardant sheathing;</u>	
<u>44.d wherein the constructed fire-resistive wall assembly has a 2-hour fire resistance rating as determined per ASTM E814 and ASTM E119.</u>	
<u>45.P A method of constructing a fire-resistive wall assembly, the method comprising:</u>	<u>[1.P] A method of constructing a fire-resistive wall assembly, the method comprising:</u>
<u>45.a.1-2 mounting a fire wall hanger on a frame wall, the frame wall including a top plate and a plurality of studs extending down from the top plate, and</u>	<u>[1.A] mounting a fire wall hanger on a frame wall, the frame wall including a top plate and a plurality of studs extending down from the top plate,</u>
<u>45.a.3 the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component, a connection portion configured for attachment to the frame wall and an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,</u>	<u>[1.B] the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component, a connection portion configured for attachment to the frame wall and an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,</u>
<u>45.a.4 said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from</u>	<u>[1.C] said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame</u>

Substitute Claims	Original Claims
<u>the frame wall;</u>	wall;
<u>45.b.1-3 cutting an opening into an exterior perimeter edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing and opening outwardly from the exterior perimeter edge of the fire retardant sheathing.</u>	[1.D] cutting an opening into an exterior edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing and opening outwardly from the exterior edge of the fire retardant sheathing; and
<u>45.b.4 the exterior perimeter edge extending from the front face of the fire retardant sheathing to the rear face of the fire retardant sheathing; and</u>	
<u>45.c.1 after mounting the fire wall hanger on the frame wall and after cutting the opening into the exterior perimeter edge of the fire retardant sheathing, installing the fire retardant sheathing with respect to the frame wall so the rear face of the fire retardant sheathing faces rearward toward the studs of the frame wall and the front face of the fire retardant sheathing faces forward away from the studs of the frame wall, said step of installing the fire retardant sheathing includes:</u>	[1.E] after mounting the fire wall hanger on the frame wall and after cutting the opening into the exterior edge of the fire retardant sheathing, installing the fire retardant sheathing with respect to the frame wall so the rear face of the fire retardant sheathing faces toward the studs of the frame wall,
<u>45.c.2 inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and</u>	[1.F] said step of installing the fire retardant sheathing includes: inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and
<u>45.c.3 moving the fire retardant sheathing relative to the fire wall hanger mounted on the frame wall so that an edge of the fire retardant sheathing bounding the opening moves alongside the extension portion and the fire wall hanger extends through the opening in the fire retardant sheathing;</u>	[1.G] moving the fire retardant sheathing relative to the fire wall hanger mounted on the frame wall so that an edge of the fire retardant sheathing bounding the opening moves alongside the extension portion and the fire wall hanger extends through the opening in the fire retardant sheathing.
<u>45.d.1 wherein the connection portion and the channel-shaped portion are rigidly fixed with</u>	[25.A] wherein the connection portion and the channel-shaped portion are rigidly fixed with respect to one another,

Substitute Claims	Original Claims
respect to one another,	
45.d.2 wherein the connection portion includes a back flange and a top flange, the back flange extending from a front edge of the top flange, the top flange extending rearward from the front edge of the top flange, the back flange having a planar front surface,	[25.B] wherein the connection portion includes a back flange and a top flange, the back flange extending from an edge of the top flange, the back flange having a planar front surface,
45.d.3 wherein the extension portion includes first and second planar extension plates extending from the channel-shaped portion to the connection portion, the first and second planar extension plates being parallel to one another, and	[25.C] wherein the extension portion includes first and second planar extension plates extending from the channel-shaped portion to the connection portion, the first and second planar extension plates being parallel to one another
45.d.4 wherein the channel-shaped portion of the fire wall hanger includes a base configured to receive an end portion of the structural component thereon to support the structural component,	[25.D] wherein the channel-shaped portion of the fire wall hanger includes a base configured to receive an end portion of the structural component thereon to support the structural component,
45.d.5 the channel-shaped portion of the fire wall hanger including a side panel extending upward from the base of the channel-shaped portion,	[25.E] the channel-shaped portion of the fire wall hanger including a side panel extending upward from the base of the channel-shaped portion,
45.d.6 the side panel being spaced apart from the planar front surface of the back flange of the connection portion along an axis that is normal to the planar front surface of the back flange of the connection portion, the axis intersecting the side panel of the channel-shaped portion and the planar front surface of the back flange of the connection portion,	[25.F] the side panel being spaced apart from the planar front surface of the back flange of the connection portion along an axis that is normal to the planar front surface of the back flange of the connection portion, the axis intersecting the side panel of the channel-shaped portion and the planar front surface of the back flange of the connection portion; and
45.d.7 <u>each of the first and second planar extension plates including an inner face and an outer face, the inner faces of the first and second planar extension plates facing one another, the inner face of the first planar extension plate facing in a first direction toward the inner face of</u>	[26.C] each of the first and second planar extension plates including an inner face and an outer face, the inner faces of the first and second planar extension plates facing one another, the inner face of the first planar extension plate facing in a first direction toward the inner face of the

Substitute Claims	Original Claims
<u>the second planar extension plate and the outer face of the first planar extension plate facing in a second direction that is opposite the first direction, the axis being spaced apart in the second direction from the inner face of the first planar extension plate; and</u>	second planar extension plate and the outer face of the first planar extension plate facing in a second direction that is opposite the first direction, the inner face of the first planar extension plate lying in an inner face plane,
45.e wherein said step of mounting the fire wall hanger includes engaging a front face of the top plate with the back flange of the connection portion of the fire wall hanger and includes engaging an upper surface of the top plate with the top flange of the connection portion of the fire wall hanger.	[25.G] wherein said step of mounting the fire wall hanger includes engaging a front face of the top plate with the back flange of the connection portion of the fire wall hanger and includes engaging an upper surface of the top plate with the top flange of the connection portion of the fire wall hanger.
46.P <u>A method of constructing a fire-resistive wall assembly, the method comprising:</u>	[1.P] A method of constructing a fire-resistive wall assembly, the method comprising:
46.a.1-2 <u>mounting a fire wall hanger on a frame wall, the frame wall including a top plate and a plurality of studs extending down from the top plate, and</u>	[1.A] mounting a fire wall hanger on a frame wall, the frame wall including a top plate and a plurality of studs extending down from the top plate,
46.a.3 <u>the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component, a connection portion configured for attachment to the frame wall and an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,</u>	[1.B] the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component, a connection portion configured for attachment to the frame wall and an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,
46.a.4 <u>said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;</u>	[1.C] said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;
46.b.1-3 <u>cutting an opening into an exterior perimeter edge of fire retardant sheathing, the</u>	[1.D] cutting an opening into an exterior edge of fire retardant sheathing, the opening extending through a front face of

Substitute Claims	Original Claims
<u>opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing and opening outwardly from the exterior perimeter edge of the fire retardant sheathing.</u>	the fire retardant sheathing and through a rear face of the fire retardant sheathing and opening outwardly from the exterior edge of the fire retardant sheathing; and
<u>46.b.4 the exterior perimeter edge extending from the front face of the fire retardant sheathing to the rear face of the fire retardant sheathing; and</u>	
<u>46.c.1 after mounting the fire wall hanger on the frame wall and after cutting the opening into the exterior perimeter edge of the fire retardant sheathing, installing the fire retardant sheathing with respect to the frame wall so the rear face of the fire retardant sheathing faces rearward toward the studs of the frame wall and the front face of the fire retardant sheathing faces forward away from the studs of the frame wall, said step of installing the fire retardant sheathing includes:</u>	[1.E] after mounting the fire wall hanger on the frame wall and after cutting the opening into the exterior edge of the fire retardant sheathing, installing the fire retardant sheathing with respect to the frame wall so the rear face of the fire retardant sheathing faces toward the studs of the frame wall,
<u>46.c.2 inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and</u>	[1.F] said step of installing the fire retardant sheathing includes: inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and
<u>46.c.3 moving the fire retardant sheathing relative to the fire wall hanger mounted on the frame wall so that an edge of the fire retardant sheathing bounding the opening moves alongside the extension portion and the fire wall hanger extends through the opening in the fire retardant sheathing;</u>	[1.G] moving the fire retardant sheathing relative to the fire wall hanger mounted on the frame wall so that an edge of the fire retardant sheathing bounding the opening moves alongside the extension portion and the fire wall hanger extends through the opening in the fire retardant sheathing.
<u>46.d.1 wherein the connection portion and the channel-shaped portion are rigidly fixed with respect to one another,</u>	[26.A] wherein the connection portion and the channel-shaped portion are rigidly fixed with respect to one another,
<u>46.d.2 wherein the extension portion of the fire wall hanger includes first and second planar extension plates, the first and second planar</u>	[26.B] wherein the extension portion of the fire wall hanger includes first and second planar extension plates, the first and

Substitute Claims	Original Claims
extension plates being parallel to one another,	second planar extension plates being parallel to one another,
46.d.3-4 each of the first and second planar extension plates including an inner face and an outer face, the inner faces of the first and second planar extension plates facing one another, the inner face of the first planar extension plate facing in a first direction toward the inner face of the second planar extension plate and the outer face of the first planar extension plate facing in a second direction that is opposite the first direction, the inner face of the first planar extension plate lying in an inner face plane, and	[26.C] each of the first and second planar extension plates including an inner face and an outer face, the inner faces of the first and second planar extension plates facing one another, the inner face of the first planar extension plate facing in a first direction toward the inner face of the second planar extension plate and the outer face of the first planar extension plate facing in a second direction that is opposite the first direction, the inner face of the first planar extension plate lying in an inner face plane,
46.d.5 wherein the connection portion includes a back flange and a top flange, the top flange extending from an edge of the back flange, the back flange extending from an edge of the first planar extension plate in the second direction, the back flange and the top flange being entirely disposed outward, in the second direction, of the inner face plane;	[26.D] wherein the connection portion includes a back flange and a top flange, the top flange extending from an edge of the back flange, the back flange extending from an edge of the first planar extension plate in the second direction, the back flange and the top flange being entirely disposed outward, in the second direction, of the inner face plane;
46.e wherein said step of mounting the fire wall hanger includes engaging a front face of the top plate with the back flange of the connection portion of the fire wall hanger and includes engaging an upper surface of the top plate with the top flange of the connection portion of the fire wall hanger; and	[26.E] wherein said step of mounting the fire wall hanger includes engaging a front face of the top plate with the back flange of the connection portion of the fire wall hanger and includes engaging an upper surface of the top plate with the top flange of the connection portion of the fire wall hanger; and
46.f wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing relative to the extension portion of the fire wall hanger so that only the first and second planar extension plates of the extension portion of the fire wall hanger extend through the opening in the fire retardant sheathing.	[26.F] wherein said step of moving the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing relative to the extension portion of the fire wall hanger so that only the first and second planar extension plates of the extension portion of the fire wall hanger extend through the opening in the fire retardant sheathing.

Substitute Claims	Original Claims
47.P A method of constructing a fire-resistive wall assembly, the method comprising:	[27.P] A method of constructing a fire-resistive wall assembly, the method comprising:
47.a.1-2 mounting a fire wall hanger on a frame wall, the frame wall including a top plate and a plurality of studs extending down from the top plate, and	[27.A] mounting a fire wall hanger on a frame wall, the frame wall including a top plate and a plurality of studs extending down from the top plate, and
47.a.3 the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component, a connection portion configured for attachment to the frame wall and an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,	[27.B] the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component, a connection portion configured for attachment to the frame wall and an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,
47.a.4 said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;	[27.C] said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;
47.b.1-3 cutting an opening into an <u>exterior perimeter</u> edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing and having an open top opening outwardly from the <u>exterior perimeter</u> edge of the fire retardant sheathing,	[27.D] cutting an opening into an edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing and having an open top opening outwardly from the edge of the fire retardant sheathing; and
47.b.4 <u>the exterior perimeter edge extending from the front face of the fire retardant sheathing to the rear face of the fire retardant sheathing;</u>	
47.c.1 after mounting the fire wall hanger on the frame wall and after cutting the opening into the <u>exterior perimeter</u> edge of the fire retardant sheathing, installing the fire retardant sheathing	[27.E] after mounting the fire wall hanger on the frame wall and after cutting the opening into the edge of the fire retardant sheathing, installing the fire retardant sheathing with respect to the frame wall so

Substitute Claims	Original Claims
with respect to the frame wall so the rear face of the fire retardant sheathing faces <u>rearward</u> toward the studs of the frame wall <u>and the front face of the fire retardant sheathing faces forward away from the studs of the frame wall</u> , said step of installing the fire retardant sheathing includes:	the rear face of the fire retardant sheathing faces toward the studs of the frame wall,
47.c.2 inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and	[27.F] said step of installing the fire retardant sheathing includes: inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and
47.c.3 arranging the fire retardant sheathing relative to the fire wall hanger so that the fire wall hanger extends through the opening in the fire retardant sheathing and <u>an extension flange</u> of the extension portion of the fire wall hanger is received in the opening in the fire retardant sheathing.	[27.G] arranging the fire retardant sheathing relative to the fire wall hanger so that the fire wall hanger extends through the opening in the fire retardant sheathing and part of the extension portion of the fire wall hanger is received in the opening in the fire retardant sheathing.
48.a.1 The method of claim 47, wherein said step of mounting the fire wall hanger includes: <u>engaging a front face of the frame wall with a first back flange of the connection portion of the fire wall hanger; engaging the front face of the frame wall with a second back flange of the connection portion of the fire wall hanger,</u>	Claim 29: wherein said step of mounting the fire wall hanger includes: engaging a front face of the frame wall with a back flange of the connection portion of the fire wall hanger;
48.a.2 <u>the second back flange being spaced apart from the first back flange; and</u>	
48.a.3 <u>engaging an upper surface of the top plate with a top flange of the connection portion of the fire wall hanger; and</u>	Claim 29: engaging an upper surface of the top plate with a top flange of the connection portion of the fire wall hanger
48.b wherein said step of arranging the fire retardant sheathing relative to the fire wall hanger includes moving the fire retardant sheathing <u>upward</u> relative to the fire wall hanger so that <u>an exposed bottom edge of the extension flange</u> of the extension portion <u>is a first part of the fire wall</u>	Claim 28: wherein said step of arranging the fire retardant sheathing relative to the fire wall hanger includes moving the fire retardant sheathing relative to the fire wall hanger so that said part of the extension portion moves into the opening in the fire

Substitute Claims	Original Claims
<u>hanger to move into the opening in the fire retardant sheathing via the open top of the opening in the fire retardant sheathing, the bottom edge being free of direct attachment to any other component; and</u>	retardant sheathing via the open top of the opening in the fire retardant sheathing.
<u>48.c wherein the method further comprises: filling the frame wall with mineral wool insulation; and</u>	
<u>48.d installing additional fire retardant sheathing with respect to the frame wall so that the frame wall is disposed between the fire retardant sheathing and the additional fire retardant sheathing; and</u>	
<u>48.e wherein the constructed fire-resistive wall assembly has a 2-hour fire resistance rating as determined per ASTM E814 and ASTM E119.</u>	
<u>49.a The method of claim 48, wherein said step of inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall includes positioning the fire retardant sheathing against a first front face of the first back flange of the connection portion of the fire wall hanger and against a second front face of the second back flange of the connection portion of the fire wall hanger, and</u>	Claim 30: wherein said step of inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall includes positioning the fire retardant sheathing against a front face of the back flange of the connection portion of the fire wall hanger.
<u>49.b wherein said step of installing the fire retardant sheathing includes placing the rear face of the fire retardant sheathing against the front face of the frame wall.</u>	Claim 30: wherein said step of installing the fire retardant sheathing includes placing the rear face of the fire retardant sheathing against the front face of the frame wall.
<u>50.a The method of claim 49, wherein the fire wall hanger is formed as one-piece of sheet metal.</u>	
<u>50.b wherein the channel-shaped portion includes</u>	[25.D] wherein the channel-shaped portion of the fire wall hanger includes a base

Substitute Claims	Original Claims
<u>a base arranged to receive an end portion of the structural component thereon to support the structural component, the base having an upper surface arranged to contact the structural component, the upper surface lying in a base plane.</u>	configured to receive an end portion of the structural component thereon to support the structural component,
<u>50.c the extension flange being directly connected to the channel-shaped portion by a generally 90-degree sheet metal bend formed by the extension flange and the channel-shaped portion.</u>	
<u>50.d the generally 90-degree sheet metal bend having an upper-most end and a lower-most end, the generally 90-degree sheet metal bend extending from the upper-most end to the lower-most end in a first direction, the first direction being perpendicular to the base plane.</u>	
<u>50.e the upper-most end of generally 90-degree sheet metal bend being at a top of the channel-shaped portion.</u>	
<u>51.a</u> The method of claim 50, <u>wherein the extension flange is a first extension flange,</u> wherein said step of arranging the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing so that the first extension flange of the extension portion of the fire wall hanger extends through the opening in the fire retardant sheathing and a second extension flange of the extension portion of the fire wall hanger extends through the fire retardant sheathing,	Claim 31: wherein said step of arranging the fire retardant sheathing relative to the fire wall hanger includes positioning the fire retardant sheathing so that a first extension flange of the extension portion of the fire wall hanger extends through the opening in the fire retardant sheathing and a second extension flange of the extension portion of the fire wall hanger extends through the fire retardant sheathing.
<u>51.b wherein the first and second extension flanges are each free of any openings.</u>	

XII. GROUND 1: CLAIMS 32-51 SHOULD BE FOUND UNPATENTABLE AS LACKING WRITTEN SUPPORT.

174. In my opinion, substitute claims 32-51 recite limitations that are not adequately supported by the disclosure, including the drawings and specification, of the '339 patent, as explained below.

A. Claims 32-51: “cutting an opening.”

175. It is my understanding that claims may be no broader than the supporting disclosure and that a narrow disclosure in the specification will limit claim breadth. It is also my understanding that the written description of the patent application must lead a POSA to understand that the inventors possessed the entire scope of the claimed invention. I have been informed that if the specification does not describe the full scope of the claims—the claim coverage is broader than what is described in the specification—that the claims should be unpatentable for lack of adequate written description.

176. Based on my review of the '339 patent specification, the recited step of “cutting an opening” of substitute claims 32, 42, 45, 46, and 47 is broader than what was described in the specification. Substitute claims 32, 42, 45, 46, and 47 recite “cutting an opening into an exterior perimeter edge of the fire retardant sheathing” without further limiting the sizing of the opening. MTA, Appx., 25, 29, 31, 33, 35.

177. The '339 patent specification never recites the term “opening.” See generally EX1001. Rather, the '339 patent specification only uses the term “slot” to describe the void space in the sheathing to receive the hanger. EX1001, 4:34-36 (“[T]russ hangers 26 extend through a narrow slot in the fire retardant sheathing 34 to maintain the integrity and fire retardant characteristics of the fire separation wall.”). The Applicant of the '339 patent used the term “slot” to distinguish the disclosed invention from the prior practice of cutting a “cutout for the entire cross section of the truss,” as described in the background of the '339 patent. EX1001, 1:41-42. This distinction is supported by Patent Owner’s expert declarant Mr. Kaczkowski noting a POSA “would recognize that an opening in this case [the '339 patent] is simply this narrow slot that is being taught by the specification.” EX1052, 51:3-13. Mr. Church noted that the simplicity of cutting a slot, rather than a larger opening, was key to the claimed method. EX1057, 51:8-53:8. For example, when asked why “there’s no penetration in the FWH hanger ... when you’re putting those two layers” of drywall, Mr. Church replied “[y]ou have to cut a very simple slot, just a line cut with a template that prevents you from going too far that slides right up behind the hanger where the hanger has a vertical metal piece that fits in that slot.” EX1057, 51:8-52:12.

178. There is a difference between a narrow “slot,” which is all the '339 patent discloses, and the claimed “opening” of indiscriminate size. Patent Owner’s

expert declarants support this distinction. For example, Mr. Tucker admitted that “not all openings would be slots.” EX1055, 62:13-18. (**“Q. What's the difference between an opening and a slot? A. So I think a slot is a description – a description of an opening. Like a type of opening. So not all openings would be slots, but all slots would be openings.”**) (emphasis added). When asked “[h]ow is cutting a slit different from cutting a notch around, you know, larger component,” Mr. Church replied, “For the FWH hanger ... the approach would be as simple as taking a piece of cardboard, taking a knife and just making one [cut] vertical. You’re done. **A notch would require two vertical cuts and a horizontal cut to notch out a section of gypsum. The FWH hanger doesn’t require that. It’s just a simple vertical cut.**” EX1057, 52:19-53:7 (emphasis added). I agree with this distinction between a “slot” and a generic “opening.” Accordingly, cutting an “opening” larger than a fire-rated slot falls outside the scope of the disclosed invention.

179. In my opinion, Patent Owner was not in possession of the full breadth of the broadly recited “opening,” and therefore, the claims lack adequate written description support from the ’339 patent specification.

B. Claims 32-51: “inserting” and “moving”/“arranging” steps.

180. Like challenged claims 1 and 27, substitute claims 32, 42, 45, 46, 47 re-cite “inserting” and “moving”/ “arranging” as separate steps that are not sup-

ported by the '339 patent specification. MTA, Appx. 26, 29, 32, 33, 35. Thus, substitute claims 32, 42, 45, 46, and 47 do not address or cure the lack of written description challenges to original claims 1 and 27 that were raised in my previous Declaration. Accordingly, claims 32-51 should remain unpatentable for the same reasons as provided in my First Declaration and addressed further above.

C. Claim 46: “only the first and second planar extension plates of the extension portion of the fire wall hanger extend through the opening.”

181. Like challenged claim 20, substitute claim 46 recites “only the first and second planar extension plates ... extend through the opening,” while the '339 patent's figures shows the extension portion's bent ends through the opening. MTA, Appx. 34. Thus, substitute claim 46 does not address or cure the lack of written description challenge to original claim 20 that was raised in my previous Declaration. Accordingly, claim 46 is unpatentable under for the same reasons as provided in my First Declaration.

XIII. GROUND 2: CLAIMS 32-51 SHOULD BE FOUND UNPATENTABLE AS INDEFINITE UNDER § 112(B).

A. Claims 32-51: “Fire Wall Hanger.”

182. Similar to challenged claims 1 and 27, substitute claims 32, 42, 45, 46, and 47 recite “mounting a fire wall hanger” without any further limitations. MTA, Appx. 25, 28, 31, 33-34. Thus, substitute claims 32, 42, 45, 46, and 47 do not address or cure the indefiniteness challenge to original claims 1 and 27 that

were raised in my previous Declaration. Accordingly, claims 32-51 remain unpatentable under §112(a) for the same reasons as provided in my First Declaration and discussed above.

B. Claims 32-51: “opening outwardly.”

183. Like challenged claims 1 and 27, substitute claims 32, 42, 45, 46, and 47 recite “opening ... opening outwardly from the exterior perimeter edge.” MTA, Appx. A, 25, 29, 31, 33, 35. Claims 32, 42, 45, 46, and 47 differ from original claims 1 and 27 by defining the exterior edge as being on an exterior perimeter edge extending from the front face to the rear face of the sheathing. MTA, 25, 29, 31, 33, 35. Patent Owner’s attempt to further define the location of the sheathing edge as on a “perimeter” edge versus some other exterior edge does not cure the indefiniteness challenge, by continuing to define the directionality of space created by the cutting step as being located outside the sheathing. Accordingly, claims 32-51 are unpatentable as being indefinite for the same reasons as provided in my First Declaration.

C. Claims 44 and 48: “a 2-hour fire resistance rating as determined per ASTM E814 and ASTM E119.”

184. Substitute claims 44 and 48 recite “the constructed fire-resistive wall assembly has a 2-hour fire resistance rating as determined per ASTM E814 and ASTM E119.” MTA, Appx. 31, 36. ASTM E814 is a test standard developed by ASTM International to evaluate the fire resistance of various building materials

while ASTM E119 is a test standard from the same organization that evaluates how long a particular assembly can resist fire or heat penetration. Given the subjective nature of the E814 and E119 tests, such as inconsistencies in installation or deviations from specifications of a manufacturer, it is unclear how limiting the claimed wall assembly to a rating determined by these standards further defines the invention. Indeed, the rating determined by ASTM for the same wall assembly may vary due to inconsistencies in installation or by the tester. This inconsistency between testers is supported by Mr. Kaczkowski's testimony. When asked "[c]an a given firewall assembly be given approval by one fire inspector but be denied by another fire inspector," Mr. Kaczkowski answered "I have seen that happen." EX1052, 76:11-20. Further, the ASTM standards are subject to revision, so what meets or fails a test today may be different once the standard is revised. Thus, requiring attainment of a rating determined per ASTM E814 and E119 fails to inform a POSA the scope of the invention with reasonable certainty.

XIV. PATENT OWNER'S PROPOSED SUBSTITUTE CLAIMS WOULD HAVE BEEN OBVIOUS.

185. Should the Board determine that the amendments in the substitute claims are supported by the '339 patent and are definite in claim scope, the prior art likewise discloses the newly recited limitations to at least the same degree. Thus, a POSA would have also understood that these added limitations were disclosed by the prior art as detailed below. Accordingly, in my opinion, the

substitute claims are unpatentable over the prior art based at least on the following grounds.

Ground	References	Basis	Substitute Claims Challenged
3	Kanai-Bundy-Allan	§103	32-33, 38, 42, 45-47
4	Kanai-Bundy-Allan-GypMan-IBC	§103	44, 48-49
5	Tsukamoto-Bundy-Allan	§103	32, 39, 47
6	Tsukamoto-Bundy-Allan-GypMan-IBC	§103	44, 48-49
7	Yamaguchi-Bundy-Allan	§103	32, 38, 42, 47
8	Yamaguchi-Bundy-Allan-GypMan	§103	44

A. Claim Construction

186. Other than the exceptions noted in my First Declaration, the terms of the substitute claims are construed based on their plain and ordinary meaning as understood by a POSA.

B. Overview of the Prior Art

1. Bundy

187. I maintain my analysis regarding the overview of Tsukamoto as set forth in my previous declaration. EX1003, ¶¶87-89.

2. Allan

188. I maintain my analysis regarding the overview of Allan as set forth in my previous declaration. EX1003, ¶90.

3. Yamaguchi

189. I maintain my analysis regarding the overview of Yamaguchi as set forth in my previous declaration. EX1003, ¶¶73-76.

4. Gypsum Manual (GypMan)

190. I understand that the publication titled GA-600-2012 Fire Resistance Design Manual, 20th Ed. (EX1017, “Gypsum Manual” or “GypMan”) was published by the Gypsum Association in June 2012. I understand that Gypsum Manual is prior art to the ’339 patent based on my discussion of the legal standards in my earlier declaration and discussions with counsel. In particular, I understand that Gypsum Manual was published more than one year prior to the earliest possible priority date of the ’339 patent (December 31, 2013), and so Gypsum Manual qualifies as prior art at least for this reason.

5. 2012 International Building Code (IBC)

191. I understand that the publication titled 2012 International Building Code (EX1034, “IBC”) was published by the International Code Council in June

2011. I understand that IBC is prior art to the '339 patent based on my discussion of the legal standards in my earlier declaration and discussions with counsel. In particular, I understand that IBC was published more than one year prior to the earliest possible priority date of the '339 patent, and so IBC qualifies as prior art at least for this reason.

6. Tsukamoto

192. I understand that Japanese Patent Application No. 19991014482 to Tsukamoto (EX1008) published on October 16, 1987. I understand that Tsukamoto is prior art to the '339 patent based on my discussion of the legal standards in my earlier declaration and discussions with counsel. In particular, I understand that Tsukamoto was published more than one year prior to the earliest possible priority date of the '339 patent, and so Tsukamoto qualifies as prior art at least for this reason.

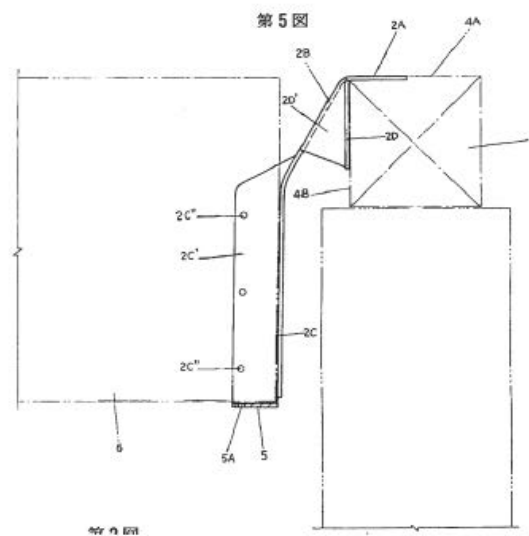
193. Tsukamoto describes a beam hanger having “horizontal portions 2A, 3A for abutting a base, inclined portions 2B, 3B that extend from front ends of the horizontal portions 2A, 3A and are inclined forwardly downward, and vertical portions 2C, 3C that extend downward from lower ends of the inclined portions.” EX1008, 2. Tsukamoto’s vertical portions 2C, 3C include holding plates 2C’, 3C’ “for holding a beam.” *Id.* Tsukamoto’s inclined portions 2B, 3B include connection plates 2D’, 3D’ having “triangular side surfaces.” EX1008, 2.

Tsukamoto's hanger further includes vertical plates 2D, 3D "for abutting the base."

EX1008, 2. As shown below in FIG. 5, Tsukamoto's holding plates 2C', 3C' and vertical plates 2D, 3D are disposed in a fixed, spaced apart relation, thereby allowing holding plates 2C', 3C' to receive a structural beam away from the wall.

EX1009, 2-3.

FIG. 5



EX1008, FIG. 5.

7. Kanai

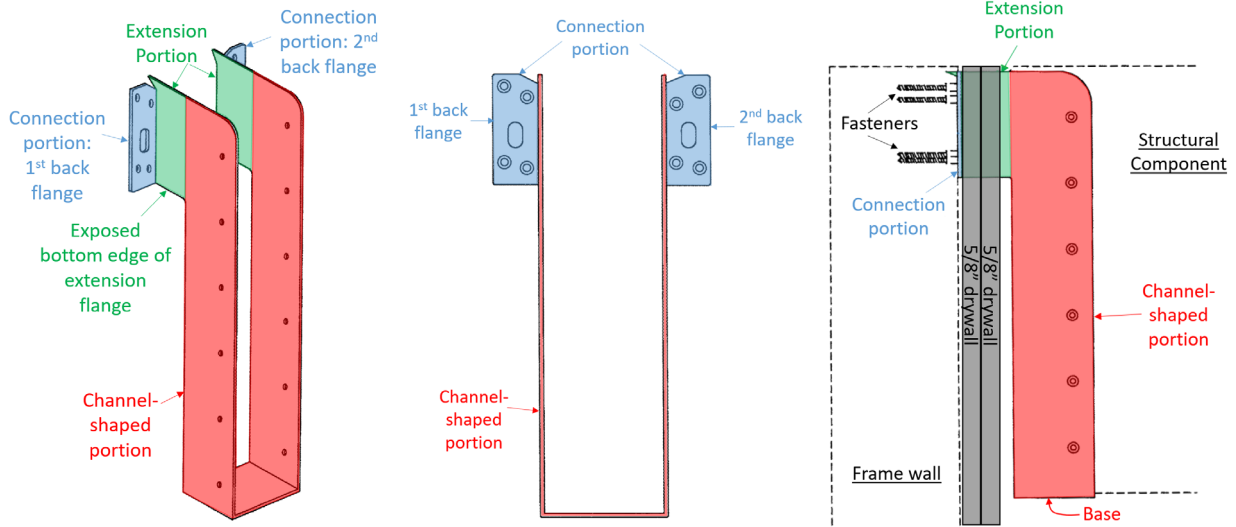
194. I understand that Japanese Design Patent No. D1226744 to Kanai (EX1071) issued on December 27, 2004. EX1071, 1 (item 45). I understand that Kanai is prior art to the '339 patent based on my discussion of the legal standards in my earlier declaration and discussions with counsel. In particular, I understand that Kanai was issued more than one year prior to the earliest possible priority date of the '339 patent, and so Kanai qualifies as prior art at least for this reason.

195. Kanai, like the '339 patent, is directed to a “Joist Bracket.” EX1071, 1 (item 54). It is my understanding that Kanai is a design patent, which does not include a written description section describing the disclosed invention. While Kanai does not include a full written description section, it does include the following statement: “The present article is fixed to a cross beam and receives an end portion of a joist, and reinforces a joint portion of the cross beam and the joist. The present article is also used to reinforce a joint portion of a sill and a girder.” *Id.* (item 55).

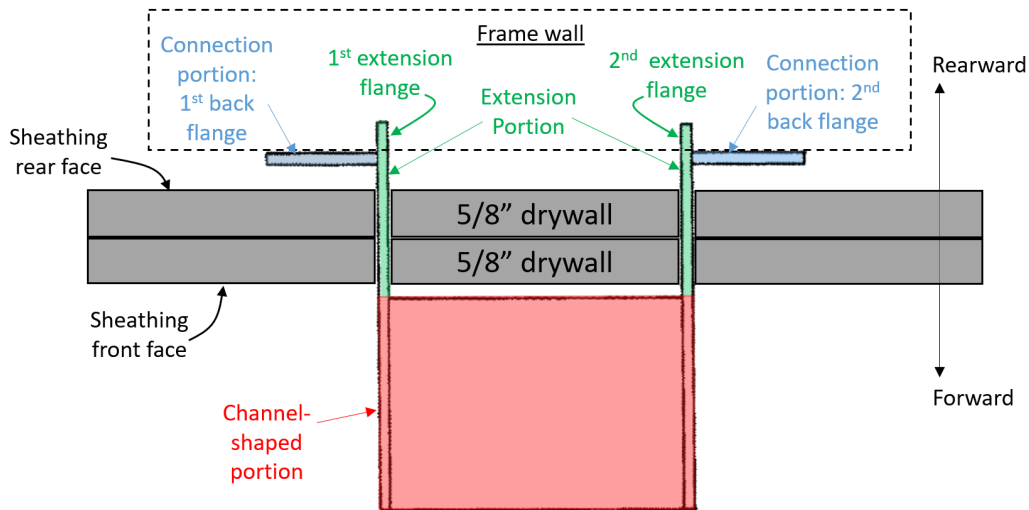
C. Ground 3: Claims 32-33, 38, 42, and 45-47 would have been obvious over Kanai in view of Bundy and Allan.

1. Independent Claims 32, 42, 45, 46, 47

196. A POSA would have found it obvious to combine Kanai, Bundy, and Allan to arrive at these claims. EX1071, 2-6 (showing different views of a joist hanger). First, a POSA would have found it obvious to adapt Kanai’s joist hanger to be installed in conjunction with one or more layers of drywall on a frame wall, as taught by Bundy. Second, a POSA would have found it obvious to install the modified hanger and drywall in the manner claimed, as taught by the combination of Kanai, Bundy, and Allan.

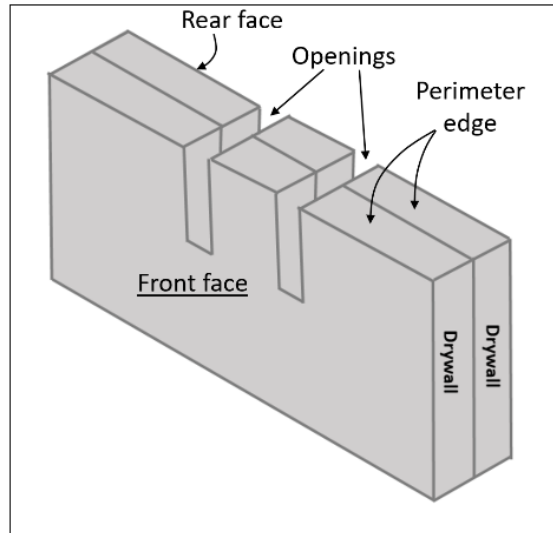


EX1071, 2 (Perspective View – annotated), 3 (Front View - annotated); 2 (Usage View - modified and annotated).¹



EX1071, 5 (Plan View - modified and annotated).

¹ Kanai's Figure Descriptions are listed above each figures. For some of the figures, the corresponding figure description is listed on the page before the drawing is shown.

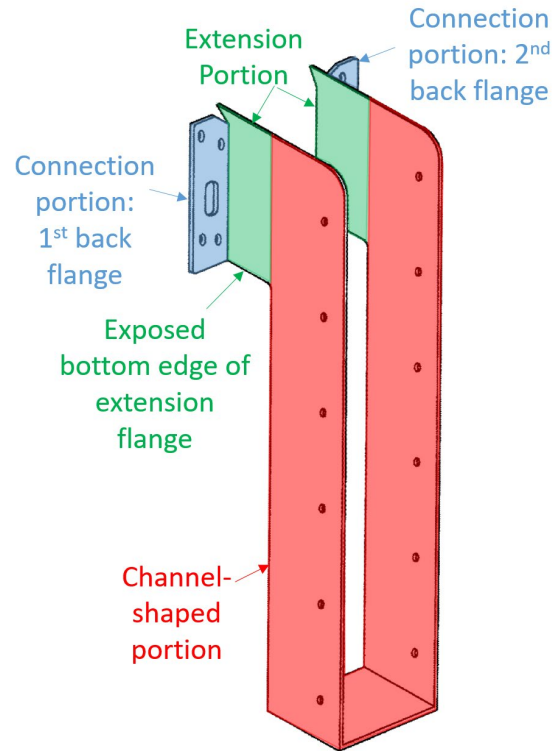


Corresponding drywall cutouts.

a. Motivation to Combine

1. Motivation to modify Kanai based on the teachings of Bundy

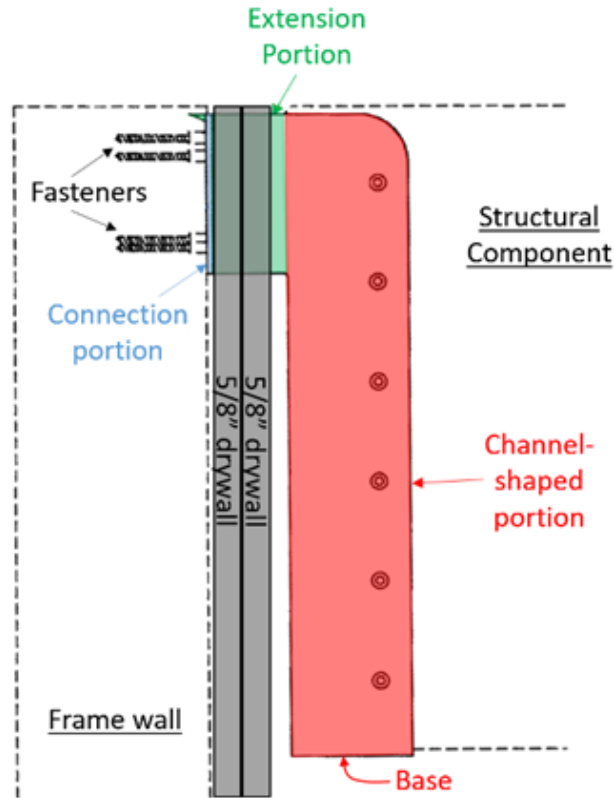
197. Similar to Cullen's, Yamaguchi's and Robinson's hanger, Kanai's hanger defines a space between its back flange and channel-shaped portion corresponding to the length of its extension portion (as annotated above). EX1071, 2-6. Accordingly, the rationales in my First Declaration for combining the teachings of Bundy and Allan with Cullen, Yamaguchi, and Robinson would similarly apply to Kanai.



EX1071, 2 (perspective view - annotated).

198. As explained in §XV.A.1 of my First Declaration, Bundy teaches advantages of installing a hanger with fire-retardant sheathing on a frame wall for fire-resistivity. A POSA would have been motivated to install drywall between Kanai's channel-shaped portion and connection portion on a frame wall, as taught by Bundy, to shield the frame wall from fire. For instance, Bundy explains that it is advantageous to position drywall over frame walls, as shown in Figure 1, because "[d]rywall is naturally fire resistant and can be used to cover and protect the structural members of a building." EX1005, 5:18-22, *see also* 2:10-18. More particularly, Bundy explains that it is advantageous to position such drywall over top plates and headers of a wall frame to shield these components. EX1005, 2:10–

24, FIG. 1. Two 5/8-inch-thick layers of drywall are commonly used for a fire separation wall.



EX1071, 2 (Usage View - modified to include a frame wall and annotated).

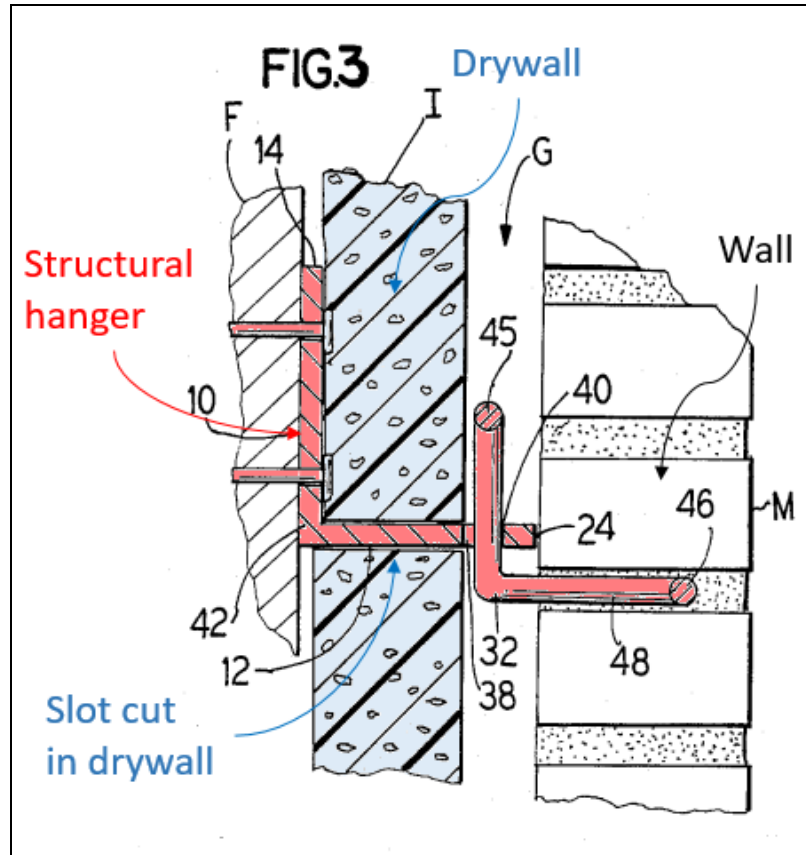
199. Kanai and Bundy are both directed to joist hangers. Not only would a POSA have been motivated to use Kanai's hanger on a wood frame wall, as taught by Bundy and illustrated in the modified figure above, but a POSA would also have been motivated to make similar modifications for the addition of drywall when using Kanai's hanger in its illustrated setting—a sill plate. A POSA would have had a reasonable expectation of success because drywall is commonly attached to foundation walls to which sills are commonly mounted, even in

basements. When applying drywall to foundation walls, it was well known to provide drywall with moisture-retarding paint/claddings to preserve the integrity of the drywall, even when exposed to moisture. A POSA would have sought to increase the distance between the back flange and the channel-shaped portion to accommodate drywall in the construction shown in Kanai's Usage View, EX1007, 2, where finishing, soundproofing, or vibration-proofing is desired. *See* EX1005, 5:10-22.

200. Adapting Kanai's hanger to receive drywall would have been nothing more than applying a known technique to a similar device to obtain the predictable result of a hanger having flanges long enough to receive drywall between the channel-shaped portion and wall frame. A POSA would have had a reasonable expectation of success because doing so would still allow Kanai's hanger to perform its intended function of securing a joist to a wall. EX1071, 1.

2. Motivation to install the Kanai-Bundy hanger as taught by Allan

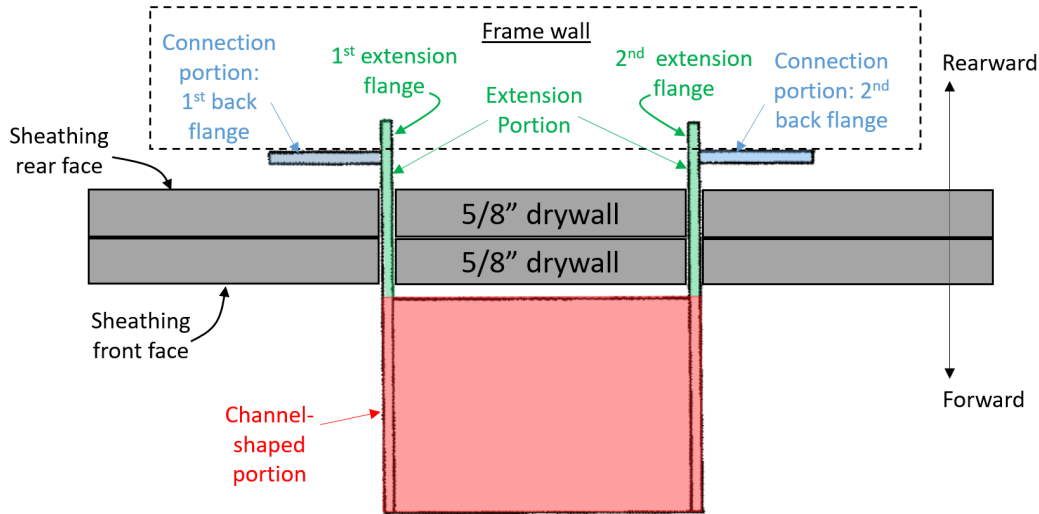
201. As explained in §XV.A.2 of my First Declaration, cutting openings in drywall to accommodate structural connectors like hangers was well-known, as evidenced by Allan. EX1006, 4:1-14. Allan teaches that "slots may be cut into the" drywall layers so that a leg of the mounted hanger can extend through the drywall and couple to the wall. EX1006, 4:1-14. An example of this is shown in Figure 3 below.



EX1006, FIG. 3 (annotated).

202. Thus, Allan shows that cutting openings into drywall to accommodate structural connectors, such as hangers, was well known and well within the grasp of a POSA. Having adapted Kanai's hanger for use with drywall based on Bundy's teachings, a POSA would have also found it obvious to install the modified fire wall hanger in conjunction with the drywall in the manner claimed. First, a POSA would have found it obvious to cut openings in the drywall so that Kanai's extension portion could extend through the drywall, as explained above. That is, in implementing the drywall between Kanai's back flange and sidewalls, a POSA

would have understood that the sidewalls must extend through the drywall, as shown below, so that the drywall could reach the top plate of Bundy's frame wall.



EX1071, 5 (plan view - modified and annotated).

203. A POSA would have found it obvious to mount the fire wall hanger to the wall and then to slide the drywall upwards relative to the hanger so that Kanai's extension portion extended through the drywall. This order of installation was well known in the art, as described in §VI.F of my First Declaration. A POSA would have been motivated to mount Kanai's hanger to the wall before installing drywall, because Kanai's face-mount fasteners would need to be accessible at the time the hanger was installed. A POSA would have further recognized that this order of assembly would be beneficial by allowing the structure to be completely framed before requiring the drywall to be installed. Because the hanger would be mounted at the top of a frame wall, a POSA would then move the cut drywall upwards

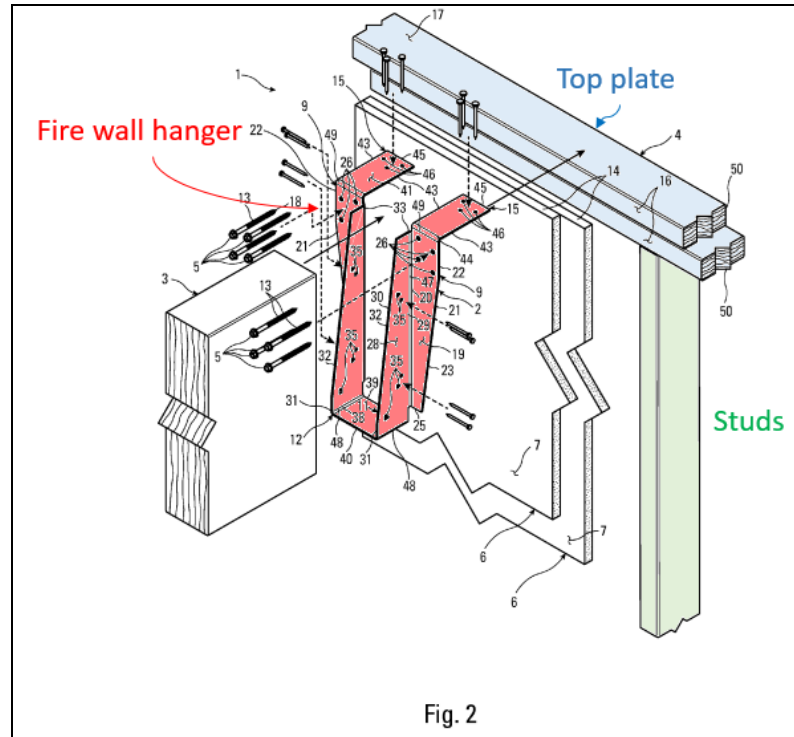
relative to the hanger so that Kanai's extension portion extended through the drywall as taught by Allan. A POSA would have found this obvious as merely choosing from a finite number of identified, predictable solutions in the same field with an expectation of success.

b. Elements [32.P], [42.P], [45.P], [46.P], [47.P]

204. A POSA would have understood Kanai's hanger to be applicable to a fire resistive wall assembly with sheathing mounted on a frame wall, as suggested by Bundy. EX1005, 2:36-41, 5:10-22. While Kanai explicitly discloses using hanger 10 for "a joist" on "a cross beam," a POSA not only would have understood that Kanai's hanger would be applicable to a wall covered with sheathing, as suggested by Bundy, but that Kanai's hanger would be applicable to a fire resistive wall assembly having sheathing mounted on a frame wall, as further suggested by Bundy. EX1005, 2:37-41, 5:10-22.

c. Elements [32.a.1-2], [42.a.1-2], [45.a.1-2], [46.a.1-2], [47.a.1-2]

205. Bundy discloses these elements for the same reasons as discussed for element [1.A] in my first declaration. *See* EX1003, §XV.B.2. Specifically, Bundy teaches mounting a joist hanger 2 to a frame wall that includes a top plate 4 (also referred to as "wood structural support member 4") and a plurality of "vertically disposed studs" extending down from the top plate. EX1005, 3:55-67, FIG. 2.



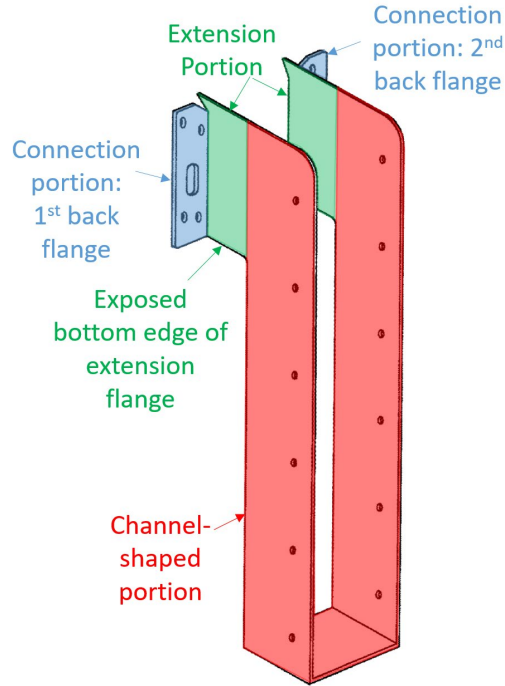
EX1005, FIG. 2 (annotated).

206. A POSA would have found it obvious to mount Kanai's hanger to Bundy's wall assembly using Kanai's fasteners, as discussed above. For instance, Kanai explicitly discloses using the hanger for attaching a joist to a cross beam, but not explicitly for securing the joist to a wall adapted to have two layers of 5/8-inch-thick drywall mounted thereon. EX1071, 1. A POSA not only would have understood that Kanai's hanger would be applicable to a wall covered with drywall, the wall including a top plate and a plurality of studs extending down from the top plate, as suggested by Bundy, but that Kanai's hanger would be applicable to a fire separation wall having drywall mounted on a frame wall, as further suggested by Bundy. EX1005, 2:37-41. A POSA would have also

understood that Kanai's hanger is configured to secure to a top plate of a frame wall by connecting Kanai's hanger directly to the top plate. Such a modification would have been simply applying a known technique (Bundy's use of a hanger on a frame wall with two layers of 5/8-inch-thick drywall to create a fire separation wall) to a known device (Kanai's hanger) to obtain the predictable result of optimizing the size of the hanger's spacing to receive drywall, thereby shielding wall structures from fire. *See, e.g.*, EX1005, 5:18-19. A POSA would have had an expectation of success in using Kanai's hanger with drywall-covered wall because Bundy's and Kanai's hangers serve similar purposes—supporting a floor joist/structural beam at a top end of a wall.

d. Elements [32.a.3], [42.a.3], [45.a.3], [46.a.3], [47.a.3]

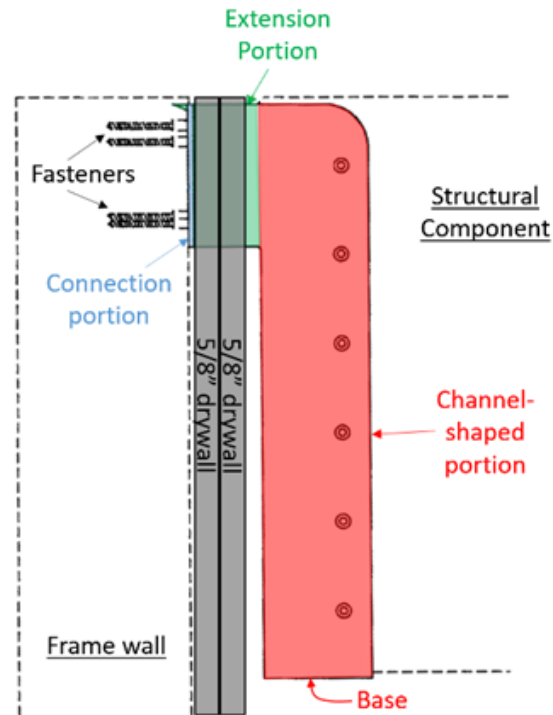
207. As shown above in annotated Figures 1-3 and 7, Kanai discloses the recited “channel-shaped portion” (in red above) sized and shaped to receive a structural component (“beam”), “connection portion” (in blue above) configured for attachment to the frame wall via the fasteners, and interconnecting “extension portion” (in green above) spacing the channel-shaped portion from the connection portion.



EX1071, 2 (Perspective View - annotated).

e. Elements [32.a.4], [42.a.4], [45.a.4], [46.a.4], [47.a.4]

208. Given that Kanai's channel-shaped portion is spaced from the connection portion, when the combined hanger is secured to the top plate of Bundy's frame wall via fasteners, the channel-shaped portion is also spaced from the frame wall, as shown below.

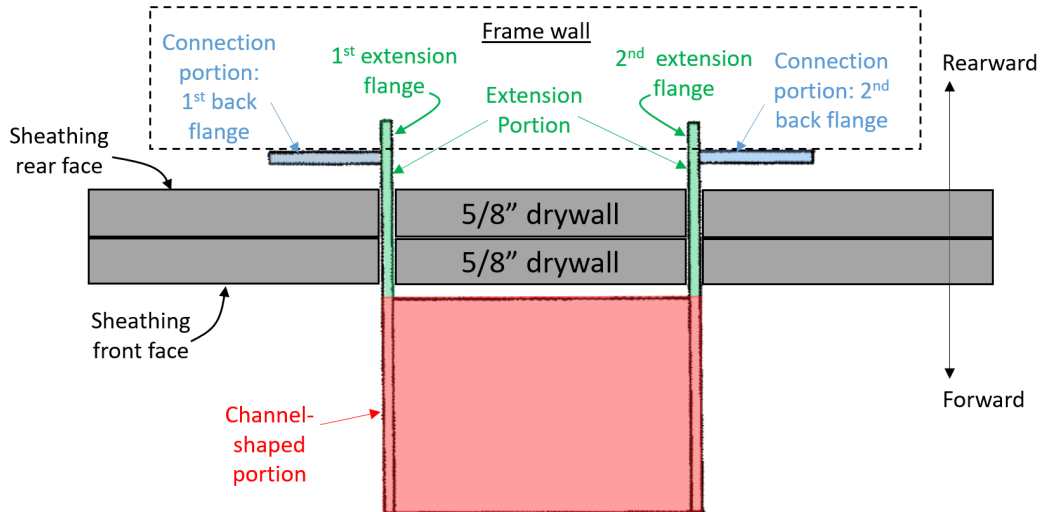


EX071, 2 (Usage View - modified and annotated).

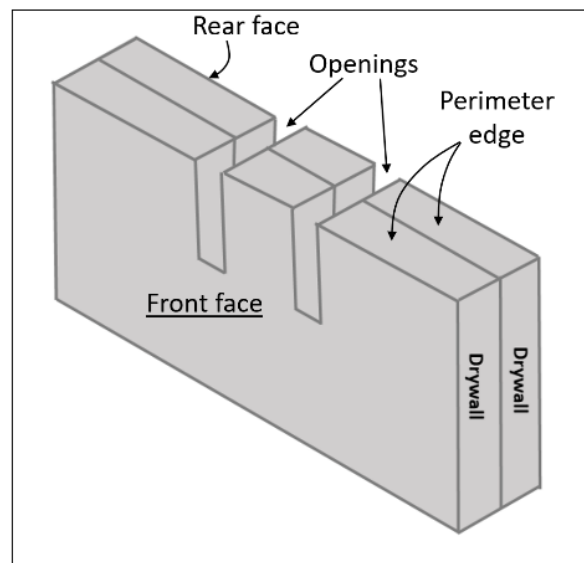
f. Elements [32.b.1-4], [42.b.1-4], [45.b.1-4], [46.b.1-4], [47.b.1-4]

209. A POSA would have understood from Allan to cut, into the recited exterior perimeter edge, at least one opening that extends through the front and rear faces of the sheathing to enable the sheathing to fit around Kanai's extension portion, as shown in the figures above. EX1006, 4:1-14. Given the shape and location of the combined hanger installed at the top plate of a frame wall, along with Allan's teachings of cutting sheathing around a structural connector (EX1006, 4:1-14), a POSA would have found it obvious to cut openings in the sheathing at the location of the hanger's obstructions, namely at the exterior perimeter edge of the sheathing, to enable the sheathing to fit around Kanai's extension portion. The

openings shown in the drywall illustrated below match the slots described and shown in the '339 patent, and thus open outwardly from the exterior perimeter edge to the same extent as the patent.



EX1071, 5 (Plan View - modified and annotated).



Corresponding Cut-Out in Sheathing.

g. Elements [32.c.1], [42.c.1], [45.c.1], [46.c.1], [47.c.1]

210. As explained above, a POSA would have found it obvious to install drywall after mounting Kanai's hanger to the wall frame and after cutting the drywall, so that the fasteners could be accessed before being blocked by the drywall. Further, Allan teaches installing drywall around a structural connector that has already been mounted to a frame wall and has an outstanding leg. EX1006, 3:27-42, 4:1-14. The installation would be such that the rear face of the fire retardant sheathing faces rearward toward the studs of the frame wall and the front face of the fire retardant sheathing faces forward away from the studs of the frame wall, as shown above.

h. Elements [32.c.2], [42.c.2], [45.c.2], [46.c.2], [47.c.2]

211. Given that the hanger is installed at the top plate prior to installing the sheathing for the reasons stated above, and it was known from Allan to insert sheathing around structural connectors (EX1006, 4:1-14), a POSA would have known to insert the sheathing (having openings cut therein) up around the extension portion between the channel-shaped portion and the connection portion.

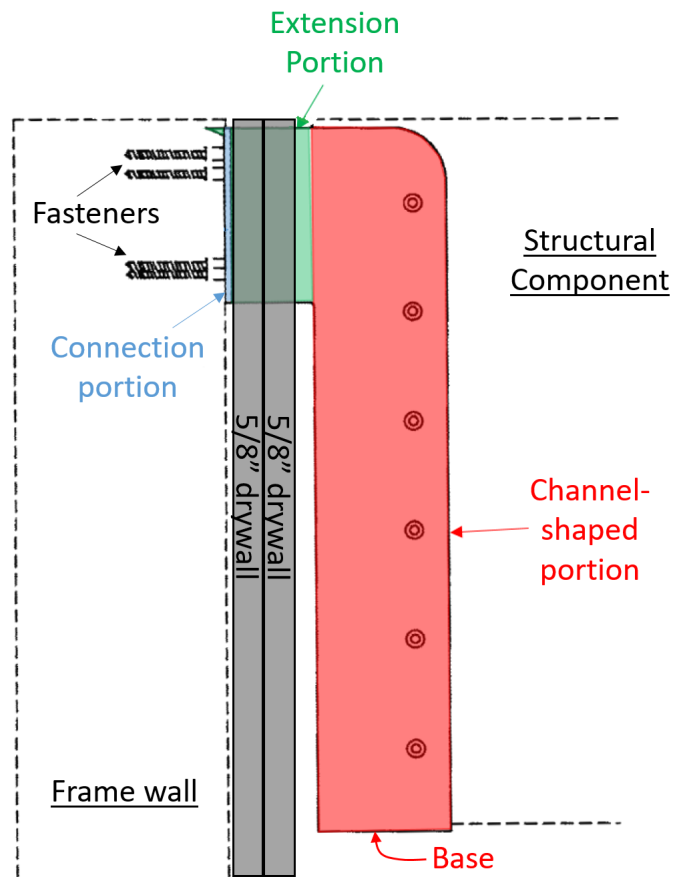
i. Elements [32.c.3], [42.c.3], [45.c.2], [46.c.3], [47.c.3]:

212. As explained above, when installing the sheathing after mounting the hanger, a POSA would have found it obvious to slide (i.e., move alongside) the sheathing layer(s) relative to the mounted hanger such that the openings in the sheathing align with the extension portion and an extension flange of the combined

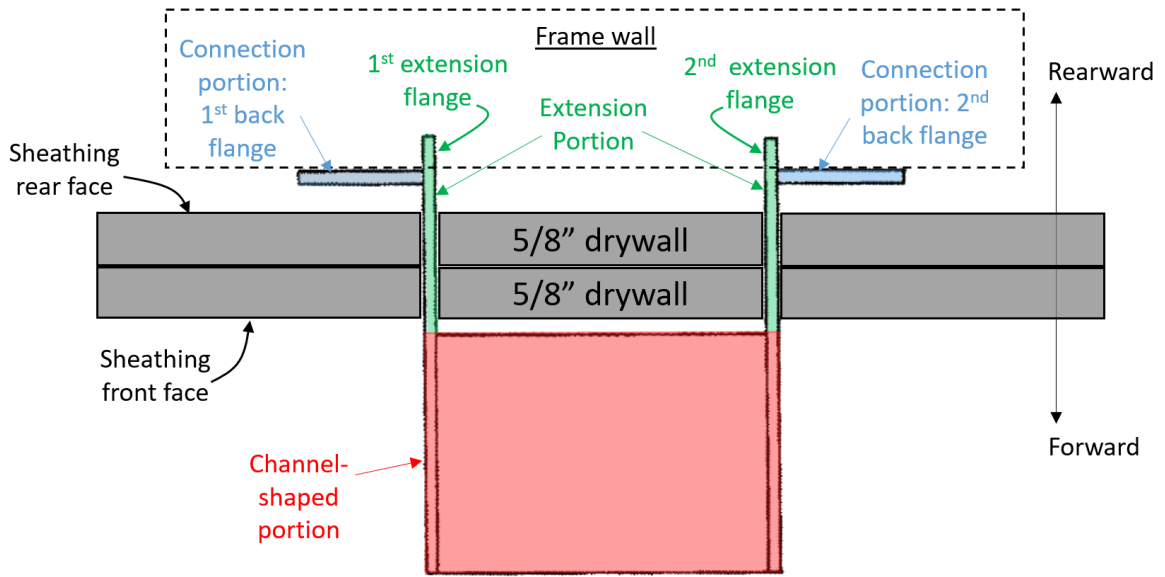
hanger's extension portion extends through and is received by the opening in the sheathing. EX1006, 3:27-42, 4:1-14.

j. Element [42.d.1]

213. As illustrated in annotated FIG. 7 above, when the sheathing is moved into place relative to the fire wall hanger, only the extension portion (shown in green) extends through the sheathing.



EX1071, 2 (Usage View - modified and annotated)



EX1071, 5 (Plan View - modified and annotated)

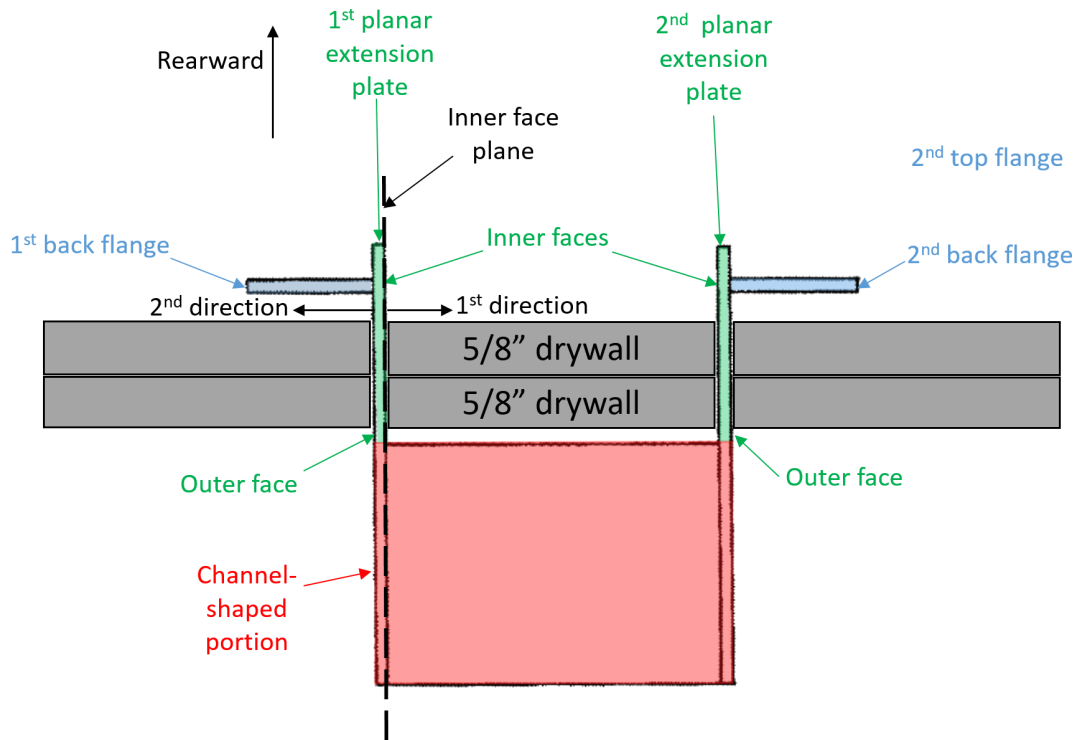
k. Elements [42.d.2], [45.d.3], [46.d.2]

214. Kanai's extension includes first and second planar extension plates extending parallel to one another from the channel-shaped portion to the connection, as illustrated above.

l. Elements [42.d.3-4], [46.d.3-4]

215. In the Kanai-Bundy-Allan hanger, each of the first and second planar extension plates includes an inner face and an outer face, the inner faces of the first and second planar extension plates facing one another, the inner face of the first planar extension plate facing in a first direction toward the inner face of the second planar extension plate and the outer face of the first planar extension plate facing in

a second direction that is opposite the first direction, the inner face of the first planar extension plate lying in an inner face plane:



EX1071, 5 (Plan View - modified and annotated)

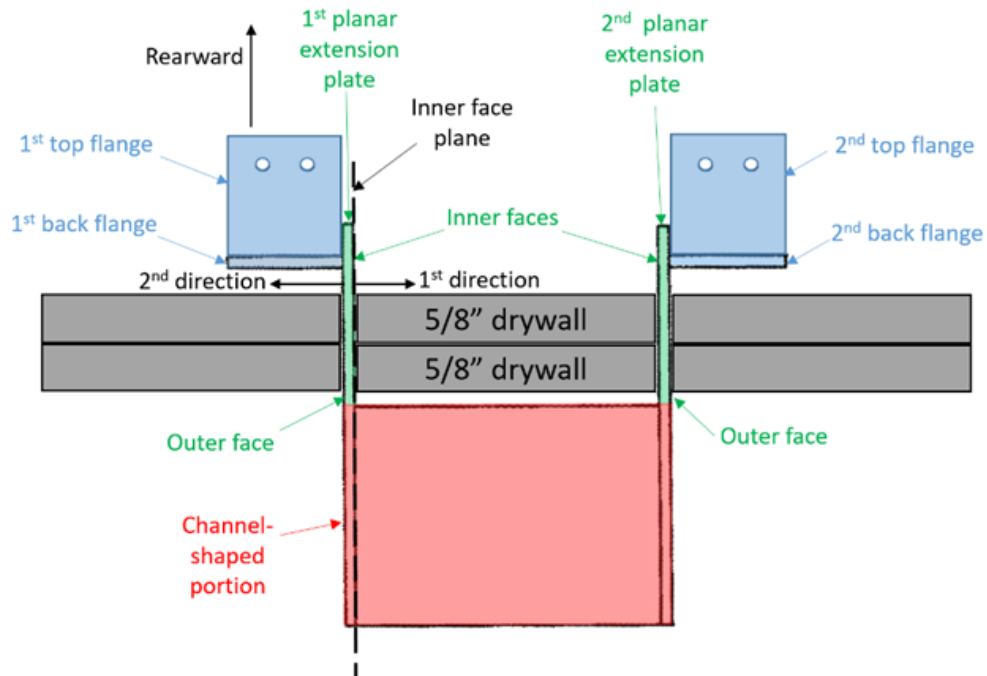
m. Elements [42.e.1], [45.d.1], [46.d.1]

216. The Kanai hanger is a “joist bracket” “fixed to a cross beam” that appears to have no moving elements. EX1071, 1. A POSA would have recognized that the hanger would be made from a metal commonly used for joist brackets, such as sheet metal. Thus, the connection portion and the channel-shaped portion of the combined hanger are rigidly fixed with respect to one another.

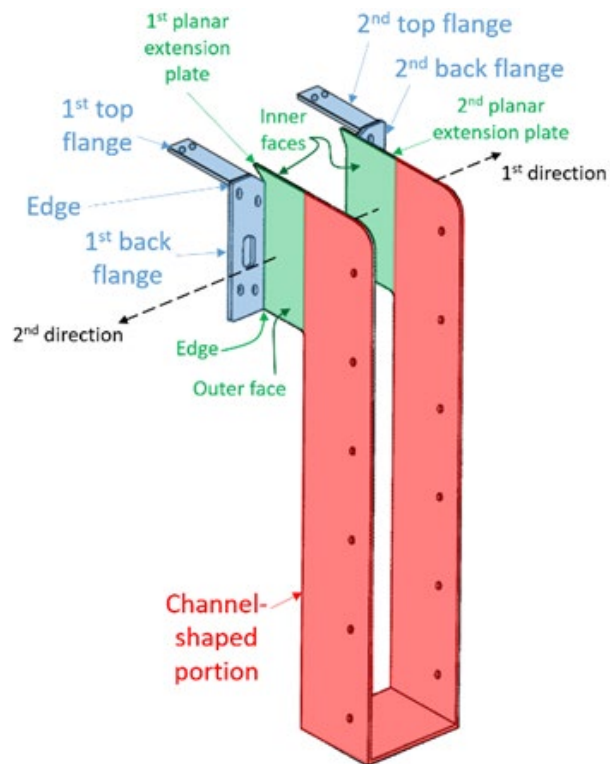
n. Elements [42.e.2], [45.d.2], [46.d.5]

217. Kanai's connection portion has a back flange (shown below). While Kanai does not illustrate a top flange, a POSA would have found it obvious to add a top flange to Kanai's hanger, as taught by Bundy. In the same field of endeavor, Bundy discloses adding first and second top flanges 15 to respective first and second back flanges 9 at angular joint 49, with the top flanges being fastened to the top face 17 of the frame wall. EX1005, 1:52-55; 5:39-52.

218. A POSA would have been motivated to add Bundy's top flange to Kanai's face mount hanger (combined hanger shown above) to improve the connectivity and ease of installation of Kanai's hanger. A POSA would have had a reasonable expectation of success in doing so because Kanai's and Bundy's hangers are used for similar purposes (e.g., hanging a structural object on a wall). As shown above, the first top flange of the combined hanger extends from an edge of the first back flange ([42.e.2], [46.d.5]). The first back flange, with a planar front surface, similarly extends from a front edge of the first top flange so that the first top flange extends rearward from its front edge ([45.d.2]). The first back flange extends from an edge of the first planar extension plate in the second direction, so that the first top flange and first back flange are entirely disposed outward, in the second direction, of the inner face plane ([42.e.2], [46.d.5]).



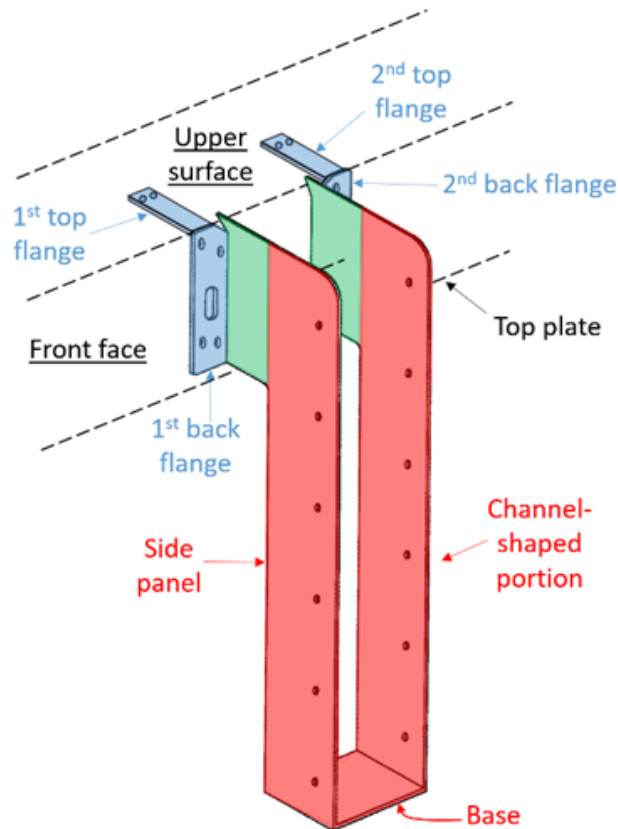
EX1071, 5 (Plan View – annotated).



EX1071, 2 (Perspective View - modified and annotated).

o. Elements [42.f], [45.e], [46.e]

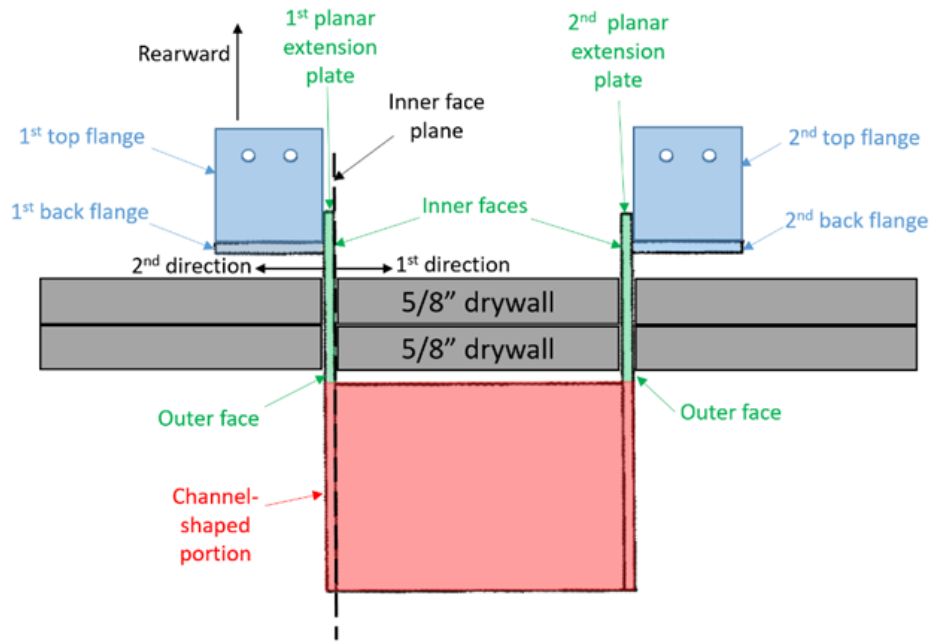
219. As illustrated here, when mounted, the combined hanger's back flange engages a front face of Bundy's top plate and the top flange engages an upper surface of the top plate.



EX1071, 2 (Perspective View - modified and annotated).

p. Elements [42.g], [46.f]

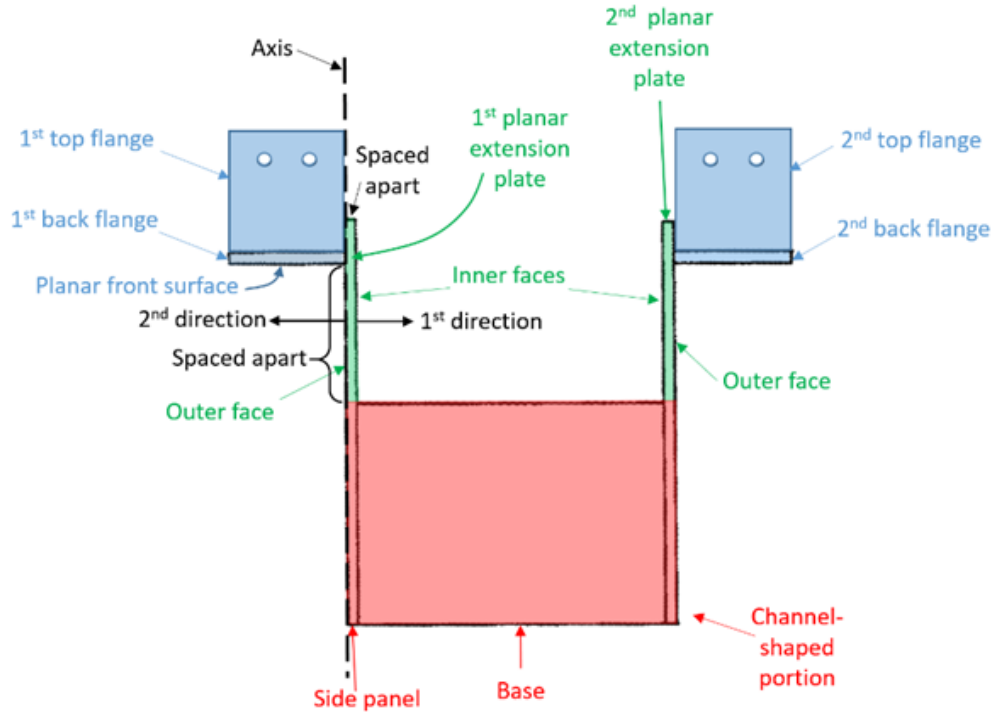
220. As shown below, the first planar extension plate is disposed in the sheathing opening. Indeed, only the first and second planar extension plates of the extension portion extend through the opening.



EX1071, 5 (Plan View – annotated).

q. Element [45.d.4-5]

221. As illustrated below for [45.d.6], the channel-shaped portion of the combined hanger includes a base and side panel as claimed.



EX1071, 5 (Plan View annotated).

r. Element [45.d.6]

222. As illustrated above, the side panel is spaced apart from the planar front surface of the back flange of the connection portion along an axis that is normal to the planar front surface of the back flange of the connection portion. The axis intersects the side panel of the channel-shaped portion and the planar front surface of the back flange of the connection portion.

s. Element [45.d.7]

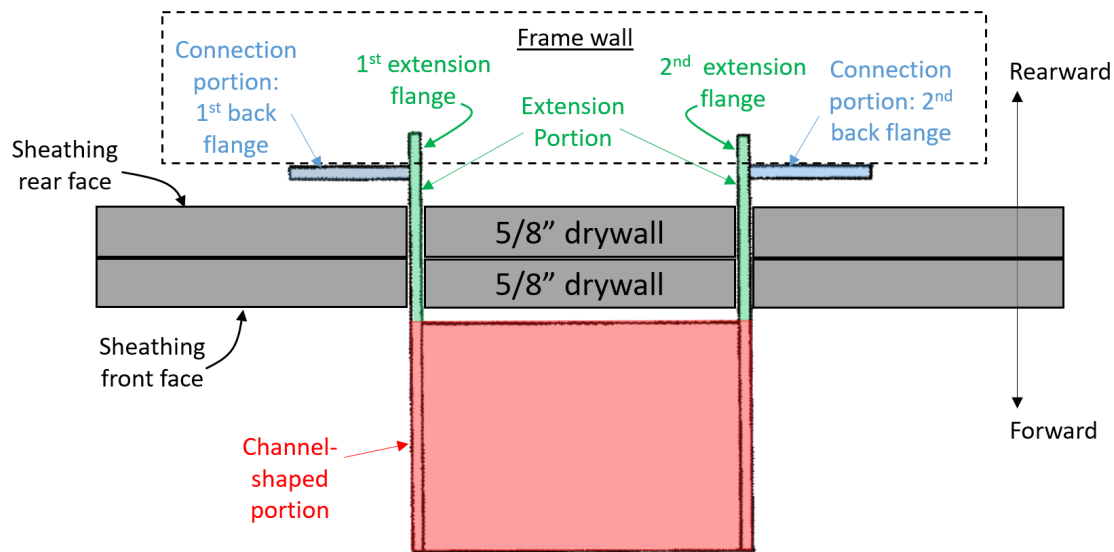
223. As illustrated above, each of the first and second planar extension plates includes an inner face and an outer face, the inner faces of the first and second planar extension plates facing one another, the inner face of the first planar

extension plate facing in a first direction toward the inner face of the second planar extension plate and the outer face of the first planar extension plate facing in a second direction that is opposite the first direction. The axis is spaced apart in the second direction from the inner face of the first planar extension plate.

2. Claim 33

a. Element [33.a.1-2]

224. Kanai-Bundy-Allan's connection portion includes spaced-apart first and second back flanges which engage the front face of the frame wall:



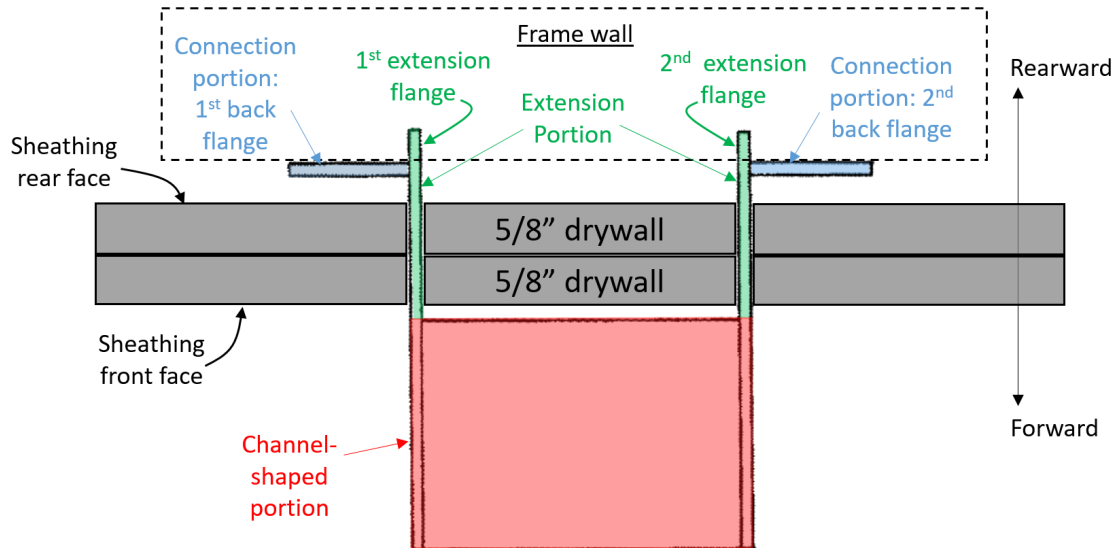
EX1071, 5 (Plan View - annotated).

b. Element [33.a.3]

225. See element [42.f] above.

c. Element [33.b]

226. Because the back flanges are engaged with the frame wall, inserting the sheathing between the combined hanger and the frame wall includes positioning the sheathing over and in front of the front faces of each back flange of the hanger, as shown in annotated FIG. 7:



EX1071, 5 (Plan View - annotated).

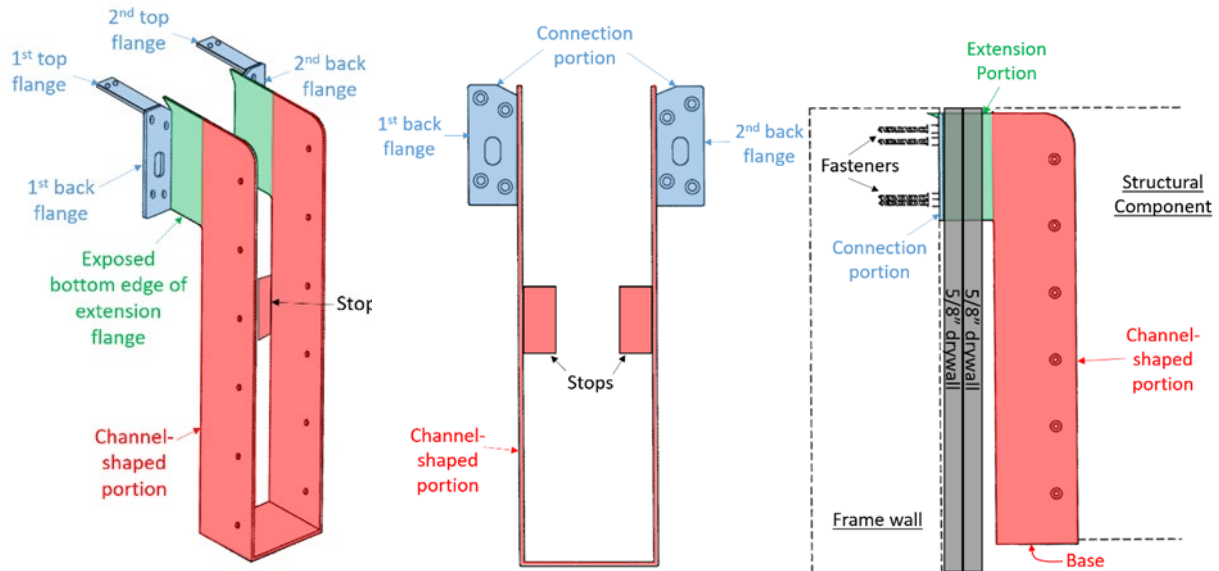
3. Claim 38

227. Because the Kanai-Bundy-Allan hanger is mounted to the frame wall prior to installing sheathing as discussed above, a POSA would have further found it obvious to install the joist on the upper surface of Kanai's base before installing the sheathing so as to complete framing. Kanai indicates that its bracket "is fixed to a cross beam and receives an end portion of a joist, and reinforces a joint portion of the cross beam and joist," and illustrates installation prior to any wall finishings.

EX1071, 1-2 (Usage State). Further, completing framing before installing drywall

was also standard practice within the construction industry, as discussed in depth above in §IX.B. And with the cutout occurring at the top of the wall, the installed joist would not block access to allow the sheathing to be inserted around the hanger. For these reasons, a POSA would have found it obvious to install the joist into the hanger before installing sheathing. Indeed, only two options exist: installing the joist before the sheathing or installing the sheathing before the joist. This element would have been simply choosing from a finite number of possibilities with a reasonable likelihood of success.

228. Further, although Kanai does not explicitly disclose a stop, Bundy teaches an analogous hanger having a stop (back plate members 9 bent inward) engaging the end of the structural component and spacing the end of the structural component from the back flange plane by this distance. EX1005, 4:39-46. In combining the teachings of Bundy with Kanai, a POSA would have been motivated to provide Kanai's hanger with a stop (as shown below) to engage the joist's end, as taught by Bundy, to ensure that the joist's end does not impede or press against sheathing installed into the space defined between Kanai's connection portion and channel-shaped portion.



EX1071, 2 (Perspective View – annotated), 3 (Front View – modified and annotated); 2 (Usage View - modified and annotated).

229. Such a modification would have been a simple substitution of one known element (Bundy's channel-shaped portion having stops bent inwards to face each other) for another (tabs on Kanai's channel-shaped portion) to obtain the predictable result of providing a stop at the end of a joist. A POSA would have had a reasonable expectation of success because doing so was well within the level of ordinary skill in the art. EX1005, 4:39-46. For example, as shown above, a POSA would have understood to add a tab to the hanger blank when cutting and bend the tab inward from the channel-shaped portion to form a stop.

230. Because it would have been obvious to install the structural component before installing the sheathing as discussed above, it would have been obvious that inserting the sheathing between the channel-shaped portion and the

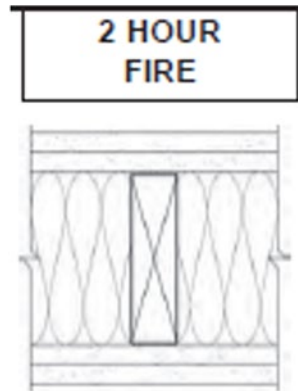
frame would include inserting the sheathing between the structural component and the frame.

D. Ground 4: Claims 44 and 48-49 would have been obvious over Kanai, Bundy, and Allan, further in view of GypMan and IBC.

1. Motivation to Combine

231. Bundy discloses the use of first and second layers of 5/8-inch-thick gypsum panels, but does not explicitly disclose that the gypsum is Type-X gypsum. EX1005,5:10-22. Further, the Kanai-Bundy-Allan combination does not explicitly disclose filling the frame wall with mineral wool insulation and disposing the frame wall between the fire retardant sheathing and the additional fire retardant sheathing such that its assembly has a 2-hour standard-based fire resistance rating.

232. However, including these materials in a fire resistant wall assembly was well known, as evidenced by GypMan and the IBC. EX1017; EX1034; *see also* EX1062; EX1063. GypMan discloses a “wood framed” wall assembly that includes “gypsum wallboard, wood studs, [and] mineral fiber insulation” to achieve a “2 Hour Fire” rating. EX1017, 88. GypMan applies both a “[b]ase layer” and “[f]ace layer [of] 5/8” type X gypsum wall wallboard.” *Id.* As shown below, GypMan fills the “stud space” with “mineral fiber insulation.” *Id.*



EX1017, 88.

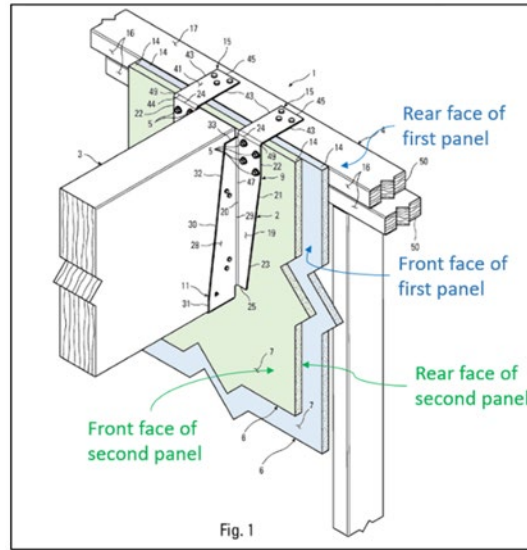
233. A POSA would have been motivated to fill the frame wall in the Kanai-Bundy-Allan combination with mineral wool and dispose the frame wall between the sheathing and additional sheathing, as taught by GypMan, so that the wall assembly would satisfy the two-hour fire-resistance rating in accordance with known ASTM standards as instructed by IBC. EX1017, 13-14; EX1034, 40-41. IBC was a well-known model building code followed in many jurisdictions in 2013, and it identified ASTM standards, such as ASTM E814 and ASTM E119, to follow for through-penetrations and through-penetration firestop systems. A POSA would have had a reasonable expectation of success in such a combination because these additions to the wall assembly—mineral wool and additional sheathing—were standard practices subject to standard testing that would not change the operability of Kanai-Bundy-Allan’s wall assembly. As further detailed below, claim 44 thus would have been obvious over Kanai, Bundy, and Allan, for the reasons discussed above, and further in view of GypMan and IBC. Claim 48

would have been obvious over Kanai, Bundy, and Allan as discussed above for claim 47, further in view of GypMan and IBC.

2. Claims 44, 48

a. Element [44.a.1-3]

234. Bundy teaches two 5/8 inch-thick-layers of drywall (made of gypsum) having the recited faces and orientations between its channel-shaped portion (seat member 12) and the front face 6 of the wall's support member 4. EX1005, 3:60-67, 5:10-22. As taught by GypMan, such layers in a fire separation wall were commonly 5/8-inch type X gypsum. EX1017, 88. A POSA would have found it obvious to modify the Kanai-Bundy-Allan combination to incorporate such layers for the reasons above. The resulting combination would include positioning the first and second Type X gypsum panels of the fire retardant sheathing, the first and second Type X gypsum panels each being 5/8-inch-thick, the first Type X gypsum panel having a front face and an opposite rear face, the second Type X gypsum panel having a front face and an opposite rear face, the rear face of the first Type X gypsum panel forming the rear face of the fire retardant sheathing and the front face of the second Type X gypsum panel forming a front face of the fire retardant sheathing, the rear face of the second Type X panel being in contact with the front face of the first Type X gypsum panel:



EX1005, FIG. 1.

b. Elements [44.b], [48.c]

235. As discussed above, GypMan discloses “filling the frame wall with mineral wool insulation” as filling the “stud space” with “mineral fiber insulation.” EX1017, 88.

c. Elements [44.c], [48.d]

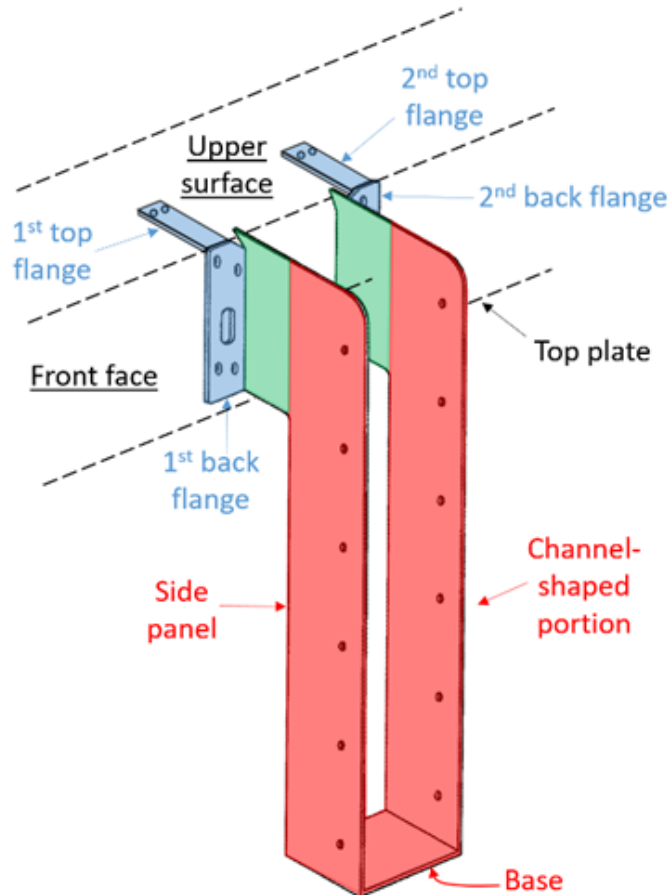
236. As discussed above, GypMan discloses “installing additional fire retardant sheathing with respect to the frame wall so that the frame wall is disposed between the fire retardant sheathing and the additional fire retardant sheathing” as applying a “[b]ase layer [of] 5/8” type X gypsum wall board at right angles to each side of 2x6 wood studs” and a “[f]ace layer [of] 5/8” type X gypsum wall board applied at right angles to each side” of the base layers. EX1017, 88.

d. Elements [44.d], [48.e]

237. GypMan discloses the recited wall assembly having a 2-hour rating determined per ASTM E119 test. EX1017, 13-14. As discussed above, a POSA would have understood that such a wall assembly would typically be governed by the IBC, which required such fire resistance wall assemblies with through penetrations to satisfy both ASTM E119 and E814. EX1034, 40.

e. Elements [48.a.1-3]

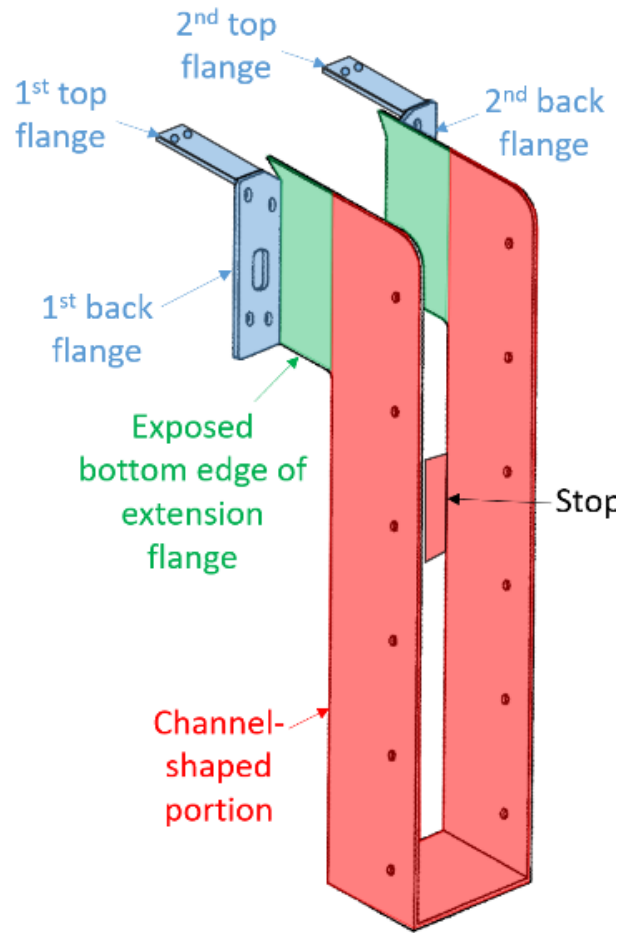
238. As shown here, the connection portion of Kanai-Bundy-Allan's hanger includes spaced-apart first and second back flanges. As discussed for element [42.3.2], it would have been obvious to extend a top flange from each back flange. The combined hanger would be mounted to Bundy's frame wall by engaging the two back flanges with a front face of the frame wall and engaging an upper surface of the top plate with corresponding top flanges of the connection portion, as shown below.



EX1071, 2 (Perspective View - modified and annotated).

f. Element [48.b]

239. As discussed for element [32.c.3], sheathing is installed by moving the sheathing up behind the channel-shaped portion of the Kanai-Bundy-Allan hanger. When moving the sheathing upward relative to the combined hanger disposed at the top of a wall, an exposed bottom edge of the extension flange would be the first part of the hanger that would move into the sheathing's opening, as shown below. Kanai's bottom edge is free of direct attachment to any other component.



EX1071, 2 (Perspective View - modified and annotated).

3. Claim 49

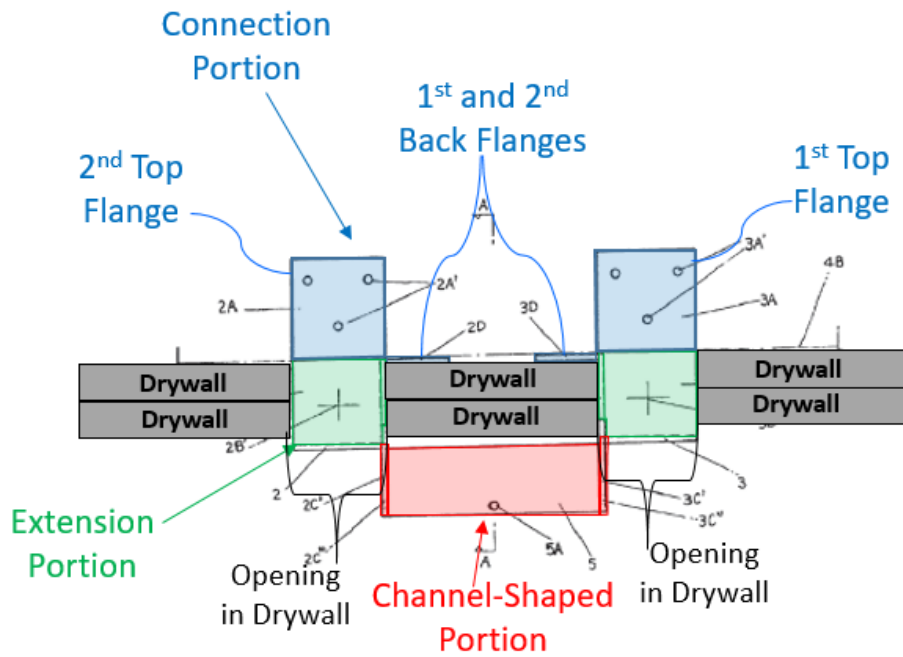
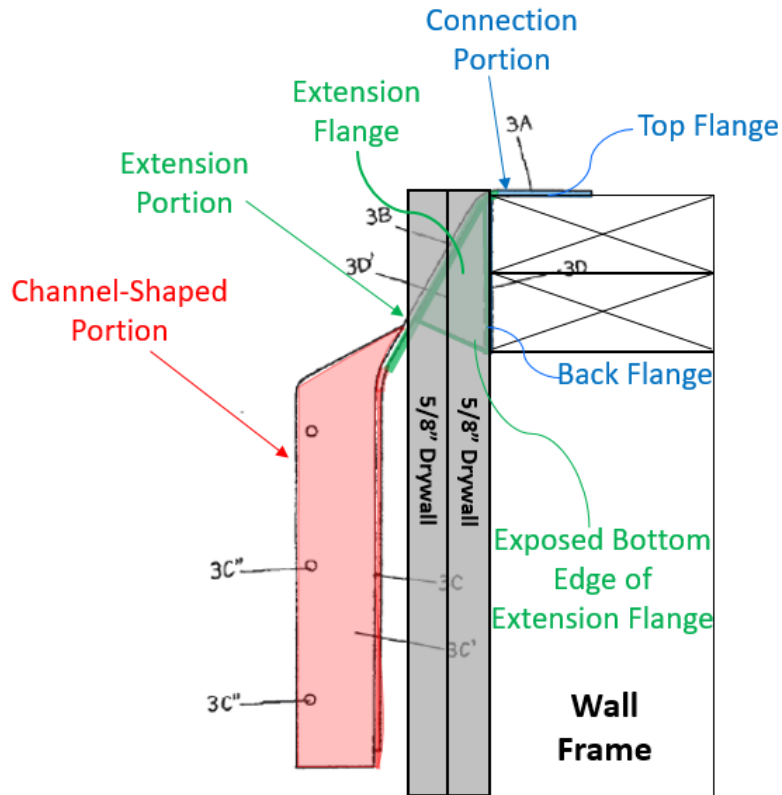
240. Bundy discloses that the back face 8 of drywall panel 6 interfaces with the front face 16 of its frame wall. EX1005, 4:24-28. Allan similarly discloses tightly fitting the sheathing to the frame wall. EX1006, FIG. 2, 3:59-68. Because the combined hanger's back flange would be flush with the frame wall, when the sheathing is fitted tightly to the frame wall, it would have been obvious to a POSA that inserting sheathing around the Kanai-Bundy-Allan hanger would include

positioning the sheathing against the front face of each of back flanges and the frame wall in areas not covered by the back flanges.

E. Ground 5: Claims 32, 39, and 47 would have been obvious over Tsukamoto in view of Bundy and Allan.

1. Independent Claims 32 and 47

241. A POSA would have found it obvious to combine Tsukamoto, Bundy, and Allan to arrive at claims 32 and 47. First, a POSA would have found it obvious to adapt Tsukamoto's joist hanger to be installed in conjunction with one or more layers of drywall, as taught by Bundy. Second, a POSA would have found it obvious to install the modified hanger and drywall in the manner claimed, as taught by the combination of Tsukamoto, Bundy, and Allan.

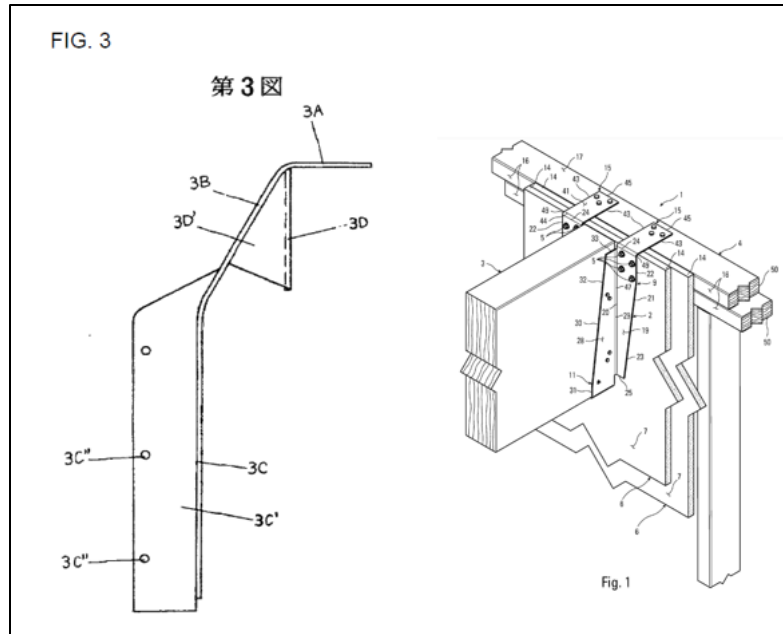


EX1008, FIGs. 3 and 4 (annotated).

a. Motivation to adapt Tsukamoto's hanger in view of Bundy

242. Similar to Cullen's, Yamaguchi's and Robinson's hanger, Tsukamoto's hanger defines a space between its back flange and channel-shaped portion corresponding to the length of its extension portion (as annotated above). EX1008, 2. Tsukamoto and Bundy are both directed to joist hangers. Accordingly, the rationales for combining the teachings of Bundy and Allan with Cullen, Yamaguchi, and Robinson would similarly apply to Tsukamoto.

243. For example, as explained in §XV.A.1 of my First Declaration, Bundy teaches advantages of installing a joist hanger with fire-retardant sheathing for fire-resistivity. Tsukamoto's hanger defines a space between its vertical plates 2D, 3D (back flanges) and vertical portions 2C, 3C (channel-shaped portion) corresponding to the length of its inclined portion (extension portion). EX1008, 2-3. Bundy discloses sizing an extension portion of an analogous hanger to receive two layers of drywall (e.g., 5/8" thick layers) between its channel-shaped portion (seat member 12) and the front face 6 of the wall's support member 4. EX1005, 5:16-18.

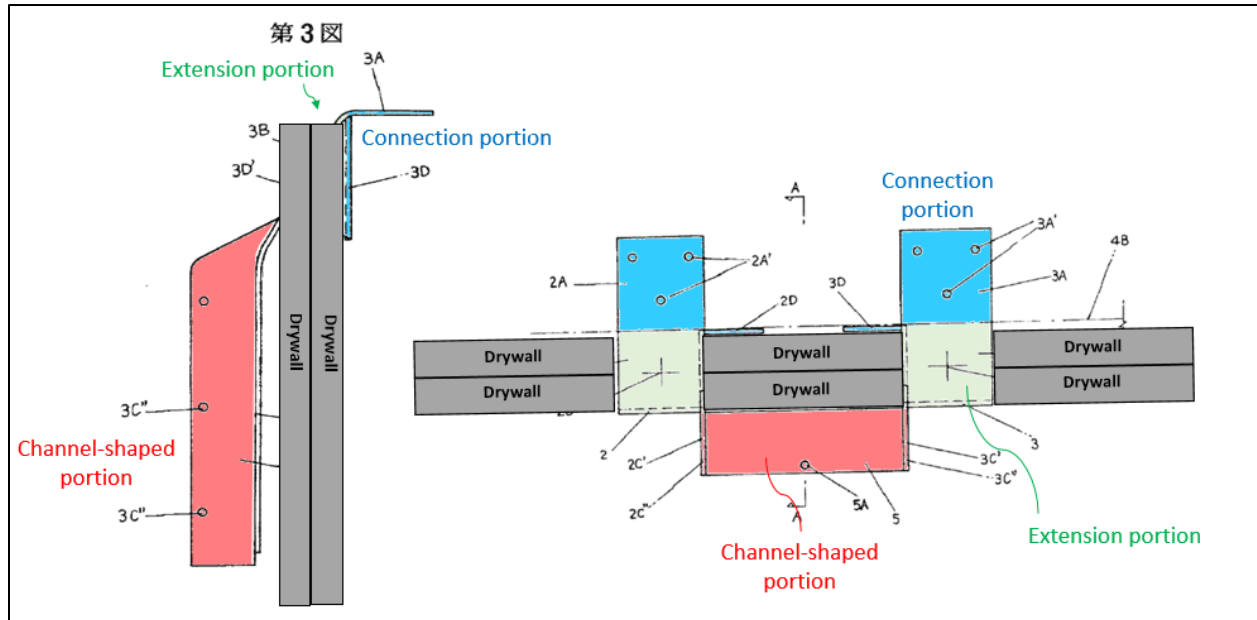


EX1008, FIG. 3; EX1005, FIG. 1

244. A POSA would have been motivated to install drywall between Tsukamoto's channel-shaped portion and connection portion, as taught by Bundy, to enable the drywall to shield the frame wall from fire as Bundy taught. A POSA would have had a reasonable expectation of success in doing so because Tsukamoto's and Bundy's hangers are both used for hanging a structural member to a wall. EX1008, 4:46-53; EX1009, 2-3.

245. As explained in §XV.A.2 of my First Declaration, cutting openings in drywall to accommodate structural elements like hangers was well-known, as evidenced by Allan. In installing the hanger and the drywall in this manner, a POSA would have been motivated to mount Tsukamoto's hanger to the wall prior to installing sheathing, as Tsukamoto FIG. 5 illustrates Tsukamoto's hanger

mounted and bearing a structural member while still having an unfilled gap between the back of the hanger's channel-shaped portion and the wall. A POSA would have known to then slide the drywall upwards relative to the hanger so that Tsukamoto's extension portion extended through the drywall, as taught by Allan. EX1006, 4:1-14. A POSA would have also found this obvious as merely choosing from a finite number of identified, predictable solutions with a reasonable expectation of success.



EX1008, FIGs. 3-4.

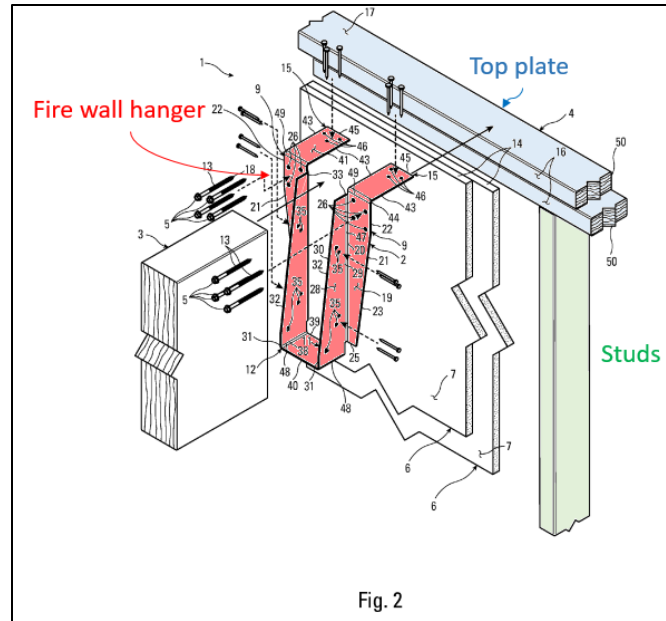
b. Elements [32.P], [47.P]:

246. Tsukamoto explicitly discloses using hanger for receiving a “beam” and for mounting to a wooden “base” but not explicitly for securing the beam to a wall adapted to have drywall (sheathing) mounted thereon. EX1008, 3. As

discussed above, a POSA not only would have understood that Tsukamoto's hanger would be applicable to a wall covered with sheathing, as suggested by Bundy, but that Tsukamoto's hanger would be applicable to a fire separation wall having sheathing mounted on a frame wall, as further suggested by Bundy. EX1005, 2:37-41, 5:10-22. A POSA would have also understood that Tsukamoto's hanger is configured to secure to a top plate of a frame wall by connecting Tsukamoto's hanger directly to the top plate.

c. Elements [32.a.1-2], [47.a.1-2]

247. Bundy discloses element [32.a.1-2] for the same reasons as discussed with respect to element [1.A] in my First Declaration. *See* EX1003, §XV.B.2. For example, Bundy teaches mounting a joist hanger 2 to a frame wall that includes a top plate 4 (also referred to as “wood structural support member 4”) and a plurality of “vertically disposed studs” extending down from the top plate. EX1005, 3:55-67, FIG. 2.

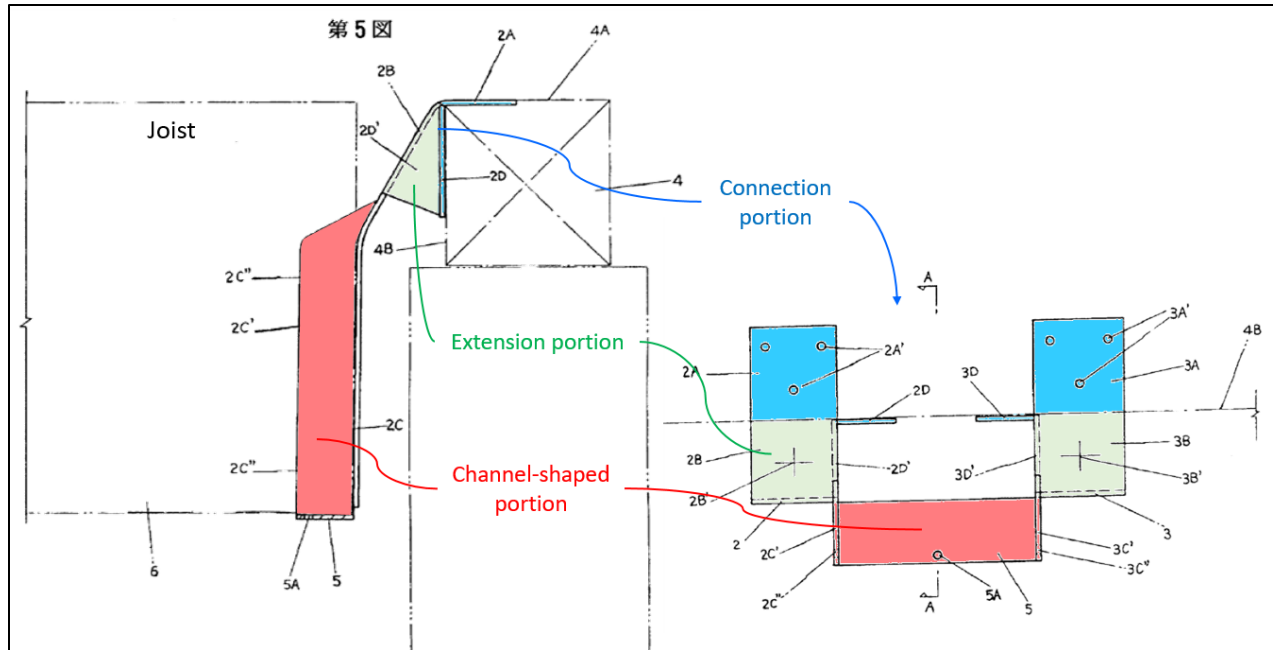


EX1005, FIG. 2.

248. For these and the reasons discussed above in the motivation combine section, a POSA would have found it obvious to mount Tsukamoto's hanger to Bundy's frame wall assembly, as discussed above.

d. Elements [32.a.3], [47.a.3]

249. Tsukamoto discloses the recited "fire wall hanger" including a "channel-shaped portion" (beam receiving plate 5, side plates 2C'/3C', and vertical portions 2C/3C), a "connection portion" (horizontal portions 2A/3A, vertical plates 2D/3D), and an "extension portion" (inclined portion 2B/3B, connection plates 2D'/3D'), as shown below:



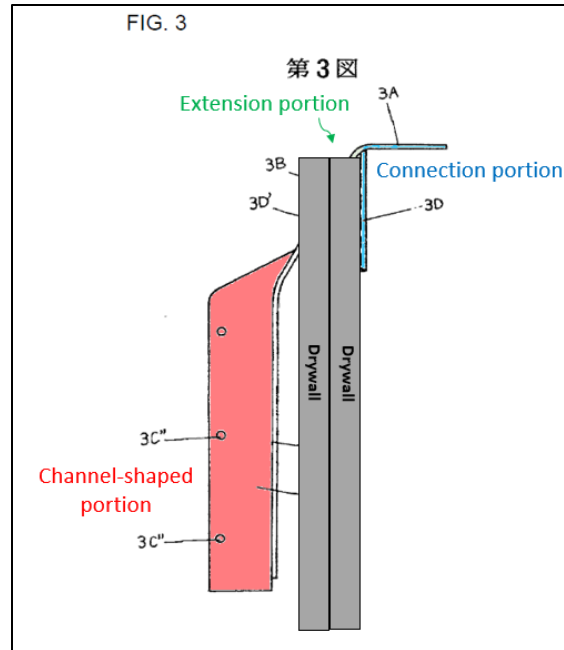
EX1008, FIGs. 5, 4.

e. Elements [32.a.4], [47.a.4]

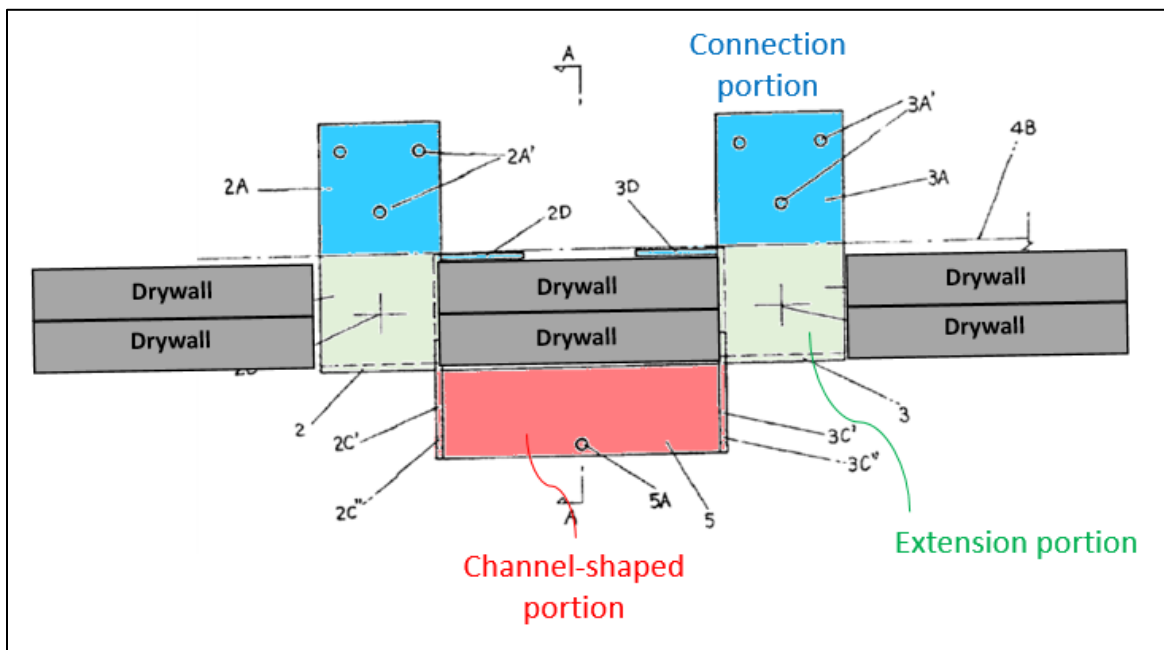
250. As discussed above, to mount Tsukamoto's hanger on the base 4, the horizontal portions 2A, 3A (*top plates*) of Tsukamoto's connection portion are attached to a top surface 4A of the base 4 by nails 9. EX1008, 2-3, FIGs. 5-6. As shown, when the hanger is mounted to the base 4, the channel shaped portion is also spaced from the base. EX1008, FIG. 5. When used on a frame wall as taught by Bundy, the Tsukamoto-Bundy hanger would similarly mount to Bundy's frame wall by engaging the horizontal portions 2A, 3A (*top plates*) on a top surface of the top plate 4 of the frame wall. *Id*; EX1005, 3:55-67, 4:17-28, FIG. 3.

f. Elements [32.b.1-4], [47.b.1-4]

251. As explained above, cutting sheathing to fit around obstructions was a known method of installing sheathing, as evidenced by Allan. EX1006, 4:1-14 (“the *edges* of the...plasterboard sheets are notched to fit around the outstanding leg 12”). As discussed, a POSA would have found it obvious to adapt Tsukamoto’s hanger to accommodate insertion of one or more layers of drywall (fire retardant sheathing) between Tsukamoto’s channel-shaped portion and connection portion, as taught by Bundy. Given the shape and location of the combined hanger installed at the top plate of a frame wall, along with Allan’s teachings of cutting sheathing around obstructions, a POSA would have found it obvious to cut openings in the sheathing at the location of the hanger’s obstructions, namely at the exterior perimeter edge of the sheathing, to enable the sheathing to fit around inclined portions 2B, 3B between the channel-shaped portion and connection portion. The below figures show an example of this arrangement:



EX1008, FIG. 3.

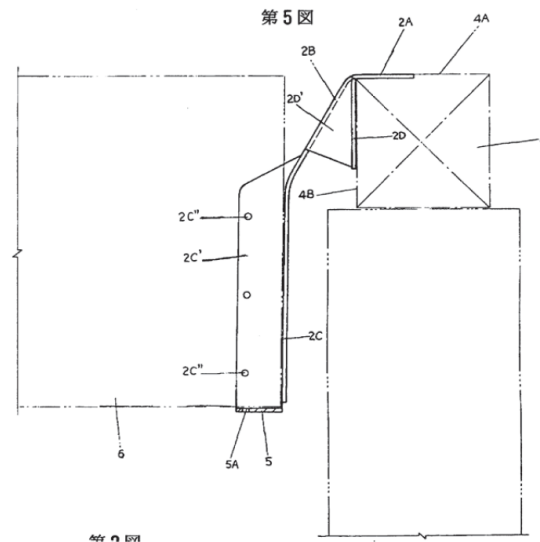


EX1008, FIG. 4.

252. As shown in these figures, the sheathing openings each extend all the way through the sheathing, from a front face of the sheathing and through a rear face of the sheathing. The openings shown in the drywall illustrated below match the slots described and shown in the '339 patent, and thus open outwardly from the exterior perimeter edge to the same extent as the patent.

g. Elements [32.c.1], [47.c.1]

253. As explained above, a POSA would have found it obvious to install sheathing after mounting the combined hanger. Tsukamoto FIG. 5 illustrates the mounted hanger holding an installed joist away from the wall prior to any wall finishing:



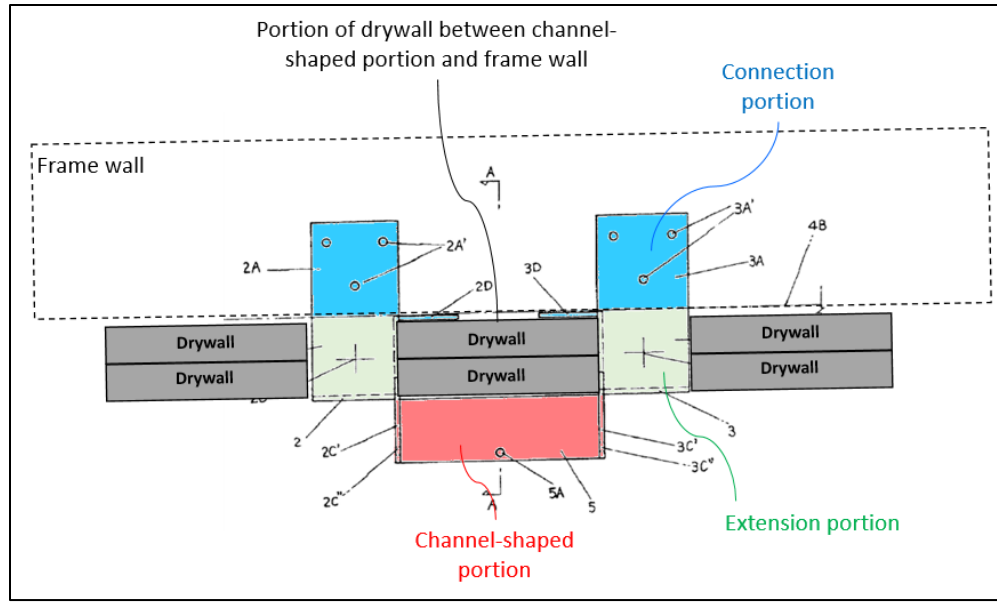
EX1008, FIG. 4.

254. Further, Allan teaches installing drywall around a structural connector that has already been mounted to a frame wall and has an outstanding leg. EX1006,

3:27-42, 4:1-14. A POSA would have also found this installation order obvious as merely choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success. Indeed, a POSA would have recognized that there were two potential orders of assembly: the hanger is installed first and then the drywall is slid in place, or vice versa—the drywall is installed first and then the hanger is slid over the drywall. Thus, the claimed order of assembly would have been obvious to a POSA. The resulting installation would be such that the rear face of the sheathing faces toward the studs of the frame wall.

h. Elements [32.c.2], [47.c.2]

255. As explained above, Tsukamoto-Bundy-Allan teaches cutting openings into an exterior perimeter edge of the sheathing layer(s). Given that the hanger is installed at the top plate prior to installing the sheathing (e.g., EX1008, FIG. 5) and that it was known from Allan to insert sheathing around obstructions, a POSA would have known to insert the sheathing (having openings cut therein) up between the channel-shaped portion and the connection portion such that the openings lined up with the extension portion.



EX1004, FIG. 4.

i. Elements [32.c.3], [47.c.3]

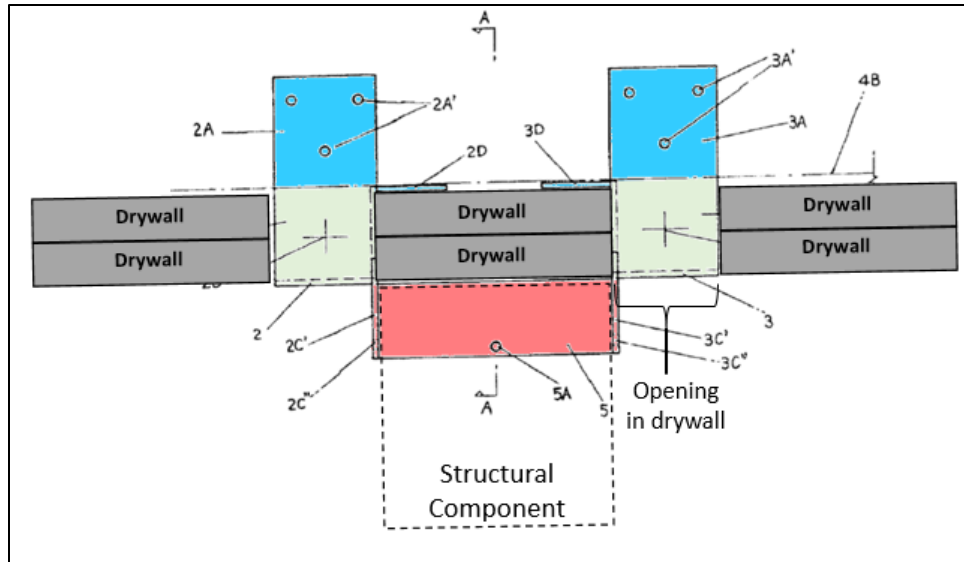
256. As explained above, when installing the sheathing after mounting the hanger, a POSA would have found it obvious to slide the sheathing layer(s) relative to the mounted hanger per the teachings of Allan (EX1006, 4:1-14) such that the openings in the sheathing align with the extension portion. Specifically, given that the hanger is installed at the top plate prior to installing the sheathing (see element [32.c.1]), that it was known to add sheathing up to the top plate for firewall construction as taught by Bundy, and that it was known to insert sheathing around obstructions as taught by Allan, a POSA would have known to insert the sheathing (having openings cut therein) up between the channel-shaped portion and connection portion such that the openings move alongside inclined portions 2B, 3B of the hanger's extension portion.

257. Given the shape and size of the openings cut in the sheathing, this installation would include moving the sheathing up to the top of the already-installed hanger, as Bundy teaches using firewall sheathing to cover the top plate. This would enable the extension portion to extend through the openings of the sheathing to fit the sheathing in place between the channel-shaped portion and the connection portion of the fire wall hanger.

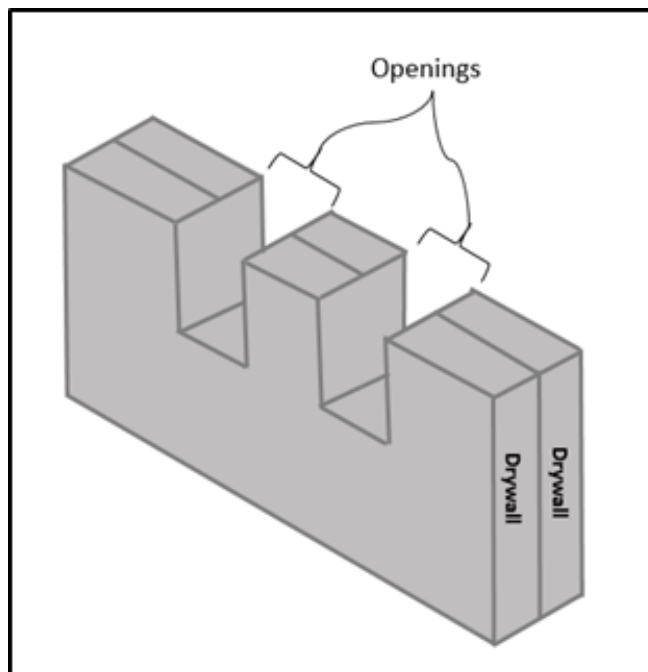
2. Dependent Claim 39

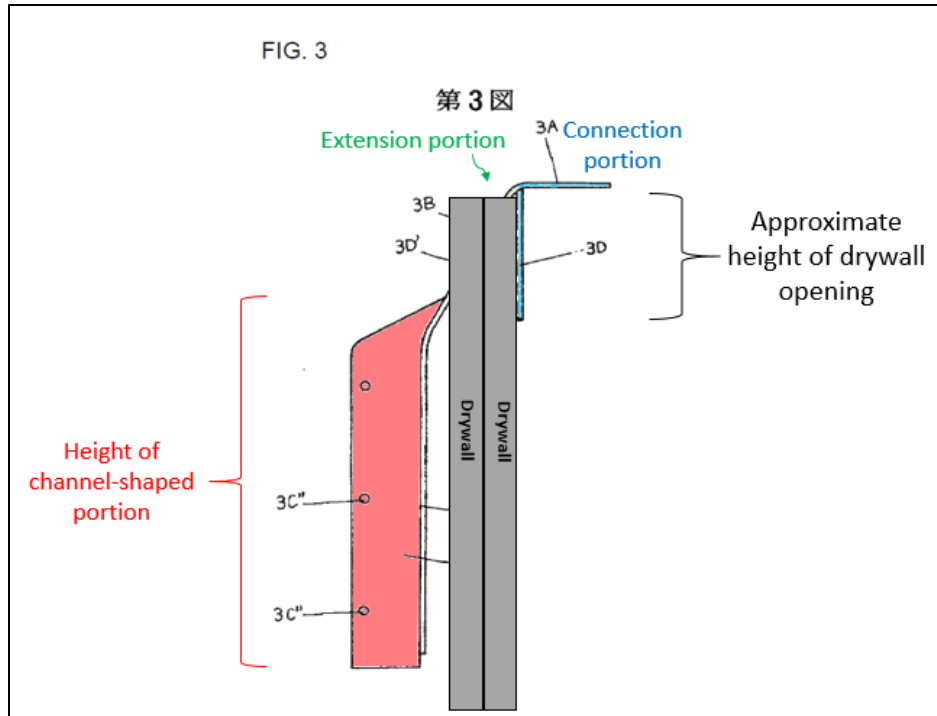
a. Element [39.a]

258. As explained above, Tsukamoto-Bundy-Allan teaches cutting narrow openings in the sheathing to accommodate Tsukamoto's inclined portions 2B, 3B. This is commensurate with Allan's teaching of cutting narrow openings in drywall to fit a hanger structure. EX1006, 4:1-14, FIG. 3. As shown in the below figure, these openings have an area less than an area of an end of the structural component, taken at and parallel to the front face of the fire retardant sheathing.



EX1007, Plan View.

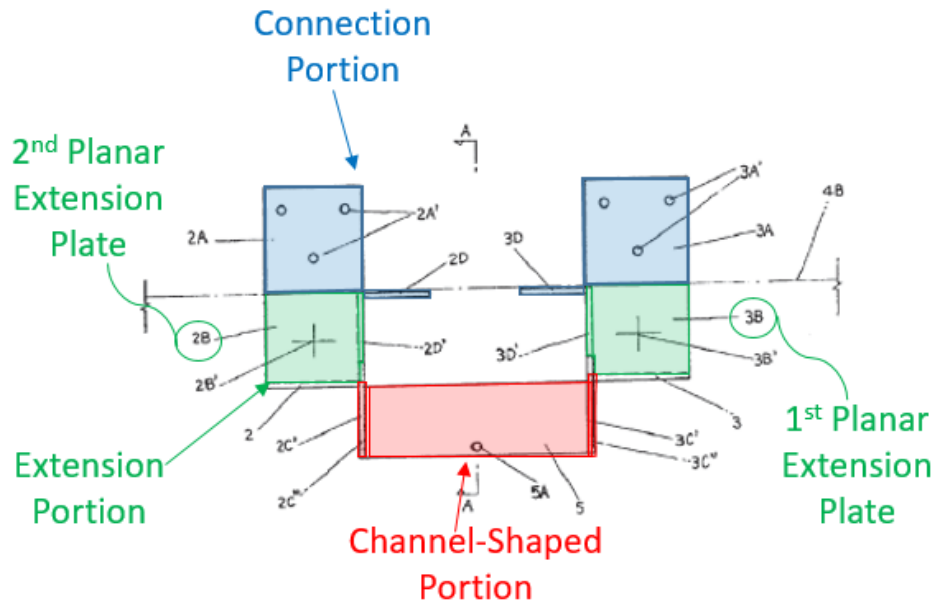
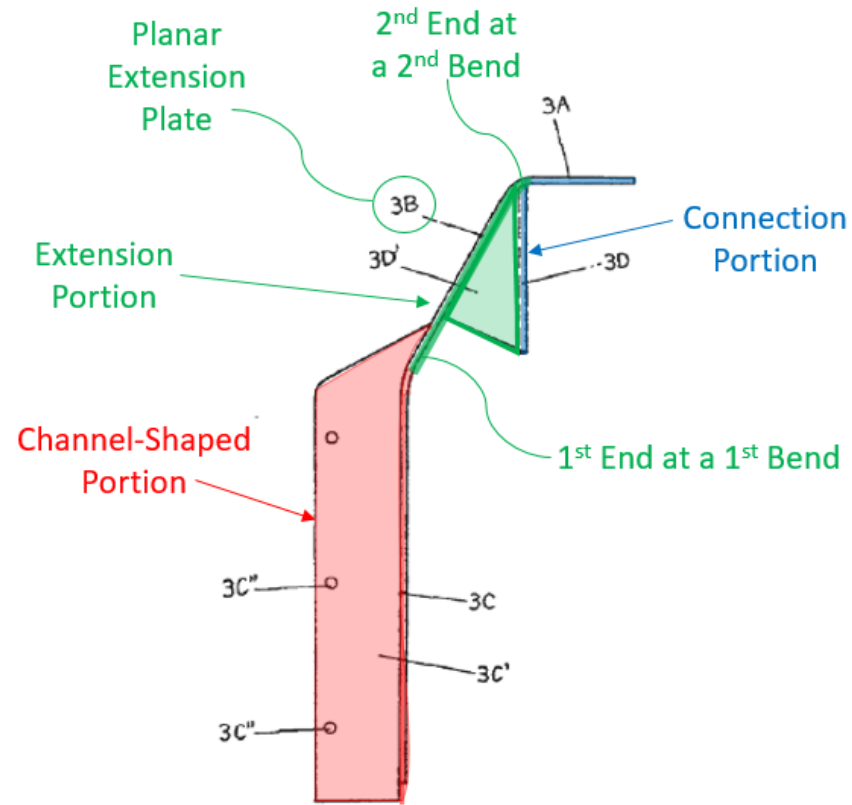




EX1008, FIG. 3.

b. Element [39.b]

259. Tsukamoto's extension portion includes first and second planar extension plates (2B, 3B) that each include opposite first and second ends. The first end of Tsukamoto's extension plates (2B, 3B) is connected to the channel-shaped portion by a bend, and the second end of Tsukamoto's extension plates (2B, 3B) is connected to the connection portion (e.g., top flange) by a bend, as shown below.



EX1008, FIGs. 3 and 4 (annotated).

F. Ground 6: Claims 44 and 48-49 would have been obvious over Tsukamoto, Bundy, and Allan, further in view of GypMan and IBC.

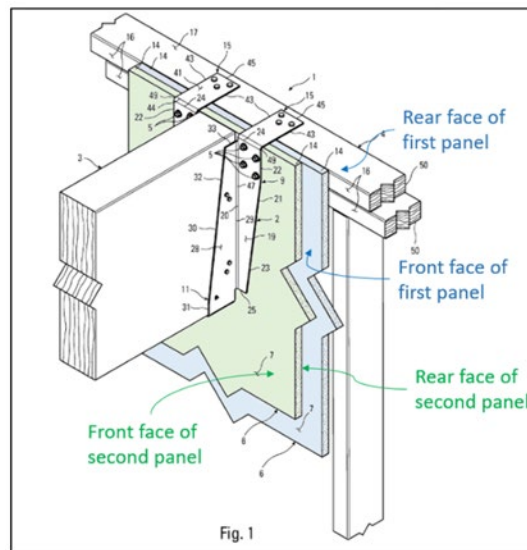
1. Motivation to Combine

260. A POSA would have been motivated to modify the Tsukamoto-Bundy-Allan combination as taught by GypMan and IBC in the same manner and for the same reasons as described in §XIV.D for modifying the Kanai-Bundy-Allan combination as taught by GypMan and IBC. Claims 44, 48-49 thus would have been obvious over Tsukamoto, Bundy, and Allan as discussed above for claims 32 and 47, further in view of GypMan and IBC as applied in §XIV.D.

2. Element [44.a.1-3]

261. Bundy teaches two 5/8 inch-thick-layers of drywall (made of gypsum) having the recited faces and orientations between its channel-shaped portion (seat member 12) and the front face 6 of the wall's support member 4. EX1005, 3:60-67, 5:10-22. As taught by GypMan, such layers in a fire separation wall were commonly 5/8-inch type X gypsum. EX1017, 88. A POSA would have found it obvious to modify the Tsukamoto-Bundy-Allan combination to incorporate such layers for the reasons above. The resulting combination would include positioning the first and second Type X gypsum panels of the fire retardant sheathing, the first and second Type X gypsum panels each being 5/8-inch-thick, the first Type X gypsum panel having a front face and an opposite rear face, the second Type X

gypsum panel having a front face and an opposite rear face, the rear face of the first Type X gypsum panel forming the rear face of the fire retardant sheathing and the front face of the second Type X gypsum panel forming a front face of the fire retardant sheathing, the rear face of the second Type X panel being in contact with the front face of the first Type X gypsum panel:



EX1005, FIG. 1.

3. Elements [44.b], [48.c]

262. As discussed above, GypMan discloses “filling the frame wall with mineral wool insulation” as filling the “stud space” with “mineral fiber insulation.” EX1017, 88.

4. Elements [44.c], [48.d]

263. As discussed above, GypMan discloses “installing additional fire retardant sheathing with respect to the frame wall so that the frame wall is disposed between the fire retardant sheathing and the additional fire retardant sheathing” as

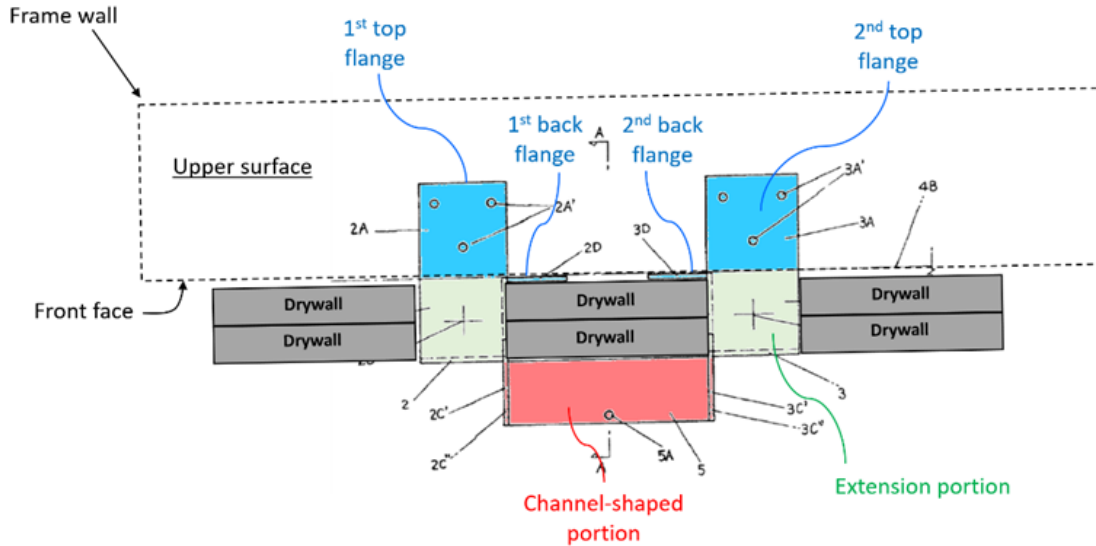
applying a “[b]ase layer [of] 5/8” type X gypsum wall board at right angles to each side of 2x6 wood studs” and a “[f]ace layer [of] 5/8” type X gypsum wall wallboard applied at right angles to each side” of the base layers. EX1017, 88.

5. Elements [44.d], [48.e]

264. GypMan discloses the recited wall assembly having a 2-hour rating determined per ASTM E119 test. EX1017, 13-14. A POSA would have understood that such a wall assembly would typically be governed by the IBC, which required such fire resistance wall assemblies with through penetrations to satisfy both ASTM E119 and E814. EX1034, 40.

6. Elements [48.a.1-3]

265. The connection portion of Tsukamoto-Bundy-Allan’s hanger includes spaced-apart first and second back flanges (2D/3D), as well as top flanges 2A/3A extending therefrom. EX1011, FIG. 5. The combined hanger would be mounted to Bundy’s frame wall by engaging the first and second back flanges with a front face of the frame wall and engaging an upper surface of the top plate with a top flange (2A/3A) of the connection portion, as shown above. EX1011, 4:28-31, FIGS 2, 5. When inserting the sheathing between the channel-shaped portion and the frame wall, the sheathing is positioned over and in front of the front faces of the hanger’s first and second back flanges.

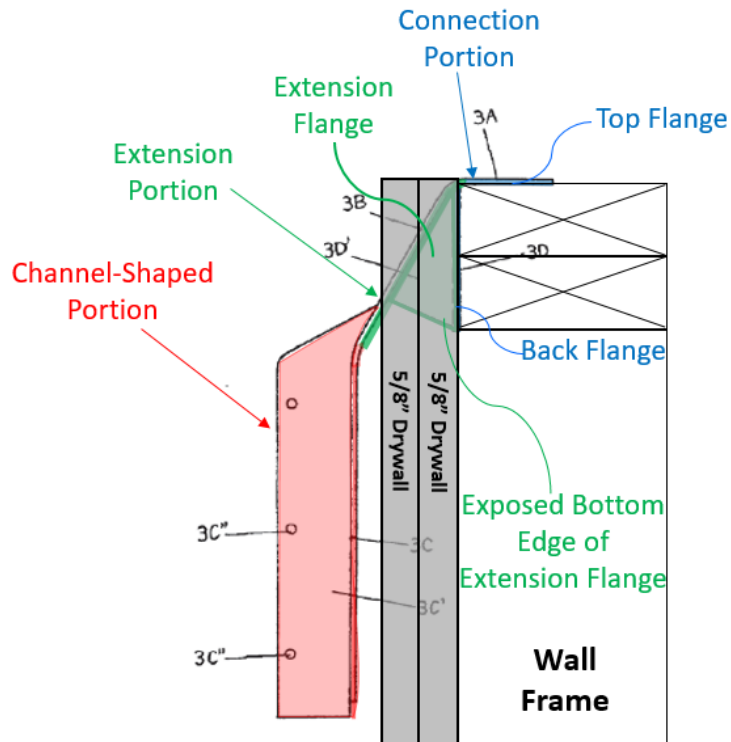


EX1008, FIG. 4 (annotated).

7. Elements [48.b]

266. As discussed for element [32.c.3], sheathing is installed by moving the sheathing up behind the channel-shaped portion of the Tsukamoto-Bundy-Allan hanger. When moving the sheathing upward relative to the combined hanger, an exposed bottom edge of the extension flange would be the first part of the hanger that would move into the sheathing's opening, as shown below.

Tsukamoto's bottom edge (annotated) is free of direct attachment to any other component.



EX1008, FIG. 3 (annotated).

8. Claim 49

267. Bundy discloses that the back face 8 of drywall panel 6 interfaces with the front face 16 of its frame wall. EX1005, 4:24-28. Allan similarly discloses tightly fitting the sheathing to the frame wall. EX1006, FIG. 2, 3:59-68. Because the combined hanger's back flange would be flush with the frame wall, it would have been obvious to a POSA that inserting sheathing around the Tsukamoto-Bundy-Allan hanger would include positioning the sheathing against the front face of each of the first and second back flanges as well as the frame wall in areas not covered by the back flanges.

G. Ground 7: Claims 32, 38, 42, and 47 would have been obvious over Yamaguchi in view of Bundy and Allan.

268. Many elements of the substitute claims are unchanged with respect to the originally-patented claims, and thus the same Yamaguchi-based rationales as were provided for those elements in my First Declaration still apply and are maintained by me. In the interest of brevity, I only address the newly-added limitations here. Claims 32, 38, 42, and 47 would have been obvious over Yamaguchi in view of Bundy and Allen for the same reasons as discussed for their corresponding claims in my First Declaration, with the below rationales for amended language.

1. Independent Claims 32, 42, 45, 47

c. [32.b.1-4], [42.b.1-4] [45.b.1-4], [47.b.1-4]

269. As explained in §XV.A.2 of my First Declaration, cutting sheathing to fit around obstructions was a known method of installing sheathing, as evidenced by Allan. EX1003, ¶¶273-277; EX1006, 4:1-14. A POSA would have understood from Allan to cut an opening into an exterior perimeter edge of the sheathing that extends from the front face of the sheathing to the rear face of the sheathing to enable the sheathing to fit around Yamaguchi's extension portion.

d. [32.c.1], [42.c.1], [45.c.1], [47.c.1]

270. As explained in §XV.A.2 of my First Declaration, a POSA would have found it obvious to install drywall after mounting Yamaguchi's hanger to the

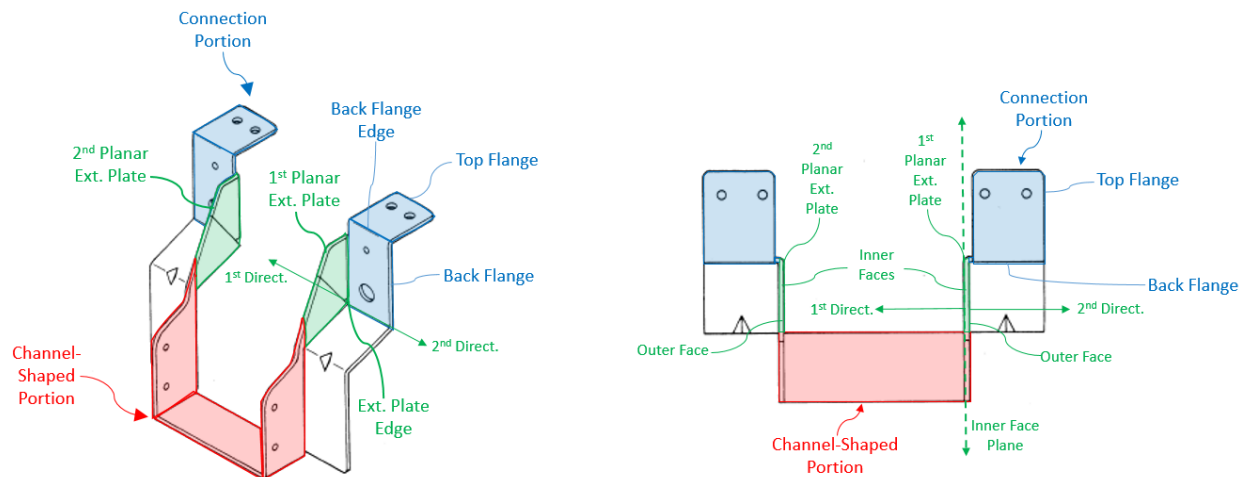
wall frame. EX1003, ¶¶278-279; EX1006, 4:1-14. The resulting installation would be such that the rear face of the fire retardant sheathing faces rearward toward the studs of the frame wall and the front face of the fire retardant sheathing faces forward away from the studs of the frame wall, as depicted in my First Declaration.

e. [42.d.1]

271. Yamaguchi-Bundy-Allan discloses element [42.d.1] for the same reasons as discussed with respect to claim 18 in my First Declaration.

f. [42.d.2]

272. Yamaguchi's first and second planar extension plates extend parallel to one another, as shown:



EX1007, Perspective and Plan Views (annotated).

g. [42.d.3-4]

273. Yamaguchi's first and second planar extension plates each include an inner face and an outer face oriented as recited in element 42.d.3, shown as

annotated above. The inner face of Yamaguchi's first planar extension plate lies in an inner face plane, as shown.

h. [42.e.1]

274. Based on the hanger shown in the figures of Yamaguchi and its description as a "bracket that...bears a joist," a POSA would have understood that the channel-shaped portion and the connection portion of Yamaguchi's hanger are connected such that they do not move freely with respect to each other, and are thus rigidly fixed with respect to one another. EX1007, 1–5.

i. [42.e.2]

275. Yamaguchi's connection portion includes a back flange extending from an edge of the first planar extension plate in the second direction and a top flange extending from an edge of the back flange, as shown above. Yamaguchi's back flange and the top flange are entirely disposed outward, in the second direction, of the inner face plane, as shown above.

2. Claim 38

276. Yamaguchi-Bundy-Allan disclose claim 38 for the same reasons as discussed with respect to claim 8 in my First Declaration.

H. Ground 8: Claim 44 would have been obvious over Yamaguchi, Bundy, and Allan, further in view of GypMan.

1. Motivation to Combine

277. A POSA would have been motivated to modify Yamaguchi-Bundy-Allan as taught by GypMan and IBC in the same manner and for the same reasons as described in §XIV.D for Kanai-Bundy-Allan. Claim 44 thus would have been obvious over Yamaguchi, Bundy, and Allan, for the reasons discussed for claim 24 in my First Declaration (EX1003, ¶¶237-261), and further in view of GypMan and IBC.

2. [44.b]-[44.d]

278. GypMan and IBC disclose elements [44.b]-[44.d] for the same reasons as discussed in §XIV.D.

XV. CONCLUSION

In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required, I will appear for cross-examination within the United States during the time allotted.

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

Executed on this 17th day of August 2025, at Calistoga, California,

/ W. Andrew Fennell /

W. ANDREW FENNELL