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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
Patent No. 11,920,339

DECLARATION OF PAUL D. TUCKER

TABLE OF CONTENTS

I.	INTRODUCTION	4
II.	THE INVENTION CLAIMED IN THE ‘339 PATENT	17
III.	THE ASSERTED PRIOR ART	23
A.	U.S. Patent No. 9,394,680 to Bundy (EX1005)	23
B.	G.B. Publication No. 2,451,853 to Cullen (EX1004)	31
C.	Japanese Design Patent No. D1213894 to Yamaguchi (EX1007).....	34
D.	G.B. Publication No. 2,433,522 to Robinson (EX1011).....	36
E.	Architectural Record: Mass Timber and Wood Framing (EX1031) ..	38
F.	U.S. Patent No. 4,827,684 to Allan (EX1006).....	43
G.	U.S. Patent No. 4,714,372 to Commins (EX1032)	45
H.	U.S. Patent No. 4,696,113 to Rice (EX1009)	48
IV.	CLAIM CONSTRUCTION	50
A.	Claim Constructions from Prior Proceedings	51
B.	“lie in [] vertical planes”	51
C.	“Bounding”	52
D.	“Opening Outwardly”	53
E.	“Planar Extension Plates”	66
E.	“Close Conformance”	67
V.	WRITTEN DESCRIPTION SUPPORT.....	68
VI.	DEFINITENESS.....	68
A.	Claims 1-31: “Fire Wall Hanger”.....	69
B.	Claims 1-31: “Opening Outwardly”.....	69
C.	Claims 1-26: “Bounding”	72
D.	Claims 13 and 14: “Close Conformance”	73
E.	Claims 20-23: “Plate”.....	73
VII.	PRIOR ART GROUNDS	74
A.	Grounds 3-8: Cullen/Yamaguchi/Robinson, Bundy, and Allan (the Bundy Combinations)	74

HIGHLY CONFIDENTIAL – ATTORNEY’S EYES ONLY

1.	The POSA Would Not Have Expected the Bundy Combinations to Work	74
2.	The POSA Would Not Have Used the Hangers From Cullen, Yamaguchi, and Robinson in the Claimed Method of the ‘339 Patent.....	92
a.	Cullen.....	92
b.	Yamaguchi.....	99
c.	Robinson	106
3.	Allan Fails to Teach Cutting an Opening in a Fire Barrier and the Method of the ‘339 Patent.....	111
B.	Grounds 9-11: ArchRecord/Commins/Cullen Combination	119
C.	The Petition Fails to Establish Where the Prior Art Teaches the Steps of the Method Claims by the ‘339 Patent.....	133
D.	Secondary Considerations Demonstrate the Method Claimed by the ‘339 Patent is Not Obvious	145
1.	Commercial Success	146
2.	Copying by Competitors	162
3.	Praise by Others	178
4.	Long Felt Need.....	189
5.	Failure of Others	191
6.	Skepticism of Others	199
7.	Teaching Away by Others	204
8.	Nexus.....	205
E.	Claim 25	214
1.	Cullen Does Not Teach the Structure of the Fire Wall Hanger Claimed in Claim 25	214
2.	Robinson Does Not Teach the Structure of the Fire Wall Hanger Claimed in Claim 25	222

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I, Paul Tucker, hereby declare as follows:

I. INTRODUCTION

1. I am currently the chief executive officer (CEO) of Áreté Forensics, PLLC (Áreté). In my role at Áreté, I act as the executive officer of the company, and I also perform structural and forensic engineering services, which include the structural design of new buildings, structural renovations of existing buildings, and forensic evaluations of buildings as well as building code interpretation. I consult on both commercial and residential projects.

2. I became a licensed professional engineer on January 5, 2004, and practiced as a structural engineer intern from August 10, 1999, until my licensure as a professional engineer. During my tenor in my profession, I have practiced only structural and forensic engineering and have done since obtaining my Bachelor of Science in Civil Engineering degree from the University of Tennessee in August 1999. I am currently licensed as a professional engineer in 18 states. I hold the structural designation in Massachusetts and am a Recognized Structural Engineer by the State of Florida. I am a licensed structural engineer in the State of Georgia.

3. I have performed structural engineering design services on thousands of buildings including numerous buildings with fire-rated assemblies. I have also performed thousands of inspections of building as a forensic engineer. In addition to my professional practice, I lectured as an adjunct professor at the University of

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Tennessee in the Department of Civil and Environmental Engineering for 15 semesters from January 2012 until May 2019. I taught both undergraduate and graduate engineering courses in Civil, Construction, and Structural Engineering.

4. From 2011 through 2020, I was appointed to and served on a three-person board, The Building Inspection Board of Appeals for Jefferson County, Tennessee. The purpose of the board was to interpret the building code and settle disagreements between code officials and local contractors during the construction process. I currently sit on the board of directors for the National Academy of Forensic Engineers and serve on the technical committee for the Metal Building Contractors and Erectors Association. I helped start the East Region of the Tennessee Structural Engineer’s Association (TNSEA), where I was Vice President, President, and Past-President.

5. In addition to my career as an engineer, I worked in the construction industry from 1985 until 1992. During that time, I worked in a structural steel fabrication shop fabricating steel and for a general contractor in the field. Between working in construction and becoming a structural engineer, I was in the United States Army, 101st Airborne Division, 311 Military Intelligence Battalion, where I was an Arabic linguist and held a Top-Secret SCI security clearance.

6. I started designing wood structures while working on a Master’s of Science degree in Structural Engineering at The University of Tennessee in 2001. I

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have been using Simpson Strong-Tie wood and cold-formed framing connectors since 2001. I have also attended continuing education courses held by Simpson Strong-Tie and Powers Fasteners as it relates to using cold-formed metal connectors in wood-framed construction. While performing structural engineering design services, I have specified Simpson Strong-Tie connectors numerous times for both wood and cold-formed steel construction. When Simpson Strong-tie’s catalog did not have a connector that would perform to my load requirements or framing geometry, I would design my own connectors and have them fabricated using hot-rolled steel. I have used Simpson Strong-Tie connectors in ways not specifically shown in their catalog, but I have never used them in such a way that the connector would be loaded in a manner that was not shown in the catalog. Regardless of the orientation of the connector, the load path through the connector must be in accordance with the catalog because Simpson Strong-Tie tests their connectors and reports capacities based upon testing. Therefore, although an engineer may change the orientation of a connector, one would refrain from altering the load path through the connector. For example, a tension connector would only be used for tension and a shear connector would only be used for shear regardless of orientation.

7. My qualifications are further enumerated in detail in my curriculum vitae, which is Exhibit 2142.

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8. I am being compensated at a rate of \$425 per hour for the work I conduct related to this proceeding. My compensation does not depend on the content of my opinions or the outcome of the proceeding.

9. I have been retained by Patent Owner Columbia Insurance Company (“Columbia” or “Patent Owner”) to provide my opinions in the above-captioned post-grant review proceeding involving U.S. Patent No. 11,920,339 (the “‘339 Patent”, Exhibit 1001), which is titled “Method of Constructing a Fire-Resistive Wall Assembly.” I understand this post-grant review has been requested by Simpson Strong-Tie Company Inc. (“Simpson” or “Petitioner”). I understand this declaration will be entered in the above-captioned post-grant review proceeding, as an exhibit with Patent Owner’s Response to the Petition for Post Grant Review (the “Preliminary Response”) submitted by Columbia.

10. I understand the ‘339 Patent is a continuation of U.S. Patent No. 11,649,626 (the “‘626 Patent), which is a continuation of U.S. Patent No. 11,021,867 (the “‘867 Patent), which is a continuation of U.S. Patent No. 10,316,510 (the “‘510 Patent). I understand the ‘626 Patent was the subject of post-grant review numbers PGR2023-00047, PGR2023-00048, and PGR2023-00049, in which a Final Written Decision for these post-grant reviews (the “‘047-049 PGRs FWD”) was issued. I understand the ‘047-049 PGRs FWD found 103 of the original claims of the ‘626 Patent to be invalid, and two (2) of the original

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claims of the ‘626 patent to be valid. I understand the ‘867 Patent was the subject of prior post-grant review number PGR2021-00109, in which a Final Written Decision (the “‘109 PGR FWD”) was issued. I understand the 109 PGR FWD decision found 18 of the original claims of the ‘867 Patent to be invalid, five (5) of the original claims of the ‘867 Patent to be valid, and one of the amended claims of the ‘867 Patent to be patentable. I understand the ‘109 PGR FWD is currently being appealed by Simpson. I understand the ‘510 Patent was the subject of prior post-grant review number PGR2019-00063, in which a Final Written Decision (the “‘063 PGR FWD”) was issued. I understand the ‘063 PGR FWD was appealed by both Simpson and Columbia to the Federal Circuit. I understand the Federal Circuit affirmed that the original claims of the ‘510 Patent were invalid and that one of the amended claims of the ‘510 Patent was found to be patentable.

11. In providing the testimony set out in this declaration, I have reviewed the specification and claims of the ‘339 Patent, the file history of the ‘339 Patent, Simpson’s Petition for Post Grant Review of the ‘339 Patent (“Petition” or “Simpson Petition”), the prior art and other documents attached to the Petition, the declaration of Mr. Fennell (“the Fennell Declaration”) (EX1003), Columbia’s Patent Owner’s Preliminary Response (“POPR”), and the Institution Decision. I have also reviewed the following documents which have been submitted as exhibits by Columbia:

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Exhibit No.	Description
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
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

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2030	Merriam-Webster’s Collegiate Dictionary – Definition of Close
2031	New Oxford American Dictionary – Definition of Close
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. Fennell
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
2048	Proposed Stipulated Protective Order
2049	Amended Protective Order
2052	Declaration of Tom Irtmer
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
2064	January 28, 2025 Deposition of Sam Hensen
2065	March 17, 2025 Deposition of Sam Hensen
2066	January 29, 2025 Deposition of Bryan Wert
2067	April 16, 2025 Deposition of Bryan Wert
2068	January 27, 2025 Deposition of Roger Dankel

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2069	January 22, 2025 Deposition of Steven Brekke
2070	January 31, 2025 Deposition of Mark Rolf
2071	January 23, 2025 Deposition of Kristi Campbell
2072	January 24, 2025 Deposition of Mike Nelson
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
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)
2100	Simpson Emails Re: USP Fire Wall Hangers FWH Series
2101	Simpson Emails Re: DGF/DGHF and DGBF

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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
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

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2134	DGF/DGHF/DGBF Product Literature: Your Go-To, Load-Rated Fire Wall Hanger
2135	DGT/DGHT Fire Wall Hanger
2136	Simpson Emails Re: DHU/DHUTF
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
2157	ASTM E814
2158	FWH Fire Wall Hanger Installation Instructions
2159	Simpson Emails Re: USP – FWH Fire Wall Hanger
2160	File History of U.S. Application No. 17/235,349
2161	File History of U.S. Application No. 16/433,799
2162	File History of U.S. Application No. 16/225,517
2163	File History of U.S. Application No. 15/675,409
2164	File History of U.S. Application No. 14/555,049
2165	Simpson Emails Re: Do You Have a Match for This?

12. In forming my opinions, I have relied upon various legal principles as included in the Fennell Declaration and the Simpson Petition, and explained to me

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by Patent Owner’s counsel. My understanding of these principles is summarized below.

13. I understand that in patent law a patent’s claims define the scope of protection for the claimed invention.

14. I understand that the validity of a patent’s claims is determined on a claim-by-claim basis.

15. I understand that in this proceeding, Petitioner has the burden of proving that the challenged claims would have been unpatentable by a preponderance of the evidence.

16. Ground 1 of the Petition argues that claims 1-31 of the ‘339 Patent should be invalidated because certain limitations purportedly lack written description support. I understand that U.S. patent law requires the patent application from which the patent matured provide a written description sufficient to convey to a person having ordinary skill in the art (“POSA”) that the inventor had possession of the claimed subject matter as of the effective filing date. I further understand that the drawings within a patent application are part of the written description and may be sufficient on their own to provide the required written description of the invention.

17. Ground 2 of the Petition argues that claims 1-31 of the ‘339 Patent should be invalidated because certain claim limitations are purportedly indefinite.

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I understand that a patent claim is invalid as indefinite if when read in light of the patent’s specification and the prosecution history, the claim fails to inform those skilled in the art as to the scope of the invention with reasonable certainty.

18. Grounds 3-11 of the Petition argue that claims 1-22, 24, 25, and 27-31 of the ‘339 Patent should be invalidated as obvious over one or more combinations of prior art references. I understand a claim is unpatentable as obvious if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious to a person of ordinary skill in the art at the time of the invention.

19. I understand that the question of obviousness is resolved based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of non-obviousness.

20. I further understand that for each of its obviousness grounds, Petitioner must demonstrate that a person of ordinary skill would have: (1) a motivation to combine the relevant references and (2) a reasonable expectation of success of developing the claimed invention.

21. I understand that the United States Patent and Trademark Office (“PTO” or “USPTO”) will interpret the claims of the ‘339 Patent as they would have been understood by those of ordinary skill in the art at the time of the

invention in view of the claim language itself, the patent specification, and the patent’s prosecution history.

22. I have been informed that the time of the invention or effective filing date of the invention for the ‘339 Patent is the filing date of U.S. Patent Application No. 14/555,049 (the first non-provisional application filed based on U.S. Provisional Application No. 61/922,531), which I have been informed is November 26, 2014.

23. In forming my opinions, I have applied the understanding of one of ordinary skill in the art working at the time of the invention claimed in the ‘339 Patent, i.e., prior to November 26, 2014. I have been informed Columbia has advanced that a person of ordinary skill in the art at this time would be a person who would have an acquired body of knowledge gained through formal education, or practical experience providing an equivalent to, a Bachelor of Science in Mechanical Engineering, Civil/Structural Engineering, or a related/equivalent field, and at least four years of work experience: with (1) construction connector design, development, or use, (2) drywall construction practices/sequencing, and (3) performance requirements related to fire rated drywall construction. Based on my review of the ‘339 Patent and the concepts—such as fire protection, joist/truss hangers, wood-framed walls, and drywall—discussed in the ‘339 Patent, I agree the person of ordinary skill in the art would have this knowledge.

II. THE INVENTION CLAIMED IN THE ‘339 PATENT

24. The ‘339 Patent pertains to the method of constructing a fire-resistive wall assembly. EX1001: claims 1 and 27. The method uses a fire wall hanger, a wood-framed wall, and fire-retardant sheathing. EX1001: claims 1 and 27. With reference to Figs. 1 and 2 (reproduced below), the fire wall hanger (26) includes (i) a channel-shaped portion (38) sized and shaped to receive a structural component, such as an end of a truss (12), (ii) a connection portion (42) configured for attachment to the wood-framed wall (28), and (iii) an extension portion (40) interconnecting the channel-shaped portion and the connection portion. EX1001: Abstract, 4:37-40. The wood-framed wall (28) has a top plate (30) and studs (32) extending down from the top plate. EX1001: 4:18-20. In the embodiment shown and described, the fire-retardant sheathing (34) comprises two layers of 5/8-inch-thick gypsum board (also called drywall). EX1001: 4:21-25.

FIG. 1

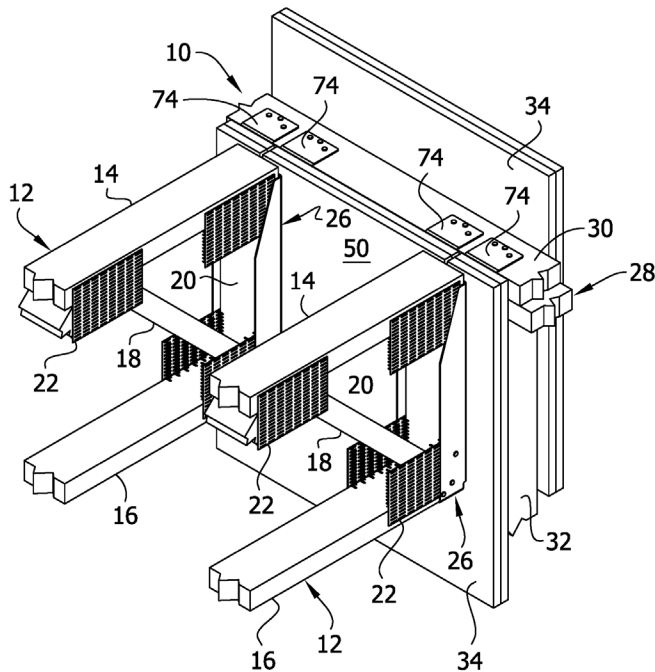
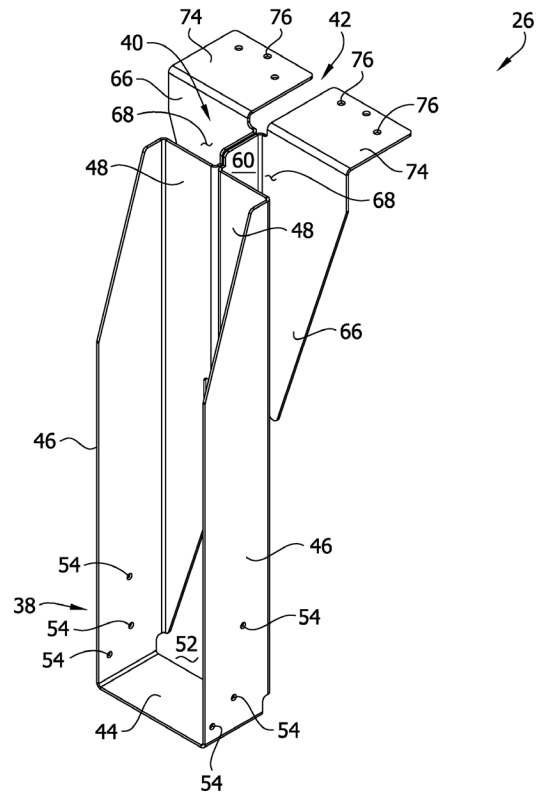
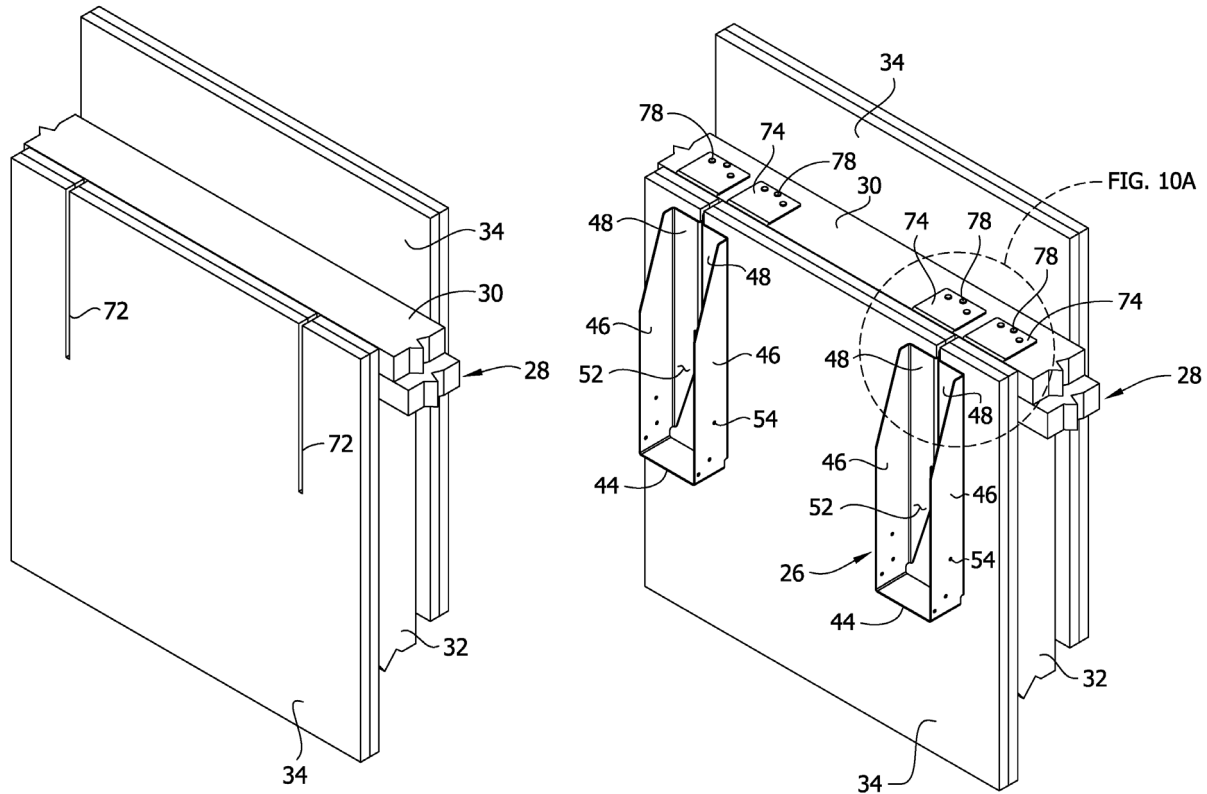


FIG. 2



EX1001: Figs. 1 and 2.

25. The ‘339 Patent’s claimed method has several steps. One step is mounting the fire wall hanger (26) on the wood-framed wall (28). EX1001: claims 1 and 27. Another step is cutting an opening or slot (72) into an exterior edge of the fire-retardant sheathing (34), as shown in Fig. 9 (reproduced below). EX1001: claims 1 and 27, 7:26-27.



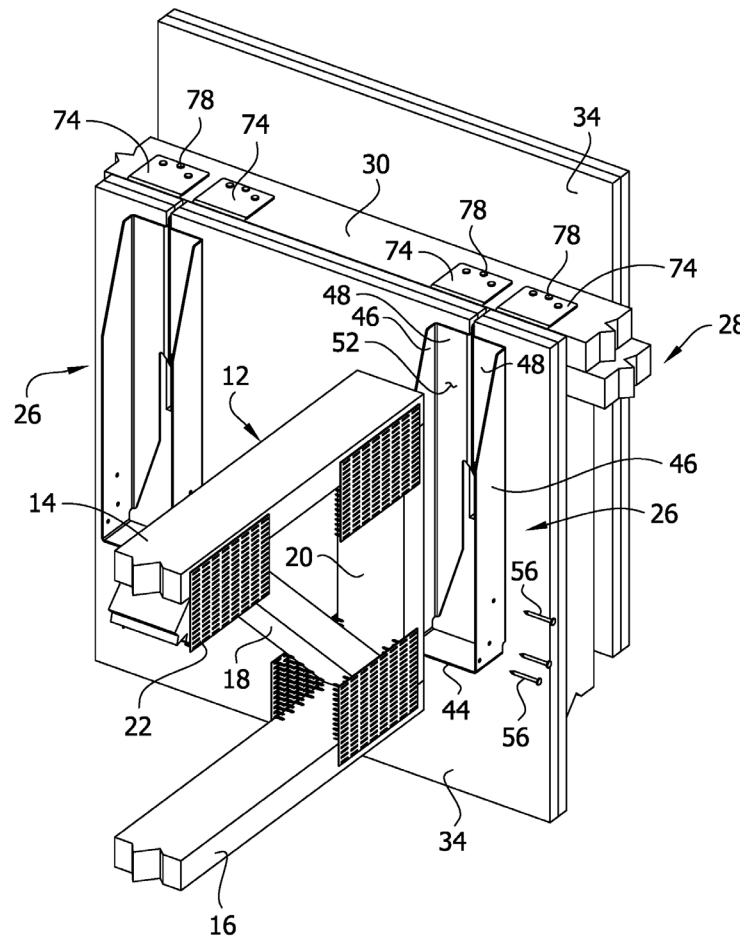
EX1001: Figs. 9 and 10.

26. The next step is installing the fire-retardant sheathing (34) on the frame wall (28). The ‘339 Patent’s claimed method recites a particular order of construction of the fire-resistive wall assembly—the fire-retardant sheathing (34) is installed on the frame wall (28) after the fire wall hanger (26) has already been mounted on the wood-framed wall. Claim 1 recites “*after* mounting the fire wall hanger [26] on the frame wall [28] and *after* cutting the opening [72] into the ... fire retardant sheathing [34], *installing* the fire retardant sheathing with respect to the frame wall.” EX1001: claim 1. Claim 1 of the ‘339 Patent recites two sub-parts or sub-steps for the fire-retardant sheathing (34) installing step. The first sub-

part is “inserting the fire retardant sheathing [34] between the channel-shaped portion [38] of the fire wall hanger [26] and the frame wall [28].” EX1001: claim

1. The second sub-part is “moving the fire retardant sheathing ... so that ... the fire wall hanger extends through the opening [72] in the fire retardant sheathing.”

EX1001: claim 1.



EX1001: Fig. 12.

27. The benefits of this order of assembly are described by the ‘339 Patent as (i) “*simplif[ing] construction*” by allowing the building to be completely framed and roofed before requiring the sheathing 34 to be installed” and (ii) allowing

“[t]rade workers (e.g., mechanical, electrical) [to] have *complete access to the wall cavity* to install components without interference from the sheathing 34.” EX1001: 7:67-8:5. I concur that these are indeed benefits to this order of construction.

28. Independent claim 27 is similar to independent claim 1. Independent claim 27 also pertains to the method of constructing a fire-restive wall assembly. EX1001: claim 27. Independent claim 27 also recites the same order of assembly as independent claim 1, that the fire-retardant sheathing (34) is installed after the fire wall hanger (26) is already mounted on the frame wall (28). EX1001: claim 27. The dependent claims of the ‘339 Patent recite further details regarding the method of construction. The method of construction indicated allows for the trusses (12) and subfloor to be installed prior to the fire-retardant sheathing (34). The installation of the trusses and subfloor provide a complete load path to transfer lateral loads of the building into the foundation. This methodology makes a safer construction site with less danger of a building collapse or partial building collapse due to incomplete load path.

29. Based on the assembly method claimed by the ‘339 Patent and the purpose of the fire wall hanger (26) shown and described by the ‘339 Patent, it is my opinion a person of ordinary skill in the art would be concerned with both structural performance and fire-protection performance. The hanger is described as “a hanger for connecting a structural component to a wall...” EX1001: 1:50-51.

The claims recite that the channel shaped portion of the fire wall hanger is

“...sized and shaped to receive a structural component...” EX1001: Claims 1, 27.

A person of ordinary skill would recognize that a “structural component” is a load-bearing element and the hanger transfers the load from the structural component to the wall. Therefore, it is my opinion, the structural performance of the hanger would be an important consideration in its design and installation.

30. Furthermore, the specification of the ‘339 Patent repeatedly teaches the importance of minimizing openings or interruptions in the fire-retardant sheathing to avoid compromising the required fire related performance:

- “The truss 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.” EX1001: 4:34-36.
- “the integrity of the fire retardant sheathing should be maintained and interruptions of the sheathing kept to a minimum.” EX1001: 1:44-46.
- “The truss hanger 26, 126 permits a floor truss 12 to be secured to a wall 28 through fire retardant sheathing 34 with minimal interruption to the sheathing. Installation of the truss hanger minimally disrupts the continuity of the sheathing and therefore does not reduce the fire resistive rating of a fire rated assembly. The extension flanges 60, 160 extend through the fire retardant sheathing 34 so that the sheathing is interrupted only by the slot 72 required to receive the flanges.” EX1001: 11:33-41.

III. THE ASSERTED PRIOR ART

A. U.S. Patent No. 9,394,680 to Bundy (EX1005)

31. U.S. Patent No. 9,394,680 (“Bundy”) is a patent assigned to Simpson. EX1005.

32. Bundy represents Simpson’s own attempt at developing a fire wall hanger. EX1005. Bundy’s filing date is December 14, 2013. EX1005. This is less than three weeks before the filing date (December 31, 2013) of U.S. Provisional Application No. 61/922,531, which disclosed the orthogonal version of the fire wall hanger shown and described in the ‘339 Patent. EX1001. Thus, Bundy represents Simpson’s own attempt to develop a fire wall hanger at the same time as the ‘339 Patent. However, the ‘339 Patent and Bundy have different approaches.

33. Bundy discloses a joist hanger 92) that is capable of installation over “one or more generally vertical drywall panels.” EX1005: Abstract.

34. As shown below in Figs. 1 and 2, the Bundy’s joist hanger (2) is installed on a wood structural support member or top plate (4) of a wall having one or more drywall panels (6) already mounted thereon. EX1005: 3:55-59 and 2:20-25. The top plate (4) of the wall is preferably made of two pieces of 2x4 dimensional lumber. EX1005: 6:4-5.

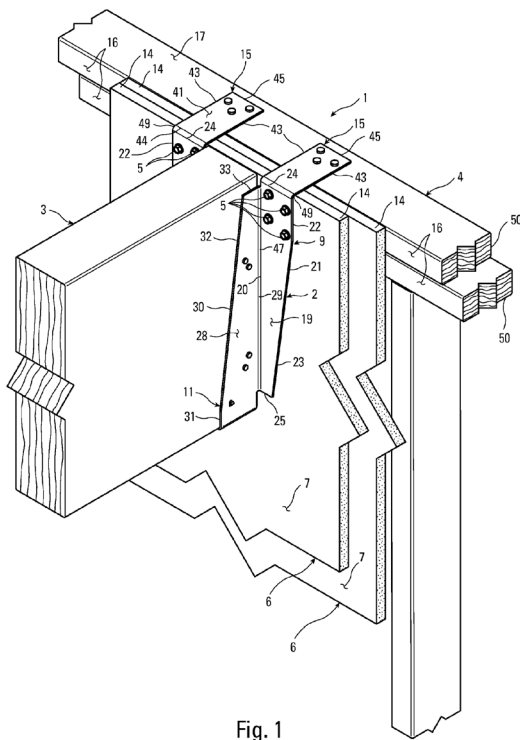


Fig. 1

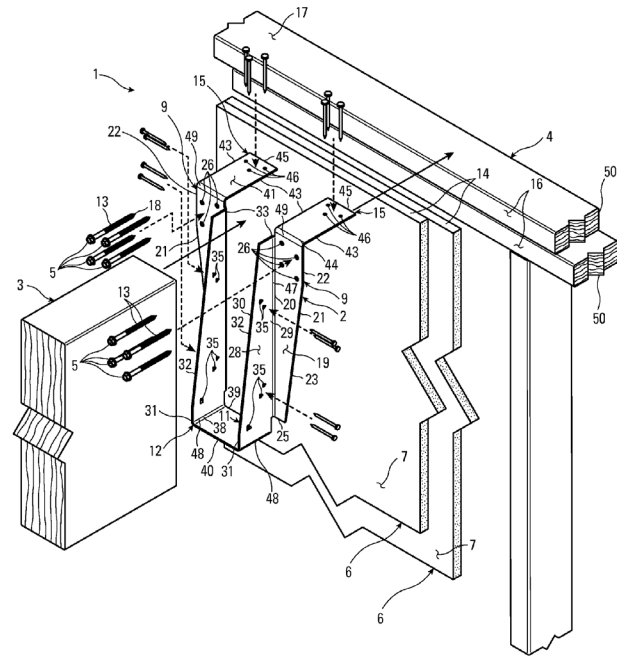


Fig. 2

EX1005: Figs. 1 and 2.

35. Bundy's joist hanger (2) includes a seat member (12) supporting the joist (3) and first and second side members (11) extending upward from the seat member along either side of the joist. EX1005: 5:23-26, Fig. 2 (annotated).

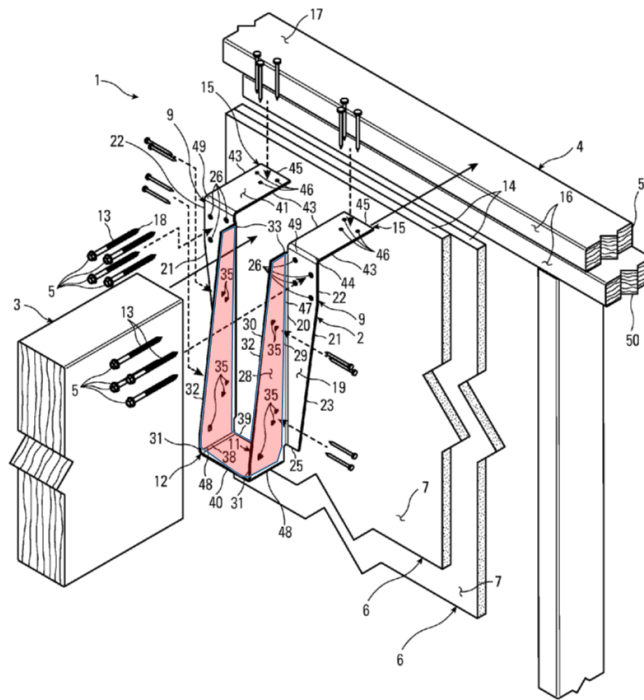


Fig. 2

EX1005: Fig. 2 (annotated).

36. The joist hanger (2) has first and second back plate members (9) extending outward from respective side members (11). EX1005: 4:5-16, Fig. 2 (annotated).

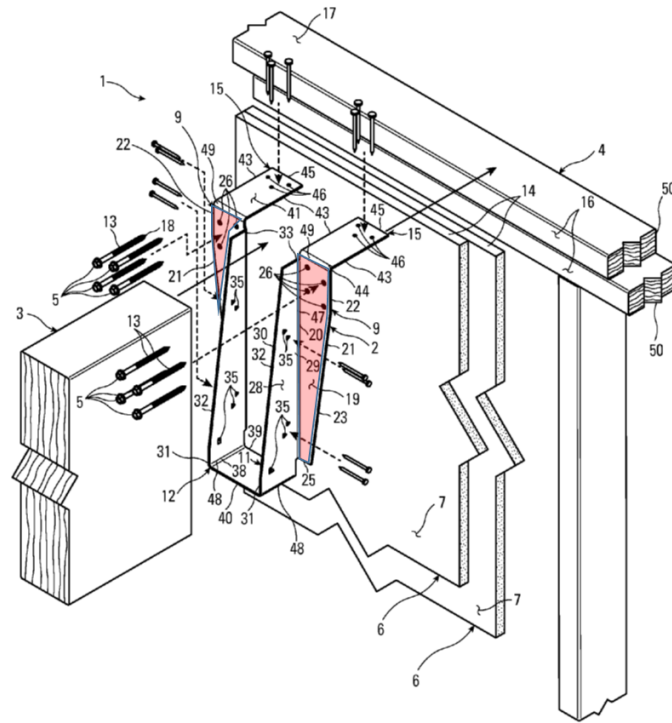


Fig. 2

EX1005: Fig. 2 (annotated).

37. The joist hanger (2) has top flanges (15) extending rearward from the respective back plate members (9). EX1005: 5:39-43, Fig. 2. The top flanges (15) extend over the top of the drywall panels (6) for attaching the joist hanger to the top surface of the top plate of a wall. EX1005: 5:39-43, Fig. 2 (annotated).

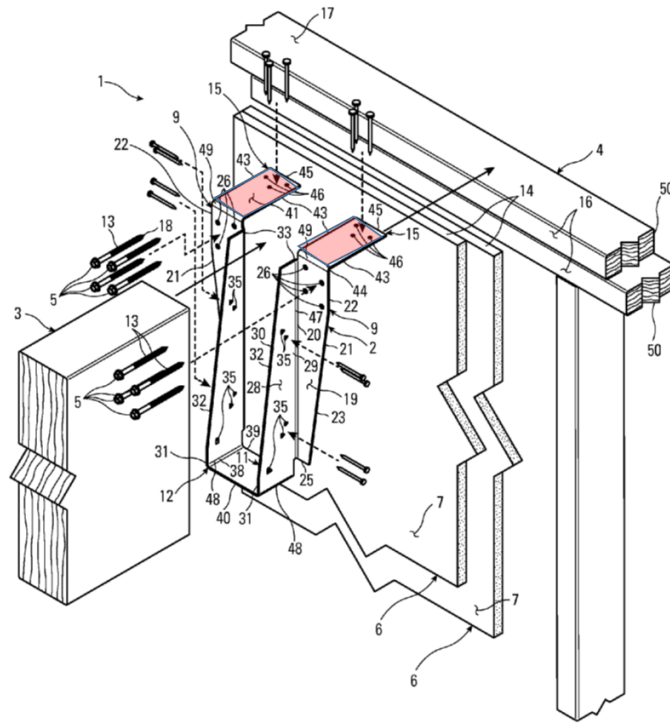


Fig. 2

EX1005: Figs. 2 (annotated).

38. The joist hanger (2) is mounted on the top plate (4) of the wall after the drywall panels (6) are installed on the wall. EX1005: Figs. 1 and 2. Thus, Bundy requires a different order of construction than the ‘339 Patent’s claims.

39. In Bundy, the drywall panels (6) are mounted on the wall *before* the joist hanger (2) is mounted on the top plate (4) of the wall. EX1005: Fig. 2, 2:20-25. Bundy states “[t]he drywall [is] applied to the [] supporting member ..., and the joist hanger can *then* be attached.” EX1005: 2:20-25. To install the joist hanger (2), the joist hanger is positioned such that “[t]he first and second top

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flanges 15 preferably extend over the top edge faces 14 of the one or more panels 6.” EX1005: 5:42-43, Fig. 1. The joist hanger (2) is placed onto the wall such that the top flanges (15) are fastened to the top face (17) of the top plate (4) and the back plate members (9) interface with the front face (7) of the outermost drywall panel (6). EX1005: 5:45-49, 6:14-17, Fig. 1. Nails (5) are then inserted through the top flanges (15) and back plate members (9) and into the drywall panels (6) and top plate (4) to secure the joist hanger (2) to the wall. EX1005: 5:45-52, 4:16-23.

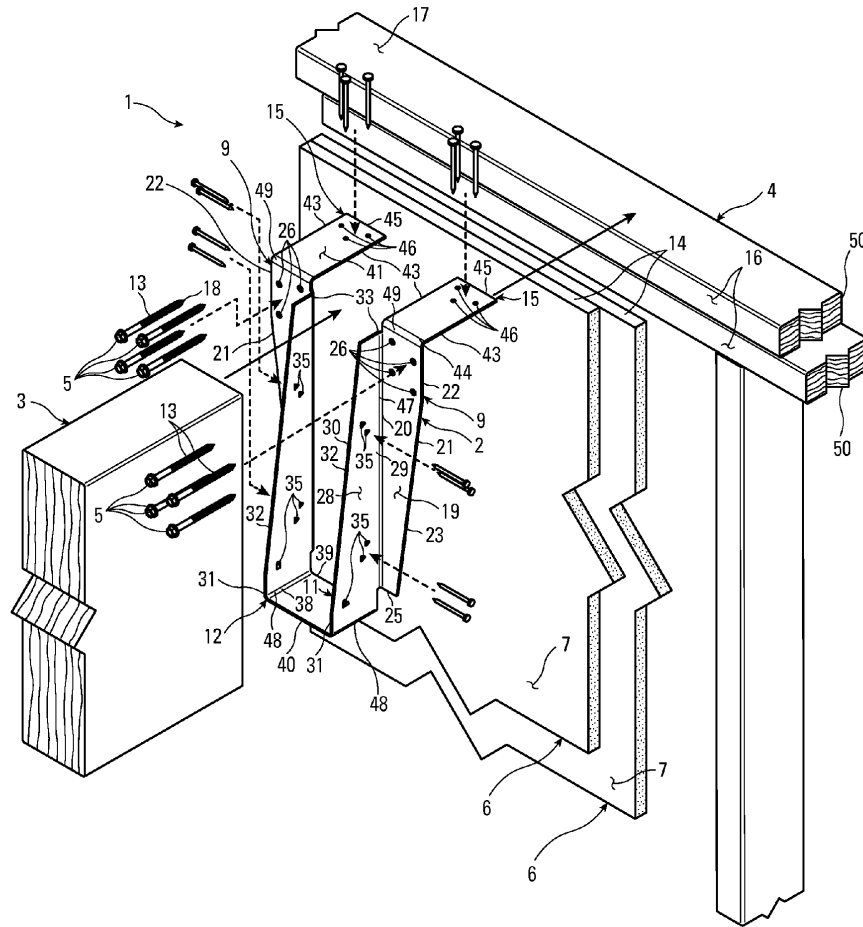


Fig. 2

EX1005: Fig. 2.

40. As shown below in Fig. 3, the vertical position of the joist hanger (2) is set by the engagement of the top flanges (14) with the wall top plate (4) and the horizontal position of the joist hanger (2) is set by the engagement of the back plate members (9) with the drywall panel (6). EX1005: Fig. 3, 5:45-49, 6:14-17.

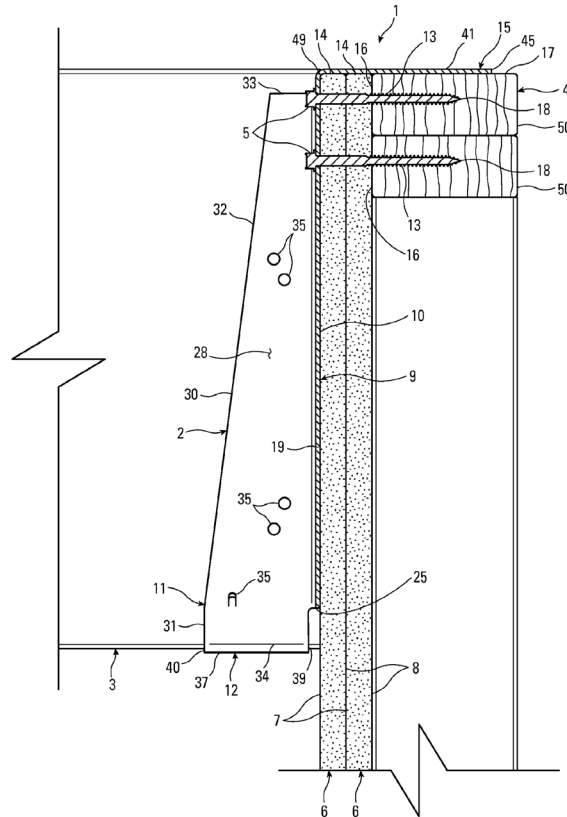


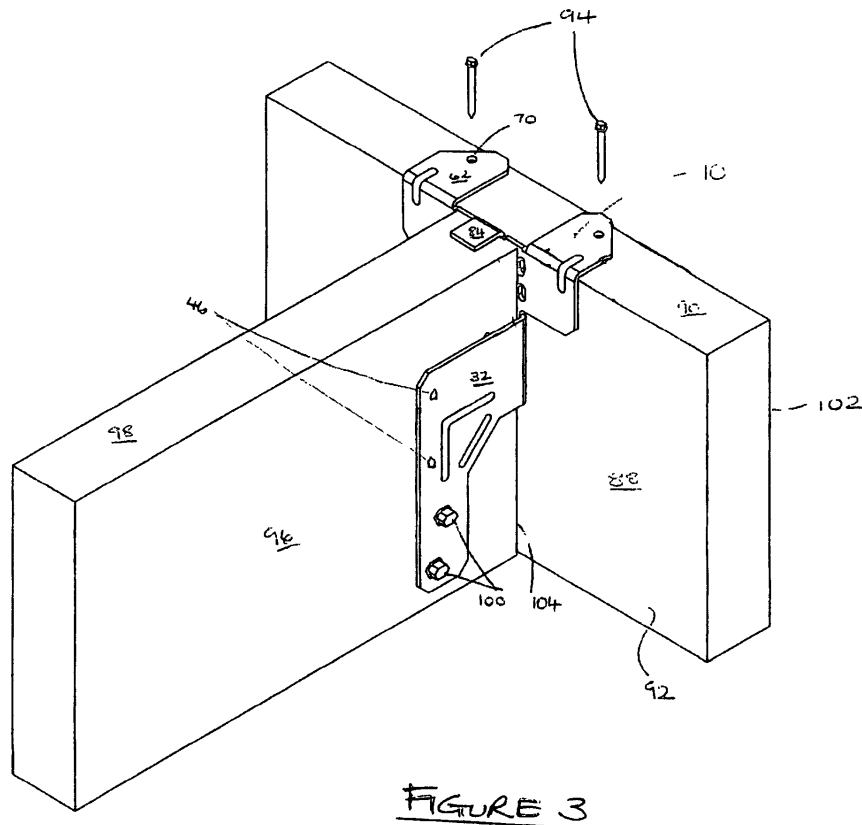
Fig. 3

EX1005: Fig. 3.

41. Bundy explains extending the joist hanger (2) over the drywall panels (6) “[i]mportantly, [] does not require any alteration of the drywall.”. EX1005: 2:18-19. Bundy’s differences with the ‘339 Patent include the drywall panels (6) being installed on the wall *before* the joist hanger (2) (not after as recited by the claims of the ‘339 Patent), and the joist hanger (2) of Bundy extending over the top of the drywall panels (6) (not through an opening in the drywall panels as recited by the claims of the ‘339 Patent).

B. G.B. Publication No. 2,451,853 to Cullen (EX1004)

42. Great Britain Publication No. 2,451,853 (“Cullen”) discloses “[a] bracket (10) in the form of a joist hanger for use in timber construction such as decking.” EX1004: Abstract. The bracket (10) connects a joist (96) to a sill (88). EX1004: Fig. 3, 10:10-12, 16:23-28.



EX1004: Fig. 3.

43. With reference to Fig. 1 (reproduced below), the bracket (10) includes a back plate (12) for placement against the sill (88) and side walls (30, 32) that extend along the sides of the joist (96). EX1004: 10:16-31, 16:13-14. The bracket (10) has bearing plates (62, 64) extending rearward from the back plate (12) to

engage the upper surface of the sill (88). EX1004: 11:24-27, 16:2-4. The bracket (10) seats the joist (96) all the way against the back plate (12), which in turn is placed against the sill (88). EX1004: Fig. 3, 16:13-14. The bracket (10) includes barbs (31, 33) at the interface between the side walls (30, 32) and the back plate (12). EX1004: Fig. 1, 11:11-12, 4:8-12. These barbs (31, 33) engage the joist (96) to “prevent [the joist’s] withdrawal” from the bracket. EX1004: Fig. 1, 11:11-12, 4:8-12. “[T]he one or more barbs are arranged to allow insertion of a joist into the bracket, but prevent its withdrawal.” EX1004: 4:8-10.

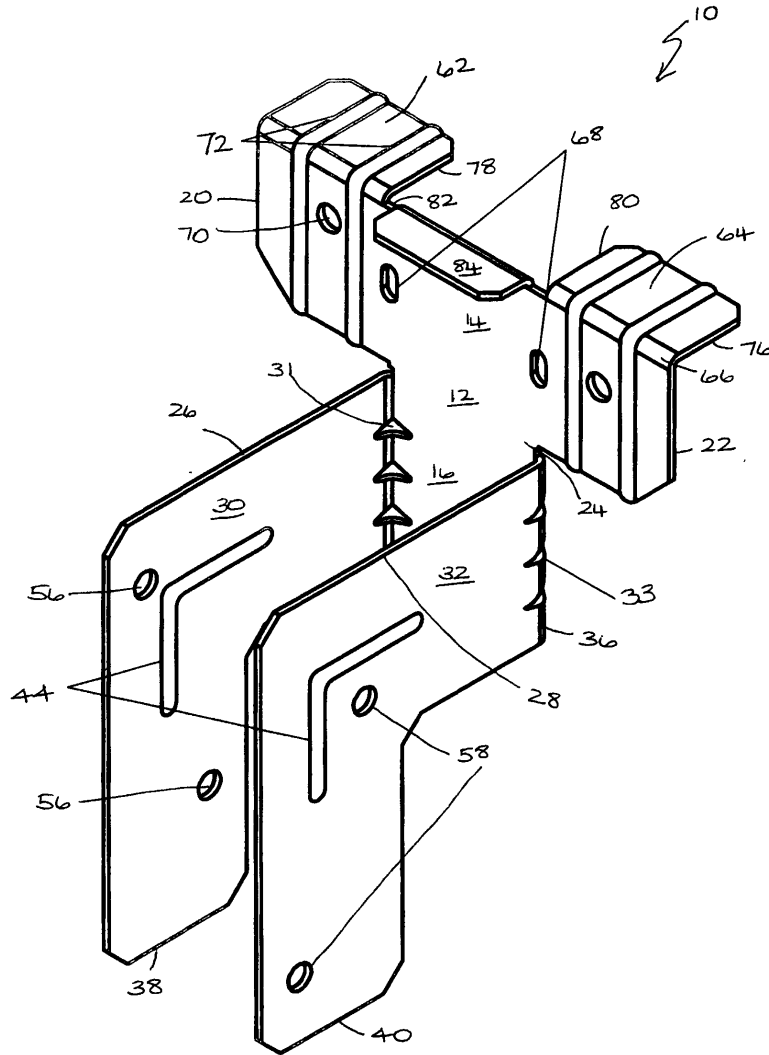


FIGURE 1

EX1004: Fig. 1.

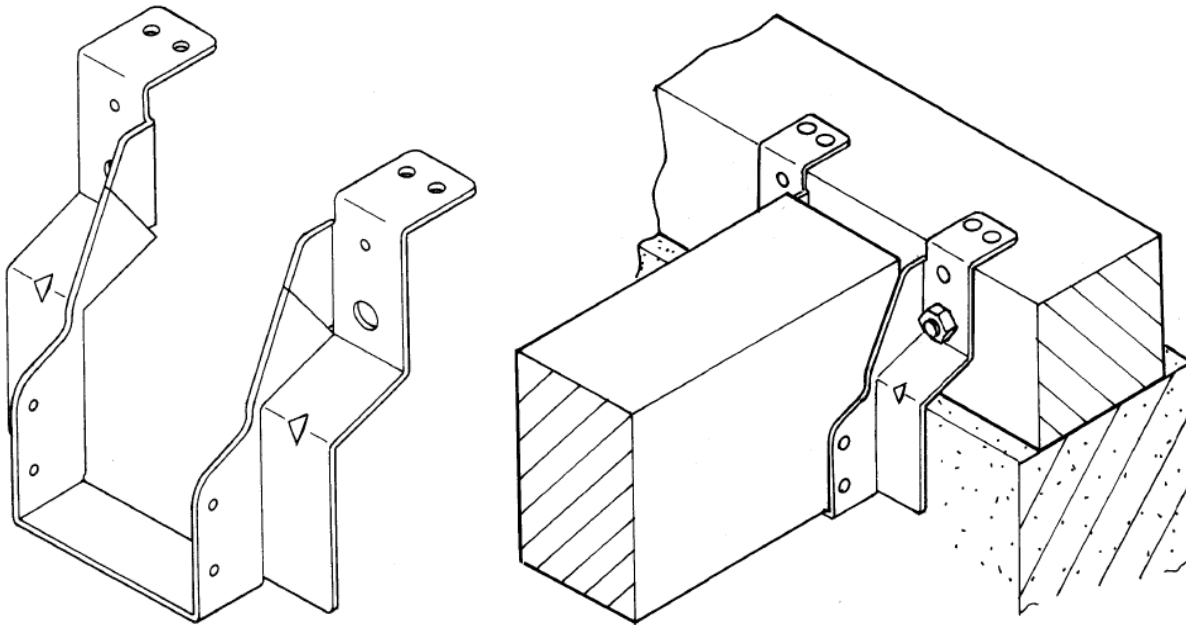
44. The bracket (10) has a location tab (84) to engage and position the joist (96). EX1004: Figs. 1 and 3, 13:1-5. Cullen explains “[t]he tab 84 is arranged so that a [] top surface of a joist located against it at the surface 86 will align with the top surface of the sill or bearing member. In this way the timber

panels or boards fixed over the sill and joists to make the decking platform will be located on an even surface.” EX1004: 13:1-4.

45. Cullen makes no mention of drywall, sheathing, nor fire resistance. EX1004. Cullen does not include the following terms: “drywall,” “gypsum,” “sheathing,” and “fire.” In addition, because Cullen seats the joist (96) against the back plate (12), which in turn rests against the sill (88), Cullen does not allow, or even contemplate, the installation of drywall between the joist and the sill. EX1004.

C. Japanese Design Patent No. D1213894 to Yamaguchi (EX1007)

46. Japanese Design Patent No. D1213894 (“Yamaguchi”) discloses “a joist bracket that is attached to sills and bears a joist bridging the sills.” EX1007: 1. I have been informed that Yamaguchi is a design patent that covers the visual appearance of the illustrated joist bracket.



EX1007: Perspective Views, Reference Diagram Illustrating Usage State.

47. Yamaguchi’s written description is brief. The “Description of Article of Design” [55] states, “The present article is a joist bracket that is attached to sills and bears a joist bridging the sills”. In the “Reference Diagram Illustrating Usage State” (shown above), Yamaguchi’s joist bracket connects a joist to a wooden sill sitting on a foundation wall made of concrete. EX1007. The foundation wall is thicker than the wooden sill. EX1007. The function and purpose of Yamaguchi’s joist bracket is similar to the beam hanger disclosed in Japanese Publication No. H3-14482 to Tsukamoto (EX1008), as Tsukamoto’s beam hanger also attaches a beam (6) to a wooden base (4) on top of a foundation wall (8), as shown in Figs. 5 and 6. EX1008: Figs. 5 and 6. I understand Tsukamoto was applied in some of the previous PGRs.

48. Yamaguchi makes no mention of drywall, sheathing, nor fire resistance. EX1007. Yamaguchi does not include the following terms: “drywall,” “gypsum,” “sheathing,” and “fire.” EX1007.

D. G.B. Publication No. 2,433,522 to Robinson (EX1011)

49. Great Britain Publication No. 2,433,522 (“Robinson”) discloses “a joist hanger for affixing a timber joist to masonry.” EX1011: Abstract. Robinson’s joist hanger (100) has “a shoe 112 for supporting a joist and a flange 120 for suspending the hanger 100 from masonry or the like.” EX1011: 4:1-2. The shoe (112) is spaced apart from a second surface (122) by a mount (124) and a dividing wall (136). EX1011: Fig. 2, 4:5-16. This forms a duct opening (126) in the joist hanger (100) for cables and pipes to extend through. EX1011: Fig. 2, Abstract, 1:24-30, 2:20-21, 4:13-19, 5:12-13. The duct opening (126) eliminates “the need to drill holes in a joist in order to run cables, pipes, and the like past the joist.” EX1011: Fig. 2, Abstract, 1:24-30, 2:20-21, 4:13-19, 5:12-13.

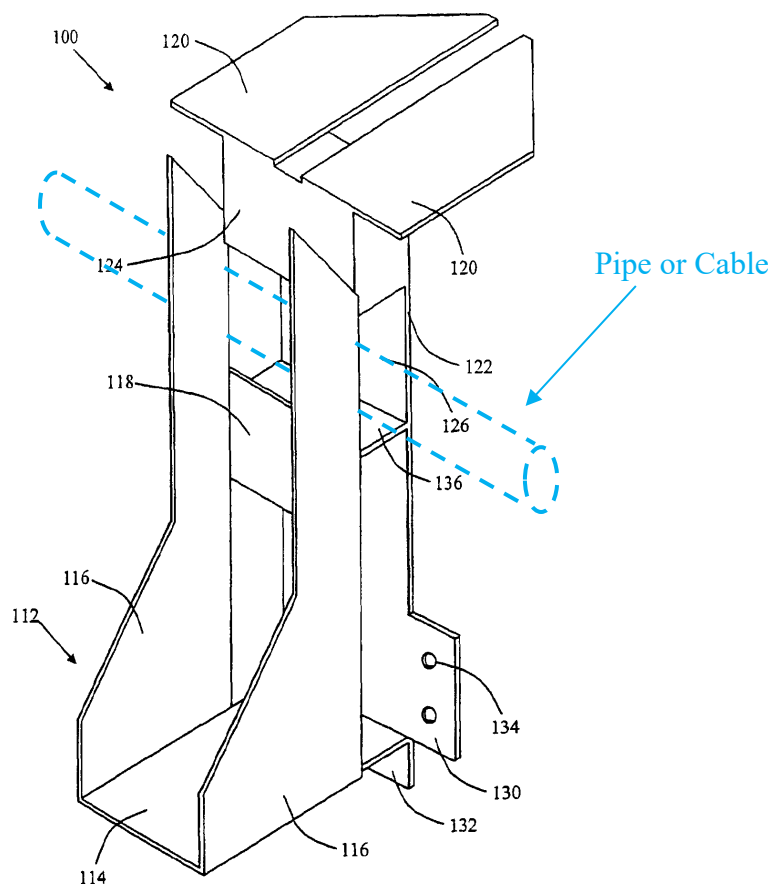


Figure 2

EX1011: Fig. 2 (annotated).

50. Robinson makes no mention of drywall, sheathing, nor fire resistance.

EX1011. Again, Robinson does not include the following terms: “drywall,”

“gypsum,” “sheathing,” and “fire.” EX1011. Likewise, Robinson would require

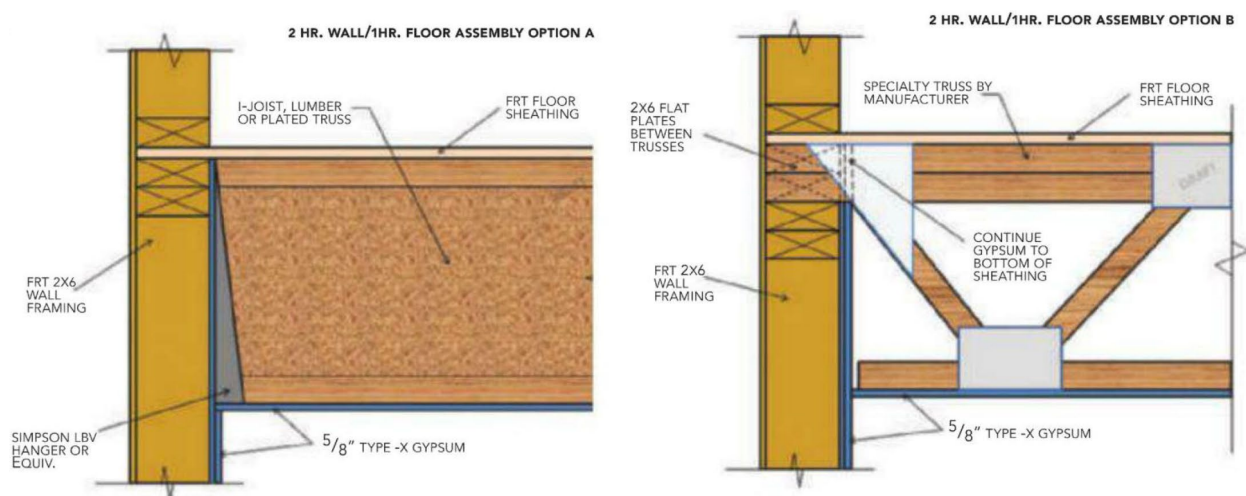
the drywall to be significantly altered with a large cutaway section that would have

to be fire-protected with fire-rated caulk. Additionally, Robinson would be very

difficult to manufacture requiring welding of multiple parts.

E. Architectural Record: Mass Timber and Wood Framing (EX1031)

51. Architectural Record is a monthly magazine publication dedicated to architecture. The November 2012 edition of Architectural Record contains an article entitled “Mass Timber and Wood Framing” (“ArchRecord”). EX1031: 5-9. This article is a promotional advertisement that discusses the ability to use mass timber and wood framing in mid-rise construction. EX1031: 5 (“Educational-Advertisement” in the heading). The article provides no detailed discussion of framing connections. This article also discusses traditional wood-frame construction techniques such as balloon framing, platform framing, and semi-balloon framing. EX1031: 6. In discussing these different types of wood-frame construction techniques, the ArchRecord includes the following image:



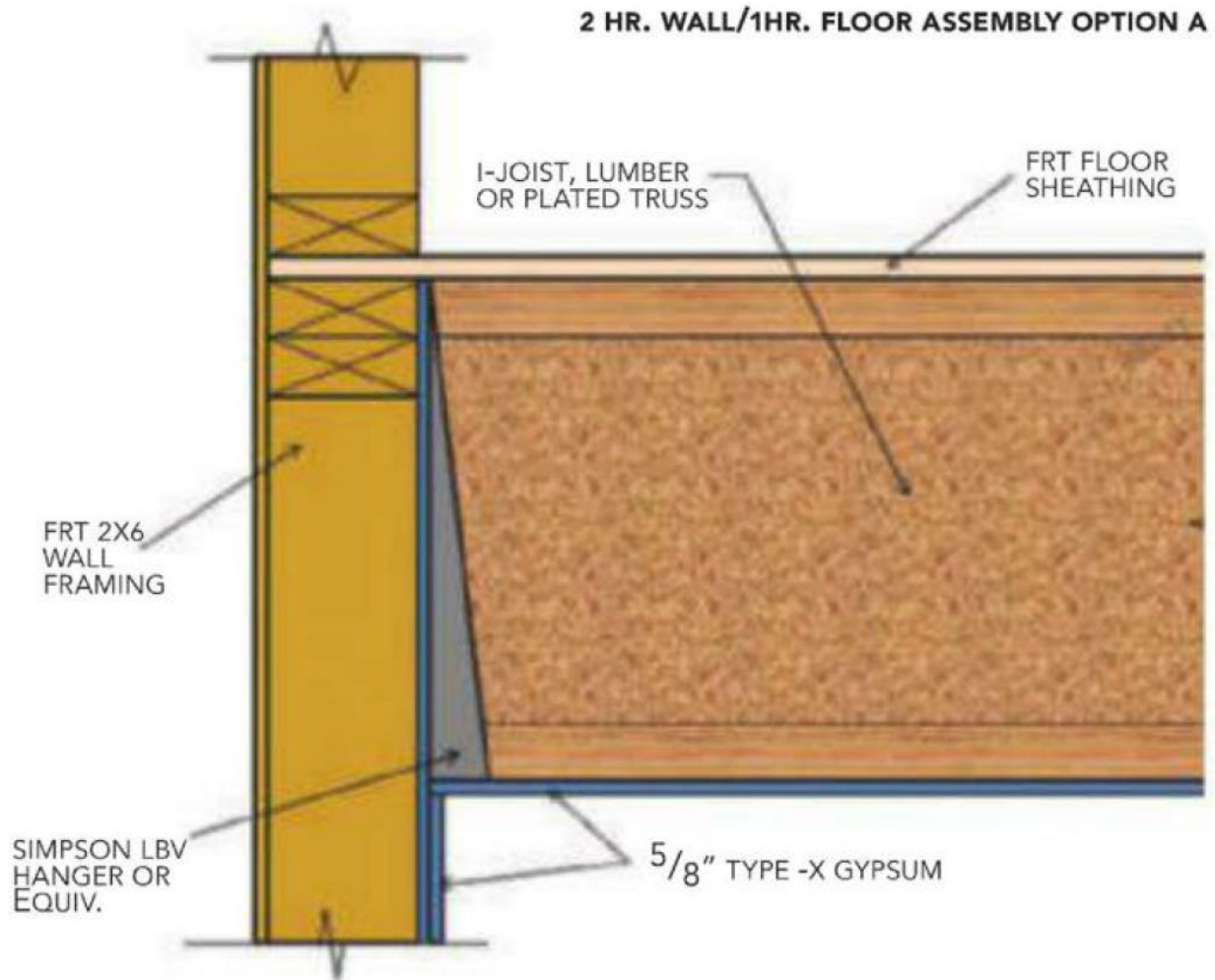
(LEFT) Semi-balloon framing is more common in buildings five stories and higher; (RIGHT) it is often used as an alternative to platform framing where fire requirements or shrinkage may be a challenge.

EX2008: 6; EX1031: 6.

52. I understand EX2008 is an electronic version of ArchRecord and is being used because EX2008 provides a better resolution of the image from EX1031.

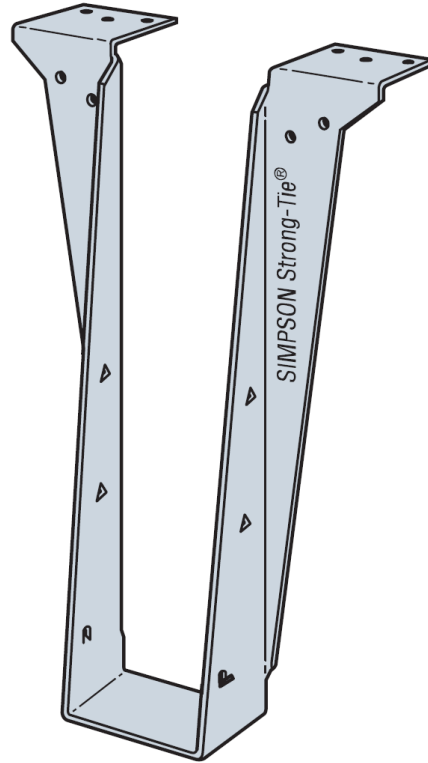
53. This image illustrates two types of wood frame construction: Option A (left side of image) and Option B (right side of image). The caption identifies Option A as illustrating semi-balloon framing. The caption for Option B states that semi-balloon framing is often used as an alternative to platform framing. EX1031: 6. Based on my experience, Option B illustrates a top-chord bearing truss connection to a wood-framed wall. In this type of connection, the top-chord of the truss extends over and rests on the wood-framed wall.

54. Option A for semi-balloon framing is shown below. ArchRecord states “[w]here balloon framing has a continuous stud from foundation to roof, semi-balloon framing does not.” EX1031: 6.



EX2008: 6; EX1031: 6.

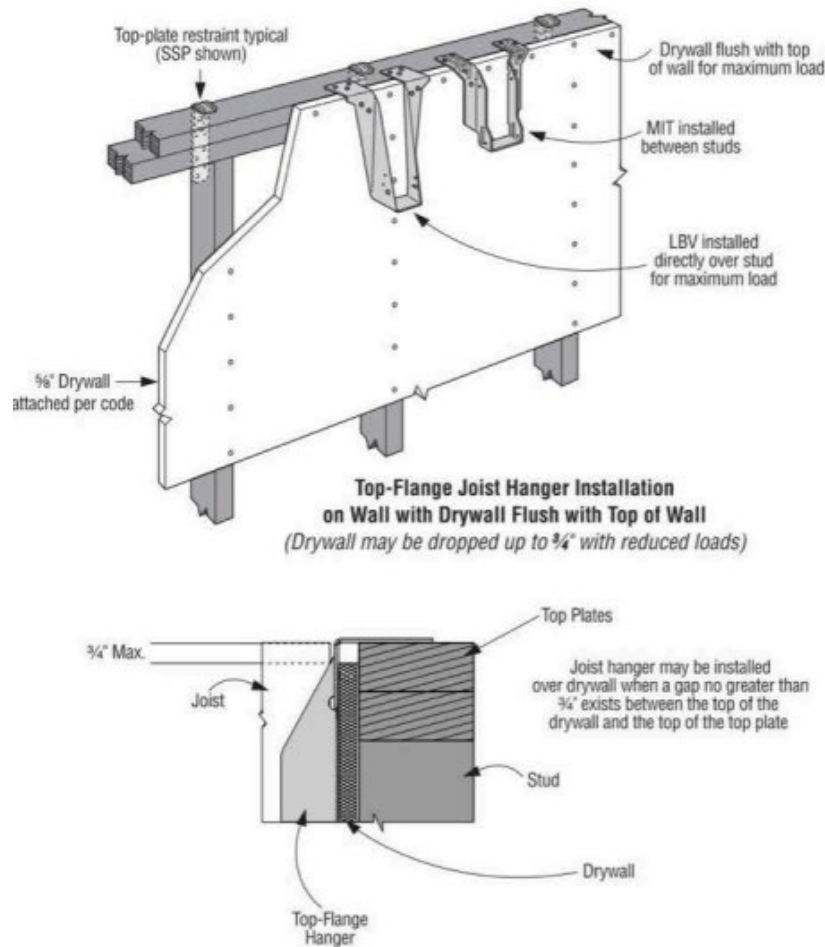
55. Option A identifies Simpson’s LBV hanger (shown below) as a suitable joist hanger to connect the joist to the wood-framed wall. EX1031: 6 (“SIMPSON LBV HANGER OR EQUIV”). EX1031: 6.



LBV

EX2009.

56. ArchRecord shows the Simpson’s LBV hanger installed over the drywall panels mounted on the wood-framed wall. EX1031: 6. Option A is consistent with Simpson’s Technical Bulletin for installing an LBV hanger over sheathing that was submitted as EX1012 (shown below). Thus, Option A is no different than Bundy. EX1005: Fig. 1.



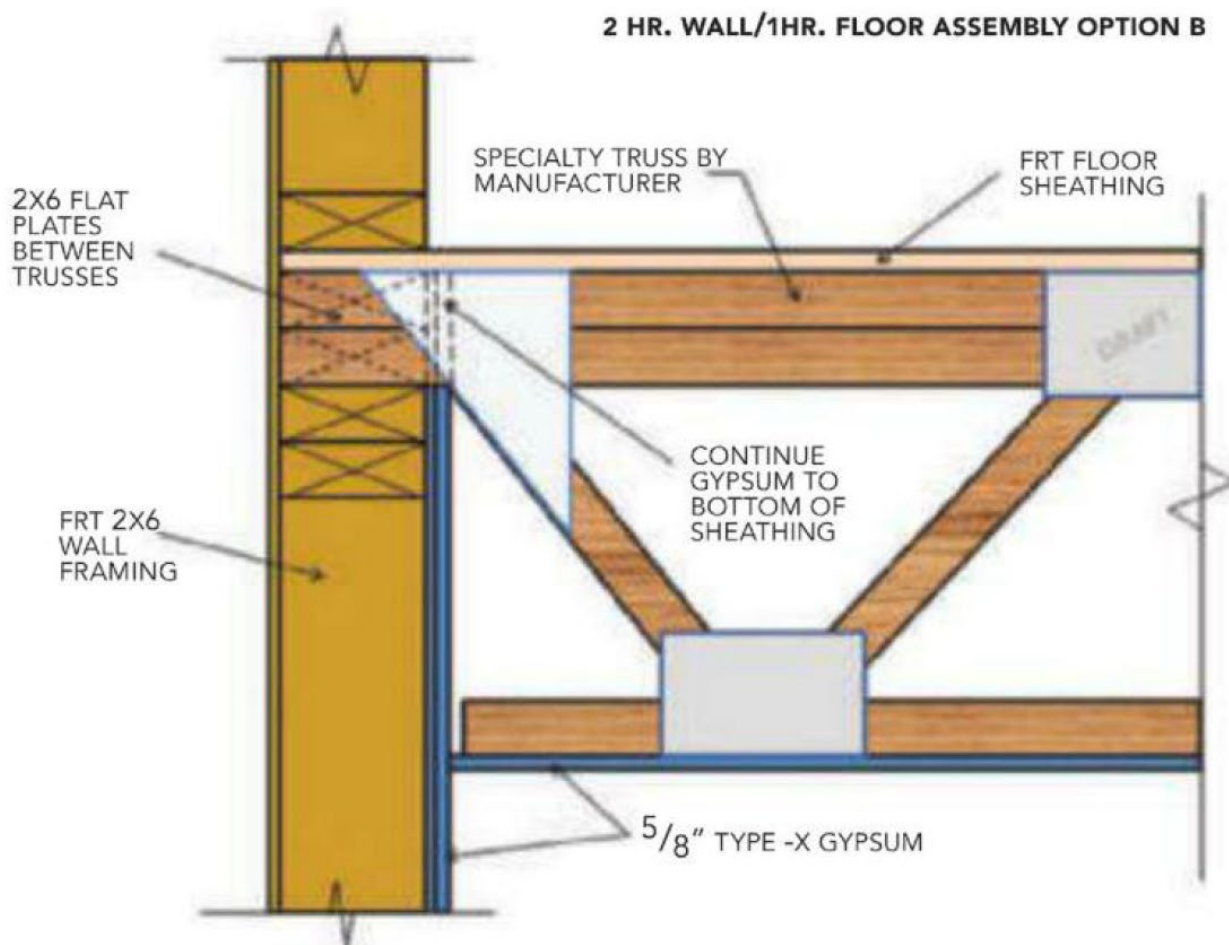
EX1012: 2.

57. Option B is shown below. Option B “does not require hangers.”

EX1031: 6. Instead, the trusses in Option B’s hybrid framing method “bear [directly] on the top plates” of the wood-framed walls extending between each floor. EX1031: 6. The top chords of the trusses bear directly on the top plates of the wood-framed walls. No hangers are illustrated or called out in Option B. Truss nailing plates (illustrated by triangular/square white/gray members) are

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shown connecting the chords to the webs of the truss, but these nailing plates are part of the truss. The nailing plates are not hangers.



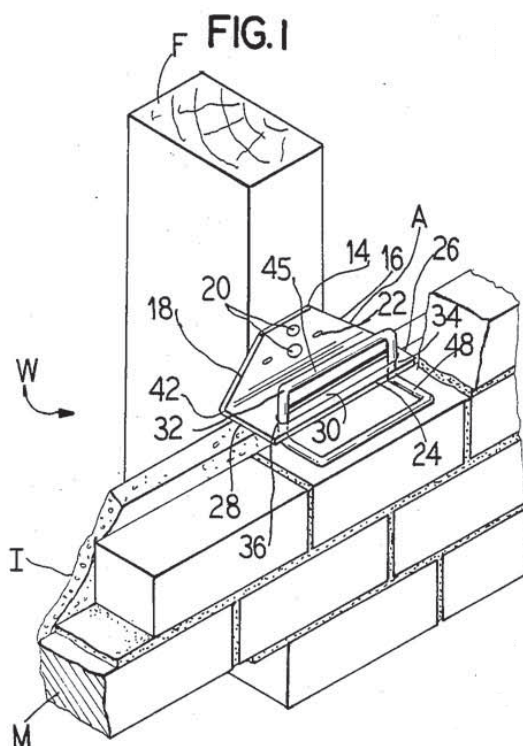
EX2008: 6; EX1031: 6.

F. U.S. Patent No. 4,827,684 to Allan (EX1006)

58. U.S. Patent No. 4,827,684 (“Allan”) discloses a masonry veneer wall anchor for tying a masonry veneer wall to the framing of a building. EX1006: 1:6-8.

59. Allan shows and describes an anchoring means or wall anchor (A) used to tie a masonry veneer wall (M) to a building frame member (F) of a wall

structure (W). EX1006: Abstract, 3:12-20. The wall anchor (A) is an angle iron made of two legs (10, 12). EX1006: 3:21-26. The wall structure (W) includes a plasterboard sheet insulation layer (I) between the masonry veneer wall (M) and the building frame member (F). EX1006: 3:12-20. One leg (10) of the wall anchor (A) is secured to the building frame member (F) and the other leg (12) extends through the insulation layer (I) and connects to a tie (32) embedded in the masonry veneer wall (M), thereby tying the building frame member to the masonry veneer wall. EX1006: Fig. 1, 3:28-33, 4:15-18.



EX1006: Fig. 1.

60. Veneer ties, like Allan’s wall anchor (A), prevent a masonry veneer from tipping or leaning away from the building structure. Allan’s wall anchor A does not transfer the vertical load or weight of the masonry veneer wall (M) to the building frame member (F). In fact, the slot (30) provides for vertical movement of the tie (32) which would prevent any vertical load path or transfer into the building frame member (F). Additionally, Allan shows no way of connecting a joist or floor system to the wall anchor (A). The tie (32) would be embedded in mortar to provide any connection to a masonry veneer wall (M).

61. Allan also makes no reference to, disclosure of, or suggestion of fire rating, resistance, or protection. EX1006. Allan is not concerned with firewalls. EX1006. Allan does not use the term “fire.” EX1006.

G. U.S. Patent No. 4,714,372 to Commins (EX1032)

62. U.S. Patent No. 4,714,372 (“Commins”) shows and describes a hurricane tie or sheet metal connector “used to connect wood bottom chord trusses to top plates on the inside wall without requiring notching of the wall board.”

EX1032: Abstract, 1:63-68, Fig. 1.

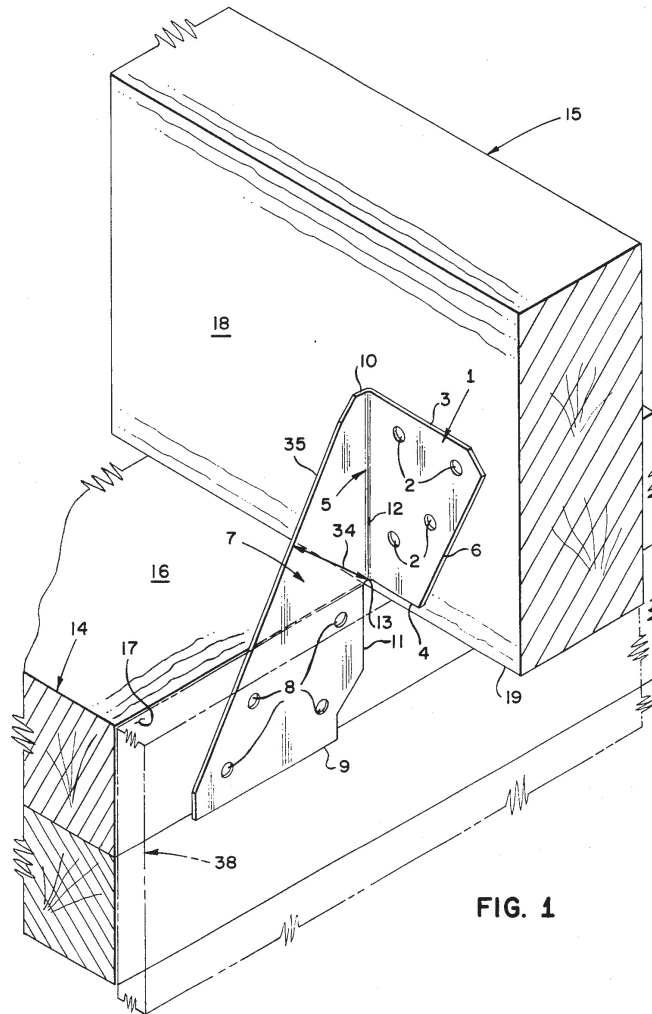
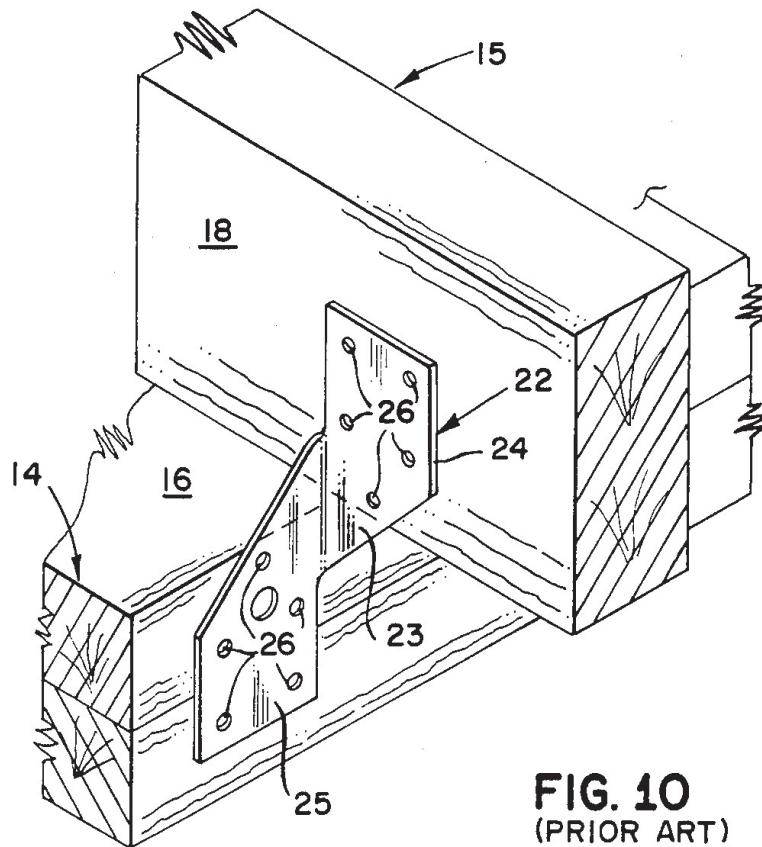


FIG. 1

EX1032: Fig. 1.

63. With reference to prior art hurricane ties as shown in Fig. 10, Commins explains when such ties were used with sheet rock (a synonymous term for drywall or gypsum board), “a notch would have to be made in the gypsum board around extension 23.” EX1032: Fig. 10, 4:32-35.



EX1032: Fig. 10.

64. Commin’s hurricane tie prevent a beam or truss (15) from being lifted and blown off the top plate (14) of a wood stud wall due to severe winds.

Commin’s hurricane tie does not transfer vertical load or weight of the beam (15) to the top plate (14). EX1032: Figs. 1 and 10, 3:15-32. Instead, the beam (15) simply rests on the top plate (14). EX1032: Figs. 1 and 10, 3:15-32.

65. Commins makes no reference to, disclosure of, or suggestion of fire rating, resistance, or protection. EX1032. Commins is not concerned with

firewalls. EX1032: Figs. 1 and 10; 3:27-29. Commins does not use the term “fire.” EX1032.

H. U.S. Patent No. 4,696,113 to Rice (EX1009)

66. U.S. Patent No. 4,696,113 (“Rice”) shows and describes “[a] tool for locating an accessory with respect to a vertical wall stud so that an opening can be cut in a panel or sheet of dry wall to accommodate the accessory before the panel is attached to the wall.” EX1009: Abstract.

67. Rice shows a few varied template designs. Fig. 2 shows a template (60) for marking the opening for a corner of a bathtub (70). EX1009: 2:53-55, 2:63-67. Fig. 3 shows a template (80) for an electrical receptacle box. EX1009: 3:3-5. Fig. 4 shows a template (110) for a drainpipe. EX1009: 3:21-25.

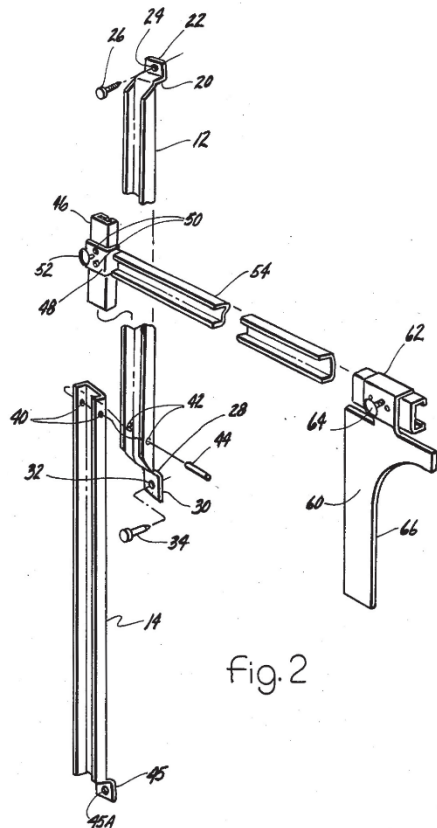


Fig. 2

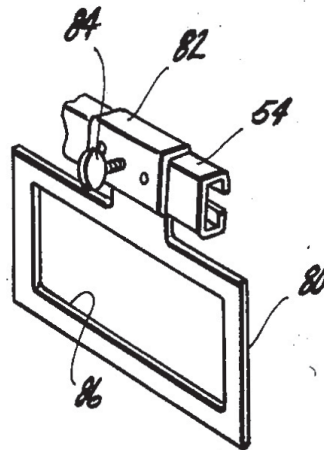


Fig. 3

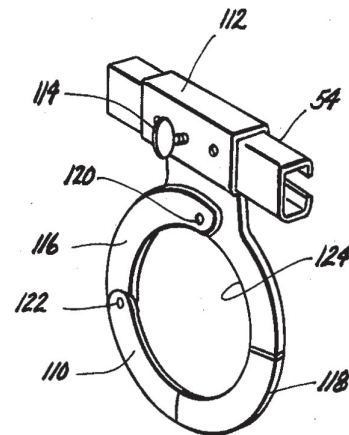
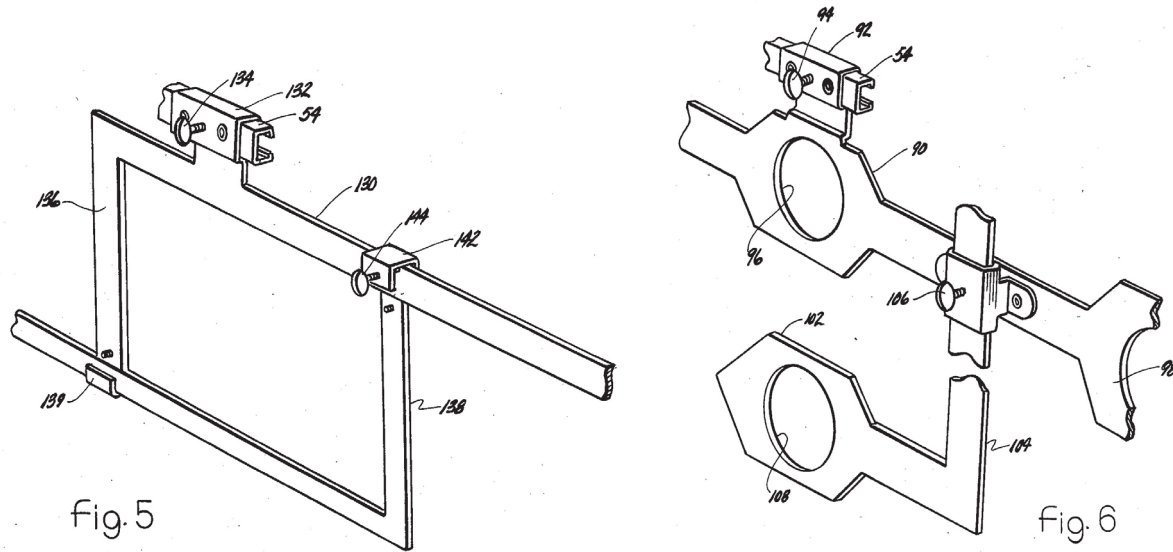


Fig. 4

EX1009: Figs. 2-4.

68. Fig. 5 shows a template (130) that is adjustable to accommodate various sizes of electrical receptacles. EX1009: 3:35-39. Fig. 6 shows a template (90) for a hot and a cold water shower nozzle. EX1009: 3:6-7.



EX1009: Figs. 5 and 6.

69. None of these templates of Rice are for a fire wall hanger, nor for a joist or truss. EX1009. In addition, none of these templates of Rice are for cutting a slot into an exterior edge of fire-retardant sheathing. EX1009. Every one of these Rice templates are for cutting an opening that is spaced from the exterior edges of the panel the opening is being cut into. EX1009.

IV. CLAIM CONSTRUCTION

70. I have been informed that claim terms and phrases are to be given their plain and ordinary meaning as understood by the POSA. I have also been informed that in construing claim terms and phrases, the POSA reads the term or phrase not only in the context of the particular claim in which the term or phrase appears, but also in the context of the entire patent, including the specification.

A. Claim Constructions from Prior Proceedings

71. I understand Simpson is applying the following constructions from prior proceedings in the Petition:

- “extend through”: “in the context of element A ‘extend[ing] through’ element B, [] ‘element A extends into one side and out the other of element B.’” Pet: 8.
- “extending from”: “in the context of element B extending from element A, the beginning of element B’s extension is on element A.” Pet: 8.
- “rigidly fixed”: “components are connected such that they do not move freely with respect to each other.” Pet: 8.

72. I make no opinion as to these constructions. I understand that Columbia does not dispute these constructions at this time, and therefore I am applying these constructions as presented.

B. “lie in [] vertical planes”

73. Claim 22 recites “wherein the first and second planar extension plates lie in parallel vertical planes.” I understand Simpson is construing “lie in [] vertical planes” as “for each planar extension plate a vertical plane is within the extent of the extension plate.” Pet: 8-9. I make no opinion as to this construction. I understand that Columbia does not dispute this construction at this time, and therefore I am applying this construction in this declaration. However, I reserve the right to revisit and advance a claim construction for this phrase in the future.

C. “Bounding”

74. Claim 1 recites “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.”

75. I understand Simpson states “bounding” as used in claim 1 means “to ‘enclose’ or ‘confine.’” Pet: 12. I also understand that Simpson provides the following example regarding the meaning of “bounding”: “[a] fence on only one side of a field does not ‘bound’ nor confine the field.” Pet: 17. Based on this example, I understand Simpson’s full meaning of “bounding” to be completely enclose or confine.

76. I understand Columbia, in contrast to Simpson, has argued the plain and ordinary meaning of “bounding” allows for only partial enclose or confine. POPR: 81-82. I also understand that in the Institution Decision, the Board preliminarily agreed with Columbia and held the term “bounding” “encompass[es] both fully and partially ‘enclosed’ or ‘confined’ areas.” ID: 24-25.

77. I agree with Columbia and the Institution Decision that the term “bounding” covers “partial” enclose or confine, and is not limited to just “fully” or “completely” enclose or confine. I have been made aware that the dictionary definition of “bounding” is “to set the limits or bounds to,” “to form the boundary

of.” EX1035: 5; EX2010: 4; EX2011: 4 (“form[ing] the boundary of”). These dictionary definitions do not require “full” or “complete” enclosure or confinement. I have also been made aware of the following dictionary example: “the ground was bounded by a main road on one side and a meadow on the other.” EX2011: 4. The dictionary example confirms to me the term “bounding” covers partial enclosure or confinement as the example describes two elements that each bound “one side” of the “ground,” not one element that bounds the entire ground.

D. “Opening Outwardly”

78. Claim 1 recites “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.”

79. Claim 27 recites “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.”

80. I understand Simpson has not stated a meaning for the phrase “opening outwardly.” Pet: 16.

81. As I read and understand the claim language, the phrase “opening outwardly” is being used to describe the physical characteristics of the opening that

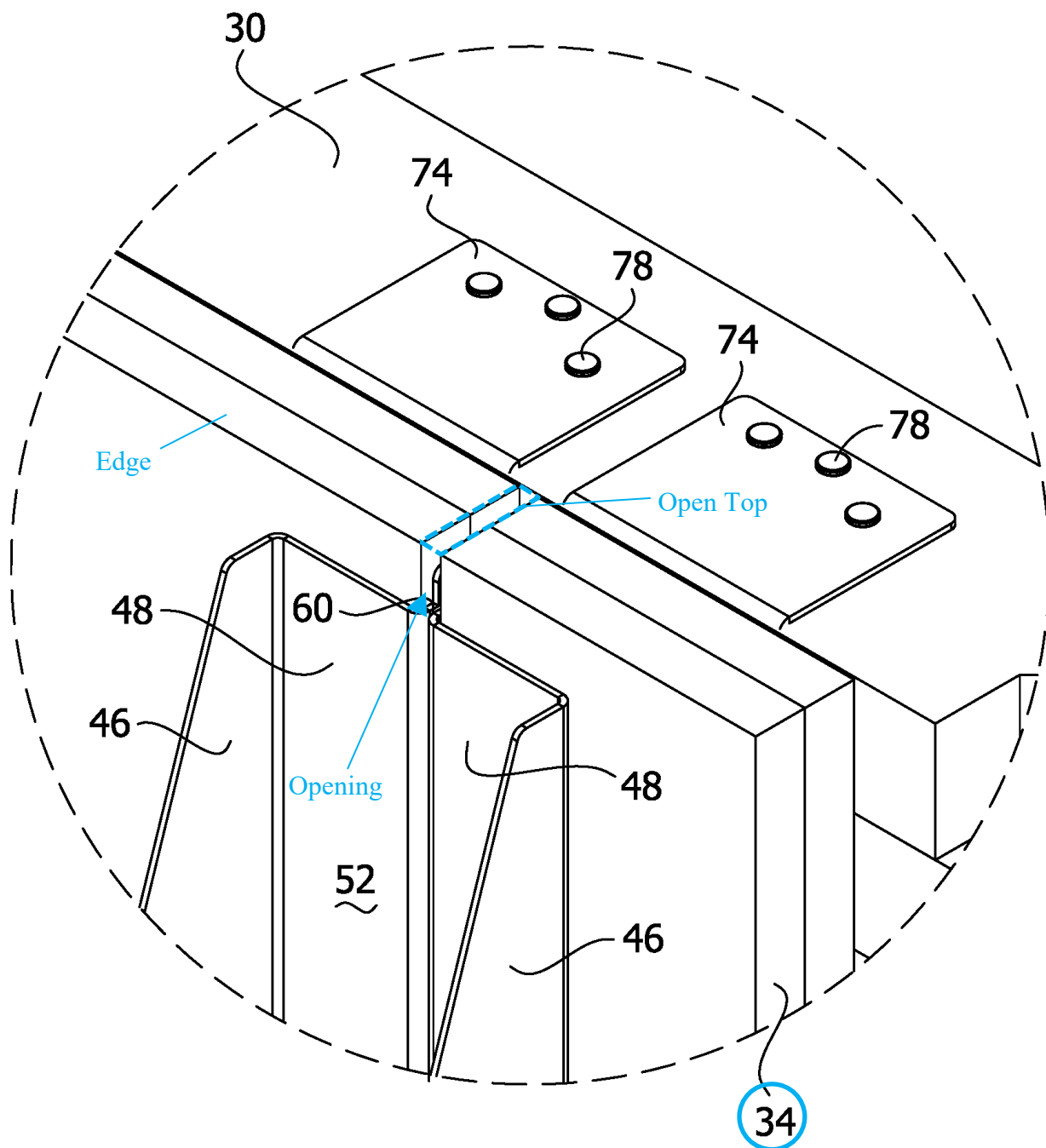
has been cut into the fire-retardant sheathing. Each of these portions of claims 1 and 27 start with “cutting an opening into an [exterior] edge of the fire retardant sheathing.” Following this “cutting” step, the claims then describe the physical characteristics of the opening—i.e., the openings extends through the front and rear faces of the fire-retardant sheathing and the opening opens outward from the edge of the fire-retardant sheathing.

82. I understand Columbia is arguing “opening outwardly” as used in claims 1 and 27 to describe the opening as having access to the outside. I understand claim 1 and 27 have a slight difference in the use of “opening outwardly.” Claim 1 describes the opening as “opening outwardly,” whereas claim 27 is more specific and states the open top of the opening is “opening outwardly.” Taking into consideration this slight difference, I understand Columbia is arguing claim 1’s recitation of “the opening ... opening outwardly from the exterior edge of the fire retardant sheathing” means the construction of the opening is such that the opening has access to the outside from the exterior edge of the fire-retardant sheathing. And that Columbia is arguing claim 27’s recitation of “the opening ... having an open top opening outwardly from the edge of the fire retardant sheathing” means the construction of the opening is such that the open top provides access to the outside for the opening from the edge of the fire-retardant sheathing.

83. I agree with these meanings of the phrase “opening outwardly” as being used to describe the opening in claim 1 and the open top of the opening in claim 27. The opening being cut into the edge of the fire-retardant sheathing is negative space. It is my opinion, when the phrase “opening outwardly” is being used to describe the physical characteristic of negative space, the phrase “opening outwardly” is describing the negative space as having access to the exterior environment surrounding the element (in this case the fire-retardant sheathing) forming the negative space. This way another object in the exterior environment can enter the negative space.

84. In the case of the ‘339 Patent, the opening “opening outwardly” is what allows the extension portion (40) of the fire wall hanger (26) to enter into the opening (72) when the fire retardant sheathing (34) is moved into place. EX1001: 8:16-21. As shown below in Fig. 10A, the open top of the opening provides access to the outside environment at the exterior edge of the fire-retardant sheathing for the extension portion (40) of the fire wall hanger (26) to move through as the fire-retardant sheathing is moved upward relative to the fire wall hanger.

FIG. 10A



EX1001: Fig. 10A (annotated)

85. I have been made aware of a number of U.S. patents and patent publications which use the phrase “opening outwardly.”

86. U.S. Patent No. 9,790,684 claims “the third structural panel assembly [10] forms an interior wall core and is further comprised of horizontal channels [16] *opening outwardly* on each side of the interior wall.” EX2080: claim 22 (emphasis added). U.S. Patent No. 9,790,684 explains “[h]orizontal channels 16 allow for easy installation of electrical, plumbing and HVAC systems in the interior of the structure.” EX2080: 7:42-44.

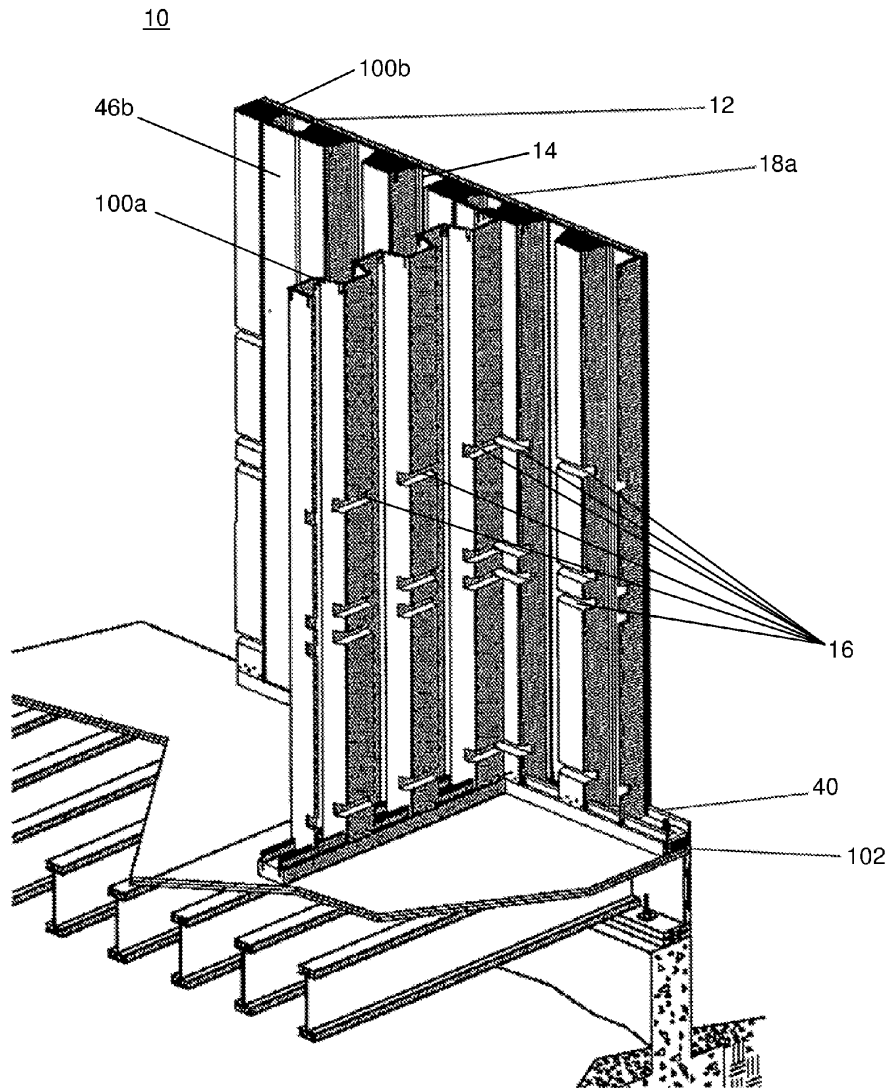
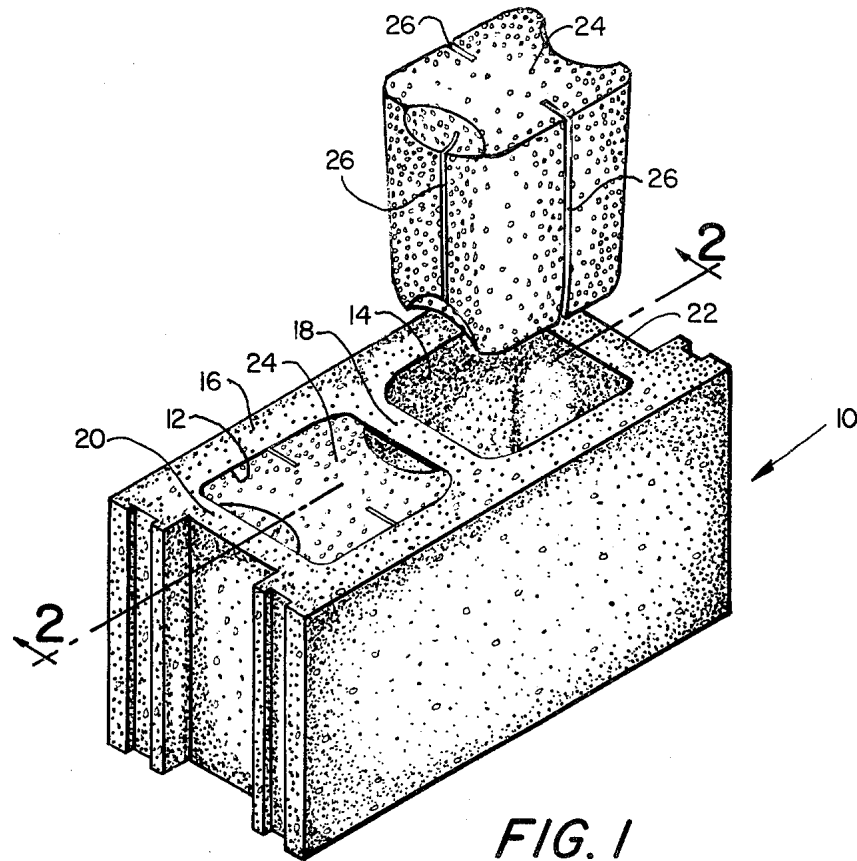


FIG. 7

EX2080: Fig. 7.

87. U.S. Patent No. 3,885,363 claims “each of said openings [26] extending throughout the length of the insert [24] and opening outwardly from the external side surface thereof.” EX2078: claim 6 (emphasis added).



EX2078: Fig. 1.

88. U.S. Publication No 2013/0047539 claims “the projecting structures [16] include one or more receiving voids [30] *opening outwardly* from the first boundary to receive one or more reinforcing bars [30A].” EX2081: claim 49 (see also claim 68) (emphasis added).

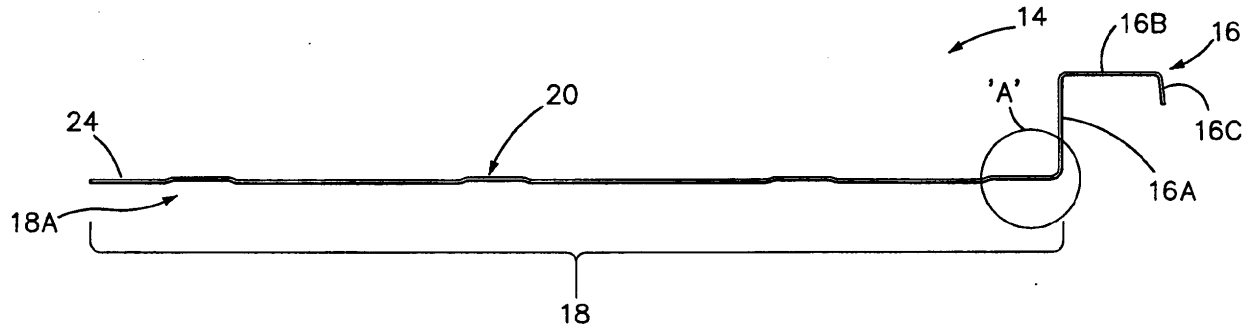


FIG. 8A

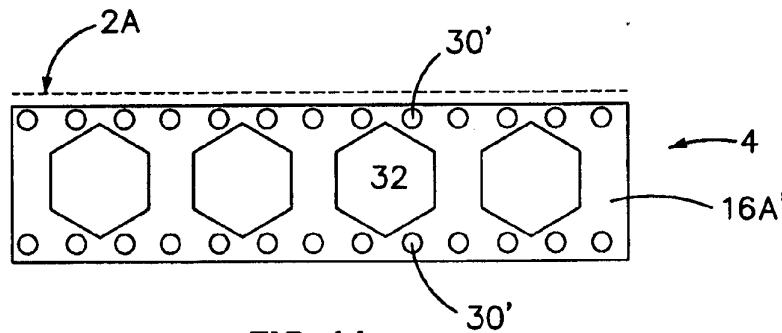


FIG. 14

EX2081: Figs. 8A and 14.

89. U.S. Publication No. 2012/0285020 claims “providing each edge face of the workpiece [11, 31] with a channel-like groove [22] *opening outwardly* of the edge face adjacent an inner edge of the respective flat surface and extending lengthwise along the edge face.” EX2082: claim 8 (emphasis added).

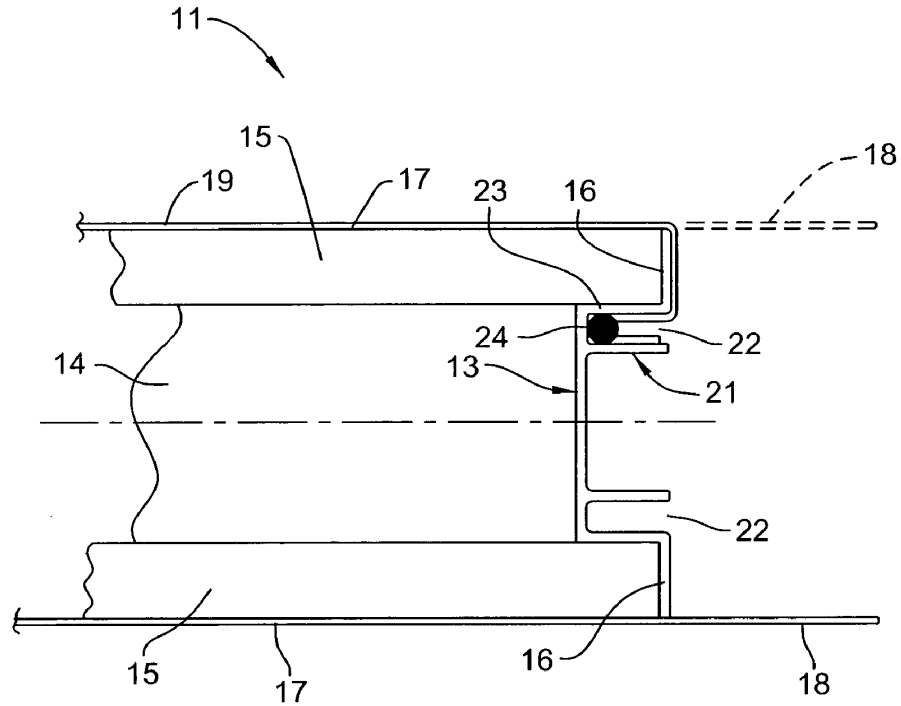


FIG. 13

EX2082: Fig. 13.

90. U.S. Publication No. 2002/0104279 describes “[t]he mould (22) further comprises at least one, but more preferably a plurality of flared recesses (42) in the front face (40), *opening outwardly* and upwardly from bottom (36) to the top (34).” EXX2026: ¶[0041] (emphasis added).

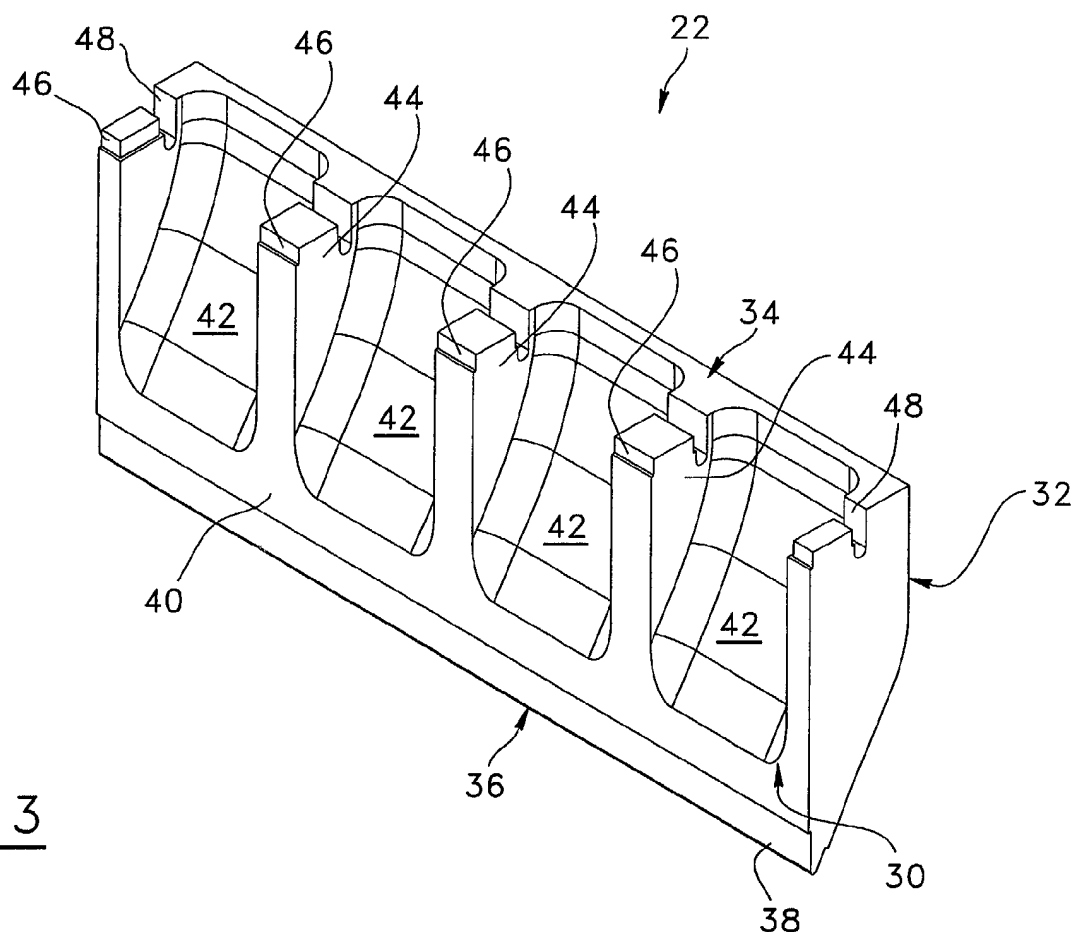


FIG. 3

EX2026: Fig. 3.

91. U.S. Patent No. 11,560,707 claims an end cap (235) having “a receiving slot [241] formed in and *opening outwardly* from an exterior surface of the elongate web surface [237].” EX2027: claim 7 (emphasis added).

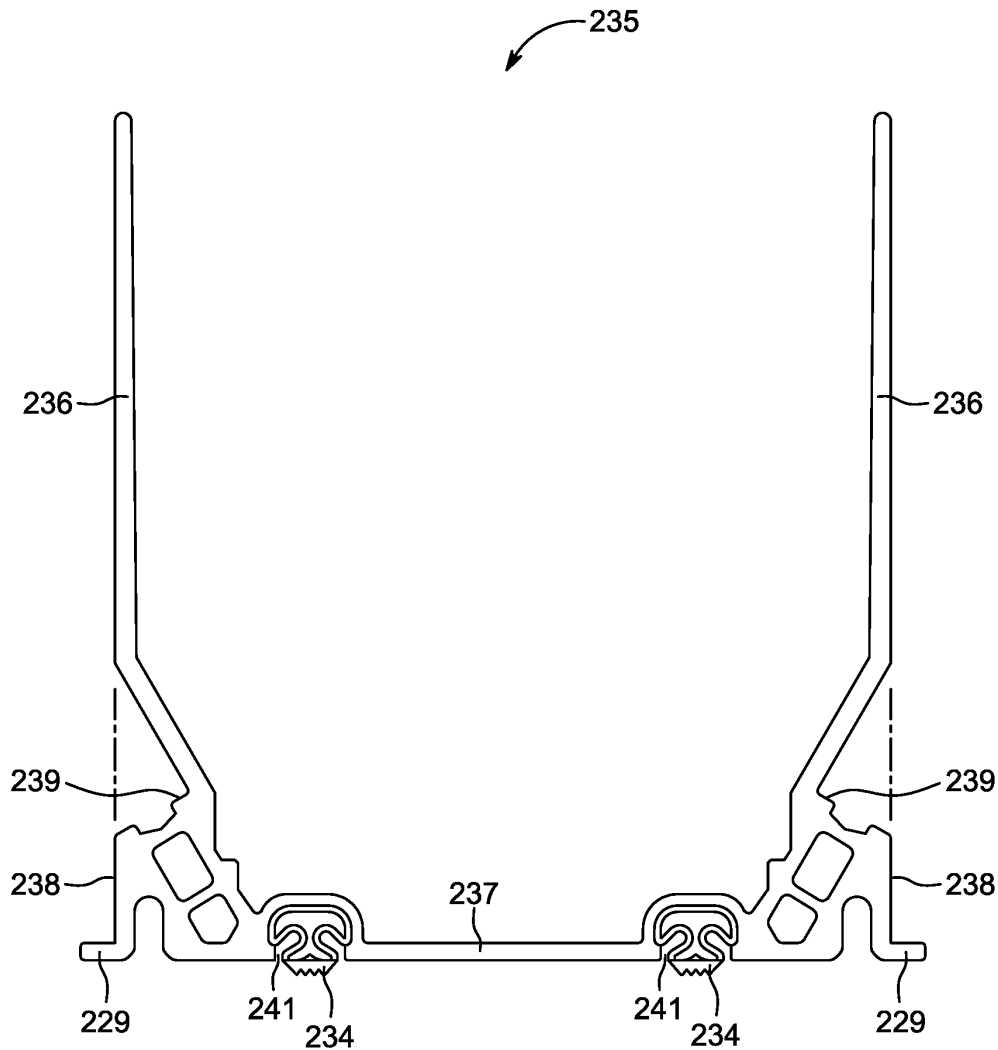


Figure 12

EX2027: Fig. 12.

92. U.S. Publication No. 2002/0148191 describes “[o]n each side of the web 14 the flanges 16,18 define therebetween a pair of separated lateral pockets 22 that *open outwardly* through opposite sides of the stud 12b and longitudinally extend along its entire length.” EX2028: ¶[0024] (emphasis added).

EX2028: Fig. 2.

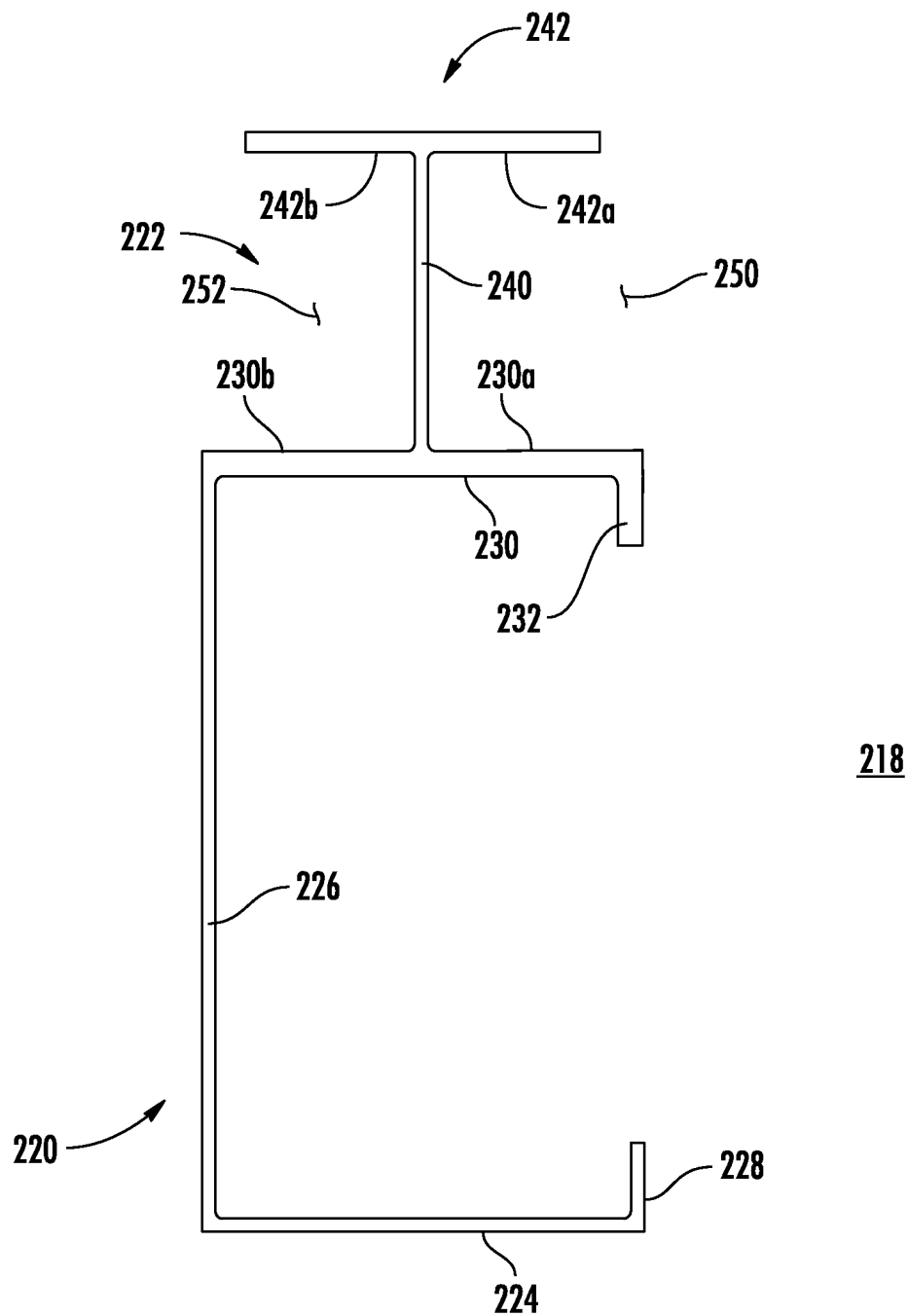


FIG. 4

EX2029: Fig. 4.

94. In each of these examples, the negative spaces identified as “opening outwardly” all have access to the exterior environment surrounding the element forming the negative space. Therefore, I agree with Columbia that the phrase “opening outwardly” in claims 1 and 27 is being used to describe the opening as having access to the outside from the exterior edge of the fire-retardant sheathing.

E. “Planar Extension Plates”

95. Claim 20 recites “positioning the fire retardant sheathing relative to the extension portion of the fire wall hanger so that only first and second *planar extension plates* of the extension portion of the fire wall hanger extend through the opening in the fire retardant sheathing.”

96. I understand Simpson states a “planar extension plate” is “a flat portion of the extension flange between any bent portions. Thus, to the extent an extension flange includes a bent portion, such a bent portion is not part of an extension plate.” Pet: 9 (internal quotations omitted).

97. I understand Columbia, in contrast to Simpson, has argued the term “planar extension plate” includes portions of the bends at the ends of the plate that connect the plate to other elements. POPR: 95. I also understand that in the Institution Decision, the Board preliminarily agreed with Simpson and held a “planar extension plate” does not include bent portions. ID: 21.

98. I agree with Columbia that, in the sheet metal art of the ‘339 Patent, the POSA would understand bends connecting “planar [] plates” of the sheet metal construct are formed by the plates and therefore are part of the plates. Sheet metal bends, like the one illustrated in the figures of the ‘339 Patent, are simply a necessary result of forming a piece of sheet metal into the illustrated hanger.

E. “Close Conformance”

99. Claim 13 recites “positioning the fire retardant sheathing relative to the fire wall hanger so that the edge of the fire retardant sheathing bounding the opening is in *close conformance* with a first exterior face of the extension portion of the fire wall hanger.”

100. Claim 14 recites “positioning the fire retardant sheathing so that a second exterior face of the extension portion is in *close conformance* with a second vertical edge of the fire retardant sheathing bounding the opening.”

101. I understand Simpson has not stated a meaning for the phrase “close conformance.” Pet: 18-19.

102. I understand Columbia has argued the meaning of “close conformance” in the context of the claims means 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. POPR: 135. I also understand that in the Institution Decision, the Board did not expressly adopt a construction of the phrase

“close conformance” but preliminarily agreed with Columbia’s arguments regarding “close conformance.” ID: 44-45.

103. I agree with Columbia on the meaning of “close conformance” in the context of the ‘339 Patent. The ‘339 Patent explains the distance between the edge of the opening (72) and the extension flanges (60) is “less than or equal to 1/8”” and shows the edge of the opening (72) and the faces of the extension flanges (60) both being planar. EX1001: 5:38-39, Figs. 5, 9, 10A, and 13A.

V. WRITTEN DESCRIPTION SUPPORT

104. I understand that Simpson is arguing certain claims do not have written description support in the ‘339 Patent. Pet: 10-14 and 19-20. I understand Columbia has argued the claims have written description support in the ‘339 Patent. POPR: 73-117. I understand that in the Institution Decision, the Board preliminarily determined claims 1-19 and 24-31 have written description support and claims 20-23 do not have written description support. ID: 28-39.

105. I offer no opinions as to the written description support of any of the claims of the ‘339 Patent. However, I reserve the right to revisit and provide an opinion regarding the written description support for any claim in the future.

VI. DEFINITENESS

106. I understand that a patent claim is invalid as indefinite if when read in light of the patent’s specification and the prosecution history, the claim fails to

inform those skilled in the art as to the scope of the invention with reasonable certainty. I have been informed that definiteness is evaluated from the perspective of the POSA.

A. Claims 1-31: “Fire Wall Hanger”

107. I understand Simpson is arguing the scope of the term “fire wall hanger” is unclear. Pet: 15. I also understand that Columbia has argued the scope of the term “fire wall hanger” is clear. POPR: 119-122. I understand that in the Institution Decision, the Board preliminarily agreed with Columbia that the term “fire wall hanger” is definite. ID: 40.

108. I offer no opinions as to this matter at this time. However, I reserve the right to revisit and provide an opinion in the future.

B. Claims 1-31: “Opening Outwardly”

109. Claim 1 recites “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.”

110. Claim 27 recites “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.”

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111. I understand Simpson argues the phrase “opening outwardly” is indefinite. Pet: 16. I understand Columbia has argued the phrase “opening outwardly” is definite. POPR: 122-131. I understand that in the Institution Decision, the Board preliminarily determined the use of the phrase “opening outward” is indefinite because it is unclear *which edge* of the fire-retardant sheathing the opening (claim 1) or the open top of the opening (claim 27) is opening outwardly from. ID: 42.

112. I reiterate that I understand Columbia is arguing claim 1’s recitation of “the opening ... opening outwardly from the exterior edge of the fire retardant sheathing” means the construction of the opening is such that the opening has access to the outside from the exterior edge of the fire-retardant sheathing. And that Columbia is arguing claim 27’s recitation of “the opening ... having an open top opening outwardly from the edge of the fire retardant sheathing” means the construction of the opening is such that the open top provides access to the outside for the opening from the edge of the fire-retardant sheathing.

113. I have also been informed that claims are written in a manner that follows the principle of “antecedent basis.” I have been informed that “antecedent basis” is a patent drafting concept where the first time a component is introduced within the claim it is introduced by an indefinite article such as “a” or “an,” and

then subsequent references to the component within the same claim (or claims that depend from it) use a definite article such as “the” or “said.”

114. Using this principle of antecedent basis as it has been explained to me, I disagree with the Board that the phrases reciting “opening outwardly” are unclear about which edge of the fire-retardant sheathing the opening (claim 1) or the open top of the opening (claim 27) is opening outwardly from. Claim 1 recites “from *the* exterior edge of the fire retardant sheathing” and claim 27 recites “from *the* edge of the fire retardant sheathing.” Using the principle of antecedent basis, this means “the exterior edge” recited by claim 1 refers to the exterior edge introduced earlier in claim 1 and “the edge” recited by claim 27 refers to the edge introduced earlier in claim 27.

115. In claim 1, before the “opening outwardly” phrase, claim 1 states “cutting an opening into *an* exterior edge of fire retardant sheathing.” This statement by claim 1 is the introduction of the exterior edge, which is then later referred to again in the “opening outwardly” phrase. Thus, “the exterior edge” of the fire retardant sheathing the opening in claim 1 opens outwardly from is the same exterior edge of the fire-retardant sheathing that was cut into to form the opening.

116. In the same manner, in claim 27, before the “opening outwardly” phrase, claim 27 states “cutting an opening into an edge of fire retardant

sheathing.” This statement by claim 27 is the introduction of the edge, which is then referred to again in the “opening outwardly” phrase. Thus, “the edge” of the fire-retardant sheathing the open top of the opening in claim 27 opens outwardly from is the same edge of the fire-retardant sheathing that was cut into to form the opening (and the open top of the opening).

117. For these reasons, I disagree with the Board that the phrases reciting “opening outwardly” are unclear about which edge of the fire-retardant sheathing the opening (claim 1) or the open top of the opening (claim 27) is opening outwardly from. It is the same edge that was cut into to form the opening.

C. Claims 1-26: “Bounding”

118. I understand Simpson is arguing the scope of the term “bounding” is unclear. Pet: 16-18. I also understand that Columbia has argued the scope of the term “bounding” is clear. POPR: 131-134. I understand that in the Institution Decision, the Board preliminarily agreed with Columbia that the term “bounding” is definite. ID: 43.

119. I discussed above my support for Columbia’s claim construction of the term “bounding,” as allowing for only partial enclose or confine. I believe the claim construction of the term “bounding” resolves Simpson’s issue regarding the scope of the term “bounding.” Therefore, I do not believe the term “bounding” is unclear.

D. Claims 13 and 14: “Close Conformance”

120. I understand Simpson is arguing the scope of the phrase “close conformance” “fails to inform with reasonable certainty by what standard/measure ‘close conformance’ would be judged.” Pet: 18-19. I also understand that Columbia has argued the phrase “close conformance” is definite. POPR: 134-144. I understand that in the Institution Decision, the Board preliminarily agreed with Columbia that the phrase “close conformance” is definite. ID: 44-45.

121. I discussed above my support for Columbia’s claim construction of the phrase “close conformance”—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. I offer no opinions as to the definiteness of the phrase “close conformance.” However, I reserve the right to revisit and provide an opinion regarding the definiteness of this phrase in the future.

E. Claims 20-23: “Plate”

122. I understand Simpson is arguing the difference between an “extension flange” and a “planar extension plate” is unclear. Pet: 20. I also understand that Columbia has argued the difference is clear. POPR: 147-148. I understand that the Board did not address this issue in the Institution Decision.

123. I offer no opinions on this matter at this time. However, I reserve the right to revisit and provide an opinion in the future.

VII. PRIOR ART GROUNDS

A. Grounds 3-8: Cullen/Yamaguchi/Robinson, Bundy, and Allan (the Bundy Combinations)

1. The POSA Would Not Have Expected the Bundy Combinations to Work

124. The claims of the ‘339 Patent are for “[a] method of constructing a fire-resistive wall assembly,” where the fire-resistive wall assembly has a wood frame wall that supports the end of structural component (joist or beam). EX1001: claims 1 and 27. A fire wall, such as the load-bearing fire-resistive wall assembly claimed by the ‘339 Patent, is more than just an ordinary load-bearing wall. Not only must the fire wall support the load of the story or stories above it, it must also prevent any potential fire in the building from spreading. This means the fire wall must not only perform like an ordinary bearing wall by having sufficient strength to support the loads (people, equipment, furniture, etc.) of the building so the building does not collapse, but that the fire wall also needs to (1) have sufficient fire resistance to support these loads during a potential fire for the code required assembly rating, and (2) be a sufficient barrier to the potential fire to prevent the fire from rapidly spreading within the building (e.g., moving past the fire wall) for the code required assembly rating. “Code required assembly rating” means the required rating (1-hour, 2-hour, 3-hour, etc.) for the wall assembly. These are not trivial requirements. Engineers designing the firewall and building contractors building the firewall must meet these requirements. Failure to do so not only

would put the lives of the people working and living in the building in jeopardy but also the certificate of occupancy would be denied by the fire marshal and/or building official, which would render the building unusable. Section 706.2 Structural Stability of the International Building Code 2012 Editions states “Fire Walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration fo the time indicated by the required fire-resistance rating or shall be constructed as double fire walls in accordance with NFPA 221.” EX1034: 30.

125. Simpson’s prior art combinations in Grounds 3-8 rely on Bundy’s fire wall. This is because none of the hanger prior art references of Cullen, Yamaguchi, and Robinson Simpson uses have anything to do with constructing a fire wall with fire-retardant sheathing that blocks the passage of a fire in the building through the fire wall.

126. Bundy, which as I mentioned above is Simpson’s own contemporaneous attempt at developing a fire wall hanger at the same time as the fire wall hanger of the ‘339 Patent, says the joist hanger (2) must be installed over the fire-retardant sheathing. EX1005: 2:18-25, 4:17-20, 5:14-25, 5:42-57, 6:14-17, Fig. 2. Bundy states this installation happens without “alternation” of the fire-retardant sheathing and after the fire-retardant sheathing has been mounted to the wood-framed wall. EX1005: 2:18-25, 4:17-20, 5:14-25, 5:42-57, 6:14-17, Fig. 2.

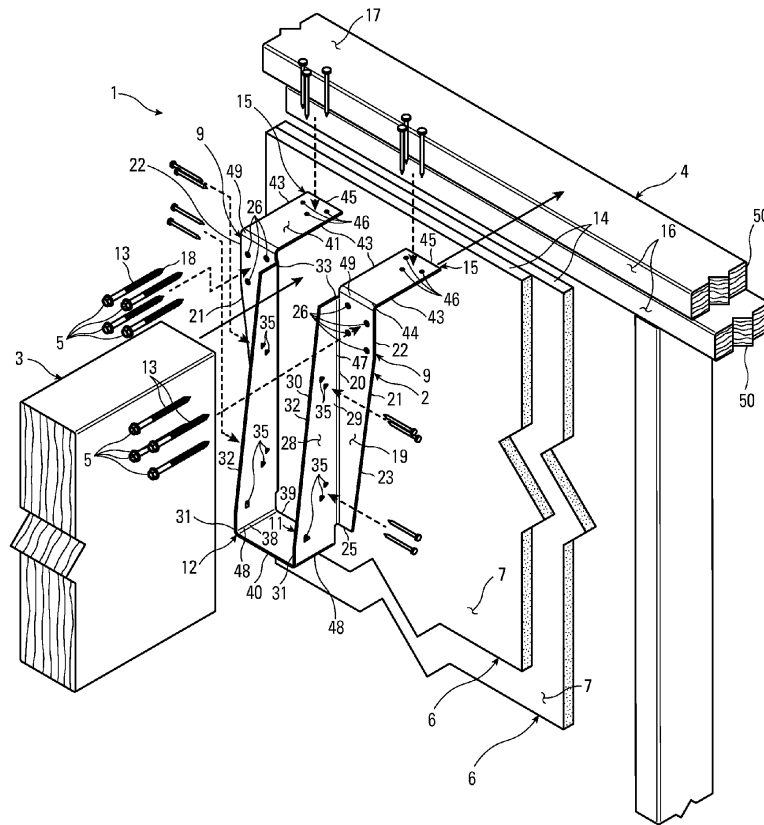


Fig. 2

EX1005: Fig. 2.

127. It is my opinion, the POSA would not have had a reasonable expectation of success based on Bundy of being able to install the fire-retardant sheathing after the joist hanger at the time invention of the ‘339 Patent. Bundy’s order of installation is opposite to that of the claims of the ‘339 Patent. The claims of the ‘339 Patent require the fire-retardant sheathing to be installed “after mounting the fire wall hanger on the frame wall.” EX1001: claims 1 and 27. Bundy on the other hand must be installed after the fire-retardant sheathing is on

the wood-framed wall, otherwise the joist hanger (2) and/or the frame wall (4) fail once the joist (3) is connected to the joist hanger (and supporting a load). While Bundy is correct that “gypsum is friable,” Bundy’s statement that gypsum has “little or no dowel bearing strength” is exaggerated. EX1005: 5:20-21. As Simpson found during their testing of variations of the Bundy joist hanger (2), the fire-retardant sheathing or gypsum plays an important part of preventing the joist (3) seated in the joist hanger (2)—and thereby the joist hanger (2) itself—from rotating and causing failure of the structural connection. For example:

-

[REDACTED]

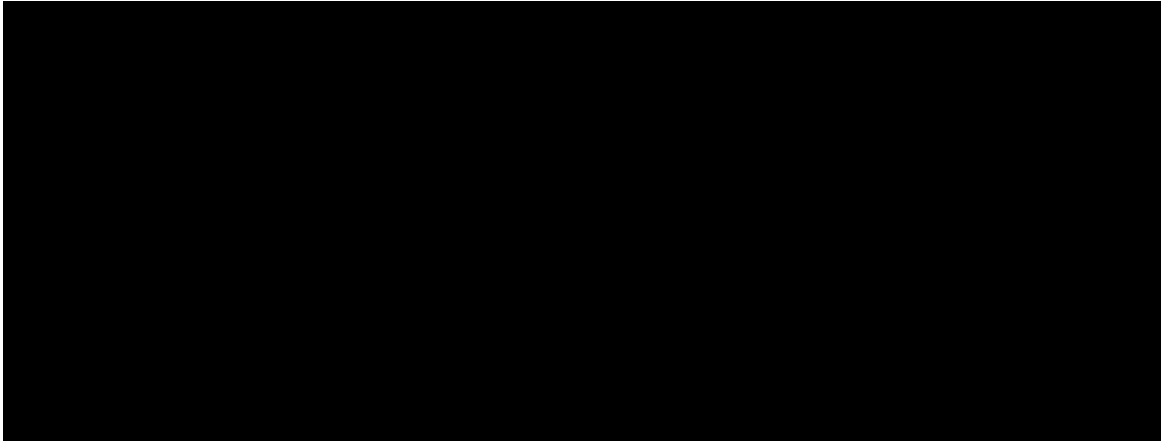
EX2086: SST0105115.

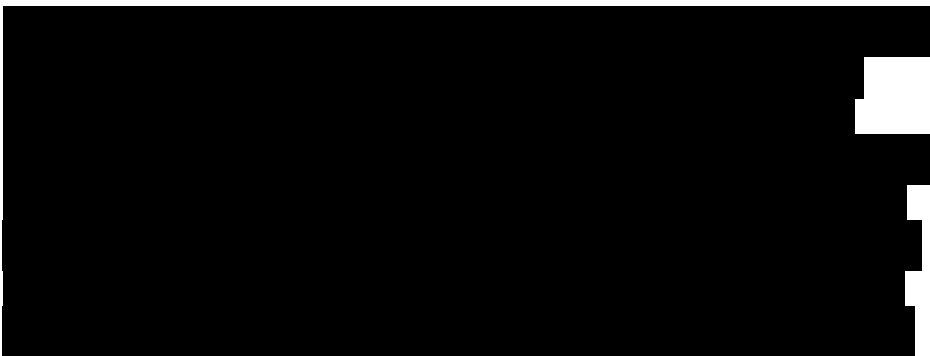
-

[REDACTED]

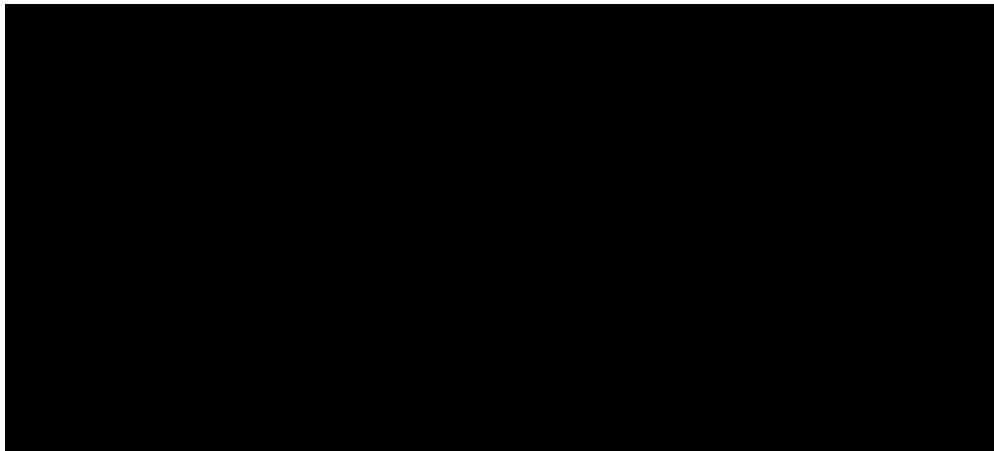
EX2086: SST0105127.

[REDACTED]



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EX2086: SST0105129.



128. This failure is not surprising. Cantilevering a joist away from the top plate of the wood-framed wall, without sheathing filling the space between the joist and wood-framed wall, makes the wood top plate vulnerable to rotation and failure. Plus, this rotation of the bottom of the joist hanger and the end of the joist toward the wood-framed wall closes (if not eliminates) any gap between the end of

the joist and the wood-framed wall for the sheathing, making subsequent installation of the sheathing impossible for a loaded joist.

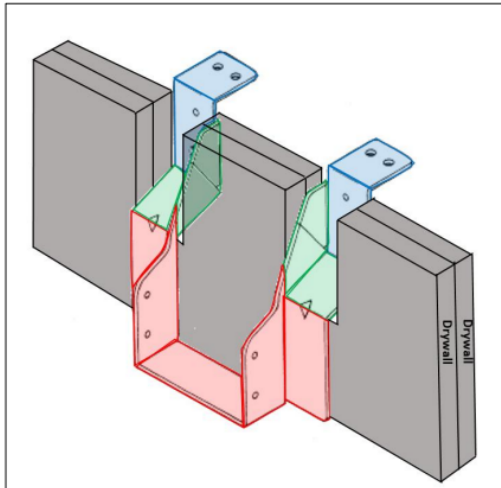
129. This is why the joist hanger (2) of Bundy “applies a sufficiently large, flat surface to the exterior drywall sheet in order to stabilize the connection without crushing the drywall either during installation (when the screws might otherwise be overdriven) or after” such as when supporting the joist (3). EX1005: 2:28-32.

130. I have been informed that Simpson questioned further development on a joist hanger that provided the space between the end of the joist and the wood-framed wall after these failed attempts. EX2065 (discussing failed attempts); 108:25-111:19 (discussing an “inconclusive” market study and belief that the market would prefer "a more cost effective hanger without the need to develop a -- a product that would cantilever off"); 219:22-221:12 (same). It seems to me that only after the ‘339 Patent came to market in 2014 (EX2045) showing this was possible did Simpson return to development and release their hangers allowing the order of construction claimed by the ‘339 Patent (EX2003; EX2004; EX2005; EX2006; EX2007).

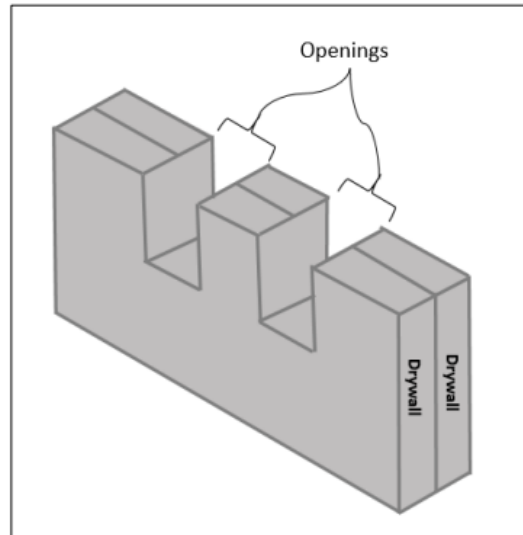
131. In addition, it is my opinion the POSA would not have had a reasonable expectation of success of maintaining the fire resistance of the fire wall after cutting openings in the fire-retardant sheathing. Simpson applications of the hangers of Cullen, Yamaguchi, and Robinson to the wall of Bundy each require the

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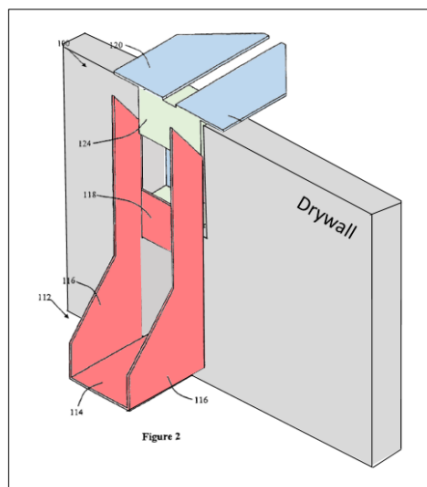
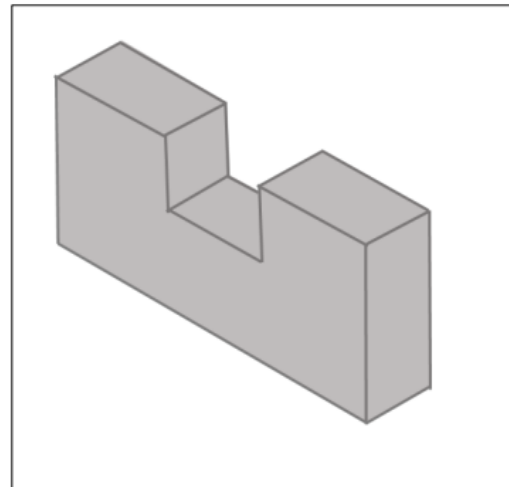
hanger to extend through one or more openings in the fire-retardant sheathing. Pet: 31, 79, and 115. Simpson’s illustrations for the Yamaguchi combination and Robinson combination require relatively large cutouts to accommodate the respective hanger.



EX1007, Perspective View.



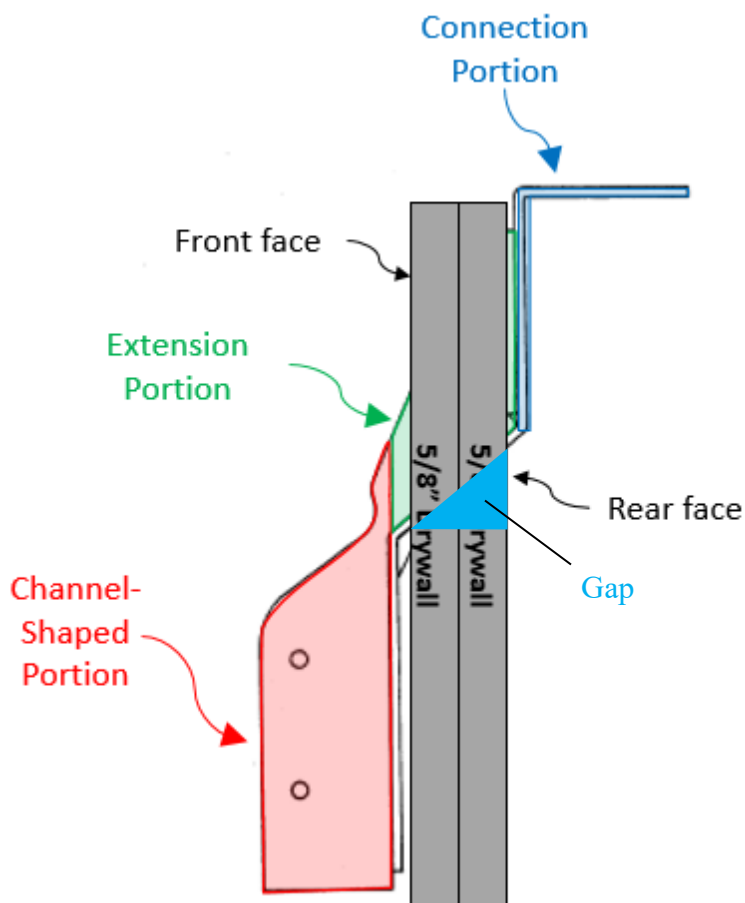
Pet: 69-70.



Pet: 106-107.

132. In addition, the configuration of the hangers of Yamaguchi and Robinson prevent non-combustible materials from readily filling the gaps in the openings in the sheathing to prevent fire jets (pathways for the fire to penetrate the fire wall) in the fire wall. These fire jets are dangerous because they allow flames, hot gases, and radiant heat to bypass protective barriers, potentially accelerating fire spread. Fire jets can be caused by unsealed penetrations, joints, and holes in the fire-resistive materials. Fire jets act like blow torches increasing the temperature of the fire in concentrated areas. The fire jets can easily cause structural failures.

133. The inclined side flanges of the hanger of Yamaguchi leave a gap (shown below) for fire to infiltrate the fire wall.



Pet: 78 (annotated by Simpson, further annotated by me).

134. While the opening in Robinson, as modified by Simpson, may be substantially covered by the joist, any gap between the structural member and the sheathing would be a pathway for fire penetration to extend into the wall cavity.

135. At the time of invention of the '339 Patent, Bundy's joist hanger (2) was following the principle known to the POSA and fundamentally guiding the POSA's actions that openings in fire barriers, such as openings in the fire-retardant sheathing, are to be avoided. As I mentioned above, weakening if not eliminating a fire wall's ability to block a fire in a building puts people's lives in danger. This

is one of the reasons cutting an opening in the fire barrier is something a POSA would not do. I have been informed of the following statements by Simpson’s employees that corroborate this understanding by the POSA:

- [REDACTED] EX2087:
SST0077467.
- [REDACTED]
EX2088: SST0087824.
- [REDACTED]
EX2089: SST0087752.
- [REDACTED] EX2041:
SST0087800.
- [REDACTED] EX2064: 168:23-
170:13.
- [REDACTED] EX2065: 107:20-108:23.
- documenting skepticism from an engineering firm that that there were “some jurisdictions that [the engineering firm] fe[lt] won't accept it because of the slit made in the drywall.”
EX2090: MiTek00014746.

136. While building codes allow for some penetrations in a fire wall for utilities, these penetrations are heavily governed. EX1034: 40-42. For example, there is a maximum allowed aggregate area of such penetrations over the wall. EX1034: 40. There is also a requirement that the penetrations on both sides of the

fire wall be offset or otherwise solid fire blocking be added. EX1034: 40-41.

Notably, the penetration exceptions recited in the 2012 International Building Code for fire-retardant sheathing (e.g., membrane penetrations) are limited to electrical boxes and sprinklers. EX1034: 40-41. At the time of invention of the ‘339 Patent, there was no exception in the 2012 International Building Code that permitted a joist hanger to penetrate the fire-retardant sheathing. The only exceptions for penetrations in a maximum of a 2-hour fire-resistance rated wall or partition were for electrical boxes and automatic fire sprinklers. Given these limits and restrictions, the POSA would not have believed penetrations in the fire barrier for each joist hanger (typically, every 12-inches, 16-inches or 24-inches on center over the length of the wall) would be acceptable and pass inspection.

137. Bundy states “[i]mportantly, the [joist hanger (2)] does not require any alternation of the drywall or the addition of any otherwise extraneous components,” such as non-combustible materials. EX1005: 2:18-19. It is my opinion this is an express teaching away by Bundy of not cutting openings in the fire-retardant sheathing for a hanger to extend through, as each one of Simpson’s Grounds 3-8 require. Fig. 2 illustrates the installation of Bundy’s joist hanger (2). Bundy states the joist hanger (2) is positioned such that “[t]he first and second top flanges 15 ... *extend over* the top edge faces 14 of the one or more panels 6.” EX1005: 5:42-43. The joist hanger (2) is moved over the drywall until the first

and second top flanges (15) engage the top face (17) of the top plate (4) and the first and second back plate members (9) engage the front face (7) of the outer most drywall panel (6). EX1005: 5:56-57, 6:14-17. Nails (5) are then used to secure the joist hanger (2) to the wall. EX1005: 5:45-62, 4:17-20. Simpson's own statements referenced in Paragraph 131 above corroborate my opinion that the text of Bundy does teach away from cutting openings into the drywall.

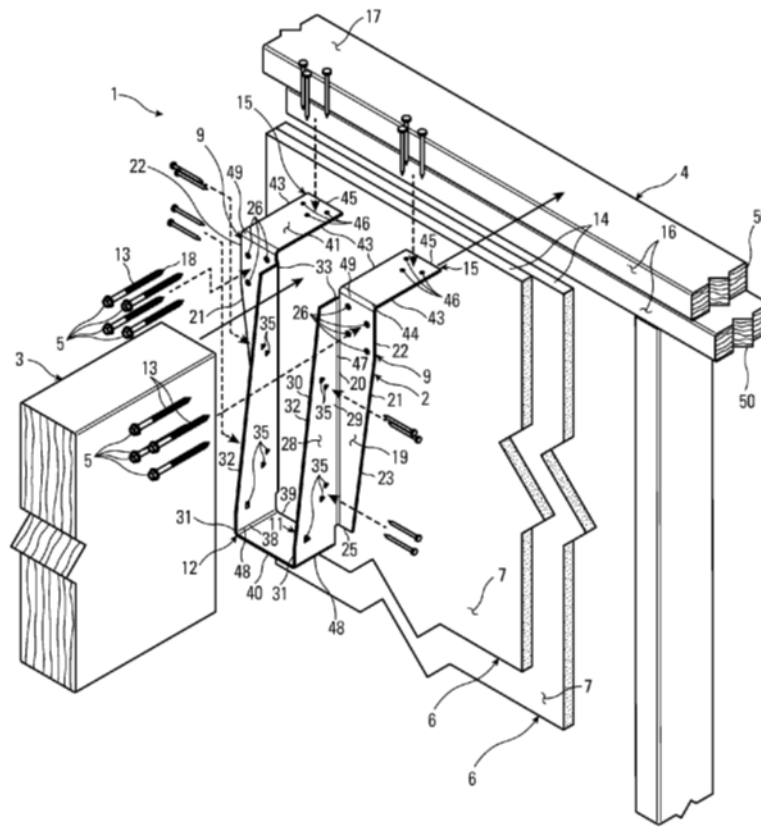


Fig. 2

EX1005: Fig. 2.

138. Moreover, Simpson’s modifications of the joist hangers of Cullen, Yamaguchi, and Robinson to hold the joist away from the wood-framed wall to leave space for the fire-retardant sheathing and to have the joist hangers extend through the fire-retardant sheathing once the fire-retardant sheathing is installed, requires leaps not suggested by the prior art references or within the knowledge of the POSA. Cullen, Yamaguchi, and Robinson each fail to teach a fire resistive wall assembly with fire-retardant sheathing that blocks the passage of a fire. It is Bundy alone which provides the teaching regarding fire resistive wall assemblies. Fig. 1 of Bundy shows installing the joist hanger (2) of Bundy over the drywall (6) after the drywall panels have already been mounted to the wall. EX1005: Fig. 2, 2:20-25 (“[t]he drywall [is] applied ..., and the joist hanger can then be attached”), 5:14-20.

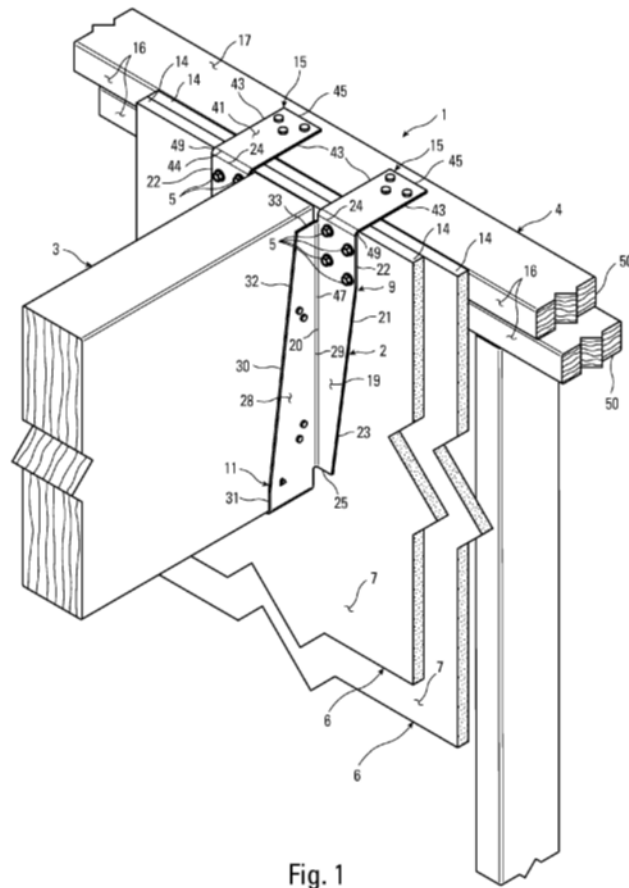


Fig. 1

EX1005: Fig. 1.

139. The modification to the joist hangers of Cullen, Yamaguchi, and Robinson that is truly suggested by Bundy is to length the top flanges (e.g., the top plates (62, 64) of Cullen, the top flanges of Yamaguchi, and the flanges (120) of Robinson) of these joist hangers so that the top flanges extend over the top edge of the drywall. This results in the back plate (12) of Cullen, the back flanges of Yamaguchi, and the portion of Robinson forming the second surface (112) contacting the front face of the drywall and being spaced apart from the wood-framed wall. These components would contact the front face of the drywall to

distribute the load and prevent the channel-shaped portion of the joist hanger from rotating toward the wood-framed wall. The joist hanger (2) of Bundy “applies a sufficiently large, flat surface to the exterior drywall sheet in order to stabilize the connection without crushing the drywall either during installation (when the screws might otherwise be overdriven) or after” such as when supporting the joist (3). EX1005: 2:28-32.

140. When Cullen is modified in the way actually suggested by Bundy, the openings (68) in the back plate (12) of Cullen remain accessible because the openings would be in front of the front face of the fire-retardant sheathing, just like Bundy’s fastener openings (26) on the back plate members (9). Similarly, when Robinson is modified in the way actually suggested by Bundy, positions the duct opening (126) in front of the drywall and preventing the drywall from closing off the sides of the duct opening, thereby allowing Robinson’s joist hanger (100) to still be used in the manner in which it was intended by allowing ducts, cables, pipes, and wires to extend through the duct opening.

141. With reference to Fig. 2 of Bundy, reproduced below, the joist hanger (2) of Bundy is installed by positioning “[t]he first and second top flanges 15 ... extend over the top edge faces 14 of the one or more panels 6.” EX1005: 5:42-43. The joist hanger (2) is moved over the top edge of the drywall (6) until the top flanges (15) contact the top face (17) of the top plate (4) and the back plate

members (9) contact the front face (7) of the drywall (6). EX1005: 5:56-57, 6:14-17. Nails (5) inserted through the back plate members (9) and into the drywall (6) and top plate to secure the joist hanger (2) to the wall (4). EX1005: 5:45-62, 4:17-20.

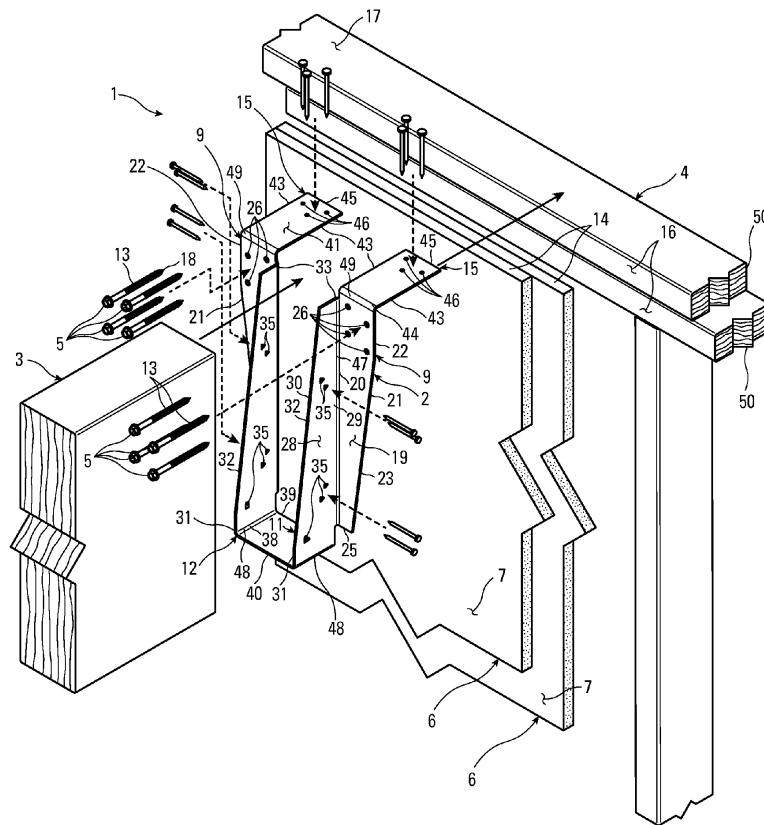


Fig. 2

EX1005: Fig. 2.

142. Simpson’s modification of the joist hangers of Cullen, Yamaguchi, and Robinson based on Bundy is to size purported “extension portions” of these joist hanger to extend through the fire-retardant sheathing. However, in these

modifications, there is then no “large, flat surface” as stated by Bundy to contact the front face of the drywall. EX1005: 2:28-32. As mentioned above, Simpson’s own internal evidence shows that this design fails when the fire resistive wall assembly is assembled as claimed by the ‘339 Patent—where the joist hanger is mounted to the wood-framed wall first, before the fire-retardant sheathing is inserted between the channel-shaped portion of the fire wall hanger and the wood-framed wall. I note that dependent claim 8 further specifically requires the structural component be positioned on the base of the channel-shaped portion “before said step of installing the fire retardant sheathing.” EX1001: claim 8. Thus, claim 8 requires the channel-shaped portion to support the load of the structural component before the fire-retardant sheathing is installed.

143. Bundy also explains its manner of construction “[i]mportantly, [] does not require any alteration of the drywall,” such as cutting an opening therein. EX1005: 2:18-19. This follows the principle guiding the POSA that openings in fire barriers are to be avoided, in order to maintain the fire resistance integrity of the fire barrier. I reiterate the following statements by Simpson’s employees that underscore this understanding by the POSA:

- [REDACTED] EX2087:
SST0077467.
- [REDACTED]
EX2088: SST0087824.

- [REDACTED] EX2089: SST0087752.
- [REDACTED] EX2041: SST0087800.
- [REDACTED] EX2064: 168:23-170:13.
- [REDACTED] EX2065: 107:20-108:23.
- documenting skepticism from an engineering firm that that there were “some jurisdictions that [the engineering firm] fe[lt] won't accept it because of the slit made in the drywall.” EX2090: MiTek00014746-47.

144. Bundy also tells the POSA not to have a back flange of a joist hanger, such as the joist hangers of Cullen, Yamaguchi, and Robinson, contact the wood-framed wall. Bundy states “[p]referably, no part of the joist hanger 2 contacts the front face 16 of the structural support member 4.” EX1005: 5:26-28. Bundy follow this statement up by stating “[t]he first and second top flanges 15 preferably extend over the top edge faces 14 of the one or more panels 6 and are the only parts of the joist hanger that contact the structural support member 4.” EX1005: 5:42-45. It is my opinion that these statements by Bundy further support that the POSA’s modifications of the joist hangers of Cullen, Yamaguchi, and Robinson in which their respective top flanges (e.g., the top plates (62, 64) of Cullen, the top flanges of Yamaguchi, and the flanges (120) of Robinson) are lengthened to extend

over the top edge of the drywall. This suggest modification does not require cutting openings in the fire-retardant sheathing, which as I explained above, was not understood by the POSA as being a viable option for a joist hanger at the time of invention of the ‘339 Patent.

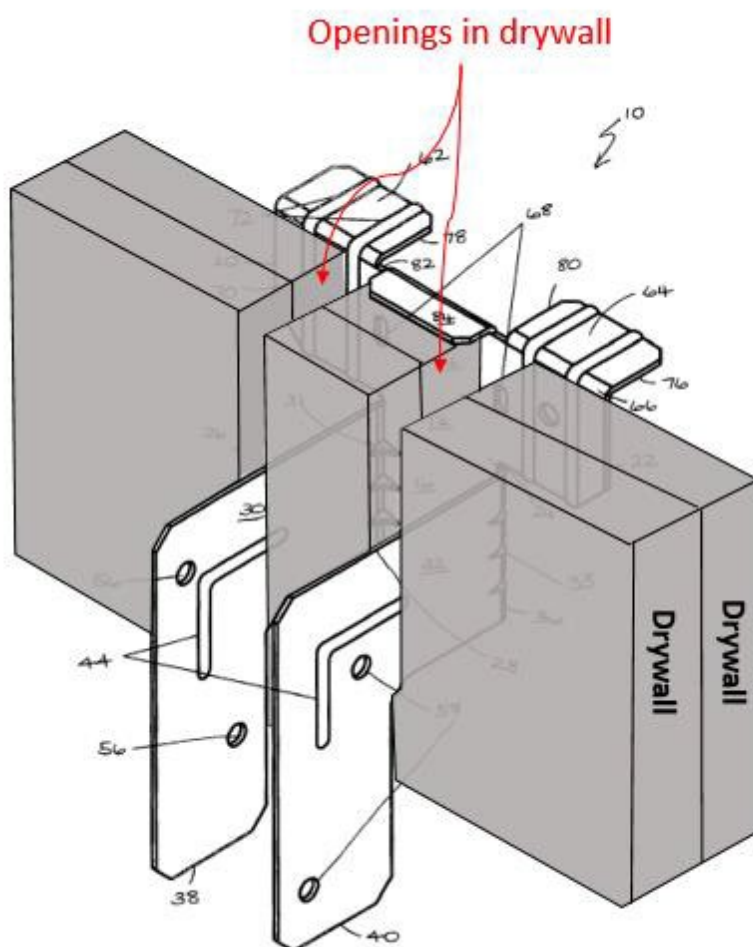
145. For these reasons, it is my opinion that the POSA at the time of invention of the ‘339 Patent would not have modified the fire wall assembly of Bundy to have the joist hangers of Cullen, Yamaguchi, and Robinson as advanced by Simpson in Grounds 3-8.

2. The POSA Would Not Have Used the Hangers From Cullen, Yamaguchi, and Robinson in the Claimed Method of the ‘339 Patent

a. Cullen

146. It is my opinion the POSA would not have used the joist hanger (10) of Cullen in the manner asserted by Simpson.

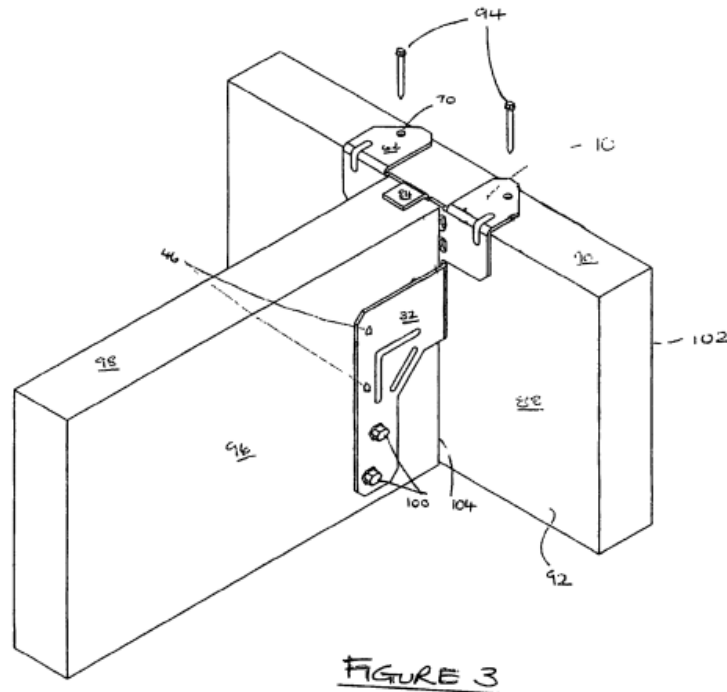
147. Simpson uses the joist hanger (10) of Cullen in a way that spaces the end of the joist away from the wall, as is apparent from Simpson’s image below. Simpson has to use the joist hanger (10) of Cullen in this fashion in order to meet the method claimed by the ‘339 Patent—installing the fire-retardant sheathing after mounting the fire wall hanger to the wood-framed wall.



Pet: 24.

148. The POSA would have recognized that the joist hanger (10) of Cullen is not used in a manner in which spaces the end of the joist (96) from the wall. Cullen’s joist hanger (10) does not create a space between its back plate (12) (or wall frame to which the back plate (12) attaches) and a channel-shaped portion. As shown in Fig. 3 (reproduced below), Cullen’s joist hanger (10) is used in the

conventional manner in which the end of the joist (96) abuts up against the sill (88), or specifically the back plate (12) in this case.



EX1004: Fig. 3.

149. This is how the joist hanger (10) of Cullen operates. Cullen explains the “joist 96 ... is guided and aligned against the back plate 12.” EX1004: 16:13-14.

150. Cullen’s joist hanger (10) has barbs (31, 33) that engage the end of the joist (96). Cullen states “the one or more barbs [31, 33] are arranged to allow insertion of a joist [96] into the bracket [10], but prevent its withdrawal.” Cullen: 4:8-12. As shown below, the barbs (31, 33) are at the intersection of the back plate

(12) and the side walls (30, 32). This means the joist (96) has to be seated against the back plate (12) in order for the barbs (31, 33) to engage the joist, not spaced apart from the back plate.

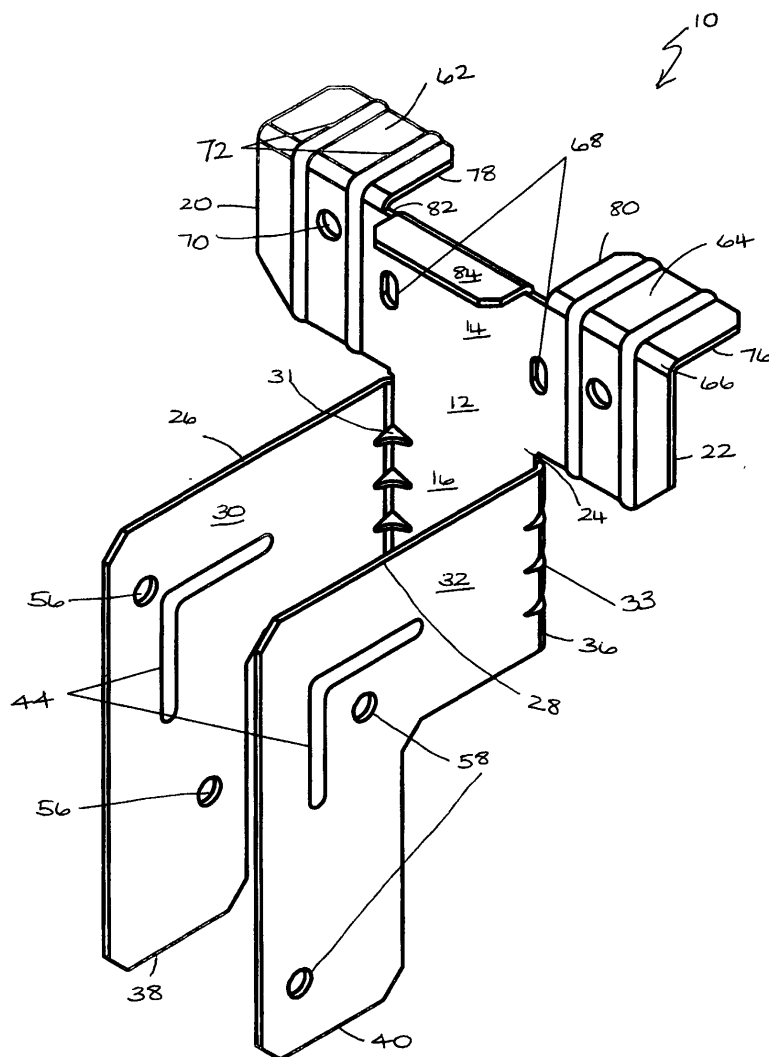


FIGURE 1

EX1004: Fig. 1.

151. In another example, Cullen explains the tab (84) at the top of the back plate (12) “is arranged so that [] the top surface of a joist [96] located against it at

the surface 86 will align with the top surface of the sill [88].” Cullen: 13:1-2.

Again, the tap (84) is at the back plate (12), which means the joist (96) has to be seated against the back plate (12) in order to engage the tab (840).

152. In addition, abutting the end of the joist (96) against the back plate (12), which is abutted up against the sill (88), means the sill (88) prevents the joist from rotating relative to the sill. Simpson’s use of Cullen requires the end of the joist (96) to be spaced away from the sill (88). This results in the side walls (30, 32) of the joist hanger (10) now having to resist the rotation of the end of the joist (96). This changes the load path by which the joist hanger (10) of Cullen transfers the load from the joist (96) to the sill (88). Spacing the end of the joist (96) from the sill (88), without any sheathing directly transferring the force to the wood-framed wall as in Bundy, creates a moment force that is now being transferred through side walls (30, 32) to the sill. The back plate (12) no longer provides any resistance to rotation. Changing this load path can cause the side walls (30, 32) to locally buckle due to transferring this moment force, which can cause the building to collapse.

153. Modifying Cullen in this manner is not disclosed or suggested by Bundy. Bundy relies upon the presence of the drywall to support loads carried by the joist hanger (2). Bundy teaches that its joist hanger (2) “applies a sufficiently large, flat surface to the exterior drywall sheet in order to stabilize the connection

without crushing the drywall either during installation (when the screws might otherwise be overdriven) or after” such as when support the joist (3). EX1005: 2:28-32. Therefore, it is my opinion that changing the joist hanger (10) to Cullen to create a space as part of a method in which the joist hanger is installed without the fire-retardant sheathing is not suggested by Bundy or Cullen. As I mentioned above, Simpson’s own internal testing demonstrated the drywall was necessary to support the joist hanger:

-

[REDACTED]

EX2086: SST0105115.

-

[REDACTED]

EX2086: SST0105127.

[REDACTED]

HIGHLY CONFIDENTIAL – ATTORNEY’S EYES ONLY

154. It is also my opinion that the POSA would not have believed the joist hanger (10) of Cullen would have even been able to maintain the space for the fire-retardant sheathing to be installed. Rotation of the bottom of Cullen’s side walls (30, 32) toward the sill (88) would close off the space and prevent the fire-retardant sheathing from being inserted between the joist and the sill. I have been informed of the following statements by Simpson’s employees that corroborate this understanding by the POSA:

- [REDACTED]
EX2092: SST0087797.
- [REDACTED] EX2089: SST0087749.
- [REDACTED]
EX2089: SST0087752.
- [REDACTED]
EX2088: SST0087827.

155. These statements by Simpson employees are from April 2014 and are indicative of the understanding of the POSA at the time of invention of the ‘339

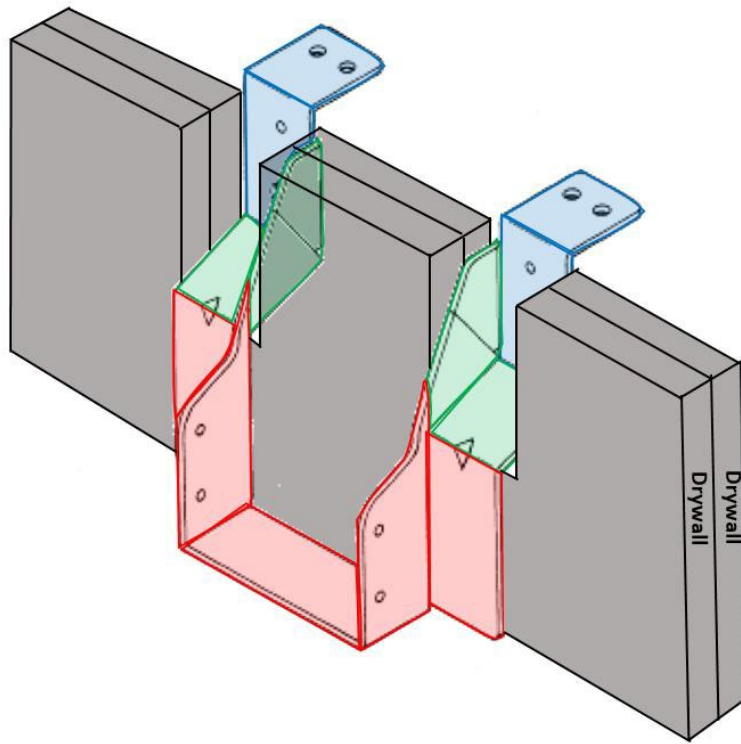
Patent. These statements demonstrate the POSA would not have had a reasonable expectation that Cullen’s joist hanger (10) would be able to support a joist (96) whose end is spaced from the sill (88) and still operate as required by the claimed method of the ‘339 Patent.

156. Accordingly, it is my opinion that the POSA would not have used the joist hanger (10) of Cullen in the method claimed by the ‘339 Patent.

b. Yamaguchi

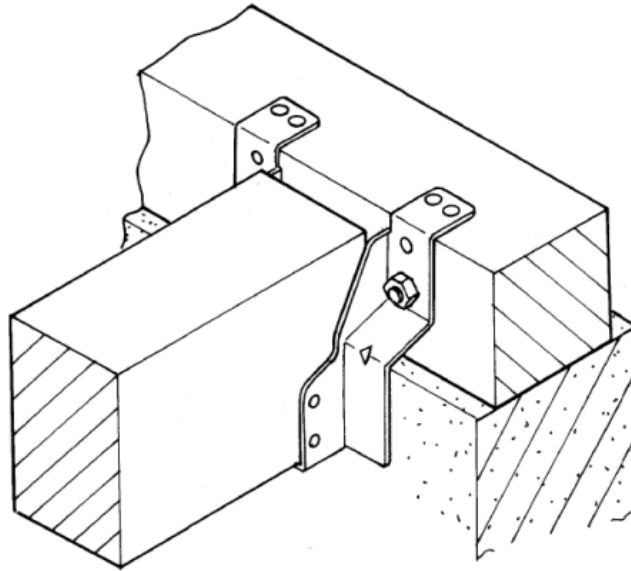
157. It is my opinion the POSA would not have used the joist hanger of Yamaguchi in the manner asserted by Simpson.

158. Simpson uses the joist hanger of Yamaguchi in a way that spaces the end of the joist away from the wall, as is apparent from Simpson’s image below. Simpson has to use the joist hanger of Yamaguchi in this fashion in order to meet the method claimed by the ‘339 Patent—installing the fire-retardant sheathing after mounting the fire wall hanger to the wood-framed wall.



Pet: 69.

159. The POSA would have recognized that the joist hanger of Yamaguchi is not used in a method of constructing a fire-resistive wall assembly in which the joist hanger is installed before the fire-retardant sheathing and spaces the end of the joist from the foundation wall. Yamaguchi's joist hanger connects a joist to the sill of a foundation wall. EX1007. Like Cullen, Yamaguchi also shows the end of the joist abutting the foundation wall. As a result, the foundation wall itself braces the end of the joist and prevents the joist and joist hanger from rotating.



EX1007: 5.

160. Modifying Yamaguchi in this manner is not disclosed or suggested by Bundy. Bundy relies upon the presence of the drywall to support loads carried by the joist hanger (2). Bundy teaches that its joist hanger (2) “applies a sufficiently large, flat surface to the exterior drywall sheet in order to stabilize the connection without crushing the drywall either during installation (when the screws might otherwise be overdriven) or after” such as when support the joist (3). EX1005: 2:28-32. Therefore, it is my opinion that changing the joist hanger of Yamaguchi to create a space as part of a method in which the joist hanger is installed without the fire-retardant sheathing is not suggested by Bundy or Yamaguchi. As I mentioned above, Simpson’s own internal testing demonstrated the drywall was necessary to support the joist hanger:

-

[REDACTED]

EX2086: SST0105115.

-

[REDACTED]

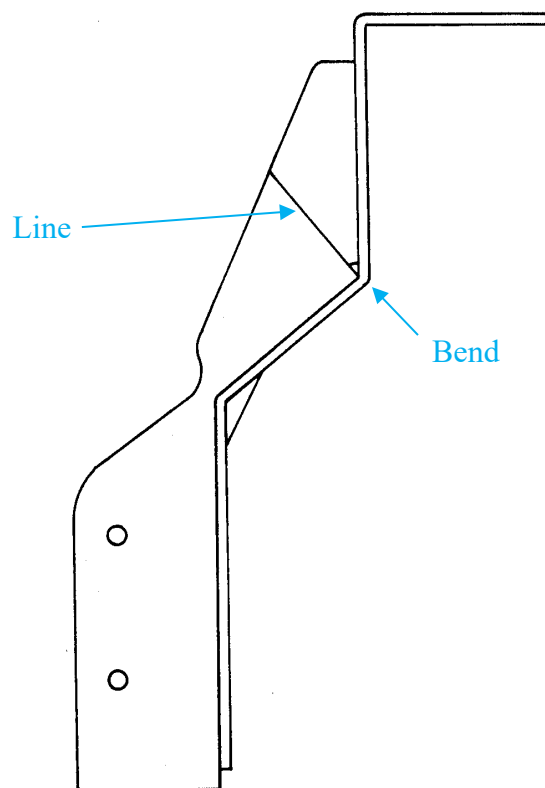
EX2086: SST0105127.

[REDACTED]

161. As discussed above with respect to Cullen, abutting the end of the joist against the foundation wall means the foundation wall of Yamaguchi prevents the joist from rotating relative to the sill. Simpson’s use of Yamaguchi requires the end of the joist to be spaced away from the wall. Spacing the end of the joist away from the foundation wall causes the downward force transferred from the joist to the hanger to be offset from the foundation wall. This introduces a larger moment force on the joist hanger of Yamaguchi. This moment force results in the bottom

of channel shaped portion and the joist of Yamaguchi rotating toward the foundation wall. Again, this changes the load path by which the joist hanger of Yamaguchi transfers the load from the joist to the sill.

162. The POSA would not use the joist hanger of Yamaguchi in the manner asserted by Simpson because, without the bracing provided by the foundation wall against the end of the joist, the joist hanger of Yamaguchi may deform and rotate toward the foundation wall. The bend indicated below on each side of the joist hanger of Yamaguchi would need to resist the entirety of the rotational force. Such a bend would likely not be able to do so. The line identified below indicates this portion of the joist hanger is formed by two different pieces and therefore would not assist in resisting rotation.

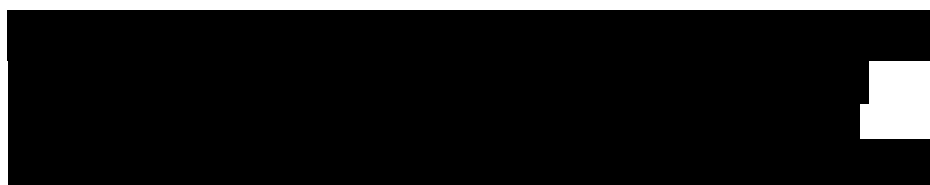


EX1007 (annotated).

163. The rotational force flows through this bend and it is questionable whether or not the bend would be able to resist the channel-shaped portion of the Yamaguchi hanger from rotating toward the foundation wall.

164. And even if the joist hanger of Yamaguchi does not deform, the POSA would question whether the sill or top plate of the wall would be able to withstand the rotational force being imparted into it by Yamaguchi’s joist hanger. As Simpson discovered during their testing:

-



[REDACTED]

Evans Exhibit 8: at SST0105129.

165. Rotation of the bottom of the channel-shaped portion of Yamaguchi’s joist hanger toward the wall would close off the space and prevent the fire-retardant sheathing from being inserted between the joist and the wall. I reiterate the following by Simpson’s employees that corroborate this understanding:

- [REDACTED] EX2089: SST0087752.
- [REDACTED] EX2089: SST0087752.
- [REDACTED]

EX2088: SST0087827.

166. Accordingly, it is my opinion, the POSA would not have used the joist hanger of Yamaguchi in the method claimed by the ‘339 Patent.

c. Robinson

167. It is my opinion the POSA would not have used the joist hanger of Robinson in the manner asserted by Simpson.

168. Robinson’s joist hanger is used in a different manner of construction than Bundy. Robinson’s joist hanger provides a space between the joist and a masonry/concrete wall for ducts, cables, pipes, and wires that extend along the face of the wall to extend through. In the wood-framed wall of Bundy, such ducts, cables, pipes, and wires are run through the studs of the wood-framed wall, not along the face of the wood-framed wall. EX2047: 6.

169. Robinson’s joist hanger has a duct cavity (126) that allows the ducts, cables, pipes, and wires to pass. EX1011: 2:1-6, 2:20-24, 3:11-15, 4:13-19, 5:12-13. Robinson states “[t]he duct opening may be arranged to allow cables and pipes to be passed through it. Additionally, or alternatively, the duct opening may define a ventilation duct between the end of the joist and the supporting structure.”

Robinson: 2:20-24. Robinson also says, “to provide a cavity or duct opening between the end of the joist and the structural wall.” Robinson: 3:11-15.

Robinson explains “[t]he duct opening 126 may include an internal dividing wall

136 to separate copper pipes carrying hot water from electrical cables.” Robinson: 4:13-19. Robinson also states “[t]he duct opening 126 is thereby arranged to allow cables and pipes to be passed through it.” Robinson: 5:12-13.

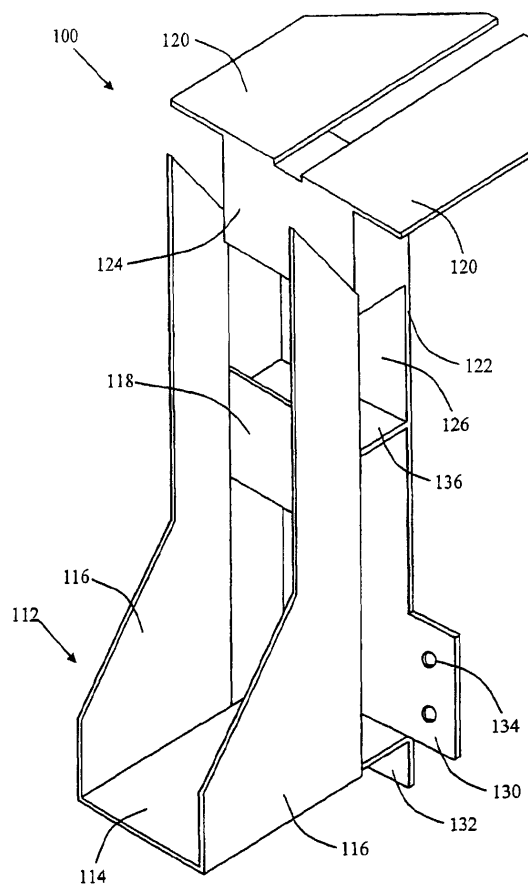
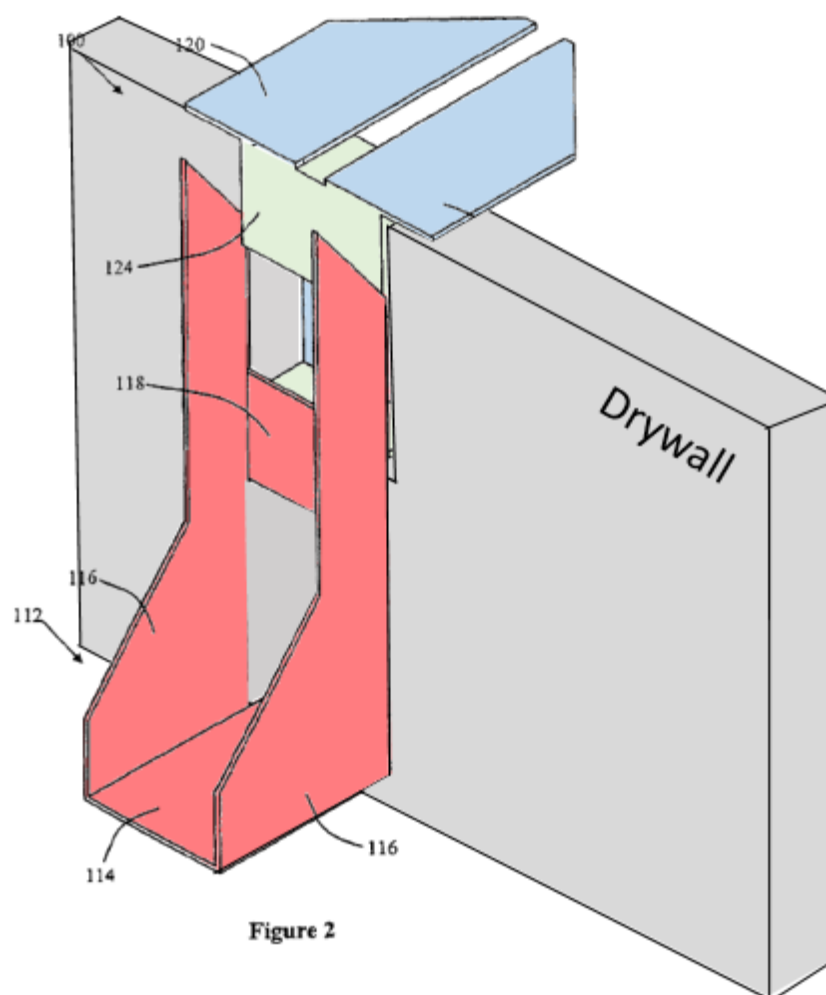


Figure 2

EX1011: Fig. 2.

170. As shown below, Simpson’s use of fire-retardant sheathing with Robinson’s joist hanger covers up the open sides of the duct opening (126), making the duct opening inaccessible for ducts, cables, pipes, and wires to extend through the duct opening.



Pet: 106.

171. Modifying Robinson in this manner is not disclosed or suggested by Bundy. Bundy relies upon the presence of the drywall to support loads carried by the joist hanger (2). Bundy teaches that its joist hanger (2) “applies a sufficiently large, flat surface to the exterior drywall sheet in order to stabilize the connection without crushing the drywall either during installation (when the screws might otherwise be overdriven) or after” such as when support the joist (3). EX1005:

2:28-32. Therefore, it is my opinion that changing the joist hanger of Robinson to create a space as part of a method in which the joist hanger is installed without the fire-retardant sheathing is not suggested by Bundy or Robinson. As I mentioned above, Simpson’s own internal testing demonstrated the drywall was necessary to support the joist hanger:

-

[REDACTED]

EX2086: SST0105115.

-

[REDACTED]

EX2086: SST0105127.

172. In addition, at the time of invention of the ‘339 Patent, the POSA would have understood that the large cutout required in the fire-retardant sheathing

to accommodate Robinson’s joist hanger would negatively impact (if not eliminate) the fire resistance capabilities of the fire barrier. Because of this, the POSA would not use Robinson’s joist hanger in this manner. I reiterate the following statements by Simpson’s employees that underscore this understanding by the POSA:

- [REDACTED] EX2087:
SST0077467.
- [REDACTED]
EX2088: SST0087824.
- [REDACTED]
EX2089: SST0087752.
- [REDACTED] EX2041:
SST0087800.
- [REDACTED] EX2064: 168:23-
170:13.
- [REDACTED] EX2065: 107:20-108:23.
- documenting skepticism from an engineering firm that that there were “some jurisdictions that [the engineering firm] fe[lt] won't accept it because of the slit made in the drywall.”
EX2090: MiTek00014746-47.

173. Moreover, the POSA would not view Robinson’s joist hanger as an effective solution because Robinson’s joist hanger would not have been

economically feasible. Robinson’s joist hanger has a complicated construction requiring multiple pieces, making it unreasonably expensive to produce.

Robinson’s joist hanger cannot be stamped from a single piece of sheet metal. For example, the second surface (122) extends above and below the dividing wall (136). This would require the same portion of sheet metal to form both the second surface (122) and the dividing wall (136) if these components were formed by stamping a sheet metal blank. In addition, the mount 124 appears to be a solid block, not a piece of sheet metal, which means it would have to be attached to the other components of the joist hanger. Such economic considerations are a driving factor in this art of metal joist hangers, as evidenced by Simpson’s belief the market would prefer “a more cost effective hanger without the need to develop a -- a product that would cantilever off” in order to allow the fire-retardant sheathing to be installed after. EX2065: 108:25-118:3.

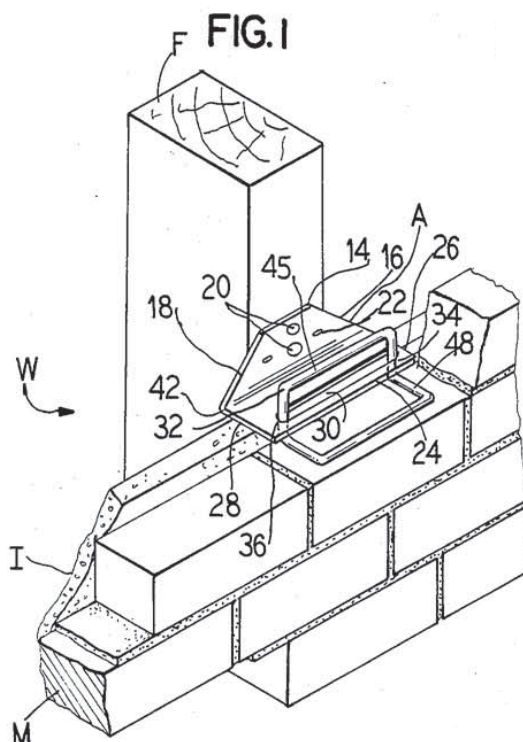
174. Accordingly, it is my opinion, the POSA at the time of invention of the ‘339 Patent would not have combined Robinson and Bundy as articulated by Simpson in the Petition. For the reasons above, the POSA would not have used the joist hanger of Robinson in the method claimed by the ‘339 Patent.

3. Allan Fails to Teach Cutting an Opening in a Fire Barrier and the Method of the ‘339 Patent

175. It is my opinion Allan does not teach that a POSA would or even could cut an opening in a fire barrier for a joist hanger to extend through.

176. Simpson is careful with how they talk about Allan. Pet: 23-27, 68-72, and 105-109. Simpson does not use the terms “fire resistant sheathing” or “fire-resistive wall assembly” in these sections (Pet: 23-27, 68-72, and 105-109) of the Petition. Instead, Simpson talks generally in terms of “drywall.” This is because, it is my opinion, Simpson is arguing Allan teaches something it does not. While Allan discloses cutting openings in drywall being used as insulation, Allan does *not* disclose cutting openings in drywall being used as part as a fire barrier.

177. Allan is not a joist hanger reference. Instead, Allan shows and describes an anchoring means or wall anchor (A) used to tie a masonry veneer wall (M) to a building frame member (F) of a wall structure (W). EX1006: Abstract, 3:12-20. The wall anchor (A) is secured to the building frame member (F). EX1006: Fig. 1, 3:28-33. One leg (12) of the wall anchor (A) extends through the insulation layer (I) and connects to a tie (32) embedded in the masonry veneer wall (M) to tie the building frame member (F) to the masonry veneer wall. EX1006: Fig. 1, 3:28-33, 4:15-18.



EX1006: Fig. 1.

178. Allan teaches an “insulation layer or plasterboard sheet I.” EX1006: 3:14-15. Allan states “slots may be cut into the insulation layer or plasterboard sheets I through which the outstanding leg [of the wall anchor (A)] is inserted.” EX1006: 4:10-12. Thus, Allan discloses cutting slots in an insulation layer, not in a fire barrier or fire wall assembly. There is a critical difference known to the POSA between cutting an opening in insulation and cutting an opening in a fire barrier. Cutting an opening in thermal insulation is relatively inconsequential and simply results in a loss of insulating capacity. POSA’s do not lose their licenses or face liability for cutting openings in thermal insulation. In contrast, cutting an

opening in the fire barrier can create a fire jet in the fire barrier where the fire penetrates the fire barrier, completely defeating the ability of the fire barrier to block a fire. This is why building codes are so strict about fire barriers.

Inadequately constructed fire barriers (such as fire barriers with unsealed penetrations in them) put the occupants of the building in danger during a fire.

POSA’s can lose their licenses and/or face liability for failing to design and/or construct a fire barrier to code. EX2043: 22-23 (“A severe fire will find any weakness in a separating barrier Care must be taken to ensure that poor quality workmanship or penetration for services and fittings do not compromise the performance of fire-resisting walls”), 122 (“Penetrations through walls and floors can severely reduce the ability of these barriers to contain a fire”).

179. Again, I reiterate that I have been informed of a number of statements by Simpson employees that demonstrate this understanding—a guiding principle for the POSA at the time of invention of the ‘339 Patent was to avoid cutting openings in fire barriers:

- [REDACTED] EX2087:
SST0077467.

- [REDACTED]
EX2088: SST0087824.

- [REDACTED]

[REDACTED] EX2089: SST0087752.

- [REDACTED] EX2041: SST0087800.
- [REDACTED] EX2064: 168:23-170:13.
- [REDACTED] EX2065: 107:20-108:23.
- documenting skepticism from an engineering firm that that there were “some jurisdictions that [the engineering firm] fe[lt] won't accept it because of the slit made in the drywall.” EX2090: MiTek00014746-47.

180. This is why Bundy states the advantage of its disclosed joist hanger (2) is that “[i]mportantly, the [joist hanger] does not require any alternation of the drywall or the addition of any otherwise extraneous components.” EX1005: 2:18-19. Instead, the top flanges (15) of Bundy’s joist hanger (2) simply extend over the top edge of the drywall (6), leaving the drywall intact as a fire barrier. EX1005: Fig. 2, 5:42-43.

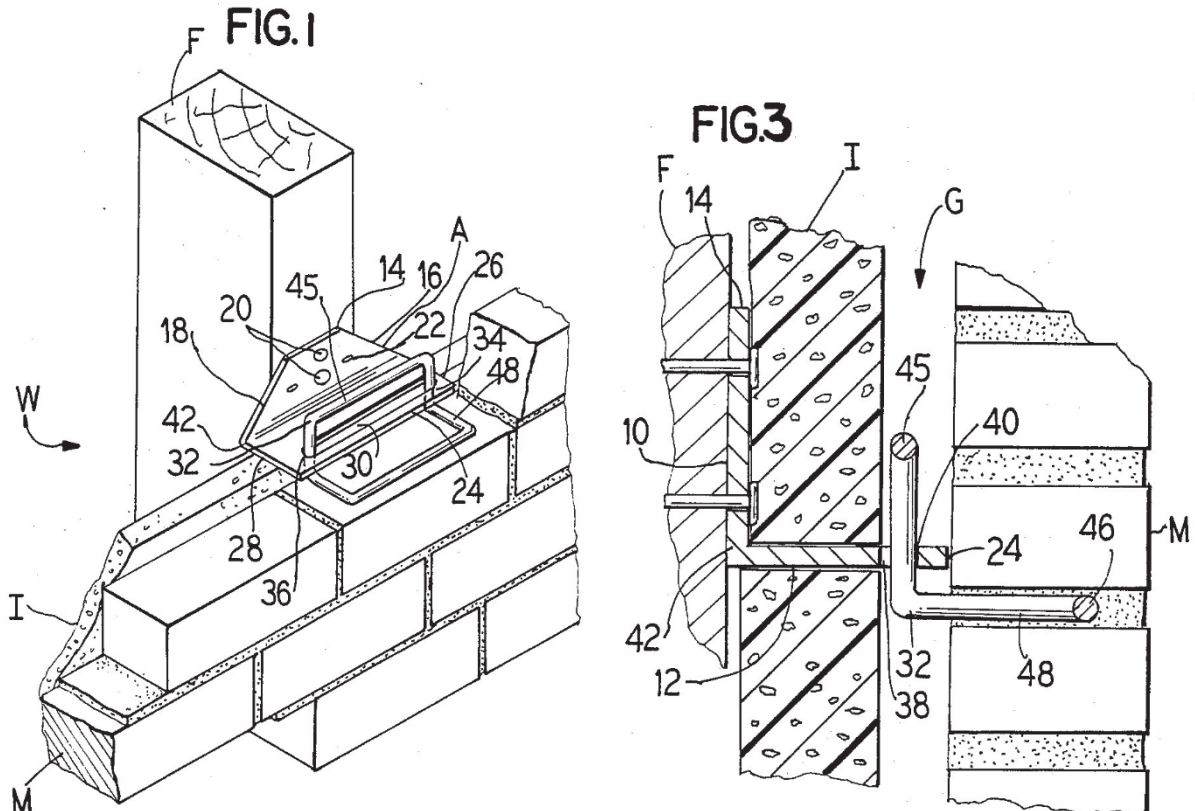
181. Allan is for coupling a veneer wall to the structure of the building and does not tell the POSA to deviate from the guiding principle known to the POSA to avoid cutting openings in fire barriers. Allan does not tell the POSA to extend a joist hanger through a fire barrier. Nor does Allan tell the POSA to cut an opening in a fire barrier at all. Allan simply teaches cutting a slot in an insulation layer for the leg of the wall anchor (A) to extend through, which results in “minimal energy

losing air gaps in the insulation.” EX1006: 4:10-14. This is why Simpson never uses the terms “fire resistant sheathing” or “fire-resistive wall assembly” in the Allan portions (Pet: 23-27, 68-72, and 105-109) of the Petition, because Allan has nothing to do with constructing a fire barrier. Simpson’s use of Allan to attempt to justify cutting the openings in the fire-retardant sheathing that would be needed to accommodate the joist hangers of Cullen, Yamaguchi, and Allan in order to practice the claimed method of the ‘339 Patent is contrary to the understand of Allan by the POSA.

182. In addition, it is my opinion that Allan does not disclose the steps of installing the fire-retardant sheathing as recited by the claims of the ‘339 Patent. Independent claims 1 and 27 of the ‘339 Patent require both (1) “inserting the fire retardant sheathing between the channel-shaped portion [] and the frame wall” “after mounting the fire wall hanger on the frame wall,” and (2) moving (as recited by claim 1) or arranging (as recited by claim 27) “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.” EX1001: claims 1 and 27.

183. With reference to Figs. 1 and 3 below, the method of construction taught by Allan includes aligning the slot in the insulation layer (I) with the leg (12) of the wall anchor (A), and then moving the insulation layer (I) toward the building frame member (F). This results in the leg (12) of the wall anchor (A)

being inserted into the slot. After the insulation layer (I) is positioned, the rest of the wall anchor (A) is assembled by inserting the tie (32) through the opening (30) in the leg (12). EX1006: 4:1-40. The tie (32) is embedded in the mortar of the masonry veneer wall (W).



EX1006: Figs. 1 and 3.

184. Thus, only part of Allan’s wall anchor (A) is installed before the insulation layer (I) is attached to the building frame member (F). Neither Allan, nor Bundy, Cullen, Yamaguchi, nor Robinson, disclose inserting the fire-resistant sheathing into the gap between a wood-framed wall and a channel-shaped portion of a fire wall hanger already secured to the wood-framed wall. To be clear, Bundy

does not provide a teaching for inserting fire resistant sheathing into the gap between the wood-framed wall and the channel-shaped portion. Bundy only discloses applying the hanger over the previously mounted sheathing. Likewise, Allan’s wall anchor is for exterior walls only and would not be applicable to an interior firewall with floor joists.

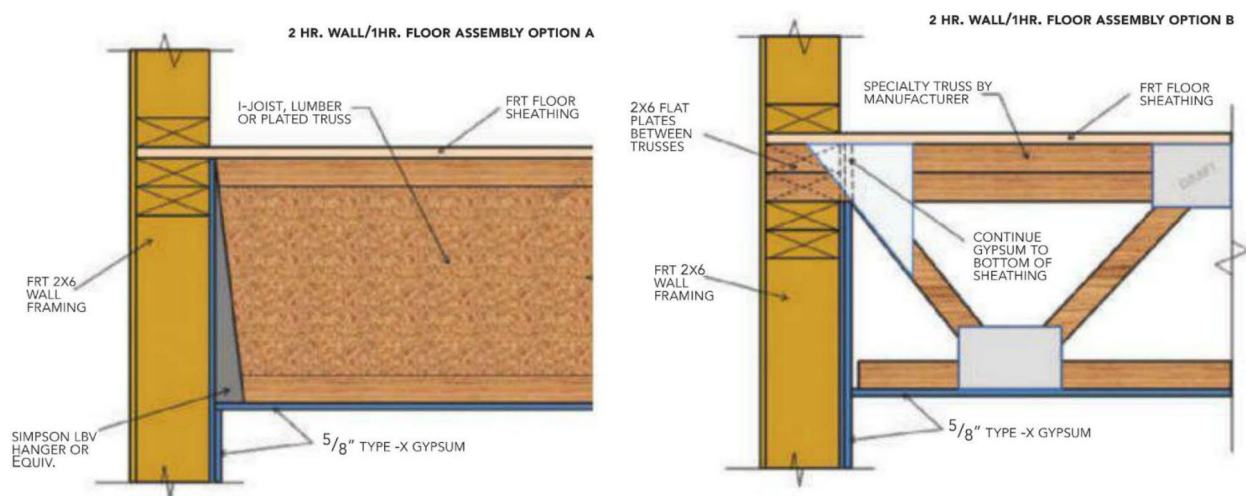
185. Nor would this solution have been intuitive to the POSA based on the Allan, Bundy, Cullen, Yamaguchi, and Robinson. This is because multiple different leaps would have had to come together in order to reach the claimed method of the ‘339 Patent, including:

- Selecting a hanger that would form a space between its channel-shaped portion and the frame wall in order to accommodate the fire retardant sheathing;
- Defying one of the POSA’s guiding principles of avoiding cutting openings in a fire barrier and cutting openings in the fire retardant sheathing; and
- Realizing the need to align and slide the fire retardant sheathing relative to the fire wall hanger to have the fire retardant sheathing fit behind the channel-shaped portion and have the fire wall hanger extend through the openings in the fire retardant sheathing.

186. These leaps are what the ‘339 Patent made and why the claim method of the ‘339 Patent is patentable over the Cullen/Bundy/Allan combination, the Yamaguchi/Bundy/Allan combination, and the Robinson/Bundy/Allan combination.

B. Grounds 9-11: ArchRecord/Commins/Cullen Combination

187. ArchRecord is a promotional advertisement article in support of timber or wood construction. EX1031: 5 (“Educational-Advertisement” in the heading). ArchRecord provides general descriptions about different types of traditional wood construction including balloon, platform, and semi-balloon wood framing constructions. EX1031: 6. As part of this description, ArchRecord provides the following image:

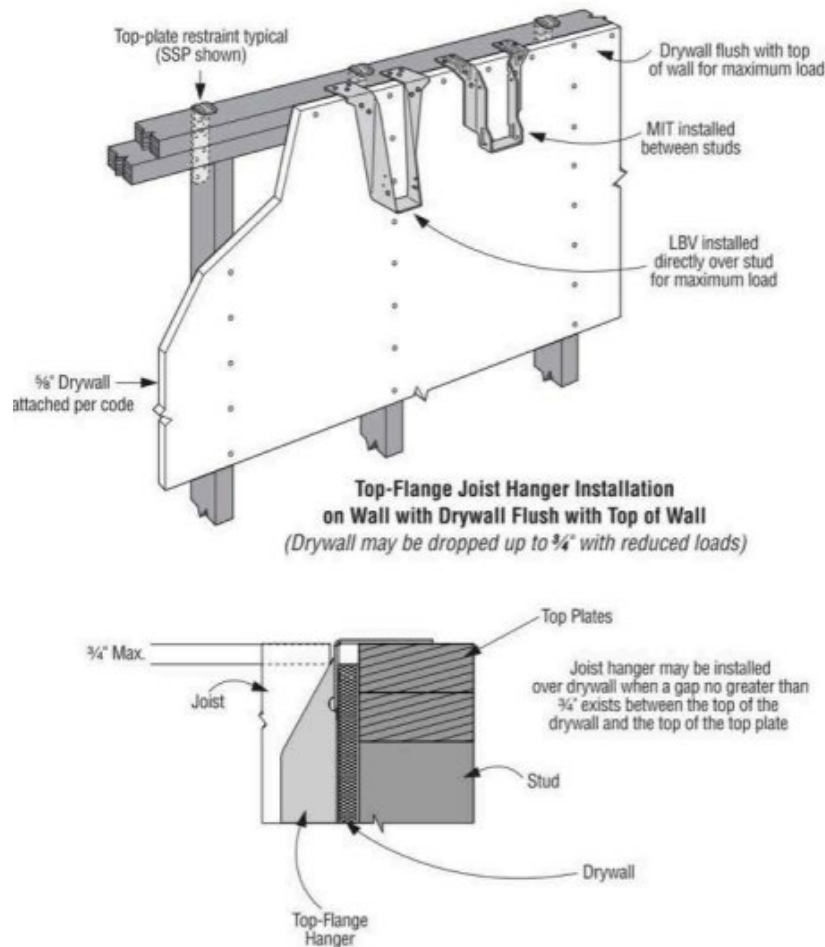


(LEFT) Semi-balloon framing is more common in buildings five stories and higher; (RIGHT) it is often used as an alternative to platform framing where fire requirements or shrinkage may be a challenge.

EX2008: 6; EX1031: 6.

188. Option A in the above image uses a joist hanger. However, the joist hanger is installed over the top edge of the gypsum, just like in Bundy. EX1031: 6. The hanger in Option A is identified as a Simpson LBV Hanger (or equivalent). EX1031: 6. Per Simpson’s Technical Bulletin regarding the LBV Hanger, the LBV Hanger is installed over the top edge of the gypsum, just like Bundy. As with

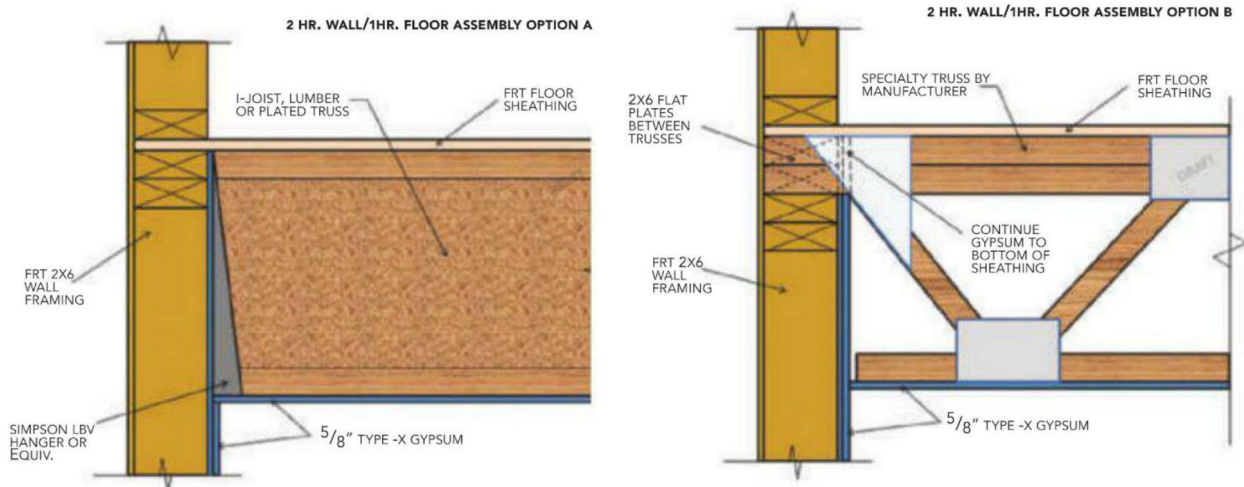
Bundy, this installation of the LBV Hanger relies on placing the back of the channel-shaped portion against the front face of the drywall to resist rotation of the LBV Hanger. Thus, Option A fails to render the claims of the ‘339 Patent invalid for all the same reasons I discussed above in relation to Bundy.



EX1012: 2.

189. Option B is a top chord bearing truss arrangement where the top chord of the truss rests directly on the top of the wood-framed wall. Option B does not use a joist hanger. Thus, Option B cannot teach installing the drywall on a wood-

framed wall after a joist hanger is mounted on the wood-framed wall. In fact, Option B does not teach any order of installing the drywall on the wood-framed wall relative to mounting the top chord on the wood-framed wall.



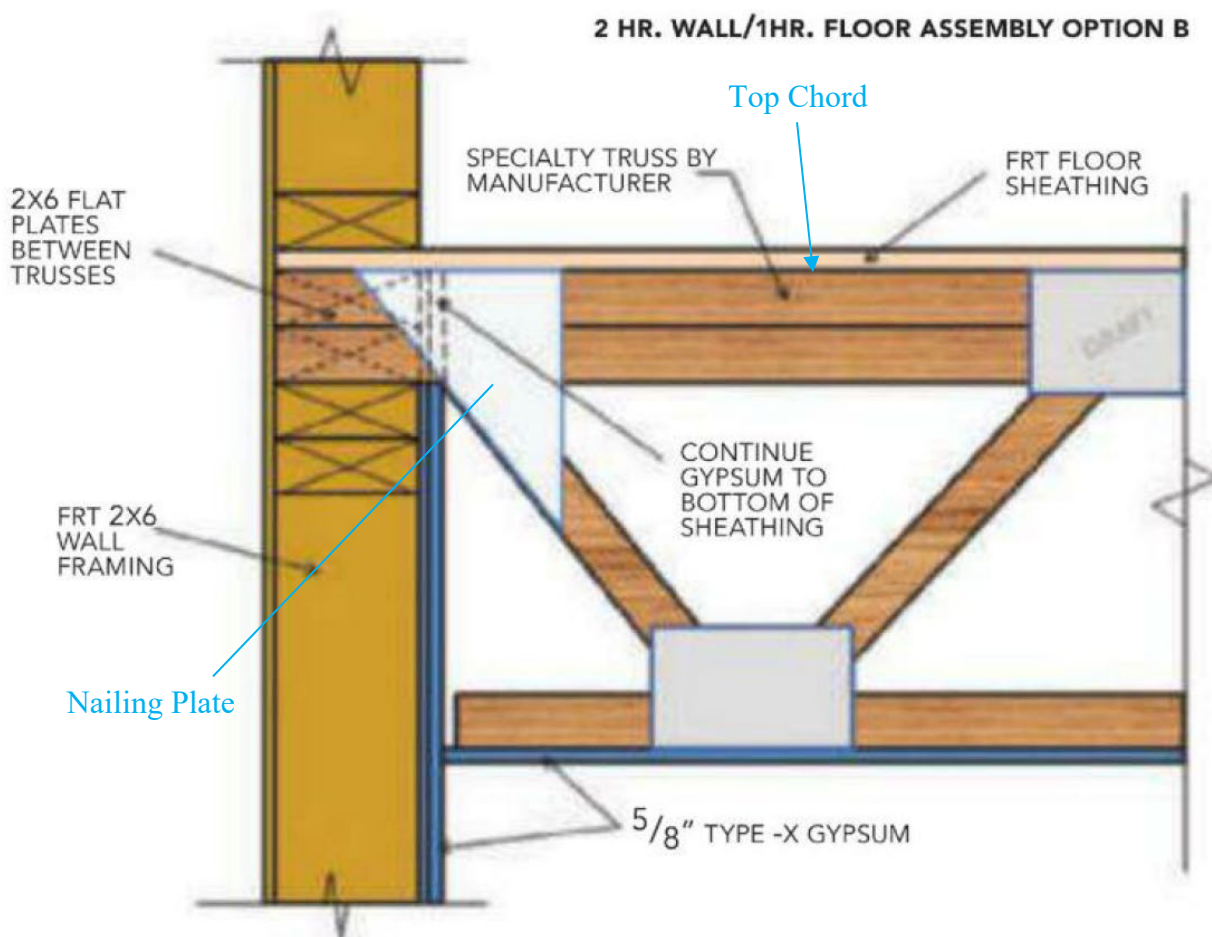
(LEFT) Semi-balloon framing is more common in buildings five stories and higher; **(RIGHT)** it is often used as an alternative to platform framing where fire requirements or shrinkage may be a challenge.

EX2008: 6; EX1031: 6.

190. Because Option B illustrates a top-chord bearing truss arrangement, Option B does not show a joist hanger or structural connector that extends through the drywall that connects the truss to the wood-framed wall. What Simpson points to as a “structural connector” is actually just a component of the truss itself, a nailing plate. Pet: 145. The nailing plate connects the top chord of the truss to the web of the truss. The nailing plate does nothing to connect the truss to the wood-framed wall. Instead, the top chord of the truss extends leftward beyond the nailing plate to rest on the top of the wood-framed wall.

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191. In Option B, the drywall is shown notched around the entire top chord of the truss, not just the nailing plate. This allows the top chord to reach the top of the wood-framed wall. The drywall is not notched around just the nailing plate. Thus, the nailing plate only extends through the drywall in the sense that the top chord of the truss that the nailing plate is attached to extends through the drywall. Moreover, trusses come in all sizes and configurations and depending on the size/configuration of the truss, a nailing plate would not even be positioned to extend through the drywall in a top chord bearing arrangement.



EX2008: 6; EX1031: 6.

192. Option B also indicates that fire-retardant treated wood would need to be required in the wall framing due to the top chord passing through the drywall. EX1031: 6. The above image calls out “FRT 2X6 WALL FRAMING.” “FRT” stands for fire-retardant treated wood.

193. Options A and B were not universally adopted in the art at the time of the ‘339 Patent. These are merely diagrams illustrating potential fire rated constructions being used in the broader context of the “Education Advertisement” of the article. Besides the image, the article does not otherwise describe the illustrated constructions as being suitable fire-rated constructions. At the time of invention of the ‘339 Patent there were a wide range of different ways fire-rated wall assemblies were being constructed based on the applicable building code. EX2067: 41:1-44:11 (describing six different methods building firewalls that he was aware of “depending on how the authority having jurisdiction interpreted the code”); EX2076: ¶40 (Simpson retained expert stating “the market did not have good solutions for using joist hangers with two-hour fire-resistive wall assemblies” and identifying solutions he implemented in the appropriate time frame). The general fire assembly was typically driven by the architect who was informed by the building code, fire marshal, or code enforcement officer.

194. In fact, I have substantial doubts that Option B would be an acceptable 2-hour fire-rated assembly meeting fire code requirements in the

majority of states in which I am licensed to practice. Option B does not provide for sprinklers in the plenum space of the truss as required for sprinkled buildings.

Likewise, the 5/8-inch type x gypsum board only give a 1-hour fire rating.

Additionally, the flooring above the truss is not rated which would result in the floor collapsing if the fire started of the above floor. Option B is a typical type rating that I would see for a garage at a residence, which only requires a 1-hour rating.

195. Simpson combines Options A and B of ArchRecord, Commins, and Cullen to meet the claimed method of the ‘339 Patent, but it is my opinion this combination by Simpson is not an accurate way the POSA would have understood these references.

196. Option A of ArchRecord is the same as Bundy and, at best, only tells the POSA to the mount the joist hanger against the drywall, after the drywall has already been mounted on the wood-framed wall.

197. Option B of ArchRecord does not show or use joist hangers. It does not contemplate a structural element, like a hanger that would be subject to bending moment. The truss shown in Option B is not cantilevered, but would be supported on the opposite side by another wall, thereby providing a force couple substantially shielding the truss from a bending moment about either one of the wall frames. Therefore, the POSA would not consider Option B to be relevant to

the problem of providing hangers that could be used in a construction method in which the hangers were installed prior to the mounting of the drywall. Option B of ArchRecord also does not describe the order of construction recited in the claims of the ‘339 Patent—e.g., the fire-retardant sheathing being installed on the wood-framed wall after the fire wall hanger. Option B does not describe how the illustrated wall assembly is assembled, nor the order of construction of the illustrated wall assembly.

198. This combination by Simpson relies on the joist hanger from Cullen. As I previously discussed, there are numerous reasons why the POSA would not use Cullen in the manner being asserted by Simpson. I reiterate here that the joist hanger (10) of Cullen is not used in a manner in which spaces the end of the joist (96) from the wall. Instead, Cullen’s joist hanger (10) is used in the conventional manner in which the end of the joist (96) abuts up against the sill (88), or specifically the back plate (12) in this case. EX1004: 16:13-14. This allows the barbs (31, 33) and tab (84) of Cullen to perform their functions of engaging the joist (96). Cullen: 4:8-12, 13:1-2.

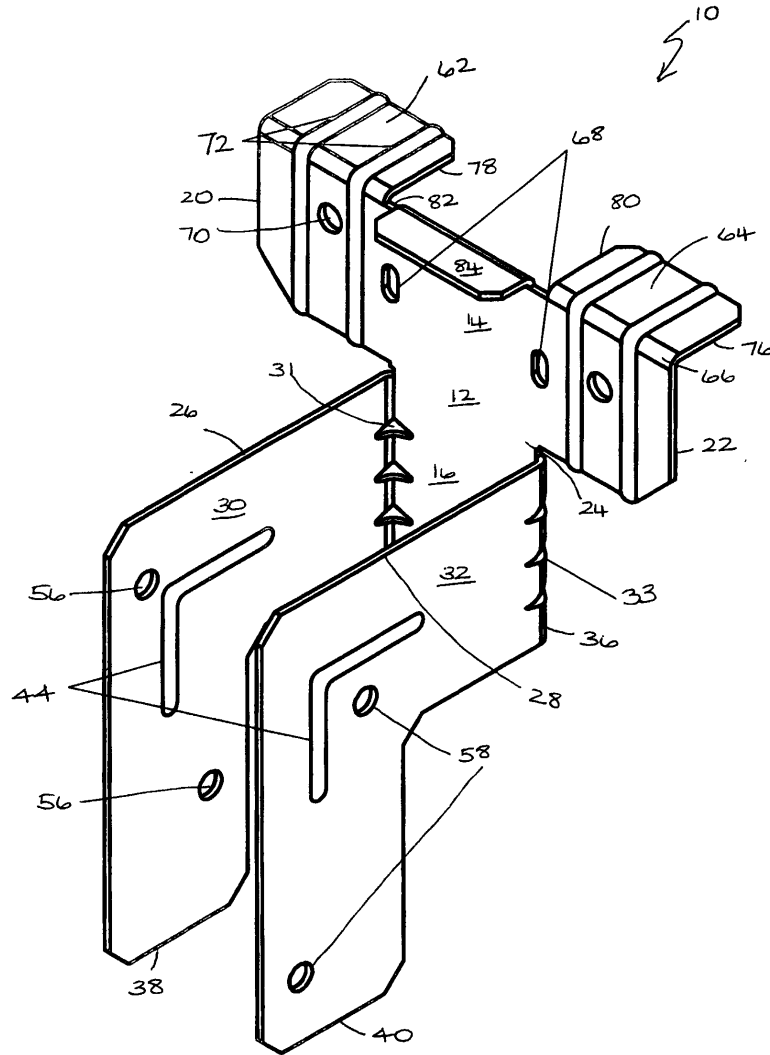


FIGURE 1

EX1004: Fig. 1.

199. In addition, as I described above, the POSA would not space the joist (96) received between Cullen’s side walls (30, 32) from the sill (88) to make space for fire-retardant sheathing because it would (1) lead to local buckling of the side walls (30, 32) in the portion of the side walls extending through the fire-retardant sheathing and/or (2) rotation of the joist hanger relative to the sill (88) that results

in structural failure. Again, I reiterate these statements by Simpson that illustrate this understanding by a POSA:

- [REDACTED]
EX2092: SST0087797.
- [REDACTED] EX2089: SST0087752.
- [REDACTED]
EX2089: SST0087752.
- [REDACTED] EX2088: SST0087827.
- In response to Simpson’s testing, S [REDACTED]
EX2086: SST0105115.
- [REDACTED]

[REDACTED]
[REDACTED] EX2086: SST0105127.

[REDACTED]

•

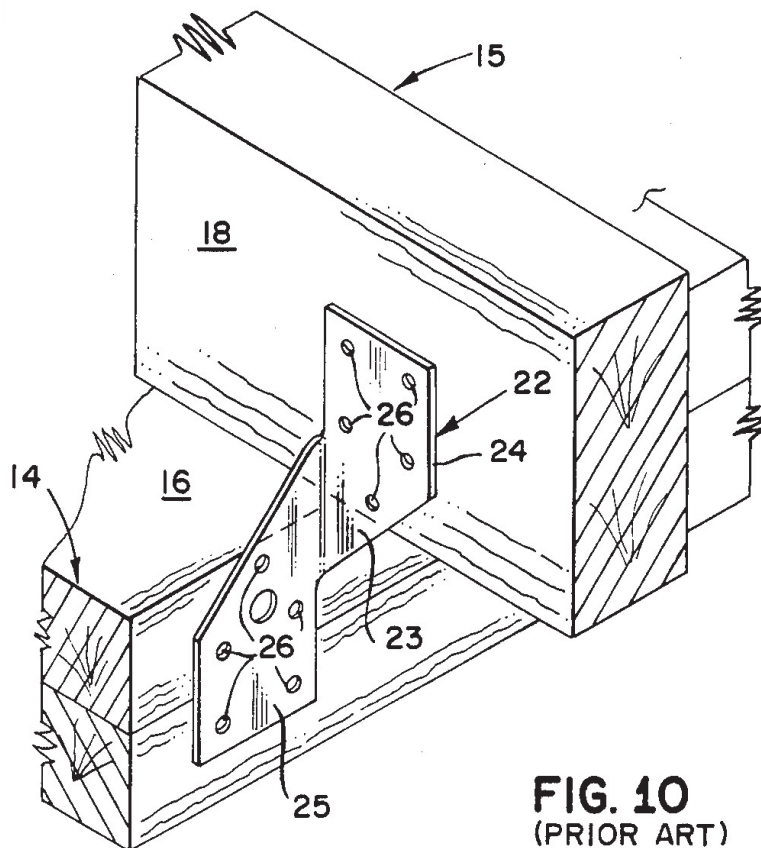
[REDACTED]
[REDACTED] EX2086: SST0105129.

[REDACTED]

200. Simpson also applies Cummins. But Cummins is a hurricane tie that prevents roof members from lifting off of walls due to strong winds (such as from

a hurricane). EX1032: Abstract, 1:63-68, Fig. 1. The hurricane tie of Cummins does not support a vertically downward directed load.

201. More importantly, Cummins has nothing to do with fire barriers or fire rated wall constructions. With reference to prior art hurricane ties as shown in Fig. 10, Cummins explains when such ties were used with sheet rock (a synonymous term for drywall or gypsum board), “a notch would have to be made in the gypsum board around extension 23.” EX1032: Fig. 10, 4:32-35. Cummins does not disclose or suggest that this drywall in which the notch is formed is part of a fire barrier.



EX1032: Fig. 10.

202. Cummins does not tell a POSA to cut an opening in a fire barrier. As I previously explained cutting an opening in the fire barrier can create a fire jet in the fire barrier where the fire penetrates the fire barrier, completely defeating the ability of the fire barrier to block a fire. This is why building codes are so strict about fire barriers. Inadequately constructed fire barriers (such as fire barriers with unsealed penetrations in them) put the occupants of the building in danger during a fire. POSA’s can lose their licenses and/or face liability for failing to design and/or construct a fire barrier to code. EX2043: 22-23 (“A severe fire will find any weakness in a separating barrier Care must be taken to ensure that poor quality workmanship or penetration for services and fittings do not compromise the performance of fire-resisting walls”), 122 (“Penetrations through walls and floors can severely reduce the ability of these barriers to contain a fire”).

203. Again, I reiterate that I have been informed of a number of statements by Simpson employees that demonstrate this understanding—a guiding principle for the POSA at the time of invention of the ‘339 Patent was to avoid cutting openings in fire barriers:

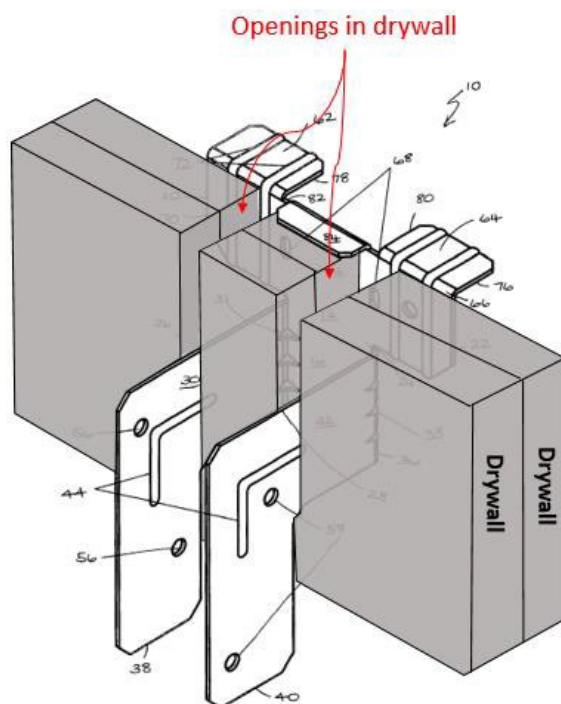
- [REDACTED] EX2087:
SST0077467.
- [REDACTED]
EX2088: SST0087824.

- [REDACTED]
[REDACTED] EX2089: SST0087752.
- [REDACTED] EX2041:
SST0087800.
- [REDACTED] EX2064: 168:23-
170:13.
- [REDACTED] EX2065: 107:20-108:23.
- documenting skepticism from an engineering firm that that there were “some jurisdictions that [the engineering firm] fe[lt] won't accept it because of the slit made in the drywall.” EX2090: MiTek00014746.

204. Cummins is for hurricane ties and does not tell the POSA to deviate from the guiding principle known to the POSA to avoid cutting openings in fire barriers. Cummings does not tell the POSA to extend a joist hanger through a fire barrier. Nor does Cummings tell the POSA to cut an opening in a fire barrier at all. Cummings simply teaches cutting a notch around a hurricane tie.” EX1032: 4:32-35.

205. It is my opinion that none of ArchRecord, Cummins, nor Cullen show or suggest to the POSA a hanger that is installed before fire-retardant sheathing that leaves a space to insert the subsequently installed fire-retardant sheathing, as recited by the claims of the ‘339 Patent. Simpson’s combination of these prior art references leaves large openings in the drywall, that are not filled by any additional

fire resistive material, as shown below, and would allow fire to penetrate the fire wall.



Pet: 151.

206. Accordingly, it is my opinion, the POSA would not have combined ArchRecord, Cummins, and Cullen in the manner asserted by Simpson.

C. The Petition Fails to Establish Where the Prior Art Teaches the Steps of the Method Claims by the ‘339 Patent

207. Based on my review of the Petition, it is my opinion the Petition fails to provide specific citations to the applied prior art references of where several claim limitations of independent claims 1 and 27 are found in the applied prior art references. In particular, it is my opinion the Petition fails to cite to specific

teachings in the asserted prior art for the following claim limitations in independent claims 1 and 27:

- [1.E]/[27.E] – installing the fire-retardant sheathing “*after* mounting the fire wall hanger on the frame wall and after cutting the opening into the exterior edge of the fire retardant sheathing” (Pet. at 32, 80, 115-116, 158-159);
- [1.F]/[27.F] – “inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall” as part of the step of installing the fire retardant sheathing “after mounting the fire wall hanger on the frame wall” (Pet. at 32-33, 80-81, 116-117, 159);
- [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” (Pet. at 33-34, 81-82, 118-119, 159-160); and
- [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.” (Pet. at 63, 101, 143, 177).

208. The applied prior art references Simpson applies for joist hangers are Cullen, Yamaguchi, and Robinson. Cullen, Yamaguchi, and Robinson provide no disclosure regarding the installation of fire-retardant sheathing and no disclosure regarding construction of a fire-resistive wall assembly. EX1004; EX1007; EX1011. This includes none of Cullen, Yamaguchi, and Robinson providing any disclosure regarding the installing the fire-retardant sheathing after the fire wall

hanger has been mounted to the wood-framed wall, as recited by the claims of the ‘339 Patent. EX1004; EX1007; EX1011.

209. Bundy and ArchRecord are the only references applied by Simpson in Grounds 3-11 that teach some form of fire-retardant sheathing on a wood-framed wall in the context of a fire barrier.

210. As I described above, Bundy’s joist hanger (2) is installed over the fire-retardant sheathing after the fire-retardant sheathing has already been mounted to the wood-framed wall. EX1005: 2:18-25 (“[t]he drywall [is] applied to the [] supporting member ..., and the joist hanger can then be attached”), 4:17-20, 5:14-25, 5:42-57, 6:14-17, Fig. 2. In Bundy, the top flanges (15) of the joist hanger (2) extend over the top edge of the drywall (6) after the drywall has already been mounted to the wall (4). EX1005: 5:42-43. This is shown below:

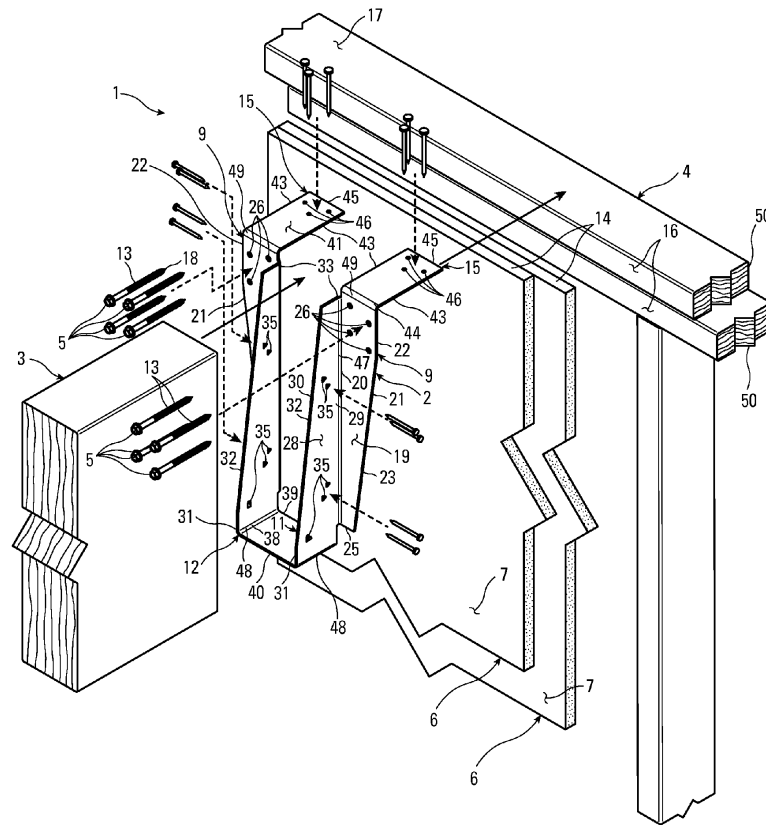


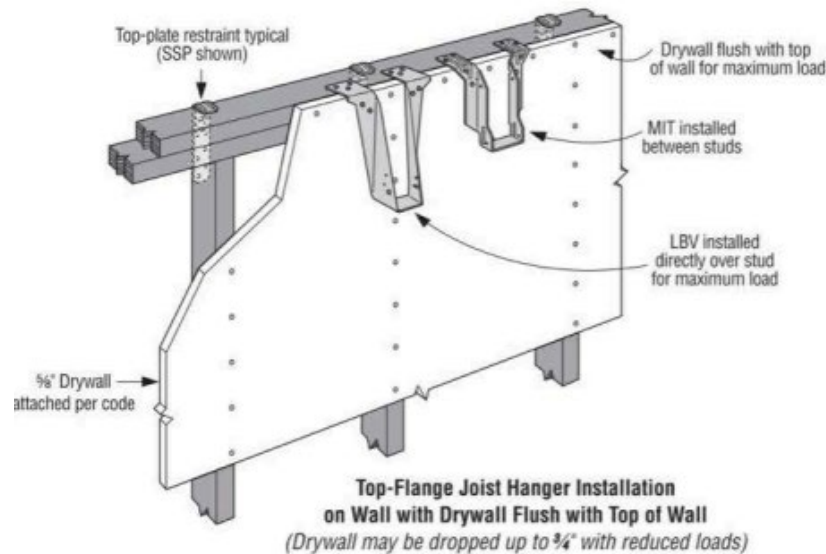
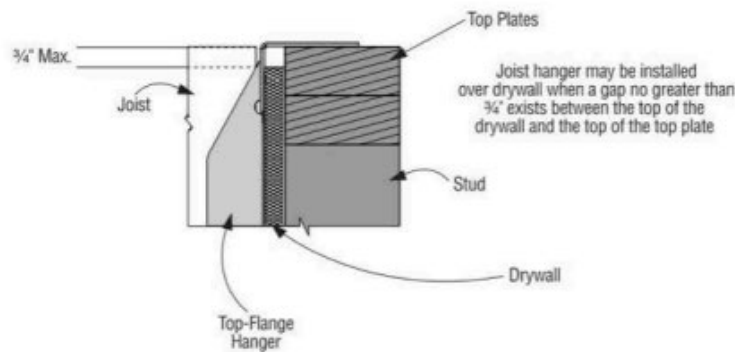
Fig. 2

EX1005: Fig. 2.

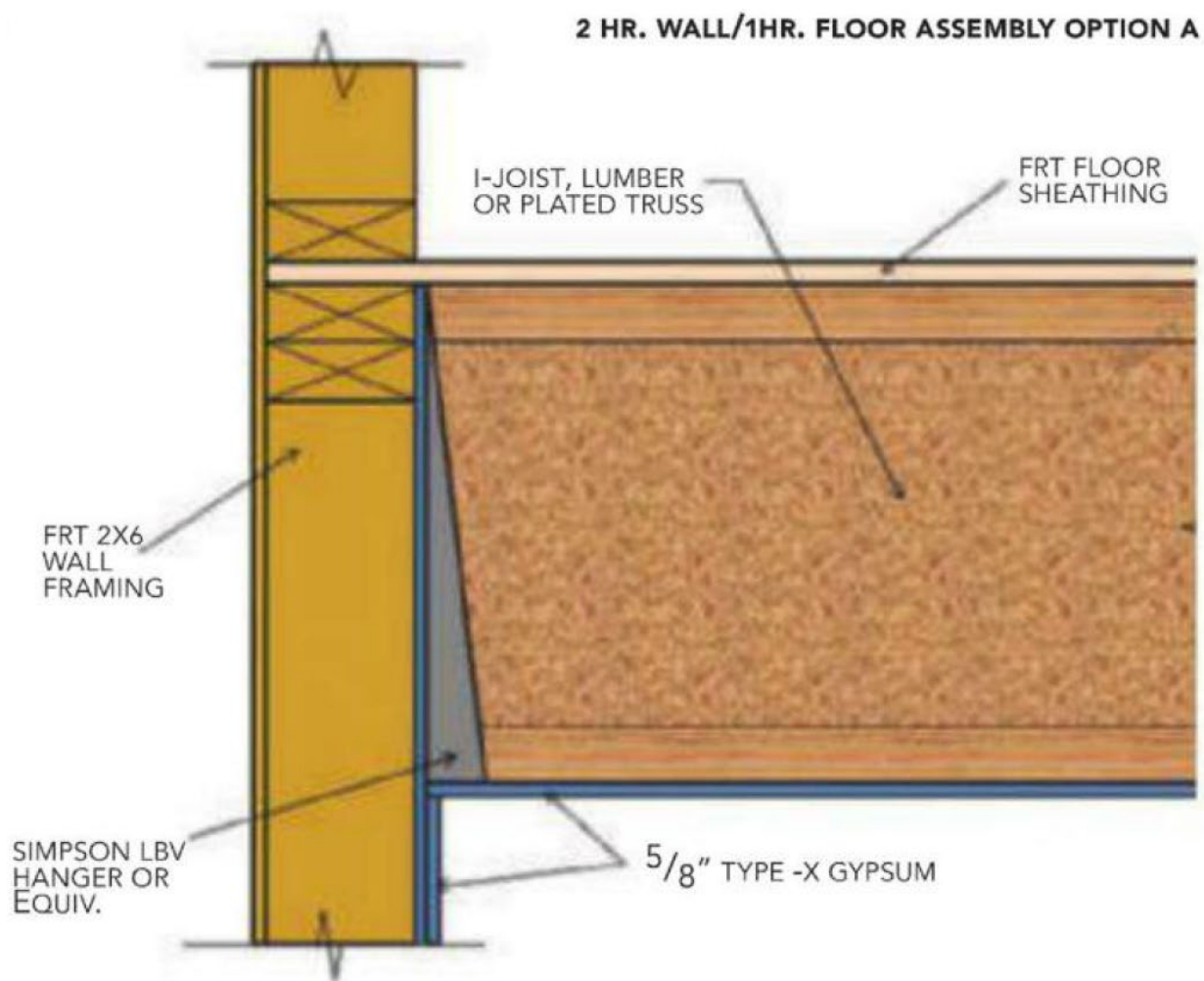
211. As I discussed above, Option A of ArchRecord is no different than Bundy. The joist hanger in Option A is installed over the top edge of the gypsum, just like in Bundy. EX1031: 6. The hanger in Option A is identified as a Simpson LBV Hanger (or equivalent). EX1031: 6. Per Simpson’s Technical Bulletin regarding the LBV Hanger, the LBV Hanger is installed over the top edge of the gypsum, just like Bundy. As with Bundy, this installation of the LBV Hanger relies on placing the back of the channel-shaped portion against the front face of

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the drywall to resist rotation of the LBV Hanger. This made clear by ArchRecord Option A not showing any broken or hidden lines for the gypsum (unlike Option B) that would indicate the gypsum is cutout around the LBV Hanger.



EX1012: 2.



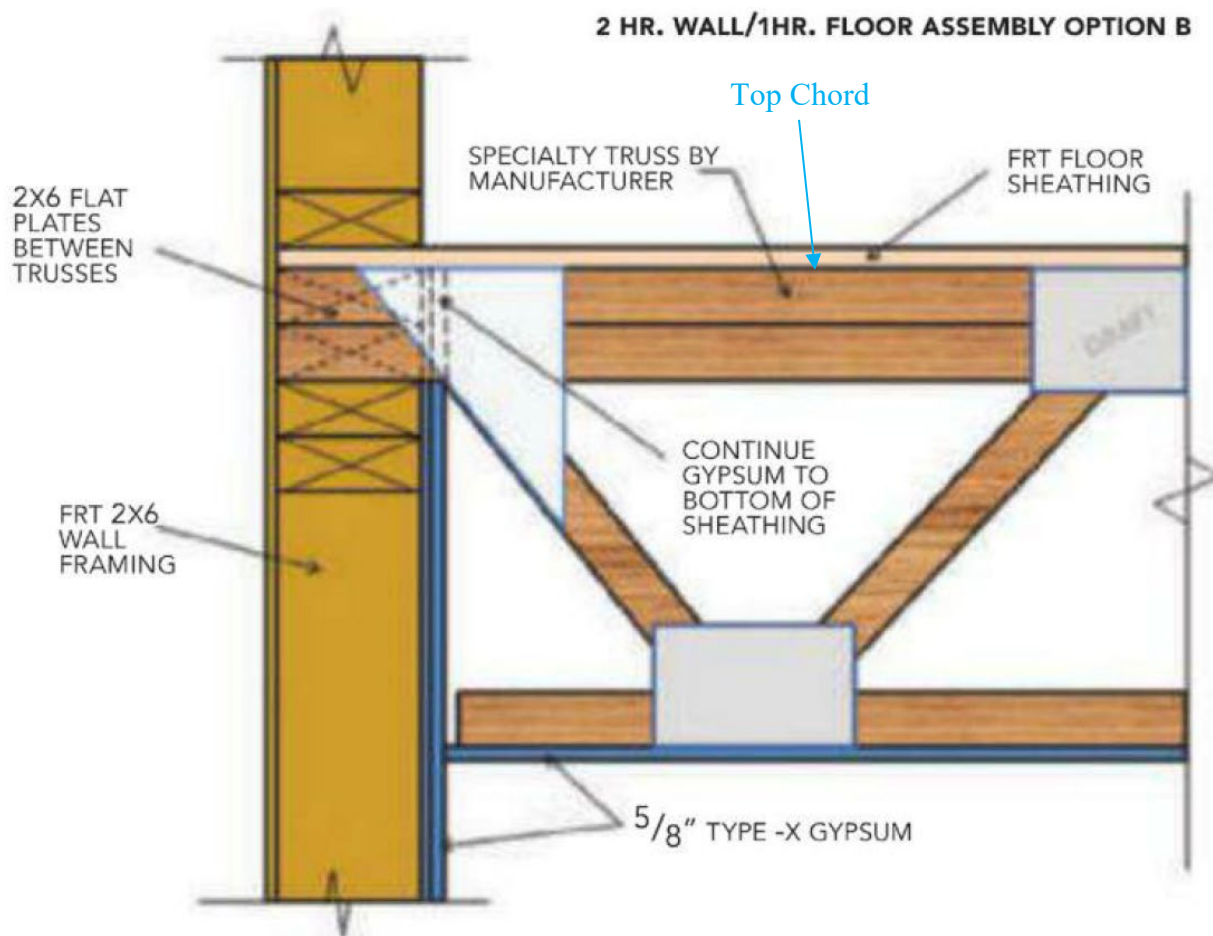
EX2008: 6.

212. And as I discussed above, Option B does not use a joist hanger.

Option B is a top chord bearing truss arrangement where the top chord of the truss rests directly on the top of the wood-framed wall. EX1031:6. As explained by ArchRecord, the top chord of the truss “bear[s] on the top plates” of the wood-framed wall, similar to platform framing. EX1031:6. Thus, Option B cannot teach installing the drywall on a wood-framed wall after a joist hanger is mounted on the wood-framed wall. In fact, Option B does not teach any order of installing the

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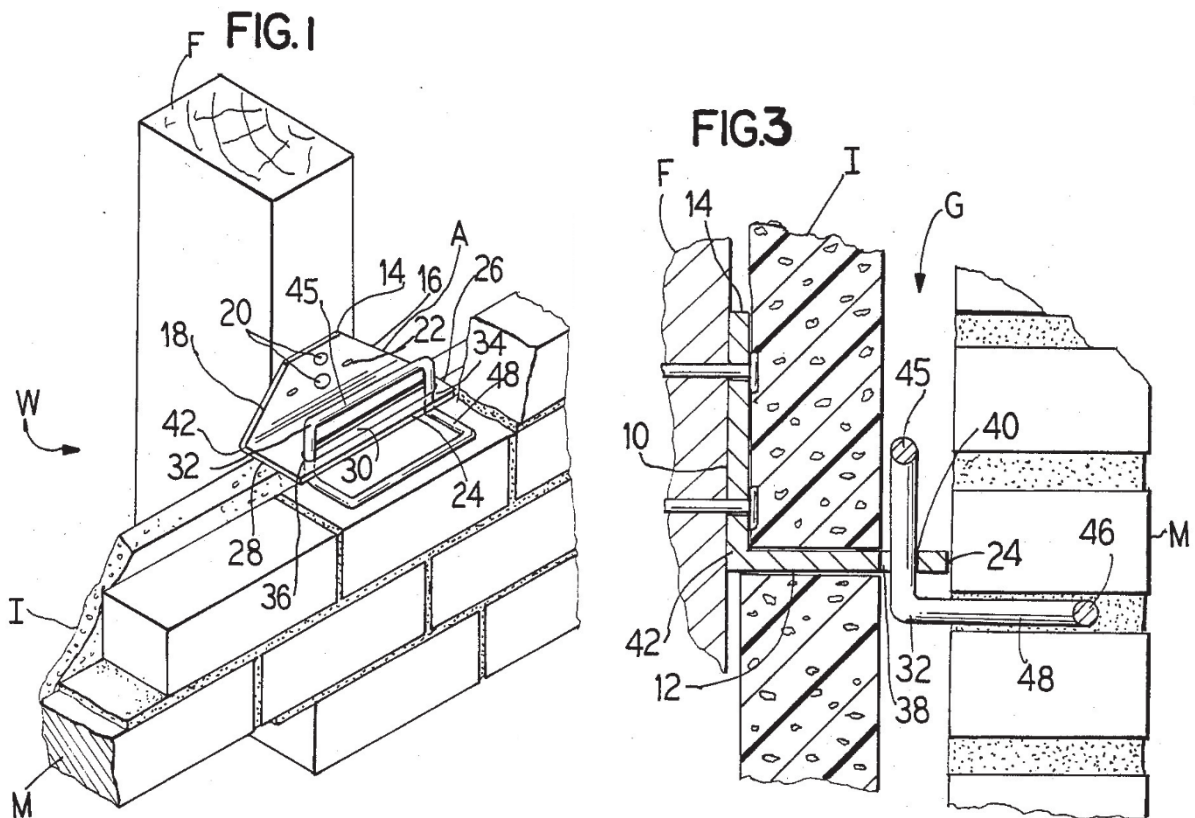
drywall on the frame wall relative to mounting the top chord on the wood-framed wall. Option B of ArchRecord only shows the finished profile of the wall assembly and does not show or describe the steps, and order thereof, of constructing the illustrated wall assembly.



EX2008: 6; EX1031: 6.

213. Option A and Option B are two different framing solutions that are alternatives to one another and are not interchangeable. They rely on different framing methods. Option B is a top-chord bearing truss arrangement which is similar to platform framing whereas Option A is semi-balloon framing.

214. Allan discloses an insulation layer (I) in a veneer wall in the form of a plasterboard sheet. EX1006: 3:14-15. But Allan discloses different steps to install the insulation layer (I) than what is claimed in the ‘339 Patent. With reference to Figs. 1 and 3 below, the method of construction taught by Allan includes aligning the slot in the insulation layer (I) with the leg (12) of the wall anchor (A), and then moving the insulation layer (I) toward the building frame member (F). This results in the leg (12) of the wall anchor (A) being inserted into the slot. After the insulation layer (I) is positioned, the rest of the wall anchor (A) is assembled by inserter the tie (32) through the opening (30) in the leg (12). EX1006: 4:1-40. The tie (32) is embedded in the mortar of the masonry veneer wall (W).



EX1006: Figs. 1 and 3.

215. When Allen’s insulation layer (I) is mounted on the building frame member (F), there is no space between the building frame member and any part of the wall anchor A that the insulation layer is inserted into. As a result, Allan fails to teach the “inserting” steps of [1.F]/[27.F]: “inserting the fire retardant sheathing *between* the channel-shaped portion of the fire wall hanger and the frame wall” as part of the step of installing the fire-retardant sheathing “*after* mounting the fire wall hanger on the frame wall.”

216. Cummins discloses an improved hurricane tie in Fig. 2 that eliminates the portion labeled “23” in the hurricane tie in Fig. 10 to avoid notching sheathing around the hurricane tie. EX1032: 2:55-57 (“the sheathing need not be installed to provide clearance for the sheathing”).

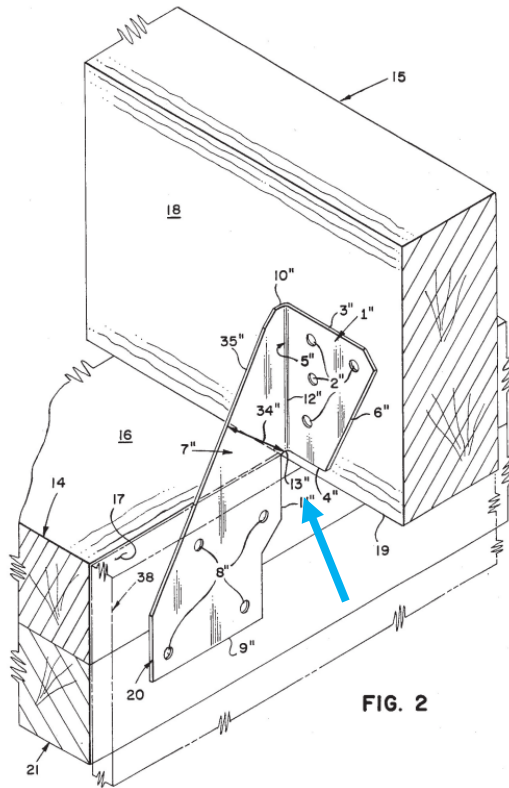


FIG. 2

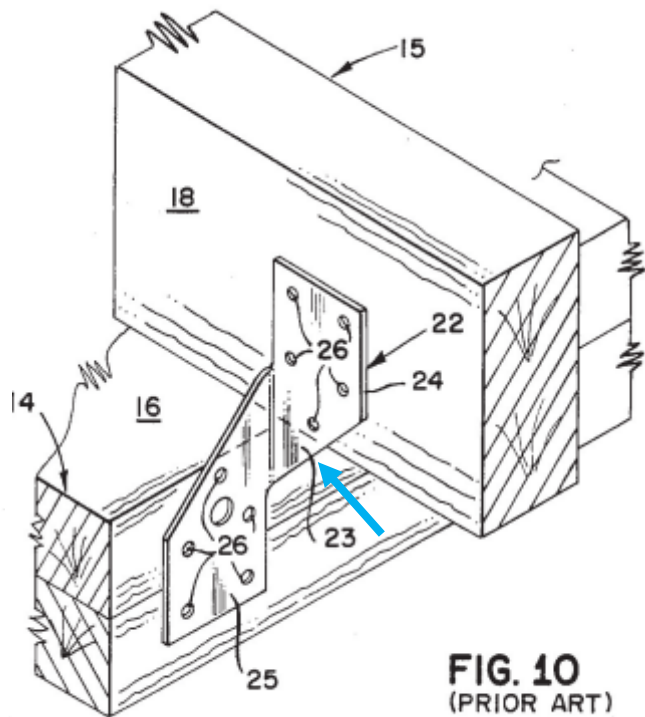
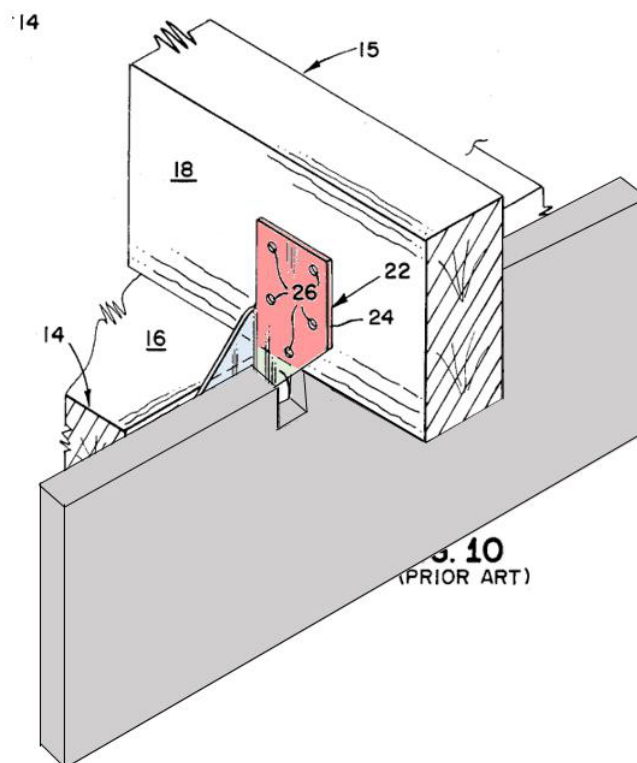


FIG. 10
(PRIOR ART)

EX1032: Fig. 2, 10 (annotated).

217. As illustrated by Simpson’s annotated Fig. 10 of Commins below, the sheathing is not inserted between the hurricane tie of Fig. 10 and the wood plate member 14/bottom chord 15. Instead, the sheathing is notched around the portion of the hurricane tie labeled “23.”



Pet: 148.

218. Accordingly, it is my opinion that none of Cullen, Yamaguchi, Robinson, Bundy, ArchRecord, Allan, and Cummins teaches the claimed step of the '339 Patent of installing the fire-retardant sheathing specifically “*after* mounting the fire wall hanger on the frame wall,” where in the step includes “inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall.”

219. These steps and order of completion are key features of the claimed method of the '339 Patent as it goes to principle benefit of the claimed method—being able to mount the fire-retardant sheathing after the fire wall hanger has already been mounted to the wood-framed wall. As explained by the '339 Patent:

“the truss hangers 26 can be installed on the wall 28 *before* the sheathing 34 is mounted on the wall. This *simplifies construction* by allowing the building to be *completely framed and roofed* before requiring the sheathing 34 to be installed. Trade workers (e.g., mechanical, electrical) therefore have *complete access to the wall cavity to install components* without interference from the sheathing 34. The truss hanger 26 is positioned against the wall 28 such that the back flanges 66 engage the wall and the connector tabs 74 engage the top plate 30. The connector tabs 74 are fastened to the top plate 30 of the wall by any suitable means, such as by inserting nails 78 through nail holes 76. Then, a truss 12 is positioned in the truss channel 52 of the hanger 26. The truss hanger is fastened to the truss 12 by any suitable means, such as by inserting nails 56 through the nail holes 54 in each side panel 46 of the hanger 26. The floor truss 12 is thereby secured to the hanger 26 and the wall 28, and access to the wall cavity remains unhindered by sheathing. *Subsequently, the sheathing 34 can be mounted on the wall 28* by moving the sheathing upward into place so that the extension flanges 60 of the hanger 26 extend through the slot 72 of the sheathing and the sheathing is positioned in the sheathing channels 68 between the back flanges 66 and the back panels 48.” EX1001: 7:65-8:21 (emphasis added).

220. Per this section of the ’339 Patent, installing the fire-retardant sheathing after the fire wall hanger is mounted to the wood-framed wall as claimed by the ’339 Patent “*simplifies construction* by allowing the building to be *completely framed and roofed* before requiring the sheathing 34 to be installed” and gives “[t]rade workers (e.g., mechanical, electrical) therefore have complete access to the wall cavity to install components without interference from the sheathing 34.” EX1001: 7:67-8:5.

221. This order of installation of the fire-retardant sheathing relative to the mounting of the fire wall hanger (e.g., after mounting the fire wall hanger) plays a

key part in the other limitations of the claims of the ‘339 Patent because it is the foundation or basis for these other limitations, such as:

- Claim Limitations 1.B/27.B: the configuration of the hanger as the hanger as claimed is required to define the space that receives the fire-retardant sheathing when the fire-retardant sheathing is installed;
 - Claim Limitations 1.D/27.D: the step of cutting the opening in the fire-retardant sheathing;
 - Claim Limitation 1.G: the step of moving the fire-retardant sheathing relative to the already mounted fire wall hanger so that an edge of the fire-retardant sheathing bounding the opening moves alongside the extension portion of the fire wall hanger and the fire wall hanger extends through the opening in the fire-retardant sheathing; and
 - Claim Limitation 27.G: the step of 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 the extension portion is received in the opening in the fire-retardant sheathing.
- D. Secondary Considerations Demonstrate the Method Claimed by the ‘339 Patent is Not Obvious**

222. I have been informed that in analyzing obviousness, objective considerations of non-obviousness (called secondary considerations) must be considered when such objective considerations are present.

223. I have been informed the following are recognized secondary considerations in supporting that a patent claim is not obvious:

- commercial success of the invention,
- whether the invention satisfied a long-felt need in the industry,
- failure of others to find a solution to the problem at hand,

- unexpected results,
- copying by others,
- licensing by others,
- skepticism of experts,
- professional approval,
- teaching away by others, and
- recognition of a problem.

224. I have been informed this list is not exhaustive and that other factors and/or considerations can provide objective evidence of non-obviousness.

225. I have been informed that MiTek Inc. (“MiTek”) is the exclusive licensee of the ‘339 Patent. I have also been informed that MiTek developed the fire wall hanger disclosed in the ‘339 Patent and assigned its rights in the invention to Columbia Insurance Company.

1. Commercial Success

226. I have been informed that when a product attains a high degree of commercial success, there is a basis for inferring that attempts to a solution have been made and have failed. I understand that demonstrating that an invention has commercial value by virtue of being commercially successful, weighs in favor of its non-obviousness.

227. In Appendix A, B, C, and D at the end of this report, I map claims 1 and 27 of the ‘339 Patent to the product literature describing installation of MiTek’s FWH product and Simpson’s DG/DGB/DGH, DGF/DGBF/DGHF, and

DGT products, establishing in my opinion that these products embody the invention claimed in at least claims 1 and 27 of the ‘339 Patent.

228. I have been informed that, prior to MiTek’s FWH, the only other firewall hanger available in the market, for use in two-hour fire resistive wall assemblies, was Simpson’s DU/DHU/DHUTF (which I understand is Bundy), which could not be installed prior to drywall. EX2075: 12-13, 23.

229. I have been informed that MiTek’s FWH created the market, with an entirely new category of firewall hanger that can be installed prior to drywall, and quickly enjoyed substantial market share as reflected in Simpson’s internal documents.

230. In forming my opinion, I considered EX2094 (SST0020897) which is a Simpson email string dated February, 2016. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

231. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] EX2094.

232. EX2095 is a Simpson email chain dated 2017 [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

233. EX2096 is a Simpson email chain dated February, 2015 which includes the following statement: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

234. EX2097 is a copy of a February 9, 2017 Simpson email that states:

[REDACTED]

[REDACTED]

[REDACTED] *See also* EX2064: 190:16-195:2 [REDACTED]

[REDACTED]

[REDACTED]

235. EX2098 is a Simpson email dated January 15, 2016 with subject [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

236. EX2137 is a Simpson email chain that includes the following statements on August 31, 2015: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

237. I understand that, during the time period of 2014 to 2017, there were only two products in the firewall market, MiTek’s FWH and Simpson’s DU. [EX2059: ¶¶3, 5; EX2055: ¶¶34-35].

238. MiTek’s FWH combined with Simpson’s infringing products, once they were introduced in 2017, enjoyed substantial market share of roughly 88% in 2020 and 86% in 2023. EX2055: ¶49].

239. Thus, the fire wall hanger claimed by the ‘339 Patent with the ability to be installed using the claimed method accounts for an increasing percentage of fire wall hangers sold and have become the industry standard.

240. It is my opinion this evidence demonstrates that since the launch of MiTek’s FWH, its sales have increased substantially and, as Simpson’s expert

admits and Simpson’s documents acknowledge, monthly sales of the FWH have always been more successful than Simpson’s DU. EX2075: 28-29.

241. EX2100 is a Simpson email chain dated March, 2017 with [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

242. I understand that Simpson came out with their versions of the FWH with the ability to be installed according to the claimed method in June 2017.

243. It is my opinion that Simpson’s documents and testimony demonstrate and Simpson’s expert acknowledges that sales of these Simpson infringing fire wall hangers have increased significantly and quickly outperformed Simpson’s DU/DHU/DHUTF series.

244. For example, EX2101 is a Simpson email discussing [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

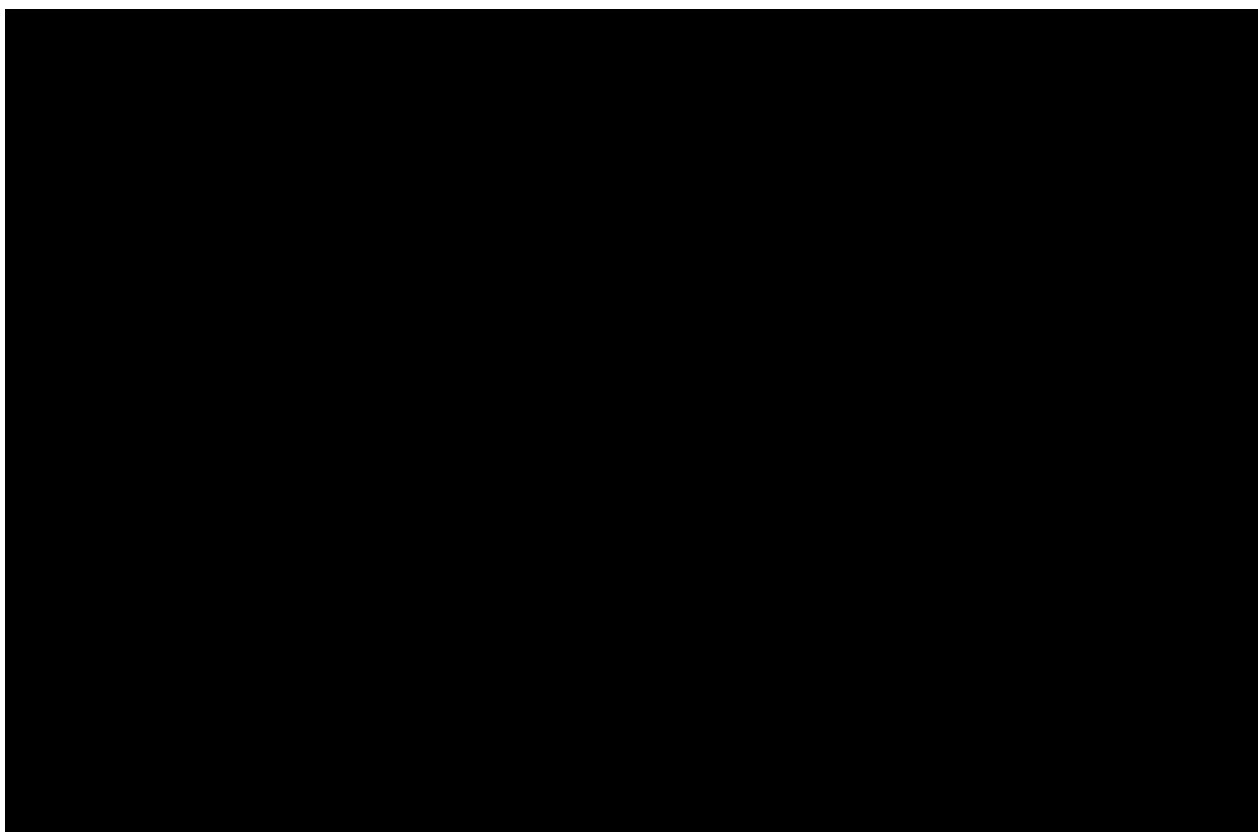
[REDACTED]

245. Simpson witness, Dankel, [REDACTED]

[REDACTED]

[REDACTED] EX2068: 140:17-141:5.

246. Below is a chart created by Simpson’s expert showing sales for the FWH, DU, DG, DGF, and DGT:



EX2075: 29.

247. The evidence obtained in the ‘510 Patent Litigations shows that the commercial success of MiTek's FWH product series was attributable to the FWH's ability to allow drywall to be installed after installation of the hanger.

248. I understand that the evidence shows that the FWH commanded a market premium over the DU because of its ability to be installed prior to drywall.

EX2094 [REDACTED]

[REDACTED]

[REDACTED] EX2059: 38:24-39:17, *see also id.*
at 43:19-44:8 and 111:16-23 (describing that the FWH product was an exception to

MiTek's connector product offerings in that it was one of the few products priced higher than the corresponding Simpson product)

249. I understand that Ryan Holmes, a customer of Mitek, has testified that he is willing to pay more for the FWH because of its ability to be installed prior to drywall. EX2058.

250. Taken together, the evidence shows that customers had a clear preference for the FWH, and its ability to be installed prior to drywall, and were urging Simpson to bring a similar product to market, as shown in Simpson’s internal documents and testimony. EX2064: 45:14-23; 56:15-57:3; 162:17-164:17; EX2107; EX2100 [REDACTED]
[REDACTED]

251. EX2102 is a January 2015 email to Simpson from [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

252. EX2103 is an April 2015 Simpson email [REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

253. EX2104 is a Simpson email dated November 13, 2014 that states: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

254. After considering this evidence, my conclusion is that it demonstrates that many customers were explicitly demanding and requiring the FWH and a firewall that could be installed prior to drywall. For example, EX2136 is a March 10, 2015 Simpson email chain that states: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

255. EX2105 is a Simpson email chain and on March 11, 2016 states [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

256. Simpson’s economics expert in the ‘510 Patent Litigation, Kenneth Serwin, acknowledged that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] EX2075: 31, 40.

257. EX2106 is a Simpson email string dated July, 2014 that includes the following statement: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

258. EX2108 is a Simpson email chain dated January, 2016 that includes the following statements: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

259. EX2129 is a November 2014 Simpson email where Simpson employee states [REDACTED] *See also* Wert Dep. Tran. at 120:15-121:8 [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

260. EX2131 is a FWH technical bulletin showing new FWH hangers, including announcing that "The advanced design allows you to install the hangers before the drywall is attached, allowing your project to be completely framed-up and weather-tight when the drywall sheathing shows up on site." *See also* Nelson

Dep. Tram. at 39:18-40:19 (testifying that MiTek's marketing communications highlighted the FWH series hanger's ability to be installed before drywall).

261. In addition, one of MiTek’s witnesses testified that customers wanted to purchase the FWH products because of "[t]he installation methodology that was enabled by that product, that it could be completely framed out in the structure without having to have the drywall be installed in between the framing process so the framers didn't have to come back. That was the predominant value that product was offering." EX2059: 34:11-35:4. "[I]n installation methodology in which the hanger could be installed before the drywall was a primary driver in the purchasing decision" of customers purchasing in the "light wood frame construction, typically three to five stories, multifamily" market. EX2059: 35:18-36:11. The "primary driver for the success" of the FWH product was that it enabled the benefit "of being completely able to frame out the structure prior to the drywall being installed." EX2059: 69:4-21. Customers communicated to MiTek the "incredible savings in the installation process" because "the process of having to have the framers come back to the job after the drywall was installed was, lengthened the overall cycle of the job which adds costs and then also directly adds cost by an additional day or two for the framing crew." EX2059: 91:3-24.

262. Considering the foregoing collectively, it is my opinion that the evidence obtained in the '510 Patent lawsuit shows that the commercial success of

Simpson's DG/DGB/DGH series hangers was attributable to the DG/DGB/DGH series hanger's ability to allow drywall to be installed after installation of the hanger.

263. EX2115 is a document titled [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

264. EX2116 is an email dated June 26, 2017 and states: [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] *See also* EX2117. EX2133 is a Simpson

brochure for the DG, DGB, and DGH that states: "Engineered Design Makes it Easy to Install Before the Drywall The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie... The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete." *See also* EX2064: 94:12-96:4 [REDACTED]

265. It is my opinion that the ability to install the FWH hanger—and later the DG Series and DGF Series—before the drywall is mounted presented significant benefits over the DU/DHU/DHUTF series hangers. The evidence confirms that the major driving force behind the commercial success of the FWH, the DG Series, DGF Series, and DGT series was the ability to install drywall after the hanger is installed.

266. It is my opinion, based on the evidence, the commercial success of MiTek's FWH series hangers and Simpson's DG/DGB/DGH, DGF/DGBF/DGHF, and DGT series hangers was the result of the ability to be installed according to the method claimed in at least claims 1 and 27 of the '339 Patent.

267. It is my opinion, commercial success of MiTek’s FWH and Simpson’s DG/DGB/DGH, DGF/DGBF/DGHF, and DGT products provide clear support for my conclusion that the challenged claims would not have been obvious.

2. Copying by Competitors

268. I have been informed that copying by a competitor is an objective indicia of non-obviousness because it suggests that the competitor saw value in the invention that he could not achieve without copying.

269. I have reviewed a number of Simpson’s internal documents and deposition testimony provided to me by Columbia. Based on my review, it is my opinion that Simpson copied the features of MiTek’s FWH series products in developing and releasing its DG series hangers so as to provide a hanger intended to be used by its customers to practice the method claimed in the ‘339 Patent.

270. It is my opinion that Simpson’s internal documents and deposition testimony show that Simpson was aware of Mitek's FWH product and analyzed it prior to developing its DG and DGF Series products.

271. For example, I understand that retired Simpson employee Roger Dankel t [REDACTED]

[REDACTED] EX2068: 41:3-10.

272. I have read the testimony of Simpson employee Sam Hensen regarding how [REDACTED]

[REDACTED] EX2064: 146:25-154:16.

273. Many of Simpson’s internal documents acknowledge the FWH hanger and its ability to be installed prior to drywall according to the claimed method of the ‘339 Patent was strongly preferred over Simpson’s own DU series products that could only be installed after the drywall.

274. For example, EX2106 is the start of a Simpson email string dated July, 2014 that includes the following statement: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

275. EX2104 is a Simpson email dated November 13, 2014 that states: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

276. Simpson’s documents and testimony also show that its sales team and customers began requesting a firewall hanger that product matched the FWH hanger’s ability to be installed prior to the drywall. EX2064: 45:14-23; *see also* 162:17-164:17; EX2107.

277. EX2096 is a Simpson email chain dated February, 2015 [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

278. EX2136 is a March 10, 2015 Simpson email chain that states: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

279. EX2137 is the start of a Simpson email chain that includes the following statements on August 31, 2015: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

280. EX2108 is the start of a Simpson email chain dated January, 2016 that includes the following statements: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

281. EX2094 is a Simpson email string dated February, 2016. On February 5, 2016, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

282. EX2105 is a Simpson email chain and on March 11, 2016 states [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

283. EX2100 is the start of a Simpson email chain dated March, 2017 with the subject [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

284. It is my opinion the above Simpson documents and testimony is further evidence that Simpson acted on the pressure from its sales team and customers and began developing a firewall hanger that incorporated the FWH’s ability to be installed prior to drywall.

285. For example, in EX2094 discussed above, Sam Hensen commented that [REDACTED]

[REDACTED]

286. EX2104 discussed above, Bryan Wert inserted the comment that he would [REDACTED]

[REDACTED]

[REDACTED]

287. EX2109 is a June 2016 Simpson email with the subject [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

288. EX2112 is a February 18, 2017 Simpson email regarding [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

289. It is plain to me from reading Simpson’s documents and testimony that Simpson was considering a number of potential options.

290. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] EX2064: 70:15-74:22;

EX2112. EX2113 s [REDACTED]

[REDACTED] *See also*

EX2064: 199:16-201:25; EX2111 [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

291.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

292. Again, EX2110 is a February 18, 2017 Simpson email regarding

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

293. EX2114 is a March 4, 2017 Simpson email regarding [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

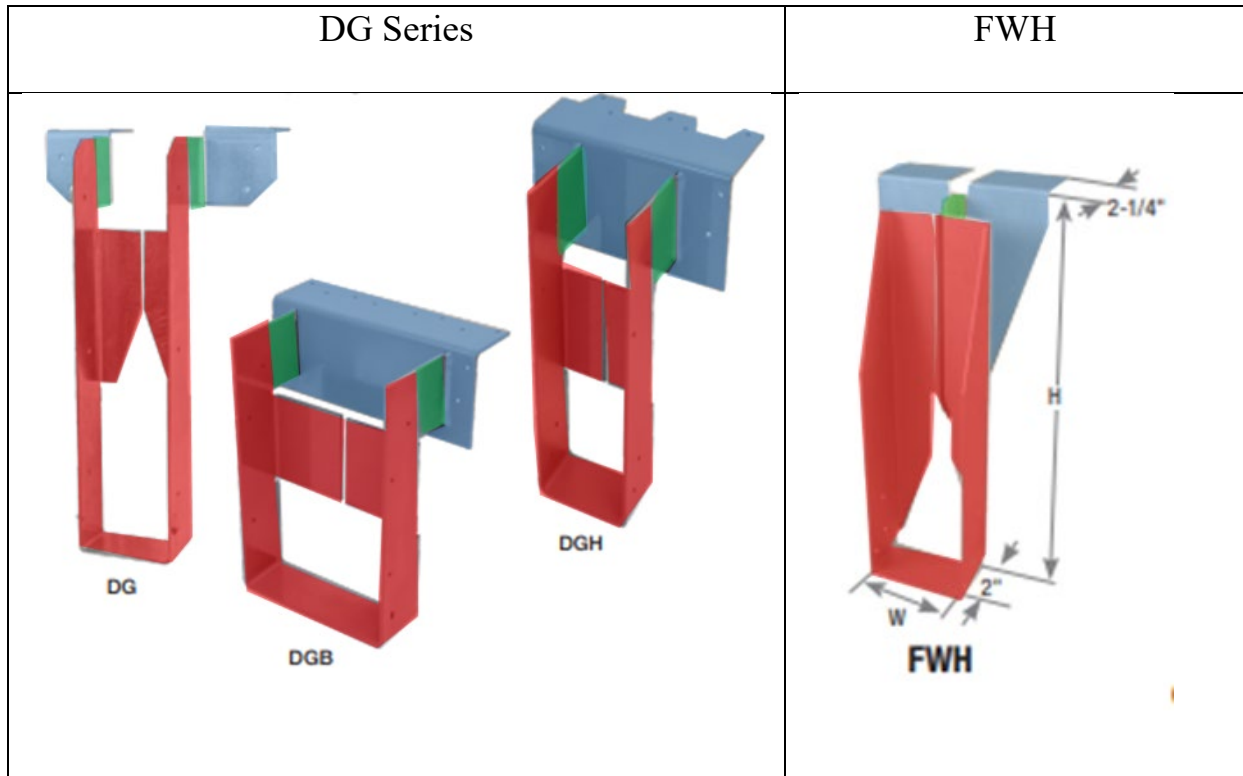
[REDACTED]

[REDACTED]

294. I note that Mr. Hensen acknowledged in a declaration that “Prior to Simpson’s release of the DG Hangers, Simpson was aware of MiTek’s FWH Hanger and the fact that Plaintiffs had filed a patent application covering the FWH Hanger. In developing the DG Hangers, Simpson was careful to design around Plaintiffs’ then-pending patent application, U.S. Pat. Appl. 14/555,049 (‘the ’049 Application’).” EX2074.

295. Although Simpson tried to design around limitations of the then pending patent application, it is my opinion that the DG Series still copied the inventive aspects of the FWH that are required to practice the claimed method of constructing a firewall.

296. More specifically, the hangers within the DG series incorporated the components of the FWH (a channel shaped portion (red in the figures below), an extension portion comprising two extension flanges (green in the figures below), and a connection portion comprising a top flange and a back flange extending from an edge of the top flange (blue in the figures below)) and their configuration (the extension flanges being configured to extend through drywall and creating space to receive the drywall between the back flange of the connection portion and the channel shaped portion). This combination of features allowed the FWH hanger to maintain spacing for receiving after-applied drywall, while avoiding damage to the wood frame wall and to the hanger itself, even when loaded with joists.



EX2133 (DG Series brochure); EX2132 (FWH series brochure).

297. The DG Series was designed to function in the same manner as the FWH with respect to the extension flanges being configured to extend through drywall and create space to receive the drywall between the back flange of the connection portion and the channel shaped portion, and this is corroborated by Simpson’s documents.

298. EX2115 is a document titled [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

299. EX2116 is an email dated June 26, 2017 and states: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *See also* EX2117.

300. EX2133 is a Simpson brochure for the DG, DGB, and DGH that states: "Engineered Design Makes it Easy to Install Before the Drywall The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie... **The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete.**"

301. It is my opinion, Simpson’s DG Series, when considered as a whole, is substantially similar in design to the FWH product and is designed to be used in the exact same way as the method claimed by the ‘339 Patent.

302. Further, because Simpson’s DG Series was intended to operate the same as the FWH product in terms of the operation of the extension portion providing space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete, I find the differences between the Simpson’s DG Series and the FWH—primarily the extension flanges being spaced apart to

avoid the earlier patent claims within the ‘339 Patent family—were not so significant as to preclude substantial similarity.

303. The configuration of the hanger provided a significant improvement over conventional hangers in that the fire resistance of the drywall could be maintained by limiting the section of the drywall required to be removed to just that required to allow the extension portion to extend through the drywall. Providing a space to receive the drywall allows the hanger to be installed—and the framing to be completed—prior to mounting the drywall. Further, the configuration of the hanger made it possible to maintain this space by providing a load path resisting the moment caused by cantilevering the channel shaped portion and joist away from the connection portion. The provision of extension flanges that are below the top flanges and engage (via the connection portion) with the wood-framed wall allow the hanger to support the considerable weight of the floor joists (for example) in the absence of drywall without either causing the hanger to fail or causing the top plate to fail.

304. The features of MiTek's FWH series hangers which Simpson copied were the very features that are embodied in the limitations of the ‘339 Patent. *See e.g.* Exhibit 1001 at Claim 1 and Claim 27 (“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”).

305. The features of MiTek's FWH series hangers which Simpson copied were further necessary to perform the claimed method of constructing fire resistant walls. Without these features, there would not be a sufficient space in which the drywall could be installed by “inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall” as claimed in both claims 1 and 27 of the ‘339 Patent.

306. Accordingly, it is my opinion that there is a nexus between the Simpson’s copying and the claimed method of the ‘339 Patent.

307. Simpson’s copying of the FWH provides strong support for my conclusion that the method claimed in the ‘339 Patent would not have been obvious to a person of ordinary skill in the art.

3. Praise by Others

308. I have been informed that praise by industry participants, especially competitors, is also recognized as an objective indicia of non-obviousness.

309. I have reviewed both Simpson’s and MiTek’s contemporaneous e-mails and communications provided to me by Columbia, and find substantial evidence of industry praise of the FWH for providing a better solution for attaching a joist to a firewall.

310. For example, EX2118 is an email chain dated March 31, 2014 between USP and a third-party discussing USP's FWH product and Simpson's DU/DHU/DHUTF series hangers. The third-party states "I don't know what Simpson's version cost. We were disappointed with what they [Simpson] came up with and didn't even bother to ask. We don't see it as an option unless the local building official has a problem with our typical approach. **Your version looks much more promising. How soon will it become available?**" (emphasis added).

311. EX2119 is the start of an email chain dated April 18, 2014 between USP and a third-party and the subject line "FW:FWH Fire Wall Hanger for 2 Hour Envelope." Curtis Cabaniss of USP wrote the following to the third-party "I didn't know if you run into this currently with anything you are producing or if you are seeing it on projects from any of the floor system companies you are working with, but I thought I would pass along some detail of the product for you in case you are looking for an engineered solution." The third-party responded as follows: "I am dealing with this on a bunch of jobs right now and **this looks like a great solution.**" (emphasis added).

312. EX2120 is an April, 2014 email chain that includes the following statement: "[REDACTED] is working with the engineer who is designing the new version of the [REDACTED] who plans to specify the FWH in the design. I spoke to the engineer today and he

said the only possible stopper would be the price being too high. **He was very excited and very much wants to include us in the design.** The initial plan is for 'around' 150 buildings." (emphasis added).

313. EX2121 is the start of an email chain dated March-May, 2014. On March 20, 2014, Fred Powers states that "**FWH was well received at** [REDACTED] [REDACTED] Wayne distributed the info to all the key players in the division." (emphasis added).

314. EX2102 is a January 2015 email to Simpson from [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

315. EX2122 is the start of an email chain dated January 27, 2015 with subject [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

316. EX2124 is the start of an email chain dated July, 2014. On July 29, 2014, [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

317. EX2123 is the start of an email chain dated March, 2015. On March 6, 2015, Matt Church at Davis & Church stated the following: "**This FWH hanger is really a homerun. I did another Woodworks seminar this past Wednesday and promoted it as heavily as I could without saying the words USP (they wouldn't let me).** I also met the USP reps here locally and had some good conversation with them about it was well. Looks like 2015 will be another big year for the multi-family industry and we really appreciate having you guys there to help us get through it as we try to provide our clients with cost effective solutions on their projects." (emphasis added).

318. In my reading, a lot of the praise from specifiers (i.e. engineers and architects), installers (framers and general contractors)—and even Simpson's own sales force and engineer—specifically recognized the importance and value of allowing installation of drywall after installation of the hanger pursuant to the method claimed in the '339 Patent.

319. EX2106 is a Simpson email string dated July, 2014 that includes the following statement: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].

320. EX2104 is a Simpson email dated November 13, 2014 that states: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

321. EX2103 is the start of a Simpson email chain. On April 16, 2015,

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED] *See also* EX2064: 155:24-159:7 [REDACTED]
[REDACTED]

322. EX2125 is the start of an email chain from January, 2015 which states the following: [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

323. EX2108 is the start of a Simpson email chain dated January, 2016 that includes the following statements: [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

324. EX2094 is the start of a Simpson email string dated February, 2016.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

325. EX2105 is a Simpson email chain and on March 11, 2016 states [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

326. EX2126 is an email chain dated September 5, 2019 that states as follows: [REDACTED]

[REDACTED]

[REDACTED]

327. Simpson’s own witnesses and internal communications establish that building codes and building inspectors in some jurisdictions began to require firewall hangers meeting the installation sequence made possible by the configuration recited in the claims of the ‘339 Patent. For example, I understand that Roger Dankel, [REDACTED]

[REDACTED]

[REDACTED]

EX2068: 132:8-23; *See also* EX2103

328. The configuration of the FWH Hanger allows the practice of the method of the ‘339 Patent. Specifically, the configuration of the FWH Hanger allows drywall to be installed between the joist and the wall assembly by cantilevering the channel shaped portion away from the connection portion. This provides a built in space sized to receive the drywall between the channel shaped portion and the back flange of the hanger, while using the extension portion to transfer the downward load on the channel shape portion through the drywall to the connection portion in a manner that adequately resists the moment caused by the downward force.

329. I make note of the fact that the praise for MiTek’s FWH was largely explicitly tied to the FWH being able to be installed prior the drywall as expressly recited in the claims of the ‘339 Patent.

330. Therefore, it is my opinion that there is a nexus between the industry praise of the FWH and the claimed method of the ‘339 Patent.

331. It is my opinion the industry praise of the FWH supports that the method claimed in the ‘339 Patent would not have been obvious to a person of ordinary skill in the art.

4. Long Felt Need

332. I have been informed that evidence of a long felt but unresolved need also tends to show non-obviousness because it is reasonable to infer that the need would have not persisted had the solution been obvious.

333. The International Building Code has required a fire resistance duration rating of two-hours between separate units within Type 3 (multi-family residential) structures since its first printing in 2000. EX2145: 107.

334. Further, prior to the 2000 International Building Code, the three national model building codes (Uniform Building Code (UBC), Standard Building Code (SBC), and the National Building Code (NBC)), and the National Fire Protection Association (NFPA) Life Safety Code all provided similar fire-resistant rating separation requirements.

335. I understand that Sam Hensen has testified that there was not a lot of change with respect to Type 3 construction with wood framing since the 2000 version of the International Building Code. EX2065: 25:1-28:15. I agree with this assessment.

336. I understand that there is testimony and evidence demonstrating that there was a known problem in the industry regarding how to attach joist to firewalls dating back as early as at least 2008. *See e.g.*, EX2056; EX2069: 27:17-28:18 (testifying as to conceiving of the invention "start[ing] back in 2009" when, at a trade show, an engineer "brought up the fact that they are starting to do more wood frame construction projects and were struggling with the details around two-hour fire rated walls.").

337. Simpson’s own internal documents and emails likewise demonstrates that Simpson had been approached by its customers as early as 2011 regarding how to attach joist to firewalls. For example, EX2127 which is a May 10, 2011

Simpson email [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

338. As demonstrated by the evidence, prior to the release of the FWH hanger there was a patch work of workarounds and imperfect solutions by which floor or roof members were connected to wall members requiring a two-hour fire rating. EX2067: 41:1-44:11; EX2076: ¶40; EX2093; EX2070: 19:13-22:20.

339. The acceptance of these solutions was not universal, but rather depended on the whims and interpretations building inspectors. *Id.*

5. Failure of Others

340. I have been informed that evidence that others tried but failed to find a solution to the problem addressed by a claimed invention is evidence of non-obviousness.

341. I have reviewed Simpson’s internal documents and testimony from the ‘510 Patent Litigation that has been provided to me by Columbia, and there is significant evidence showing that in 2013 Simpson was investigating hanger constructions for attaching a hanger to support the floor system to the fire-resistive wall.

342. Simpson recognized that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] EX2086: SST0105115.

343. The evidence shows that Simpson tested methods [REDACTED]

[REDACTED]

[REDACTED]

EX2064: 33:6-35:18; *see also* 146:25-154:16 ([REDACTED])

[REDACTED]

[REDACTED] 180:21-190:6 (same); EX2138 [REDACTED]

[REDACTED]

[REDACTED]

344. During testing, Simpson’s engineers found that [REDACTED]

[REDACTED]

EX2086: SST0105115.

345. In one test, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

EX2086: SST0105128.

[REDACTED]

346. Simpson used [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] EX2086:
SST0105129.

[REDACTED]

347. Each of these attempts [REDACTED]

[REDACTED] EX2086: SST0105129.

348. While Simpson's DU/DHU/DHUTF series hangers were commercially released and remain available, they have not enjoyed the commercial success that was enjoyed by the products which allowed the practice of the method of the '339 Patent.

349. As an example, the document starting with EX2118 is an email chain dated March 31, 2014 between USP and a third-party discussing USP's FWH product and Simpson's DU/DHU/DHUTF series hangers. The third-party states "I don't know what Simpson's version cost. We were disappointed with what they

came up with and didn't even bother to ask. We don't see it as an option unless the local building official has a problem with our typical approach. Your version looks much more promising. How soon will it become available?"

350. As discussed above, Simpson's DU/DHU/DHUTF series hangers require the drywall to be installed before the hanger. That solution would have often been unacceptable to builders. Ideally the framing will be completed before drywall is installed. This allows access to the interior of the walls for electrical and plumbing work—as well as inspection—before closing the walls. It further allows the drywall to be protected from the elements as otherwise the structure may not be enclosed and a roof installed prior to introducing the drywall. Requiring drywall to be installed prior to the hangers also presents scheduling, sequencing, and labor difficulties as the drywall is typically installed by a separate trade than the trade performing the framing.

351. The evidence includes feedback that Simpson received from its customers demonstrating the unacceptability of Simpson's DU/DHU/DHUTF series hangers for the majority of multi-family construction projects.

352. For example, EX2104 is a Simpson email dated November 13, 2014 that states: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

353. EX2103 is a June 2015 Simpson email relaying engineers' dislikes of Simpson's DU line and likes of FWH: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

354. EX2108 is a Simpson email chain dated January, 2016 that includes the following statements: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

355. EX2094 is a Simpson email string dated February, 2016. On February 5, 2016, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

356. It is my opinion that the evidence demonstrates that Simpson knew that it would be advantageous to install a hanger cantilevered from the framing that was capable of withstanding service level construction loads so that the drywall could be installed later according to the method claimed in the ‘339 Patent. Simpson tried, but failed, to design a hanger capable of such methods of installation. In failing to design a hanger allowing the drywall to be installed after

the hanger was installed, the hanger that Simpson did release failed to adequately meet the needs in the industry.

357. In view of the foregoing, I have concluded that Simpson’s attempts, and failure, to design a hanger allowing the drywall to be installed after the hanger was installed strongly corroborates my opinion that the method claimed in the ‘339 Patent is not obvious.

6. Skepticism of Others

358. I have also been informed that evidence of industry skepticism weighs in favor of non-obviousness. I have been informed that if industry participants or skilled artisans are skeptical about whether or how a problem could be solved or the workability of the claimed solution, it favors non-obviousness. I know that doubt or disbelief by skilled artisans regarding the likely success of a combination or solution weighs against the notion that one would combine elements in references to achieve the claimed invention.

359. As addressed in Section VII(A) above, it is my opinion that the person of ordinary skill in the art would have been skeptical as to cutting holes in or removing sections of the fire-resistant drywall to accommodate a hanger and supported member in fear that doing so would jeopardize the fire rating. The evidence collected in the litigation confirms my opinion.

360. Sam Hensen, senior vice president of Simpson, testified that in 2014

[REDACTED]

[REDACTED]

EX2064: 168:23-170:13.

361. Similarly, EX2090 is a MiTek email string dated July 10, 2014 that states the following: "Today I made my first FWH presentation to an Engineering firm, [REDACTED] One of the Principals, [REDACTED] reviewed it along with an Engineer I know. Overall, they feel it is a good concept.

Questions/concerns that came up were:>**They said they deal with some jurisdictions that they feel won't accept it because of the slit made in the drywall.** I thought I had viewed some test information that might have addressed this, but I can't find it in my files. > They asked about a condition where the FWH would be used at a shearwall location, where you would have plywood/OSB then drywall over that. The hanger is built for 2 layers of drywall so can we make the hanger work in a condition like this? > They asked about the cost of the FWH compared to SST."

362. The evidence further shows skepticism of the FWH hanger solution as to the ability to receive the sheathing within the space provided by the extension portion and the ability of the hanger to withstand the moment caused by cantilevering the channel shaped portion away from the wood-framed wall.

363. For example, [REDACTED]

[REDACTED]

[REDACTED]

EX2064: 171:13-174:24; *see also* EX2107.

364. EX2121 is an answer to a request for a substitution of the FWH hanger dated March 28, 2014 which includes a handwritten note dated April 3, 2014 that states: "This is structurally not ok as the wall stud height become taller and the load capacity of the studs become less. Also the eccentricity of truss load being applied on the studs become larger by this method which adds more moment into the studs." *See also* EX2124 [REDACTED]

[REDACTED]

365. In 2015, Simpson was skeptical about the testing and test results that MiTek was advertising for its firewall hanger because the test setup seemed to artificially restrain top-plate rotation as there was bracing on the top plate to prevent it from rotating. EX2064: 176:4-178:25; EX2140.

366. As compared to conventional hangers and even Simpson's DU/DHU/DHUTF series hangers, hangers meeting the configuration of components as recited in the limitations of the '339 Patent would have higher cost in that they require more material and require more complex stamping.

367. It is my opinion this evidence demonstrates that there was skepticism as to whether the benefits of the claimed hanger would justify the additional manufacturing cost.

368. EX2139 is a MiTek email string dated March 6, 2015 that states the following: "I received some comments back recently from a couple of key engineering customers and Multifamily framers, regarding the FWH. . . Regarding time savings, right now they don't believe that this would save their clients significant enough time to justify the higher cost of this hanger."

369. MiTek's customer—Trussway—with whom MiTek was working on the FWH "was concerned that it was going to be way more expensive than I-in mind, it needed to be a lot cheaper than it was. And we ended up, you know having to charge quite – I don't remember the prices but they were way more costly than I thought the market could bear. But I was incorrect because, obviously we sold a lot of them." EX2070: 70:6-71:25; *see also id.* at 86:25-87:19.

370. I understand that MiTek has provided the following testimony in the ‘510 Patent Litigation: "I am aware that the pricing was questioned. Different customers asked for different reason and considered different things. And during the process, I learned more of the variables that could be in place with the cost of application. So asking why the product was expensive or the need for it was something that we discussed with a lot of customers and why it was important to

explain the benefits that were in every saving options in there." EX2071 116:5-117:16.

371. I understand that Sam Hensen has acknowledged in a March 17, 2025 deposition that Simpson chose to develop its DU series hangers to install after the drywall because doing so was a more cost effective solution and that it was inconclusive at the time as to whether the industry would appreciate a hanger that could be installed before the drywall. EX2065: 108:25-111:18.

372. In my opinion, the evidence establishes that the industry expressed skepticism that the method claimed in the '339 Patent could be used in firewalls without compromising the firewall's fire resistance rating. Further, the industry expressed skepticism that hanger recited in the limitations of the '339 patent would not have the ability to adequately withstand the moment caused by cantilevering the channel shaped portion away from the wood-framed wall and thus would not be able to maintain the space to receive the sheathing as required in the inserting steps of the '339 Patent. Finally, the industry expressed skepticism whether the benefits of the method claimed in the '339 Patent would justify the additional manufacturing cost of the hanger required to practice the method.

373. It is my opinion that the industry skepticism of the claimed method corroborates my opinion that the method claimed in the '339 Patent.

7. Teaching Away by Others

374. I have been informed that non-obviousness can also be shown when the prior art teaches away from the claimed invention. I have been informed that a prior art reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the patent applicant.

375. As addressed above and in my first declaration, Bundy is the single prior art reference in which two layers of fire resistant sheathing was disclosed between the channel shaped portion of the hanger and the wall frame.

376. In Bundy, the joist hanger (2) is mounted on the top plate (4) of the wall *after* the drywall panels (6) are installed on the wall. EX1005: Fig. 2, 2:20-25. In fact, Bundy states "[t]he drywall [is] applied to the [] supporting member ..., and the joist hanger can *then* be attached." EX1005: 2:20-25.

377. Bundy explains extending the joist hanger (2) over the drywall panels (6) *"[i]mportantly*, [] does not require any alteration of the drywall." EX1005: 2:18-19.

378. Bundy explains that "[p]referably, no part of the joist hanger 1 contacts the front face 16 of the structural support member 4." EX1005: 5:26-28. Bundy further explains that "[t]he first and second top flanges 15 preferably extend

over the top edge faces 14 of the one or more panels 6 and *are the only parts of the joist hanger that contact the structural support member 4.*" EX1005: 5:42-45

(emphasis added). Bundy discourages the use of back flanges that would engage the face of the top plate, as such a member would prevent the hanger from sliding over the one or more drywall panels and onto the lumber of the wood structural support member.

379. In other words, Bundy expressly taught away from any hanger that would require alteration of the fire resistant drywall—such as the cutout in the drywall to accommodate the extension portion of the hanger as recited in the claims of the ‘339 Patent. Bundy further taught away from including a back flange extending from an edge of the top flange.

380. It is my opinion, a person of skill in the art would have considered the prior art to teach away from the claimed method of the '339 Patent and this weighs in favor of the non-obviousness of the '339 Patent.

8. Nexus

371. I have been informed that an important part of a secondary considerations analysis is to find a nexus between the evidence of secondary considerations and the claims of the ‘339 Patent. I have been informed that there are two ways to establish a nexus. First, a nexus is presumed to be present if the evidence is tied to a specific product that embodies the claimed features, and is

coextensive with them. I understand that there is a presumption of nexus for objective considerations when the patentee shows that the asserted objective evidence is tied to a specific product and that product is the invention disclosed and claimed in the patent. Second, a nexus may be established (absent the presumption under the first prong) by showing that the evidence is the direct result of the unique characteristics of the claimed invention, rather than a feature that was known in the prior art. I have also been informed that it is Columbia’s burden to establish secondary considerations.

372. As set forth above, all of the objective evidence relates to MiTek’s FWH and Simpson’s DG/DGB/DGH, DGF/DGHF/DGBF, and DGT and/or the claimed method of installing the unique fire wall hanger prior to the drywall.

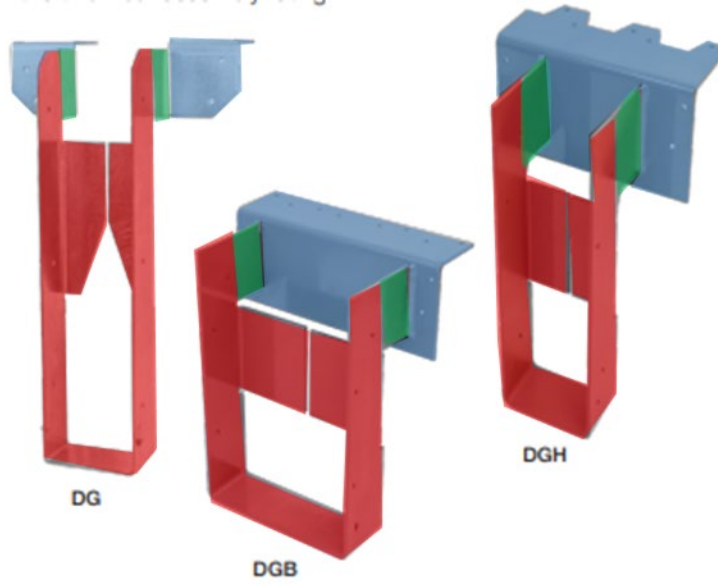
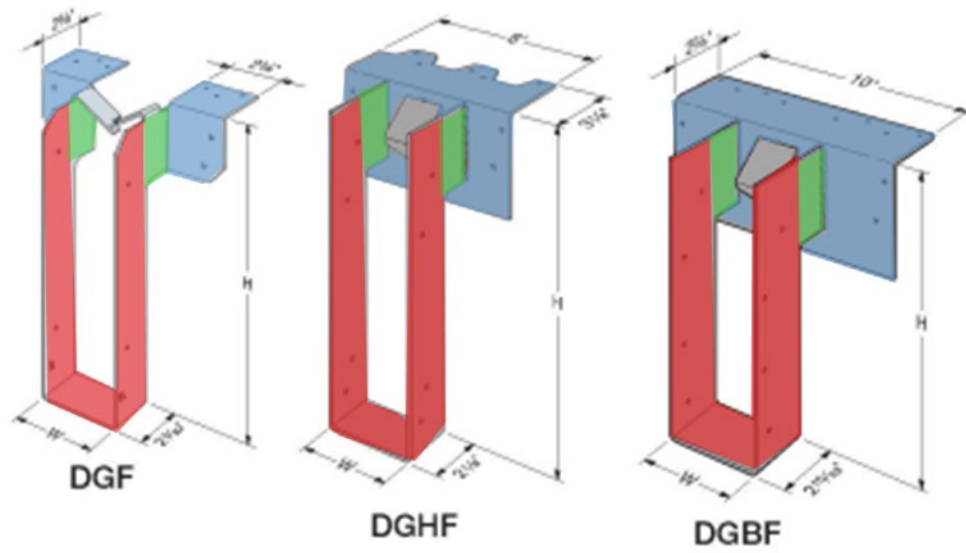
373. In the following paragraphs, in combination with Appendixes A, B, C, and D, I have mapped claims 1 and 27 to the product literature describing installation of MiTek’s FWH and Simpson’s DG/DGB/DGH, DGF/DGHF/DGBF, and DGT, establishing that these products embody the full scope of the claimed invention and are coextensive with the claimed features.

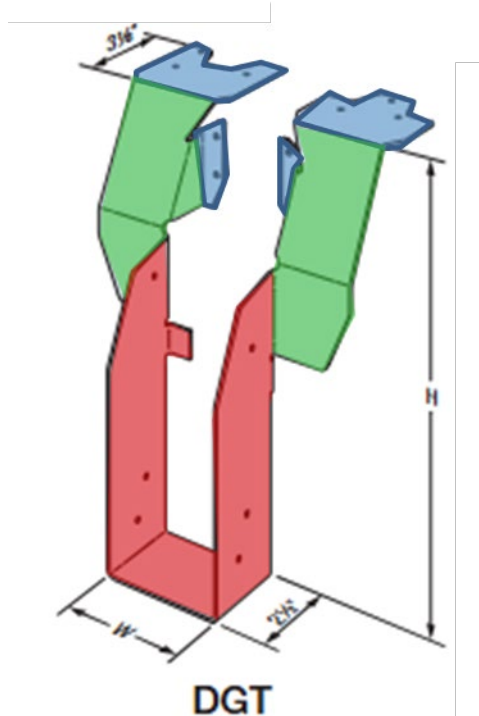
374. As shown below and in Appendixes A, B, C, and D, MiTek’s FWH and Simpson’s DG/DGB/DGH, DGF/DGHF/DGBF, and DGT, as recited in claims 1 and 27 of the ‘339 Patent, contain a channel shaped portion (red in the figures below), an extension portion comprising two extension flanges (green in the

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figures below), and a connection portion comprising a top flange and a back flange extending from an edge of the top flange (blue in the figures below)) and their configuration (the extension flanges being configured to extend through drywall and creating space to receive the drywall between the back flange of the connection portion and the channel shaped portion. I note that MiTek’s FWH looks nearly identical to the non-orthogonal hanger (26) shown in Figs. 1-14A of the ‘339 Patent.







375. Further, brochures for these products instruct that they are installed according to the claimed method of steps of mounting the fire wall hanger, cutting an opening into an exterior edge of fire retardant sheathing and installing the fire retardant sheathing after mounting the hanger and cutting the opening in the fire retardant sheathing. EX2132; EX2133; EX2134; EX2135.

376. It is my opinion, MiTek’s FWH and Simpson’s DG/DGB/DGH, DGF/DGHF/DGBF, and DGT are commercial embodiments of the invention disclosed and claimed in the ‘339 patent, these products practice the limitations of claims 1 and 27 of the ‘339 Patent, the objective evidence is tied to these products, and the presumption of nexus applies. Appendixes A, B, C, and D.

377. As mentioned above, I have been informed that even absent a presumption of nexus, nexus can be proven by showing that the evidence of secondary considerations is the direct result of the unique characteristics of the claimed invention.

378. It is my opinion the inventive configuration of the claimed fire wall hanger, as a whole, provides the ability to be installed according to the claimed method, including, first, “mounting a fire hanger on a frame wall,” and then “installing the fire retardant sheathing” “after mounting the fire wall hanger on the frame wall.”

379. It is my opinion that the evidence shows the benefit of the claimed method of installing the drywall *after* the fire wall hanger drove success of Mitek’s FWH, was copied by Simpson in its DG/DGB/DGH, DGF/DGHF/DGBF, and DGT, was praised in the industry, and was not achieved by other fire wall hangers in the prior art.

380. Documents and deposition testimony in this case demonstrate the connection between the claim elements and the objective evidence of non-obviousness:

- Simpson’s expert, Kenneth Serwin, acknowledged that [REDACTED]

[REDACTED]

EX2075: 31, 40.

- Customer declarations state that the product was purchased due the claimed feature of being able to be installed prior to the drywall. EX2058 (Holmes Dec.); EX2057: ¶13; EX2056 (Church Dec.).

381. There are many Simpson documents showing customer demand for the FWH, showing customer requests for, and acknowledging the need for, a product comparable to the FWH that can be installed according to the claimed method, and indicate that the FWH guided Simpson to design its products to permit the infringing method. For example, a third-party email to Simpson states:

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] EX2102; *see also* EX2100; EX2096; EX2094;

EX2107; EX2104; EX2105; EX2106; EX2129; EX2067: 120:15-121:8; EX2064:

45:14-23;162:17-164:17. Another Simpson email notes that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] EX2136; EX2108; EX2064: 146:25-154:16;

EX2109; EX2114. Simpson internal documents show its goal with its competing

products, such as the DG, was to [REDACTED]
[REDACTED]” EX2115; *see also* EX2110; EX2116;
EX2117; EX2094; EX2109.

382. Testimony from Mitek shows that the primary reason customers purchased the FWH product was because the hanger could be installed prior to drywall. EX2059: 34:11-35:4; 35:18-36:11; 69:4-21; 91:3-24.

383. Survey evidence shows the primary reason customers buy the FWH is due to the preferred installation method and 87% of those respondents said they would pay more for a hanger with this patented feature. EX2054: ¶¶23-26, 91-96.

384. I have been informed that the prominence of the patented technology in advertising creates an inference that links the invention to the success. Both Mitek’s and Simpson’s marketing experts elected to emphasize the claimed method, which shows its importance. For example, EX2131 is a FWH technical bulletin showing new FWH hangers, including announcing that "The advanced design allows you to install the hangers before the drywall is attached, allowing your project to be completely framed-up and weather-tight when the drywall sheathing shows up on site." *See also* EX2059: 39:18-40:19 (testifying that MiTek's marketing communications highlighted the FWH series hanger's ability to be installed before drywall). ES2133 is a Simpson brochure for the DG, DGB, and DGH that states: "Engineered Design Makes it Easy to Install Before the Drywall

The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie... The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete.”

385. I have also been informed that lack of previous experience in the relevant market combined with high sales of the patented product provide an inference of a nexus between commercial success and the patented invention and that the lack of market power in the field suggests that it is the features of the patented invention that led to the commercial success.

386. The record in this case shows that MiTek’s FWH was MiTek’s first foray into the fire wall market. EX2059: ¶¶3-4. Despite being a newcomer, Mitek captured the market, sold the FWH at a premium. EX2059: ¶¶9-16; EX2055: ¶¶49-52]. Thus, MiTek’s lack of previous experience in the relevant market combined with its high sales of the patented FWH product provides an inference of a nexus between its commercial success and the patented invention the lack of market power in this field suggests that it was the features of the patented invention that led to the commercial success.

387. It is my opinion, there is a nexus between the unique features of the claimed invention, the inventive configuration of the fire wall hanger and installation method, and the evidence of secondary considerations.

E. Claim 25

388. I have been informed that the prior art references being applied in an obviousness ground must teach all the limitations of a claim in order to render the claim invalid as obvious.

389. Simpson says claim 25 is invalid as obvious based on Cullen, Bundy, and Allan in Ground 3, based on Robinson, Bundy, and Allan in Ground 7, and based on ArchRecord, Commins, and Cullen in Ground 9. Grounds 5 and 6 based on Yamaguchi, Bundy, and Allan do not address claim 25.

390. Claim 25 is directed to specific structure of the claim fire wall hanger. It is my opinion that Simpson has failed to show the applied prior art references disclose the specific structure of the fire wall hanger recited by claim 25. Specifically, it is my opinion that the joist hanger (10) of Cullen relied upon in Grounds 3 and 9 and the joist hanger (100) of Robinson relied upon in Ground 5 do not show the specific structure of the fire all hanger recited by claim 25.

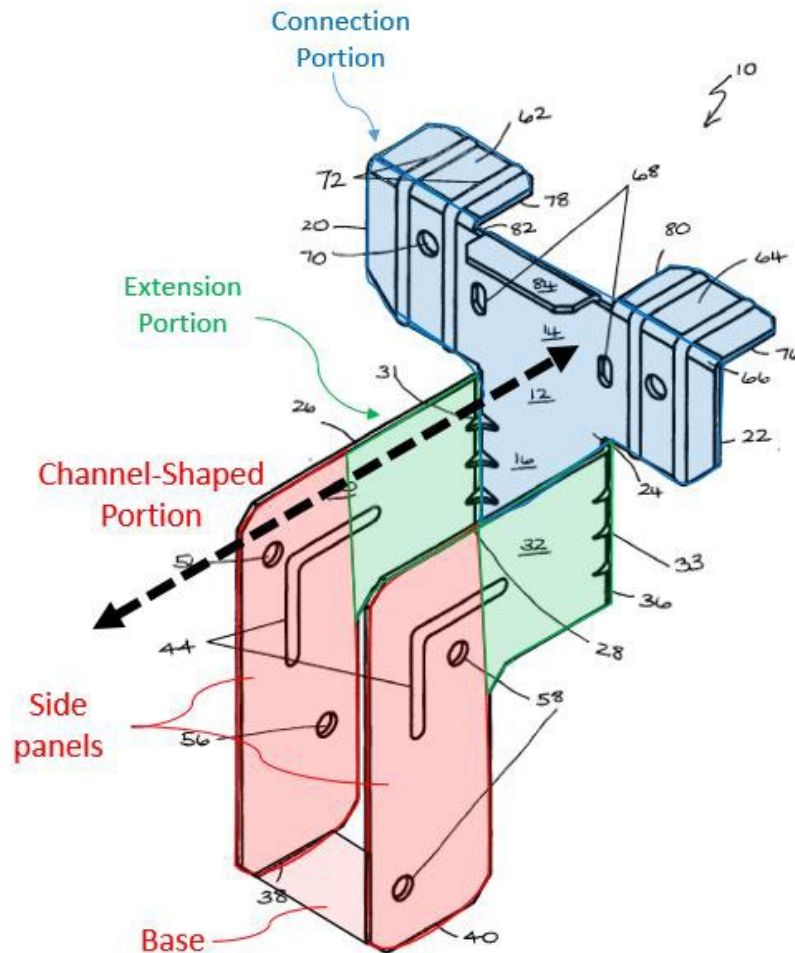
1. Cullen Does Not Teach the Structure of the Fire Wall Hanger Claimed in Claim 25

391. Simpson asserts Cullen teaches the structure of the fire wall hanger recited in claim 25 in Grounds 3 and 9. Pet: 59-62, 176. I disagree.

392. Claim 25 states “an axis that is normal to the planar front surface of the back flange ..., the axis *intersecting the side panel* of the channel-shaped

portion and the planar front surface of the back flange.” This is limitation 25.F. It is my opinion that Cullen’s joist hanger (10) does not have this configuration.

393. Simpson relies on the joist hanger (10) shown in Fig. 1 of Cullen as having this structure recited by claim 25. Pet: 61-62, 176. Cullen’s joist hanger (10) has a back plate (12) and two side walls (30, 32). EX1004: Fig. 1, 10:22-24. As shown below, Simpson points to the red annotated portions of the side walls (30, 32) as being the claimed channel-shaped portion and the back plate (12) (annotated blue by Simpson) as being the claimed back flange. Pet: 61-62.



Pet: 62 (annotated by Simpson).

394. I have reproduced Fig. 1 of Cullen below. Cullen’s side walls (30, 32) are “parallel” to one another and “perpendicular to the back plate (12). EX1004: 10:25-26. By extension, the side walls (30, 32) are also perpendicular to the “planar front surface” of the back plate (12). As shown below, Cullen’s side walls (30, 32) are connected to the back plate (12) by curved or radius bends. Cullen explains “[t]he side walls 30, 32 are created by folding the lower portion of the back plate 12 along vertical fold lines 34, 36.” EX1004: 10:22-23. This means the “planar front surface” of the back plate (12) is spaced inward from the side walls (30, 32). Said another way, the side walls (30, 32) are spaced outward from the “planar front surface” of the black plate (12).

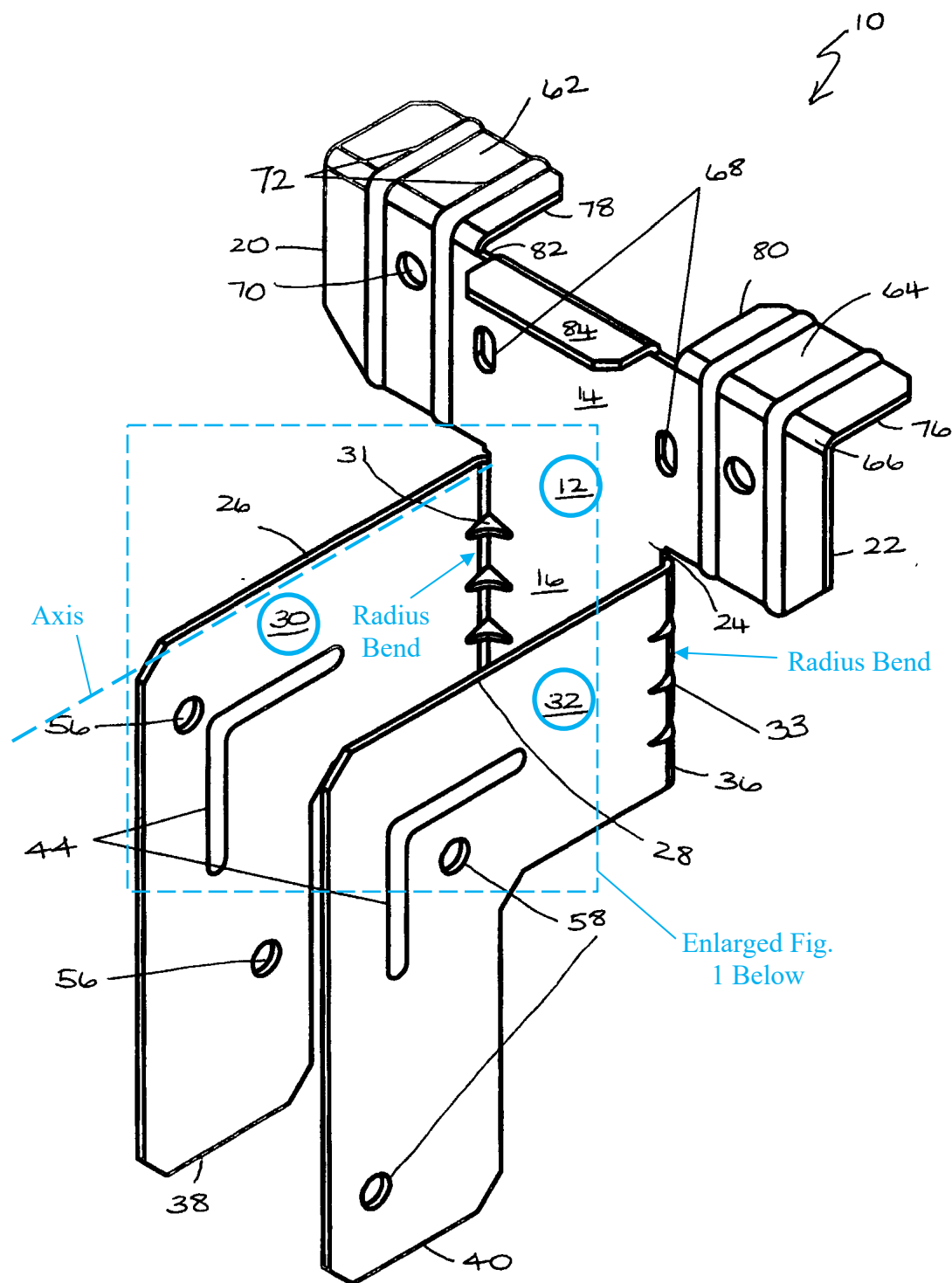
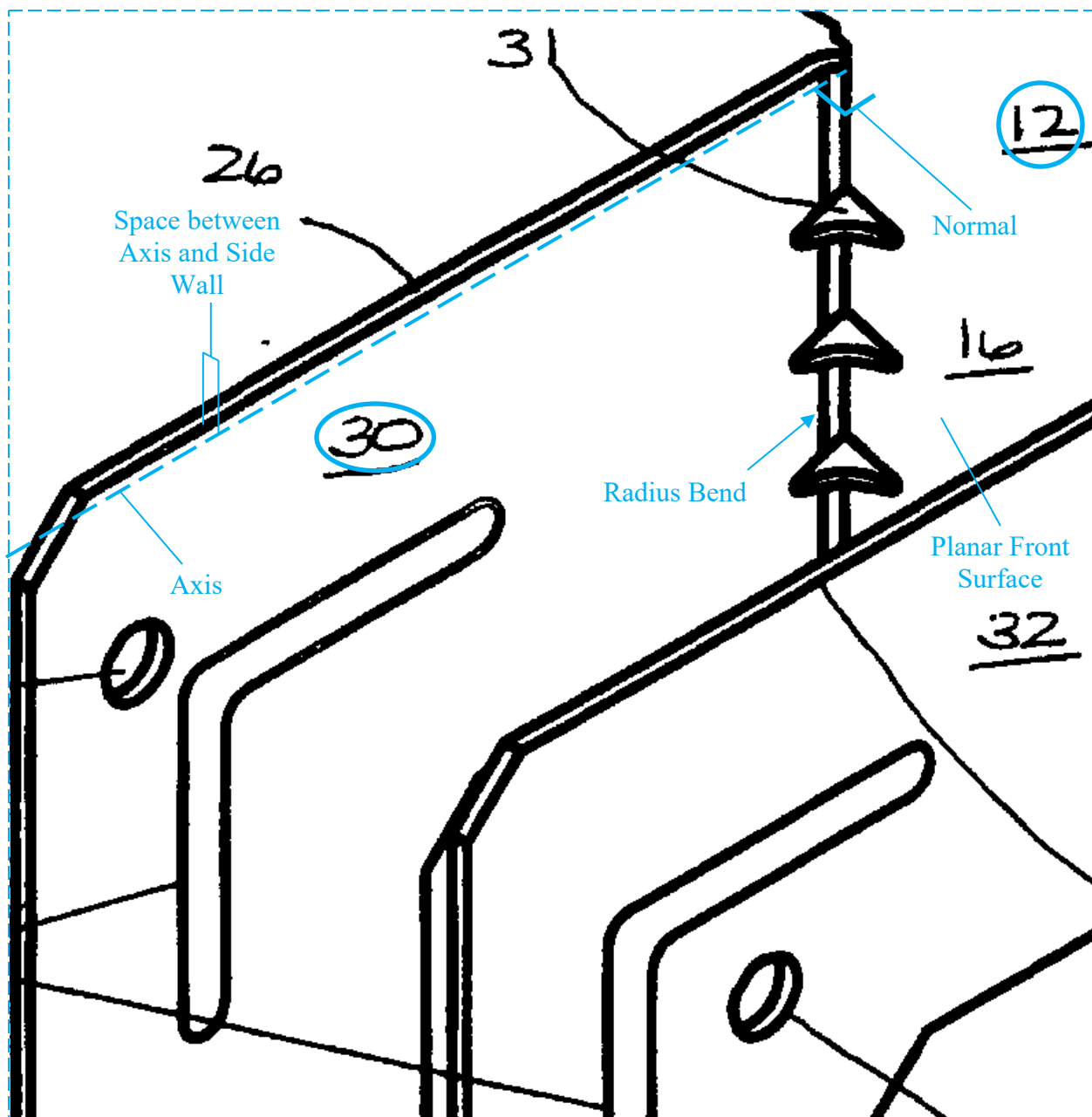


FIGURE 1

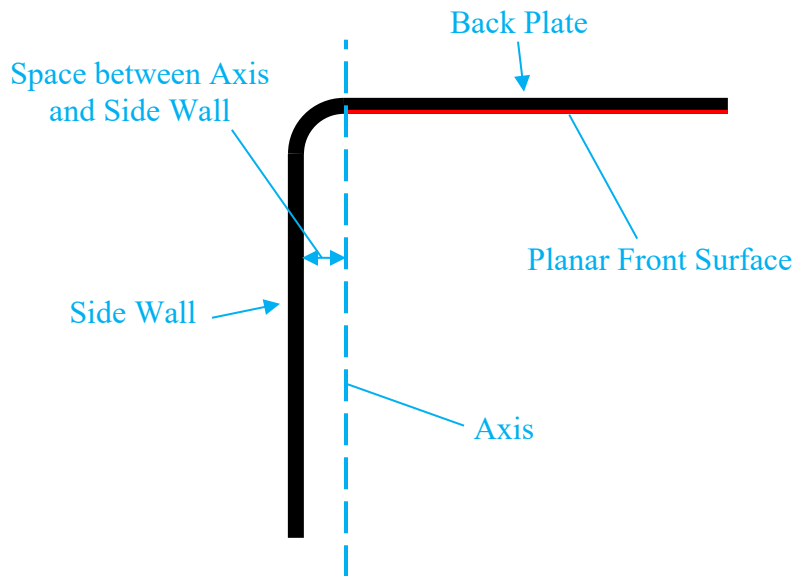
EX1004: Fig. 1 (annotated).

395. As a result, an imaginary axis normal to and intersecting the “planar front surface” of the back plate (12) does not also intersect one of the side walls (30, 32), which are “perpendicular to the back plate 12.” EX1004: 10:25-26. The word “normal” in the context of claim 25 has its geometric meaning of being perpendicular to the given reference element—which in this case is the “planar front surface” of the back flange as recited by claim 25. As shown below, such an axis is spaced apart from and parallel to the side walls (30, 32), including the portion of the side walls Simpson points to as forming the channel-shaped portion.

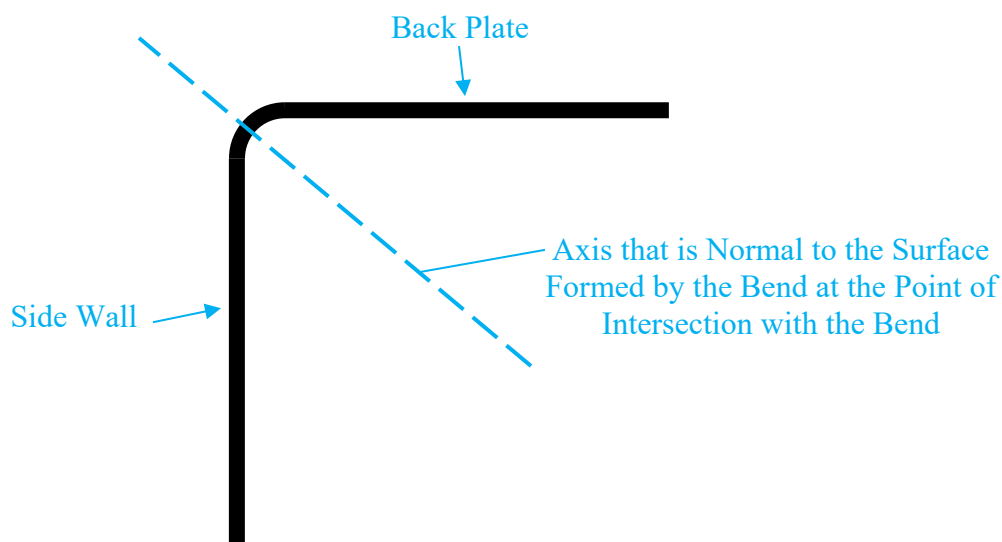


EX1004: Fig. 1 (enlarged and annotated).

396. I have also created the following schematic image of the side wall (30) and the back plate (12) of Cullen’s joist hanger (10) which further illustrates the space between the axis and the side wall:



397. I note that it is not possible, in my opinion, for Simpson to say the “planar front surface” of the back plate (12) extends all the way to the side walls (30, 32) by extending over the radius bends between the side walls (30, 32) and the back plate. This is because claim 25 recites a “planar front surface” and any portion of the front surface of the back plate (12) formed by the radius bend is not “planar.” Further, an axis that intersects the front surface along the bend and that is normal to the front surface at the point of intersection would be skewed relative to the side wall (30, 32) and therefore not intersect the side wall as I illustrate schematically below:



398. Further, the radius bends between the side walls (30, 32) and the back plate (12) of Cullen’s joist hanger (10) would always be present in the joist hanger. Cullen explains its joist hanger (10) is formed from a single sheet metal blank by folding. EX1004: Fig. 4, 8:12-14, 10:22-23, 18:7-19:7. Sheet metal is not folded at sharp corners but have radius or curved bends between planar sections of the sheet metal, no matter how tight the bend is formed. I understand Simpson’s expert, Mr. Fennell, already agrees with this point when he said the following during a prior deposition:

Q: And, question. Is this a bent piece of metal?

A: Yes.

Q: And with a bent piece of metal, is there going to be some type of radius, even a small radius of that bend?

A: Likely, yes.

Q: And that would be a small radius both on the inside and the outside, correct?

A: Yes.

EX2062: 110:10-111:16.

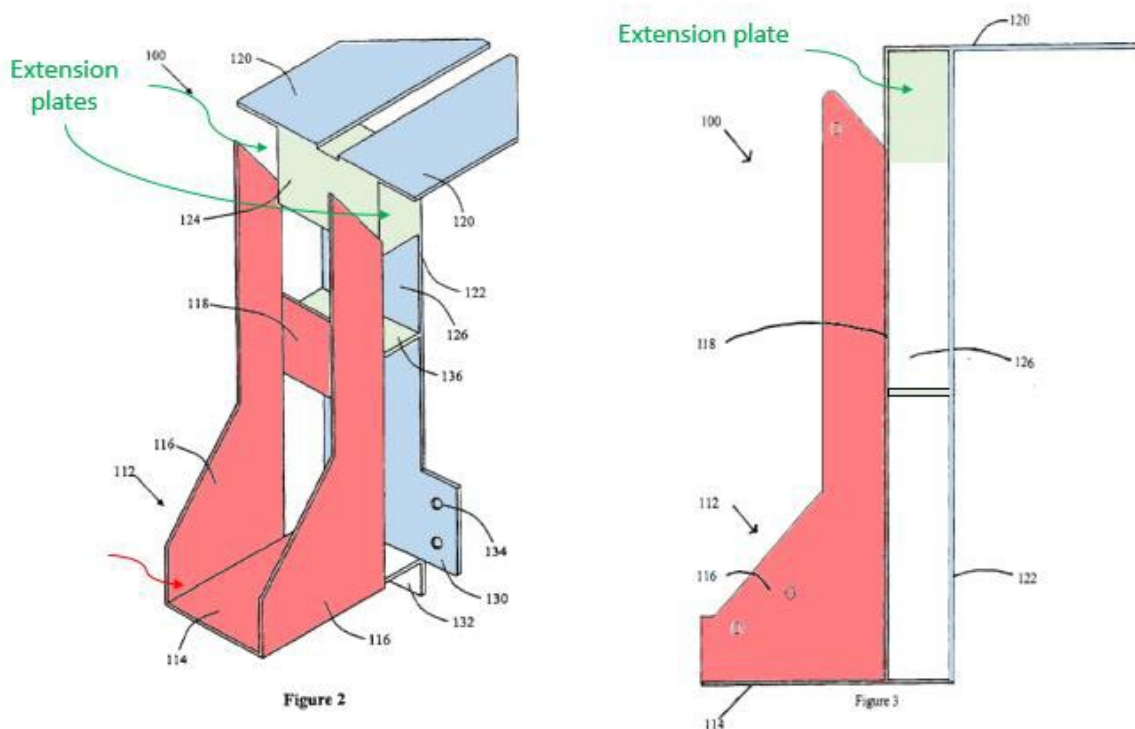
399. Accordingly, it is my opinion the joist hanger (10) of Cullen does not teach limitation 25.F.

2. Robinson Does Not Teach the Structure of the Fire Wall Hanger Claimed in Claim 25

400. Simpson asserts Robinson teaches the structure of the fire wall hanger recited in claim 25 in Ground 4. Pet: 136-143. I disagree.

401. Claim 25 states “the extension portion includes first and second planar extension plates.” This is limitation 25.C.

402. Simpson relies on the joist hanger (100) shown in Fig. 2 of Robinson as having this structure recited by claim 25. Pet: 61-62. Robinson’s joist hanger (100) has “a mount 124 to which the second surface 122 and the two side gussets 116 are attached.” EX1011: 4:9-10. As shown below, Simpson points to the sides of the mount (124) (annotated green by Simpson) as being the claimed first and second extension plates. Pet: 139-140.



Pet: 140 (annotated by Simpson).

403. I disagree with Simpson that Robinson shows the mount (124) as having first and second planar extension plates. Per Simpson, a “plate” is “a smooth flat thin piece of material.” Pet: 9. There is no view in Robinson that shows the internal construction of the mount (124). There is also no detailed description on the internal construction of the mount (124) in Robinson. Instead, Robinson merely identifies the mount (124). EX1011: 2:30-3:2, 4:9-10.

404. With reference to Figs. 2-5 of Robinson, these figures are inconsistent with each other relative to their depiction of the mount (124). Fig. 2 shows the mount (124) as a solid block from the exterior. No seam or connection lines are

shown on the exterior surface of the mount (124). This makes the mount (124) appear to be a solid block of material. The perspective of Fig. 2 provides no indication of the mount’s (124) internal structure. As a result, there is no indication the sides of the mount (124) pointed to by Simpson as the extension plates are indeed “a smooth flat *thin* piece of material.” Pet: 9 (emphasis added).

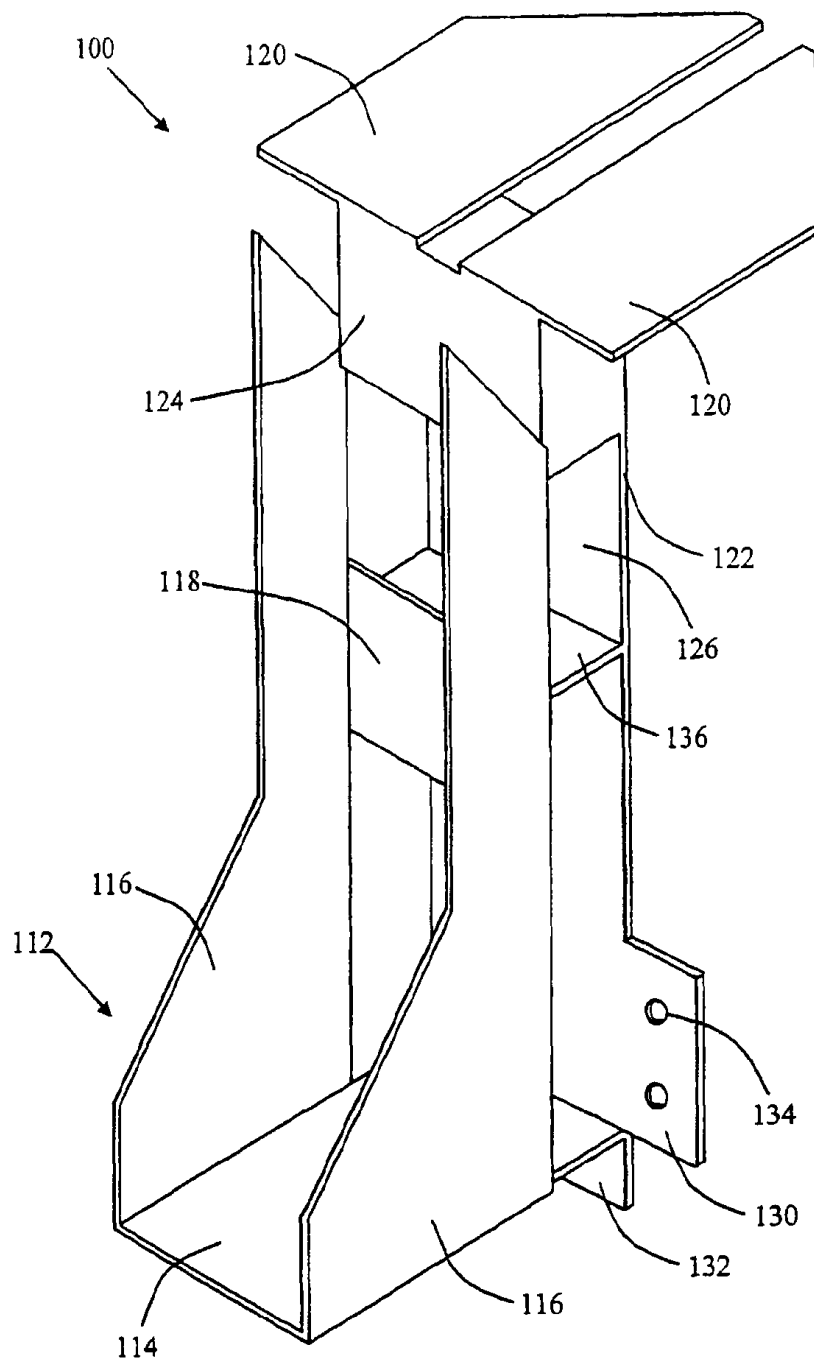
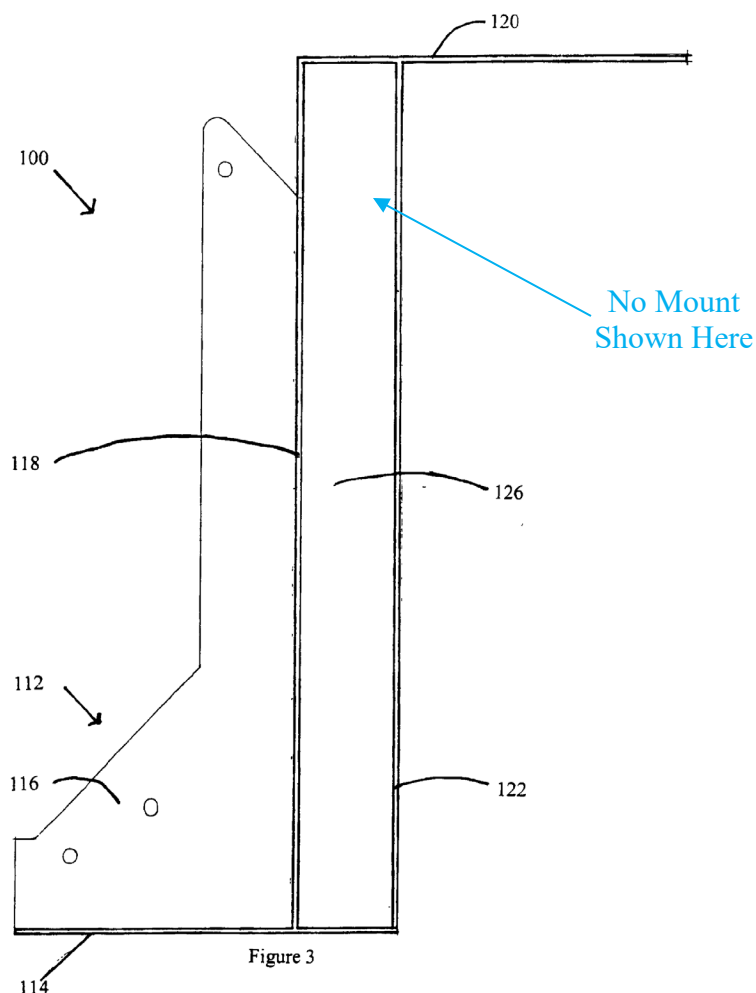


Figure 2

EX1011: Fig. 2.

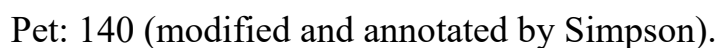
405. Fig. 3 of Robinson, reproduced below, does not show the mount (124) at all.



EX1011: Fig. 3.

406. Simpson provides the following modified and annotated image of Robinson’s Fig. 3 in an attempt to establish that Fig. 3 shows an extension plate. But Simpson added the green rectangle to Fig. 3. As shown above, there are no lines in the actual Fig. 3 of Robinson that denote the mount (124) shown in Fig. 2, even though Fig. 3 is “a side elevation of the joist hanger of Figure 2.” EX1011:

3:24. The side elevation of Fig. 3 make it seem like the joist hanger (100) of Robinson does not have a mount (124) at all. Another inconsistency between Figs. 2 and 3 of Robinson is the first surface (118). Fig. 3 shows the first surface (118) extending continuously the entire height of the joist hanger (100), whereas Fig. 2 shows this first surface is being only a segment at the middle of the height and being spaced below the mount (124).



227

called hidden lines). As known to the POSA, broken lines used in this manner indicate a component that is otherwise hidden behind another component in the view. Note that the directly visible portions of the otherwise hidden components (e.g., second surface (122)) change from broken lines to solid lines to indicate their visibility. Fig. 4 shows the portions of the joist hanger (100) that forms the second surface (122), and covered by the flanges (120), in broken lines to indicate these portions are hidden behind the flanges (120). However, Fig. 4 does not have any such broken lines indicating the mount (124) has planar extension plates on its sides. Instead, Fig. 4 has broken lines indicating the exterior sides of the duct opening (126), which based on Fig. 2 are vertically aligned with the exterior sides of the mount (124). If the mount (124) had planar extension plates on each side, Fig. 4 would show a second broken line inward of each existing broken line depicting the duct opening (126) to indicate the thickness of the planar plates.

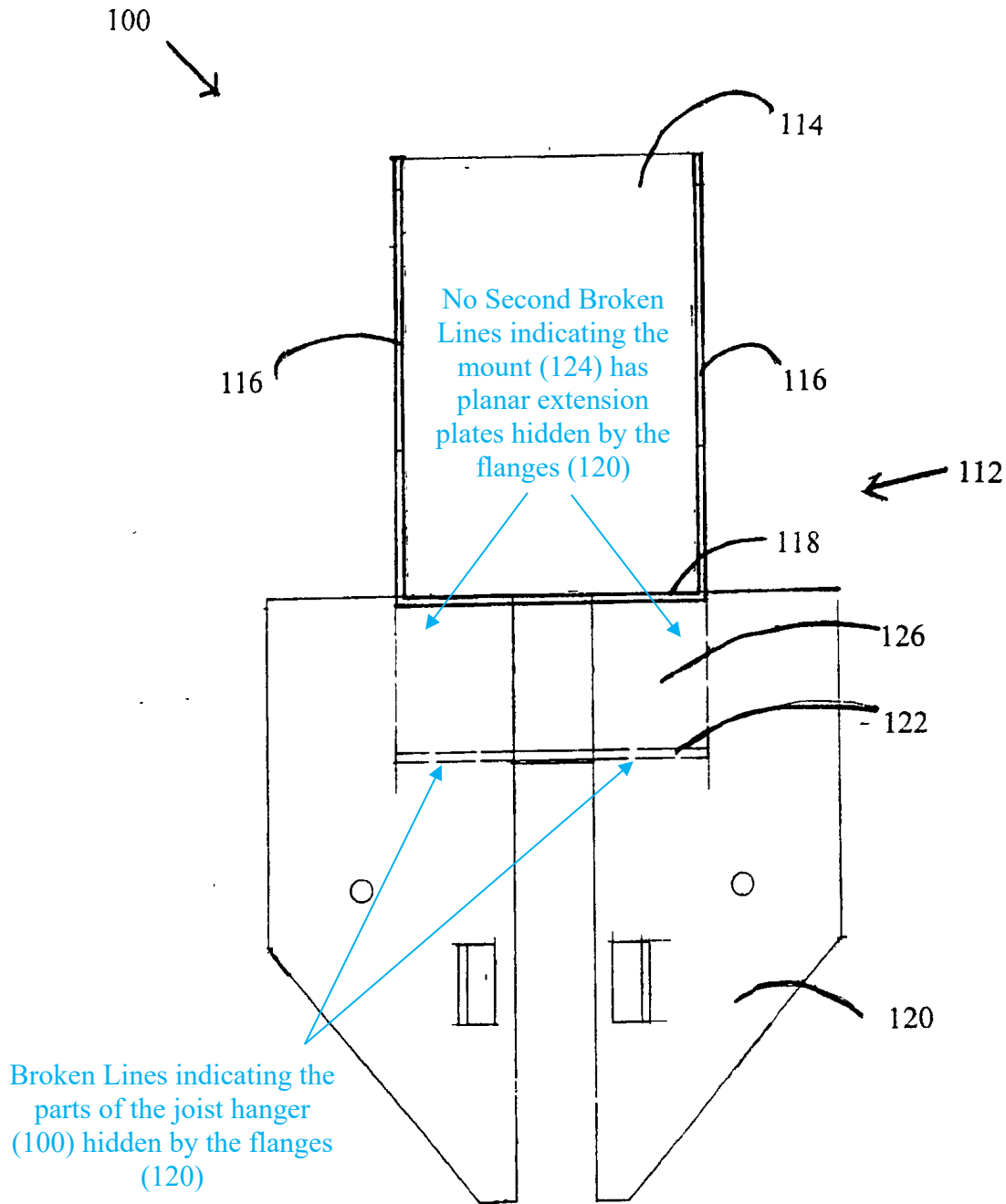
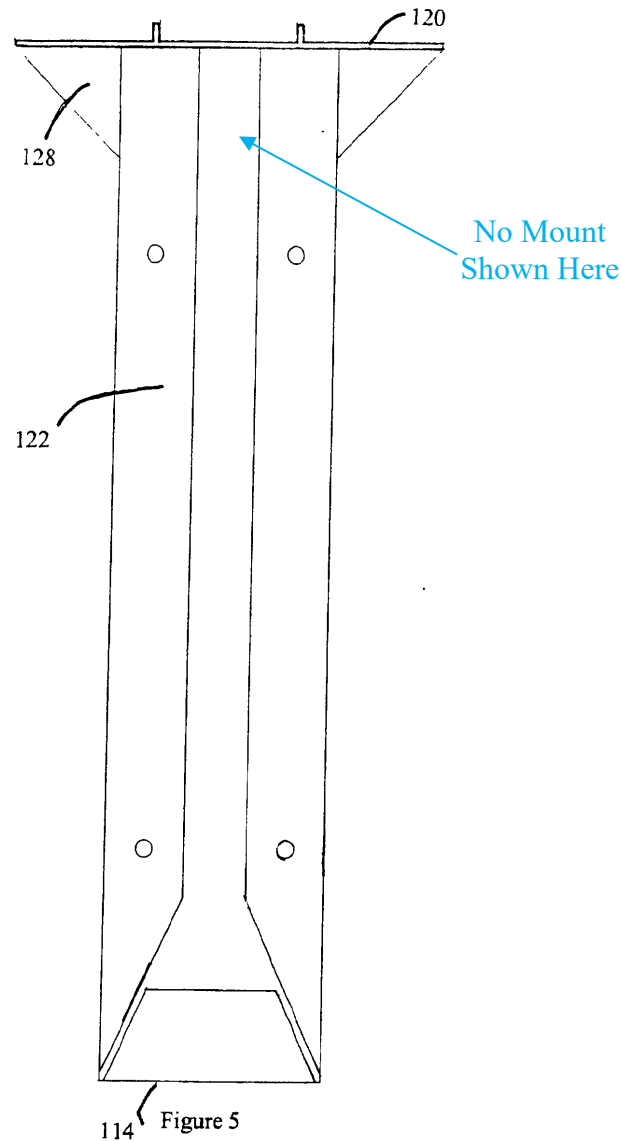


Figure 4

EX1011: Fig. 4 (annotated).

408. Fig. 5 of Robinson, reproduced below, also does not show the mount (124). And furthering the inconsistency between Figs. 2-5 of Robinson, shows the

second surface (112) having a different construction and shape than that shown in Fig. 2. I do not believe the second surface (122) of Fig. 2 is visible in Fig. 5 because the second surface is a forward facing surface and Fig. 5 is “a rear elevation of the joist hanger of Figure 2.” EX1011: 3:26.

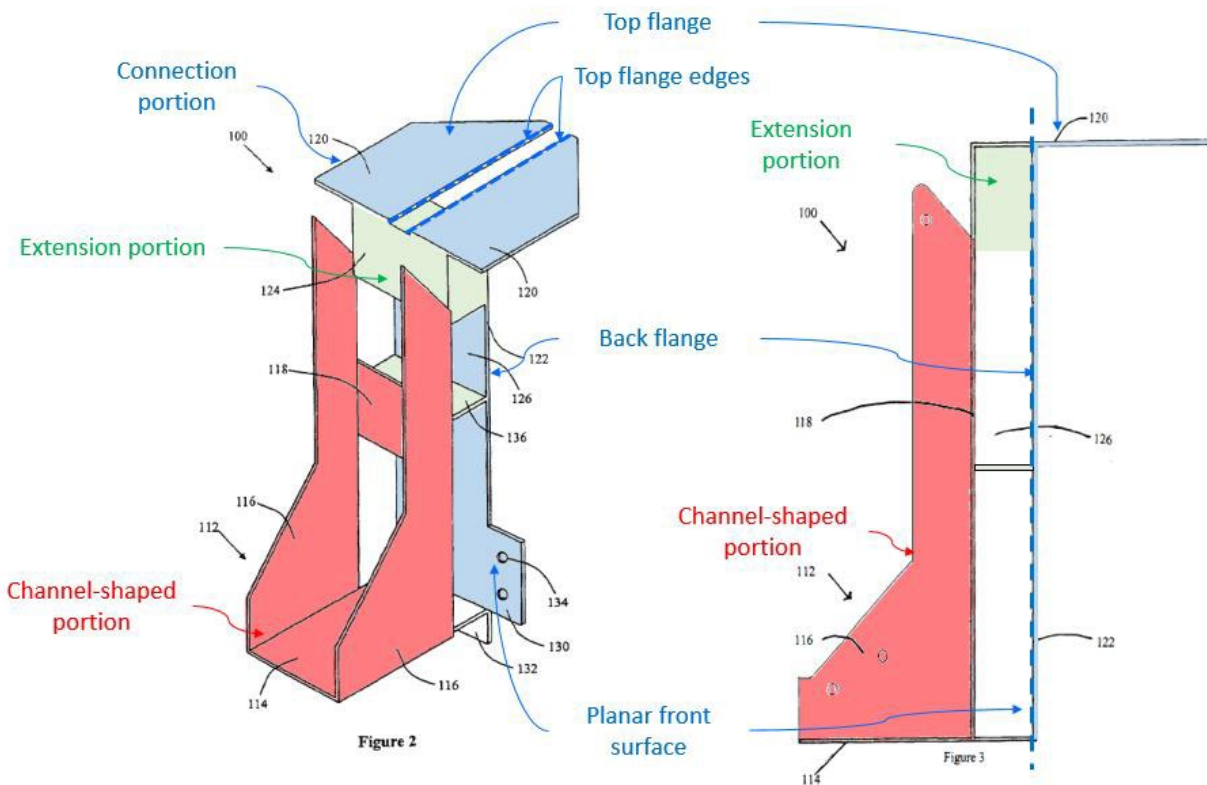


EX1011: Fig. 5.

409. Accordingly, it is my opinion the joist hanger (100) of Robinson does not teach limitation 25.C.

410. Moving to another portion of claim 25, claim 25 also states “the back flange extend[s] from an edge of the top flange.” This is limitation 25.B.

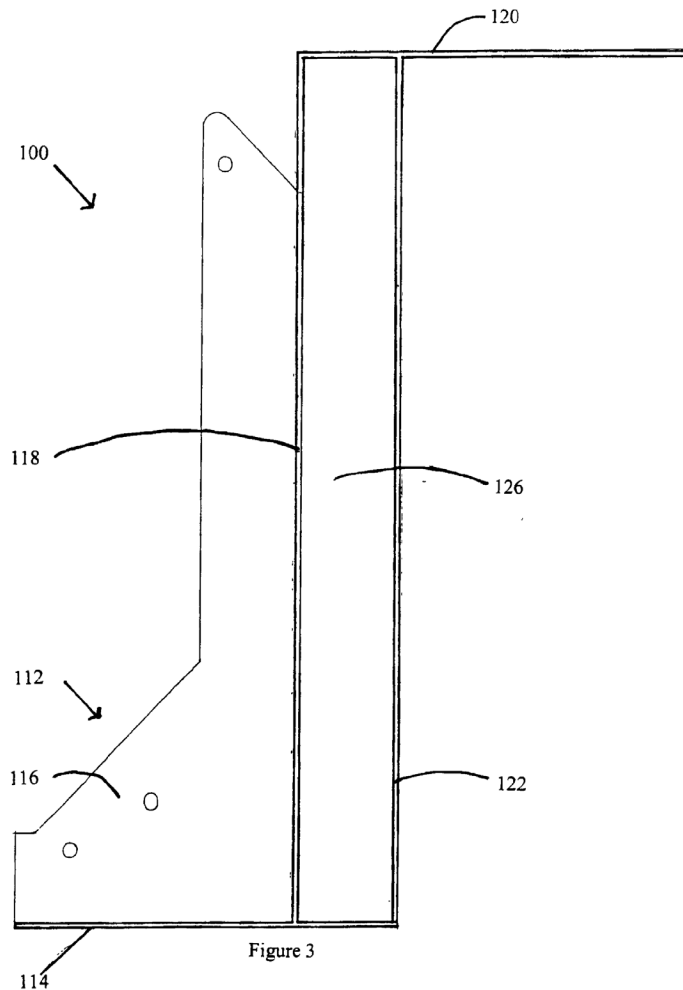
411. As shown below, Simpson points to the portion of the joist hanger (100) that forms the second surface (122) (annotated blue by Simpson) as being the claimed back flange. Pet: 137-139. Simpson points to inner edges of the flanges (120) (also annotated blue by Simpson) as being the claimed edge of the top flange. Pet: 137-139.



Pet: 137 (annotated by Simpson).

412. I disagree with Simpson that the identified “back flange” of Robinson’s joist hanger (100)—the portion of the joist hanger that forms the second surface (122) of Robinson—extends from either one of the inner edges of the flanges (120) of Robinson.

413. Fig. 3 of Robinson, reproduced below, shows Simpson’s purported “back flange” extends from the *bottom face* of the flange (120), not an edge of the flange (120).



EX1011: Fig. 3.

414. Fig. 2 of Robinson, reproduced below, shows the inner edges of the flanges (120) are exposed and not directly connected to any other component of the joist hanger (100). I reiterate that the construction of “extending from” means “in the context of element B extending from element A, the beginning of element B’s extension is on element A.” Pet: 8. The beginning of Simpson’s purported “back flange’s” extension is not shown to be on either of the inner edges of the flanges (120) in Fig. 2. It is the bottom face of the flange (120), at least as seen in Fig. 3, that is the beginning location of the Simpson’s purported “back flange’s” extension.

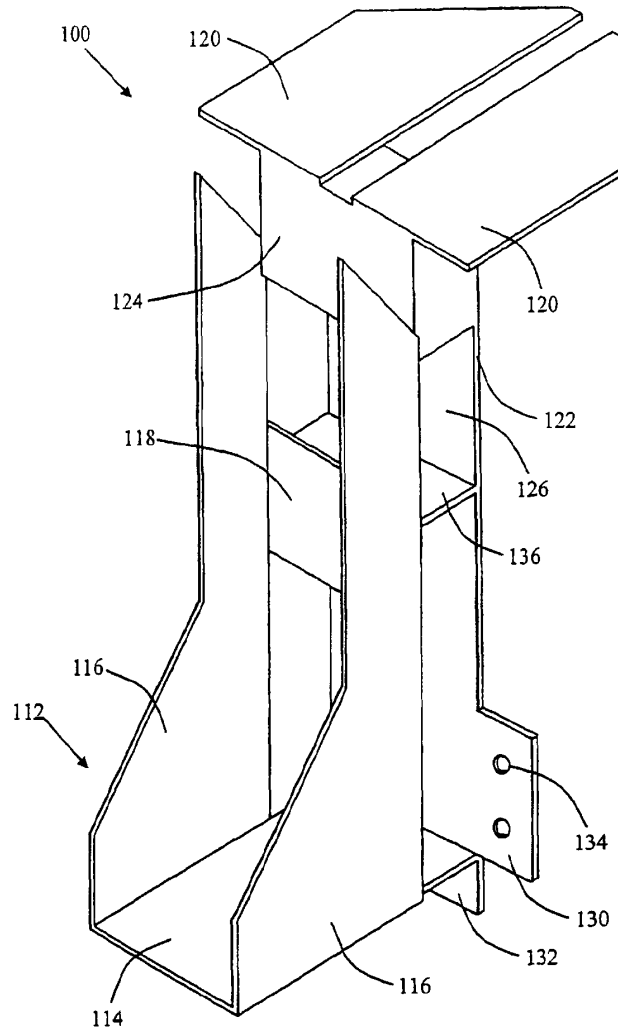


Figure 2

EX1011: Fig. 2.

415. Again, I reiterate that Figs. 2-5 of Robinson are inconsistent with one another and therefore the exact construction of Robinson’s joist hanger (100) is ambiguous. As stated above, the mount (124) is shown in Fig. 2 but not in Fig. 3. Fig. 3 does not show the mount (124) between the first and second surfaces (118, 122). Another inconsistency between Figs. 2 and 3 includes the different configurations of the first surface (118), as explained above. In Fig. 2, the mount

(124) has a top surface (annotated below) that is disposed between the flanges (120) and Simpson’s purported “back flange.”

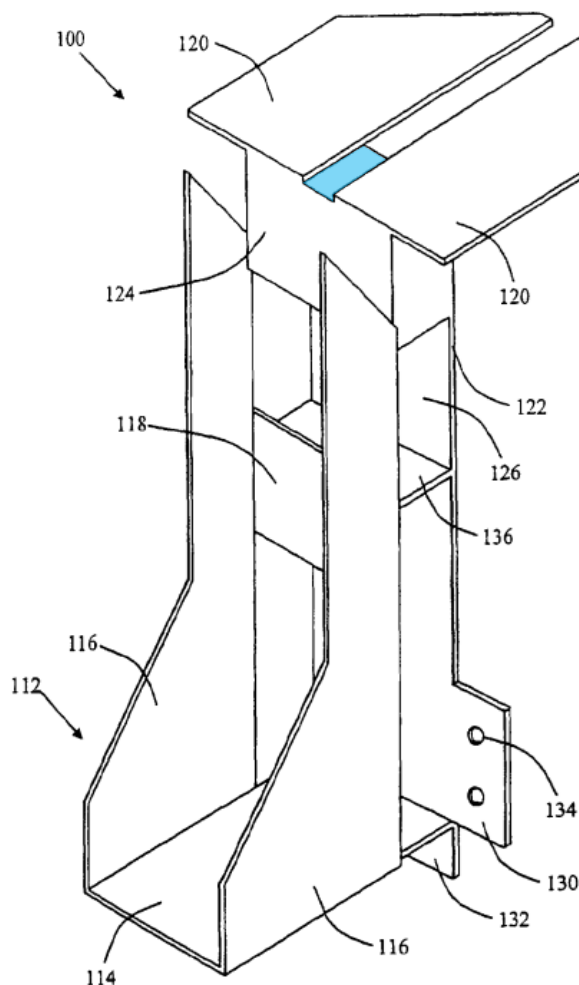


Figure 2

EX1011: Fig. 2 (annotated).

416. Simpson confirms their purported “back flange” does not extend down directly from the flanges (120) in Fig. 2 with their own annotated images. As shown below, Simpson has pointed to the top surface area of the mount (124)—annotated in the image below—directly underneath the flanges (120) as part of the

extension portion (annotated green by Simpson), not the purported “back flange.”

Pet: 112.

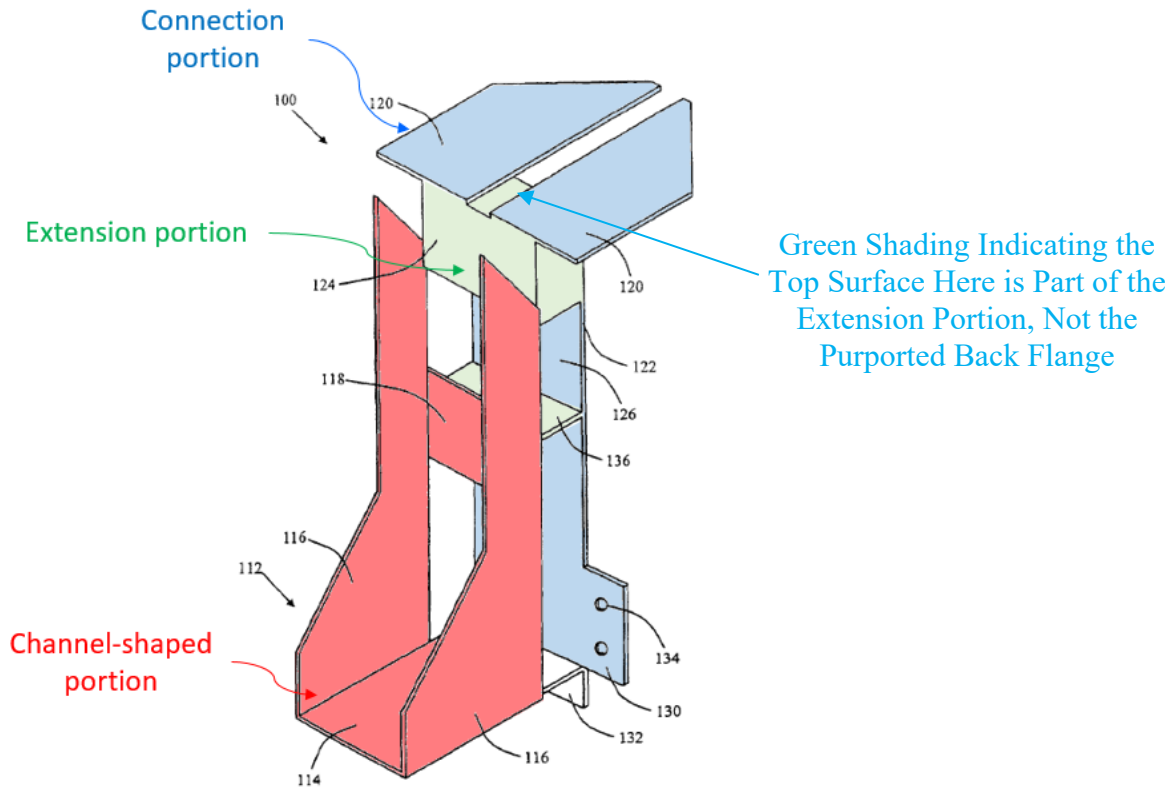


Figure 2

EX1011: Fig. 2 (annotated by Simpson, further annotated added by me).

417. In summary, Fig. 2 does not show what Simpson points to as the “back flange” engaging either of the flanges (120), let alone extending from either one of the inner edges of the flanges (120). And Fig. 3 shows what Simpson points to as the “back flange” as extending from the bottom face of the flange (120), not one of the inner edges of the flange (120).

418. Accordingly, it is my opinion the joist hanger (100) of Robinson does not teach limitation 25.B.

HIGHLY CONFIDENTIAL – ATTORNEY’S EYES ONLY

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 27th day of May, 2025.

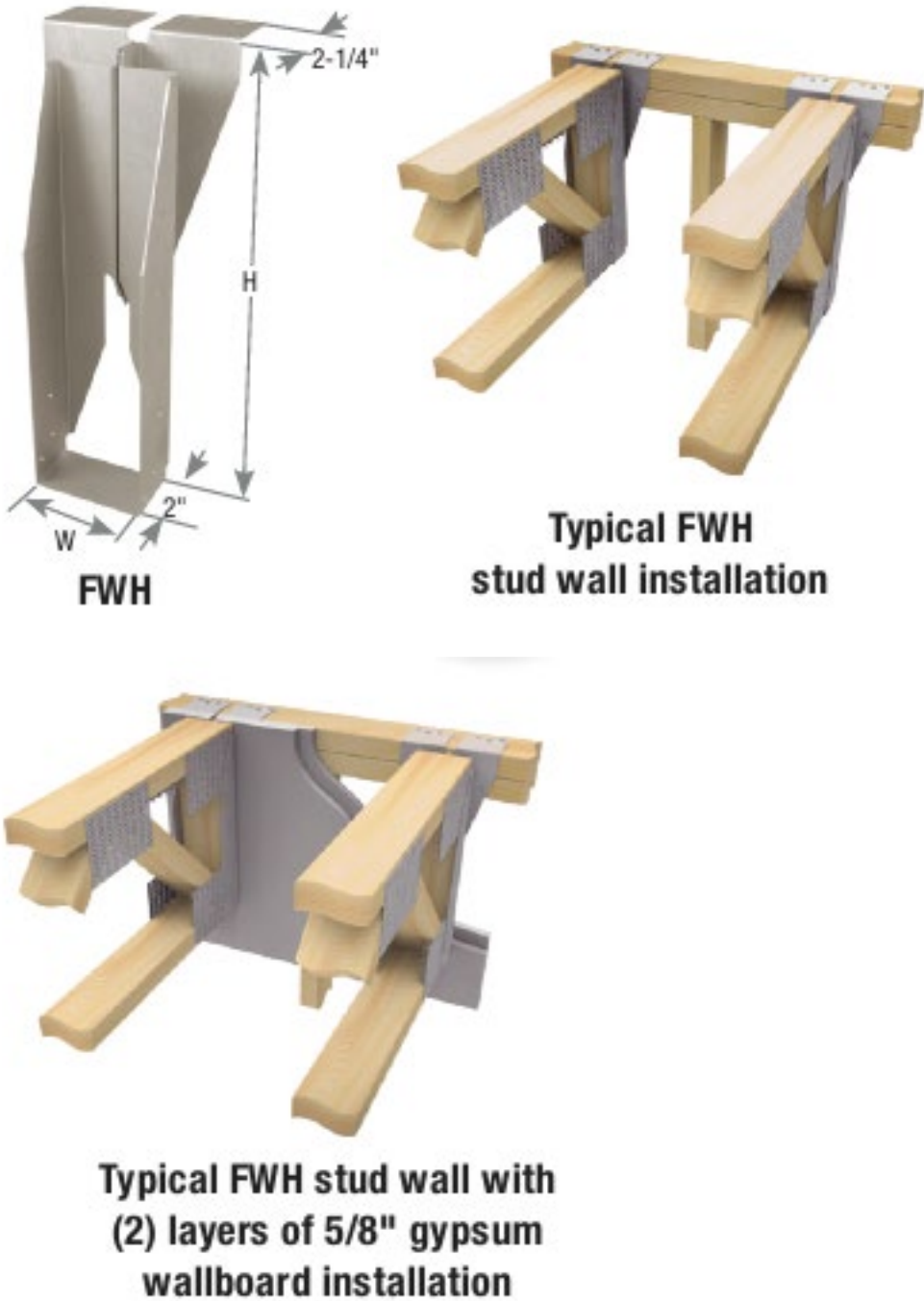
By Paul Tucker: /Paul D. Tucker/

APPENDIX A

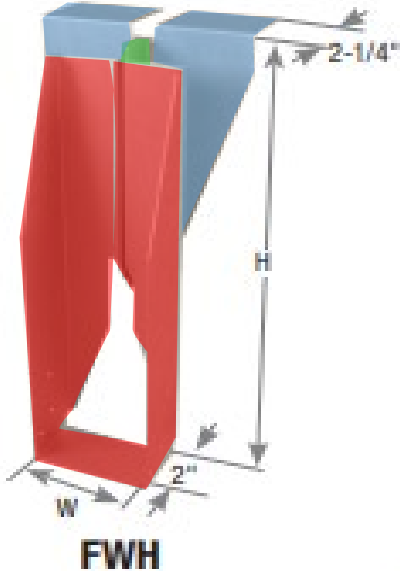
Mapping of MiTek’s FWH Series of Hangers to Claims 1 and 27 of the ‘339 Patent

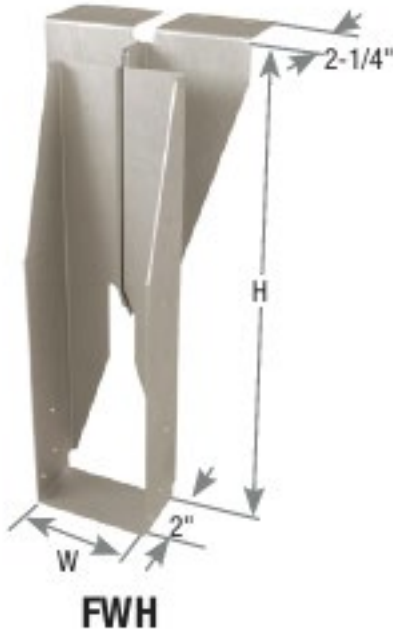
Claim 1/[Claim 27]	MiTek FWH
<p>A method of constructing a fire-resistive wall assembly, the method comprising:</p> <p>[A method of constructing a fire-resistive wall assembly, the method comprising:]</p>	<p>Users of MiTek’s FWH Series Hangers perform the method of constructing a fire-resistant wall assembly when using MiTek’s FWH Series Hangers according to the instructions provided by MiTek:</p> <p>The Fire Wall Hanger is designed for attaching truss, I-joist, solid sawn lumber, or engineered wood floor framing members to double wall top plates or minimum 2-ply 2x solid sawn header fire rated wood frame walls. The advanced design allows the installation of the FWH before the 5/8" gypsum wallboard (drywall) is attached and permits the building project to be completely framed-up, and weather-tight before the gypsum wallboard sheathing work starts.</p> <div data-bbox="784 982 1140 1041"> <p>2 Hour Fire-Rating</p> </div> <div data-bbox="505 1041 1419 1264"> <p>FWH hangers are tested per ASTM E814 standards. When installed on one side of a maximum 2 hour fire-rated wall assembly, 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.</p> </div>

Claim 1/[Claim 27]	MiTek FWH
	 <p data-bbox="630 783 1107 930">Typical FWH stud wall with (2) layers of 5/8" gypsum wallboard installation</p>
<p data-bbox="203 968 418 1073">mounting a fire wall hanger on a frame wall,</p> <p data-bbox="203 1115 418 1220">[mounting a fire wall hanger on a frame wall,]</p>	<p data-bbox="488 968 1484 1037">MiTek instructs users of MiTek’s FWH Series Hangers to mount the fire wall hangers on a frame wall:</p> <p data-bbox="516 1073 1456 1373">The Fire Wall Hanger is designed for attaching truss, I-joist, solid sawn lumber, or engineered wood floor framing members to double wall top plates or minimum 2-ply 2x solid sawn header fire rated wood frame walls. The advanced design allows the installation of the FWH before the 5/8" gypsum wallboard (drywall) is attached and permits the building project to be completely framed-up, and weather-tight before the gypsum wallboard sheathing work starts.</p> <p data-bbox="516 1451 695 1486">Installation:</p> <ul data-bbox="516 1499 1360 1535" style="list-style-type: none"> • Install the face of hanger flanges tight to stud wall framing.

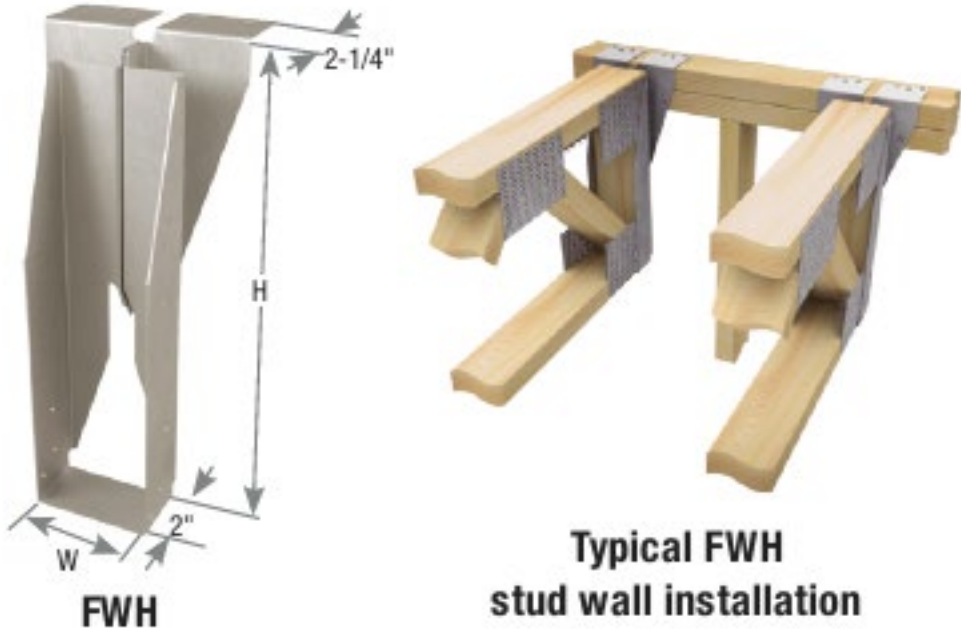
Claim 1/[Claim 27]	MiTek FWH
	 <p>FWH</p> <p>Typical FWH stud wall installation</p> <p>Typical FWH stud wall with (2) layers of 5/8" gypsum wallboard installation</p>
<p>the frame wall including a top plate and a plurality of studs extending down from the top</p>	<p>The frame wall on which users of MiTek’s FWH Series Hangers are instructed to mount the hangers includes a top plate and a plurality of studs extending down from the top plate:</p>

Claim 1/[Claim 27]	MiTek FWH
<p>plate, and</p> <p>[the frame wall including a top plate and a plurality of studs extending down from the top plate, and]</p>	<p>The Fire Wall Hanger is designed for attaching truss, I-joist, solid sawn lumber, or engineered wood floor framing members to double wall top plates or minimum 2-ply 2x solid sawn header fire rated wood frame walls. The advanced design allows the installation of the FWH <i>before</i> the 5/8" gypsum wallboard (drywall) is attached and permits the building project to be completely framed-up, and weather-tight before the gypsum wallboard sheathing work starts.</p>  <p>Typical FWH stud wall installation</p>

Claim 1/[Claim 27]	MiTek FWH
	 <p data-bbox="630 785 1107 932">Typical FWH stud wall with (2) layers of 5/8" gypsum wallboard installation</p>
<p data-bbox="201 970 461 1222">the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component,</p> <p data-bbox="201 1264 461 1516">[the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component,]</p>	<p data-bbox="487 970 1477 1041">MiTek’s FWH Series Hangers include a channel-shaped portion (highlighted red below) sized and shaped to receive a structural component:</p>  <p data-bbox="623 1684 704 1717">FWH</p>

Claim 1/[Claim 27]	MiTek FWH
	<p>The Fire Wall Hanger is designed for attaching truss, I-joist, solid sawn lumber, or engineered wood floor framing members to double wall top plates or minimum 2-ply 2x solid sawn header fire rated wood frame walls. The advanced design allows the installation of the FWH before the 5/8" gypsum wallboard (drywall) is attached and permits the building project to be completely framed-up, and weather-tight before the gypsum wallboard sheathing work starts.</p> <ul style="list-style-type: none"> • The truss/joist should bear fully on the FWH seat with a gap no greater than 1/8" between the end of the supported member and the hanger. See Figure 1. <div data-bbox="532 888 922 1514">  <p>FWH</p> </div> <div data-bbox="933 926 1490 1503">  <p>Typical FWH stud wall installation</p> </div>
<p>a connection portion configured for attachment to the frame wall and</p> <p>[a connection portion configured for attachment to</p>	<p>MiTek’s FWH Series Hangers include a connection portion (highlighted green below) configured for attachment to the frame wall:</p>

Claim 1/[Claim 27]	MiTek FWH
the frame wall and]	<div data-bbox="545 333 946 907" data-label="Image"> </div> <p data-bbox="516 1045 1442 1348">The Fire Wall Hanger is designed for attaching truss, I-joist, solid sawn lumber, or engineered wood floor framing members to double wall top plates or minimum 2-ply 2x solid sawn header fire rated wood frame walls. The advanced design allows the installation of the FWH <i>before</i> the 5/8" gypsum wallboard (drywall) is attached and permits the building project to be completely framed-up, and weather-tight before the gypsum wallboard sheathing work starts.</p>

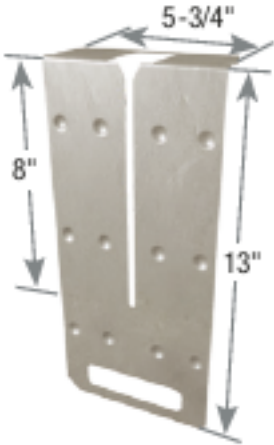
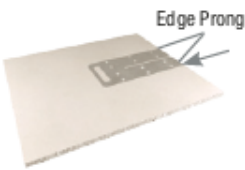
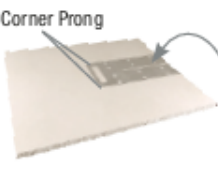
Claim 1/[Claim 27]	MiTek FWH
	 <p style="text-align: center;">FWH</p> <p style="text-align: center;">Typical FWH stud wall installation</p>
<p>an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,</p> <p>[an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,]</p>	<p>MiTek’s FWH Series Hangers include an extension portion (highlighted blue below) interconnecting the channel-shaped portion and the connection portion and providing an approximately 1 5/8” drywall gap between the channel-shaped portion and the connection portion (i.e., spacing the channel-shaped portion from the connection portion):</p>

Claim 1/[Claim 27]	MiTek FWH
	<div data-bbox="548 338 943 909" data-label="Image"> <p>FWH</p> </div> <div data-bbox="496 1018 1437 1115" data-label="List-Group"> <ul style="list-style-type: none"> • The end of the truss/joist should measure 1-5/8" from the face of the supporting wall. See Figure 1. </div> <div data-bbox="521 1234 959 1680" data-label="Image"> </div> <div data-bbox="548 1696 959 1824" data-label="Caption"> <p>Figure 1 Typical FWH Side View</p> </div> <div data-bbox="1062 1180 1468 1810" data-label="Image"> <p>FWH</p> </div>

Claim 1/[Claim 27]	MiTek FWH
	 <p data-bbox="630 785 1107 932">Typical FWH stud wall with (2) layers of 5/8" gypsum wallboard installation</p>
<p data-bbox="201 1008 467 1478">said step of mounting the fire wall hanger includes securing the connection portion of the firewall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;</p> <p data-bbox="201 1520 467 1871">[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</p>	<p data-bbox="487 1008 1484 1150">MiTek instructs users of MiTek’s FWH Series Hangers to mount the fire wall hanger by 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:</p> <p data-bbox="516 1222 1451 1520">The Fire Wall Hanger is designed for attaching truss, I-joist, solid sawn lumber, or engineered wood floor framing members to double wall top plates or minimum 2-ply 2x solid sawn header fire rated wood frame walls. The advanced design allows the installation of the FWH before the 5/8" gypsum wallboard (drywall) is attached and permits the building project to be completely framed-up, and weather-tight before the gypsum wallboard sheathing work starts.</p> <ul data-bbox="503 1583 1429 1680" style="list-style-type: none"> • The end of the truss/joist should measure 1-5/8" from the face of the supporting wall. See Figure 1.

Claim 1/[Claim 27]	MiTek FWH
<p>portion is spaced from the frame wall;]</p>	<div data-bbox="521 302 964 800"> </div> <div data-bbox="678 814 847 873"> <p>Figure 1</p> </div> <div data-bbox="552 890 959 942"> <p>Typical FWH Side View</p> </div> <div data-bbox="1062 302 1468 873"> </div> <div data-bbox="1138 884 1227 930"> <p>FWH</p> </div> <div data-bbox="503 1062 1052 1520"> </div> <div data-bbox="574 1545 959 1646"> <p>Typical FWH stud wall installation</p> </div>

Claim 1/[Claim 27]	MiTek FWH
	 <p data-bbox="630 785 1107 932">Typical FWH stud wall with (2) layers of 5/8" gypsum wallboard installation</p>
<p data-bbox="201 1010 467 1587">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</p> <p data-bbox="201 1629 467 1875">[cutting an opening into an edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing</p>	<p data-bbox="487 1010 1490 1115">MiTek instructs users of MiTek’s FWH Series Hangers to cut notches into the fire retardant drywall sheathing as part of the installation of the fire-retardant wall assembly:</p> <ul data-bbox="516 1157 1445 1377" style="list-style-type: none"> • Gypsum Wallboard Installation - Use the FWH-T template to slot cut the gypsum wallboard. See FWH-T Template Installation Sequence on next page. Slide the gypsum wallboard into position and fasten to the framing members meeting minimum requirements specified by code. <p data-bbox="487 1419 1513 1640">The notches that MiTek instructs users to cut into the fire retardant drywall sheathing as part of the installation of the fire-retardant wall assembly extend through the front face and rear face of the fire-retardant sheathing. The notch is cut from the exterior edge of the fire-retardant sheathing, such that the resultant opening (open top of the opening) faces outwardly, away from the exterior edge of the fire-retardant sheathing.</p>

Claim 1/[Claim 27]	MiTek FWH
<p>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]</p>	<div data-bbox="500 310 878 863">  <p>FWH-T template (must be ordered separately)</p> </div> <div data-bbox="505 953 1435 1367"> <p>FWH-T Template Installation Sequence</p> <div data-bbox="521 1016 857 1346">  <p>Edge Prong</p> <p>1) Align the FWH-Template slot with the mark in the gypsum wallboard and engage the prongs into edge of gypsum wallboard</p> </div> <div data-bbox="873 1016 1143 1346">  <p>Corner Prong</p> <p>2) Rotate the template and press down on the end to engage the corner prongs</p> </div> <div data-bbox="1159 1016 1419 1346">  <p>3) Run the gypsum wallboard cutter down the template to cut the slot</p> </div> </div>
<p>after mounting the fire wall hanger on the frame 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</p>	<p>MiTek instructs users of MiTek’s FWH Series Hangers to install the fire retardant drywall sheathing with respect to the frame wall so that the rear face of the sheathing faces toward the studs of the wall frame:</p>

Claim 1/[Claim 27]	MiTek FWH
<p>faces toward the studs of the wall frame,</p> <p>[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 the rear face of the fire retardant sheathing faces toward the studs of the frame wall,]</p>	<p>The Fire Wall Hanger is designed for attaching truss, I-joist, solid sawn lumber, or engineered wood floor framing members to double wall top plates or minimum 2-ply 2x solid sawn header fire rated wood frame walls. The advanced design allows the installation of the FWH before the 5/8" gypsum wallboard (drywall) is attached and permits the building project to be completely framed-up, and weather-tight before the gypsum wallboard sheathing work starts.</p> <div data-bbox="516 684 1432 1079"> <p style="text-align: center;">Features:</p> <ul style="list-style-type: none"> • Hangers can be installed before gypsum wallboard is attached • Gypsum Wallboard Installation - Use the FWH-T template to slot cut the gypsum wallboard. See FWH-T Template Installation Sequence on next page. Slide the gypsum wallboard into position and fasten to the framing members meeting minimum requirements specified by code. </div> <div data-bbox="529 1121 1089 1587">  </div> <p style="text-align: center;">Typical FWH stud wall with (2) layers of 5/8" gypsum wallboard installation</p>

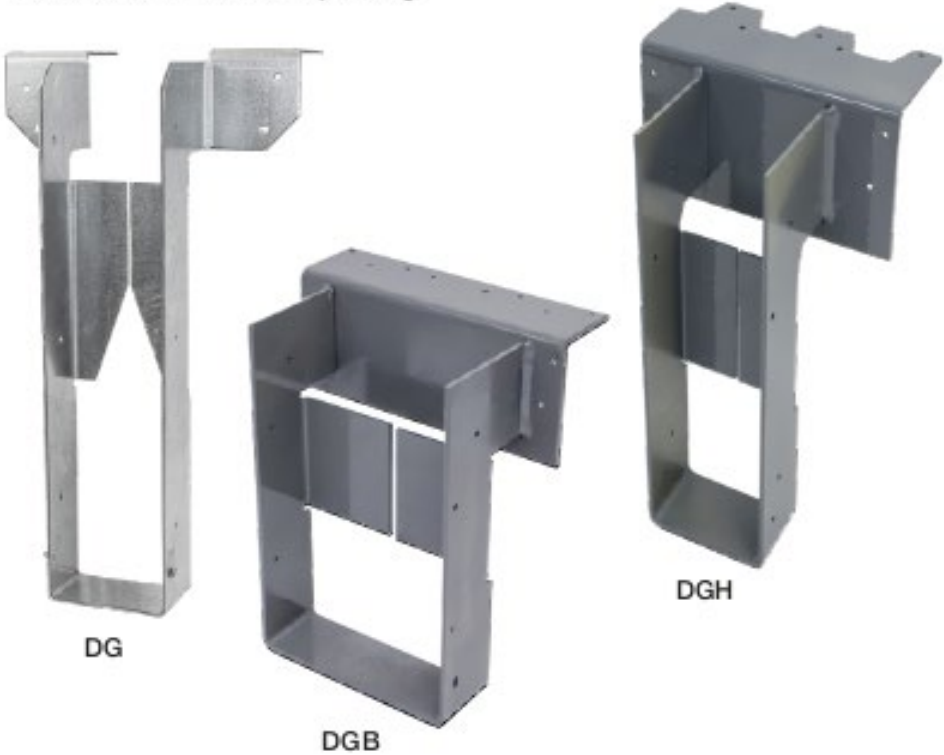
Claim 1/[Claim 27]	MiTek FWH
<p>said step of installing the fire retardant sheathing includes: inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and</p> <p>[said step of installing the fire retardant sheathing includes: inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and]</p>	<p>MiTek instructs users of MiTek’s FWH Series Hangers to install the fire retardant drywall sheathing by inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall:</p> <ul style="list-style-type: none"> • Gypsum Wallboard Installation - Use the FWH-T template to slot cut the gypsum wallboard. See FWH-T Template Installation Sequence on next page. Slide the gypsum wallboard into position and fasten to the framing members meeting minimum requirements specified by code.  <p>Typical FWH stud wall with (2) layers of 5/8" gypsum wallboard installation</p>
<p>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</p>	<p>Installing the fire retardant drywall sheathing requires moving the sheathing relative to MiTek’s FWH Series Hangers mounted on the frame wall so that (1) an edge of the fire retardant drywall sheathing bounding the opening on said sheathing moves alongside the extension portion of the fire wall hanger, (2) the fire wall hanger extends through the opening in the fire retardant drywall sheathing, and (3) part of the extension portion of the fire wall hanger is received in the opening in the fire retardant sheathing:</p>

Claim 1/[Claim 27]	MiTek FWH
<p>hanger extends through the opening in the fire retardant sheathing.</p> <p>[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.]</p>	<div data-bbox="784 300 1140 357" data-label="Section-Header"> <h3>2 Hour Fire-Rating</h3> </div> <div data-bbox="505 357 1419 577" data-label="Text"> <p>FWH hangers are tested per ASTM E814 standards. When installed on one side of a maximum 2 hour fire-rated wall assembly, 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.</p> </div> <div data-bbox="505 636 1435 856" data-label="List-Group"> <ul style="list-style-type: none"> • Gypsum Wallboard Installation - Use the FWH-T template to slot cut the gypsum wallboard. See FWH-T Template Installation Sequence on next page. Slide the gypsum wallboard into position and fasten to the framing members meeting minimum requirements specified by code. </div> <div data-bbox="529 936 1088 1402" data-label="Image"> </div> <div data-bbox="625 1421 1109 1575" data-label="Caption"> <p>Typical FWH stud wall with (2) layers of 5/8" gypsum wallboard installation</p> </div>

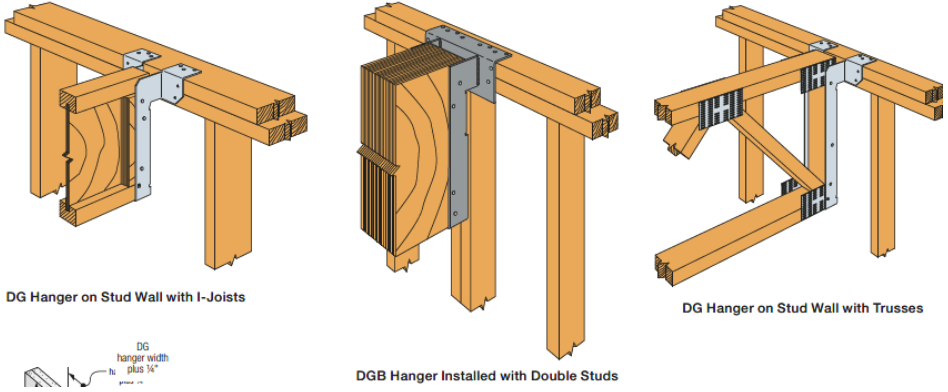
APPENDIX B

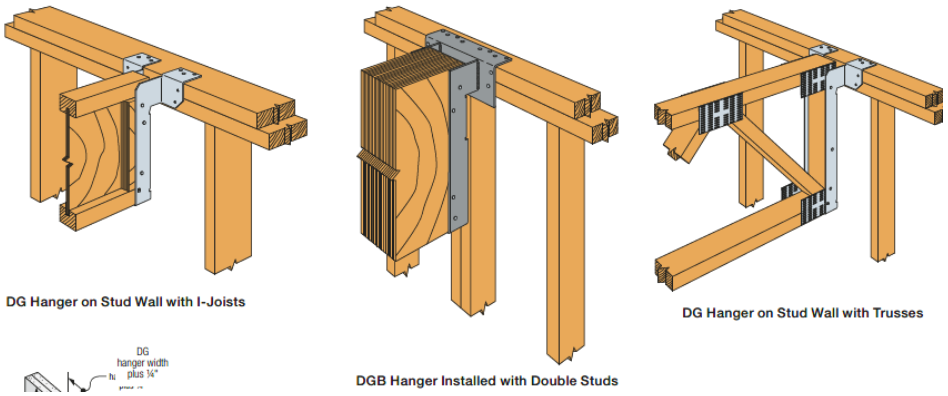
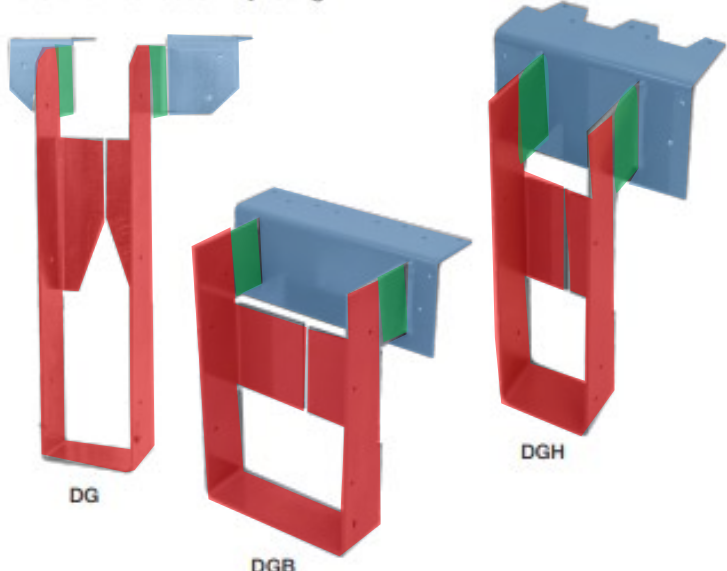
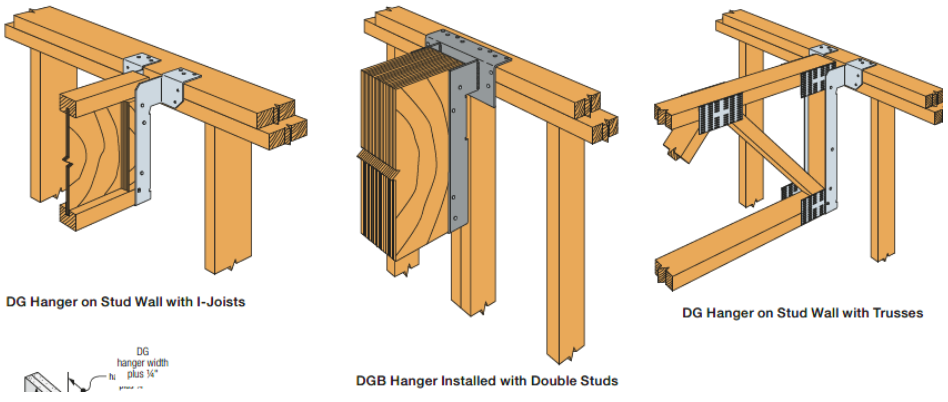
Mapping of Simpson’s DG/DGB/DGH Series of Hangers to Claims 1 and 27 of the ‘339 Patent

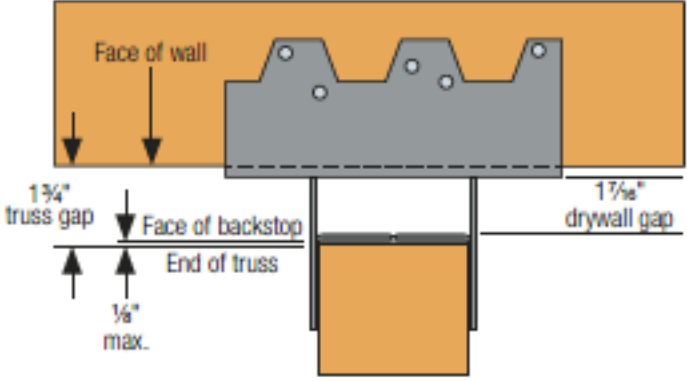
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
<p>A method of constructing a fire-resistive wall assembly, the method comprising:</p> <p>[A method of constructing a fire-resistive wall assembly, the method comprising:]</p>	<p>Users of Simpson’s DG, DGB, and DGH Hangers perform a method of constructing a fire-resistant wall assembly when using Simpson’s DG, DGB, and DGH Hangers according to the instructions provided by Simpson:</p> <p>The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It’s ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a continuous fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DG/DGH/DGB hangers do not reduce the two-hour fire wall assembly rating.</p>

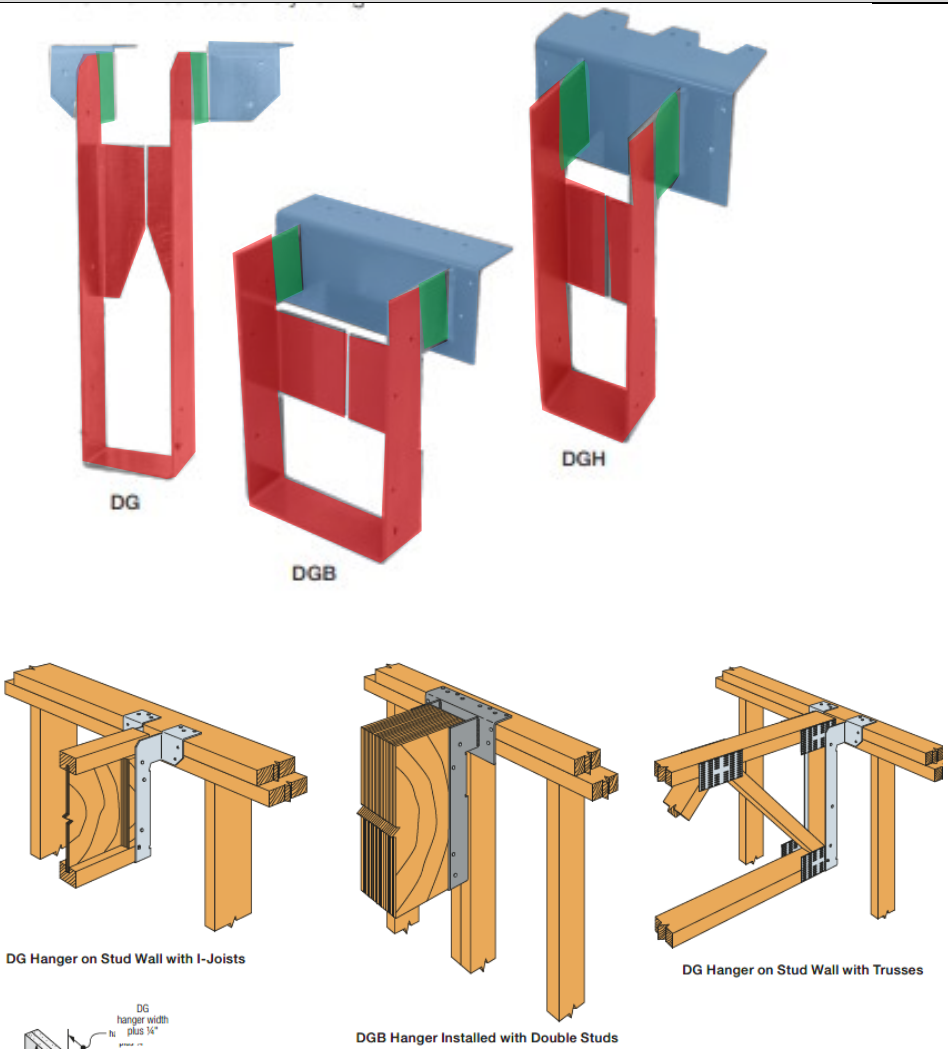
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	<p data-bbox="516 296 1177 338">Two-Hour Fire Wall Assembly Rated</p> <p data-bbox="516 359 1377 474">Simpson Strong-Tie has completed ASTM E814 standard testing verifying that the DG/DGH/DGB hangers do not reduce the two-hour assembly rating.</p> <div data-bbox="505 472 1443 1222">  <p data-bbox="581 1100 626 1129">DG</p> <p data-bbox="818 1192 880 1222">DGB</p> <p data-bbox="1175 1045 1237 1075">DGH</p> </div>

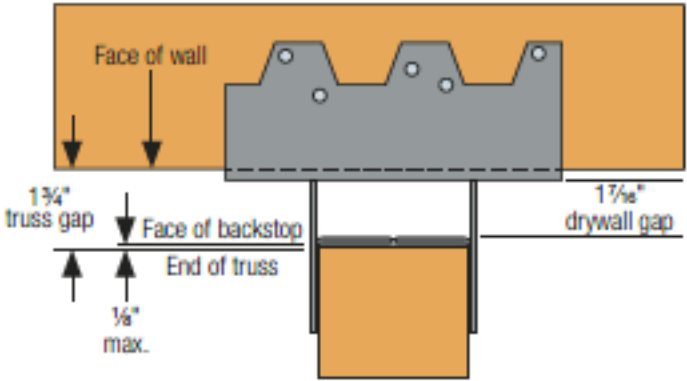
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	 <p data-bbox="505 898 639 911">DG Hanger with I-Joists</p>
<p data-bbox="203 940 418 1041">mounting a fire wall hanger on a frame wall,</p> <p data-bbox="203 1083 418 1184">[mounting a fire wall hanger on a frame wall,]</p>	<p data-bbox="488 940 1484 1003">Simpson instructs users of Simpson’s DG, DGB, and DGH Hangers to mount the fire wall hangers on a frame wall:</p> <p data-bbox="509 1066 1219 1230">The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It’s ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p data-bbox="509 1251 1219 1482">This series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a continuous fire-rated wall.</p> <p data-bbox="509 1503 1219 1667">All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DG/DGH/DGB hangers do not reduce the two-hour fire wall assembly rating.</p>

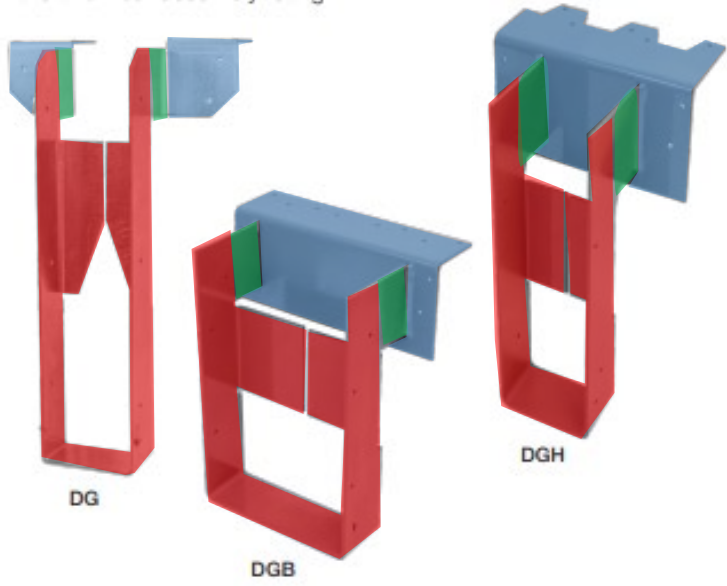
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	<p>Installation</p> <ul style="list-style-type: none"> • Use all specified fasteners. I-joists require web stiffeners. • DG/DGH/DGB hangers are mounted like a standard top-flange hanger.  <p>DG Hanger on Stud Wall with I-Joists</p> <p>DGB Hanger Installed with Double Studs</p> <p>DG Hanger on Stud Wall with Trusses</p> <p>DG hanger width plus 1/4"</p>
<p>the frame wall including a top plate and a plurality of studs extending down from the top plate, and</p> <p>[the frame wall including a top plate and a plurality of studs extending down from the top plate, and]</p>	<p>The frame wall on which users of Simpson’s DG, DGB, and DGH Hangers are instructed to mount the hangers includes a top plate and a plurality of studs extending down from the top plate:</p> <p>The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It’s ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a continuous fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DG/DGH/DGB hangers do not reduce the two-hour fire wall assembly rating.</p>

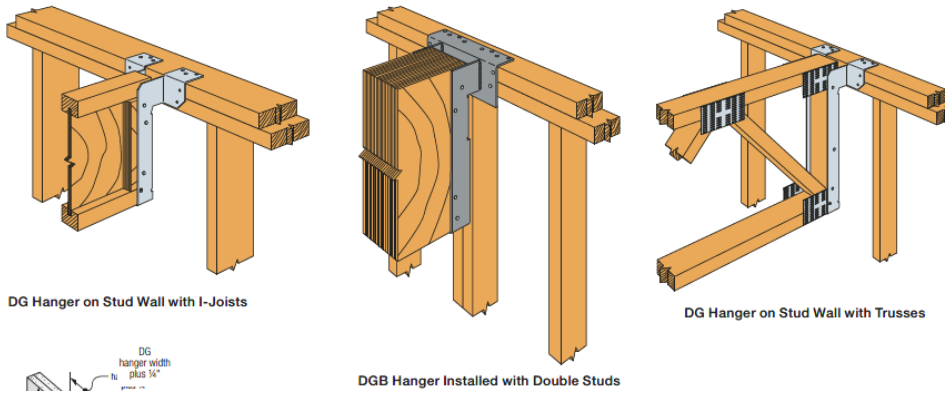
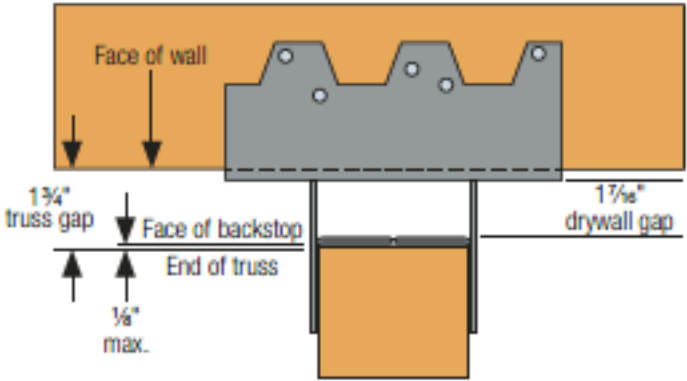
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	 <p>DG Hanger on Stud Wall with I-Joists</p> <p>DGB Hanger Installed with Double Studs</p> <p>DG Hanger on Stud Wall with Trusses</p> <p>DG hanger width = $h + \frac{1}{4}$ inch</p>
<p>the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component,</p> <p>[the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component,]</p>	<p>Simpson’s DG, DGB, and DGH Hangers include a channel-shaped portion (highlighted red below) sized and shaped to receive a structural component:</p>  <p>DG</p> <p>DGB</p> <p>DGH</p>  <p>DG Hanger on Stud Wall with I-Joists</p> <p>DGB Hanger Installed with Double Studs</p> <p>DG Hanger on Stud Wall with Trusses</p> <p>DG hanger width = $h + \frac{1}{4}$ inch</p>

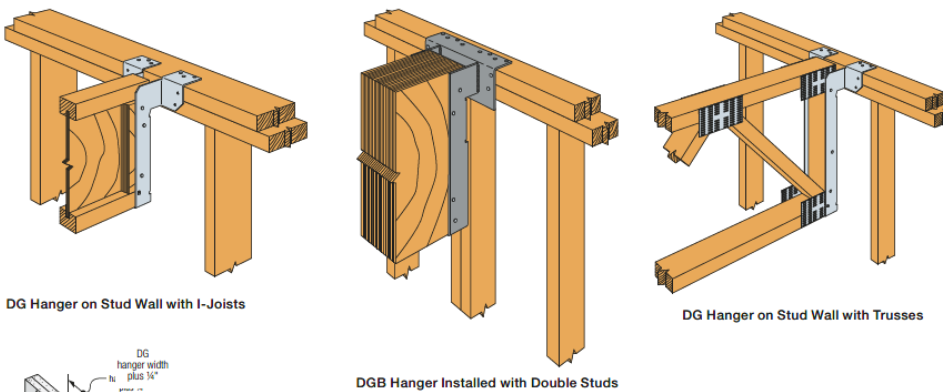
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	 <p>DGH Hanger (DG Similar) Top View with Gap</p>  <p>DG Hanger with I-Joists</p>
<p>a connection portion configured for attachment to the frame wall and</p> <p>[a connection portion configured for attachment to the frame wall and]</p>	<p>Simpson’s DG, DGB, and DGH Hangers include a connection portion (highlighted blue below) configured for attachment to the frame wall:</p>

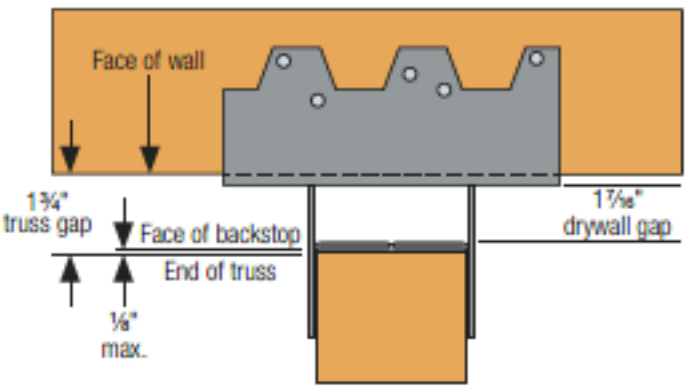
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	 <p>DG</p> <p>DGB</p> <p>DGH</p> <p>DG Hanger on Stud Wall with I-Joists</p> <p>DGB Hanger Installed with Double Studs</p> <p>DG Hanger on Stud Wall with Trusses</p> <p>DG hanger width h plus 1/4"</p>

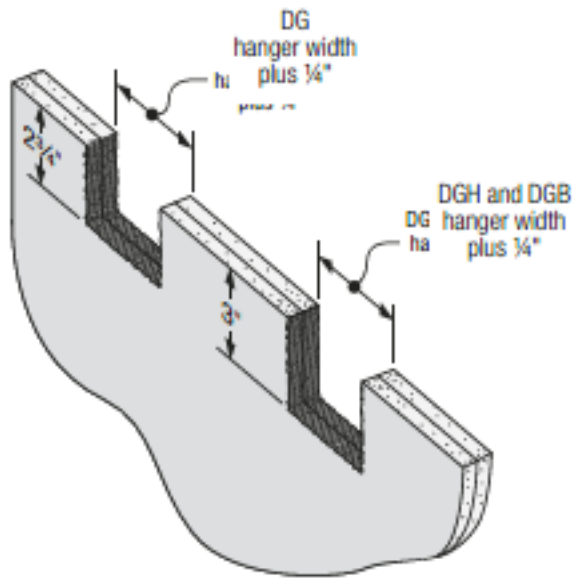
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	<p>The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a continuous fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DG/DGH/DGB hangers do not reduce the two-hour fire wall assembly rating.</p>  <p>DGH Hanger (DG Similar) Top View with Gap</p>
<p>an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,</p>	<p>Simpson’s DG, DGB, and DGH Hangers include an extension portion (highlighted green below) interconnecting the channel-shaped portion and the connection portion and providing approximately a 1 7/16” drywall gap between the channel-shaped portion and the connection portion (i.e., spacing the channel-shaped portion from the connection portion):</p>

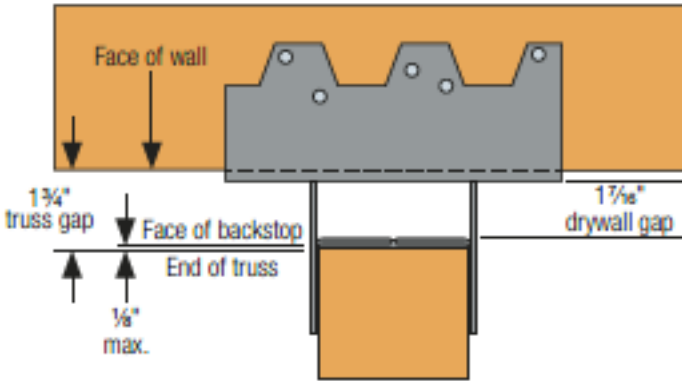
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
<p>[an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,]</p>	<div data-bbox="552 268 1274 850">  </div> <p>The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a continuous fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DG/DGH/DGB hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall

Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	<div data-bbox="509 289 1451 680">  <p>DG Hanger on Stud Wall with I-Joists</p> <p>DGB Hanger Installed with Double Studs</p> <p>DG Hanger on Stud Wall with Trusses</p> <p>DG hanger width plus 1/4"</p> </div> <div data-bbox="509 730 1192 1108">  <p>Face of wall</p> <p>Face of backstop</p> <p>End of truss</p> <p>1 3/4" truss gap</p> <p>1 7/8" drywall gap</p> <p>1/8" max.</p> </div> <div data-bbox="509 1142 1192 1184"> <p>DGH Hanger (DG Similar) Top View with Gap</p> </div> <div data-bbox="505 1230 893 1839">  </div> <div data-bbox="505 1843 639 1864"> <p>DG Hanger with I-Joists</p> </div>

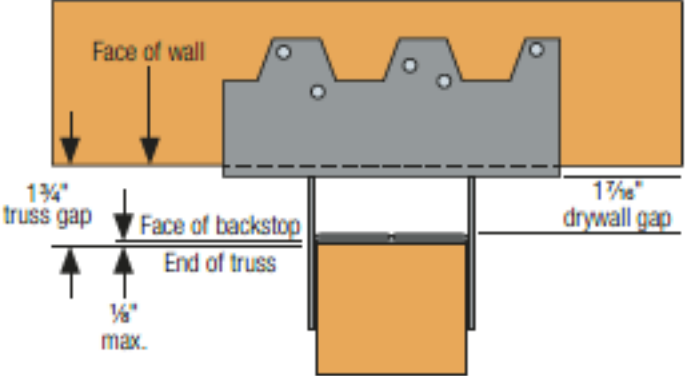
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
<p>said step of mounting the fire wall hanger includes securing the connection portion of the firewall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;</p> <p>[said step of mounting the fire wall hanger includes 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;]</p>	<p>Simpson instructs users of Simpson’s DG, DGB, and DGH Hangers to mount the fire wall hanger by 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:</p> <p>The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It’s ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a continuous fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DG/DGH/DGB hangers do not reduce the two-hour fire wall assembly rating.</p> <h3>Key Features</h3> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall <div style="text-align: center;">  <p>DG Hanger on Stud Wall with I-Joists</p> <p>DGB Hanger Installed with Double Studs</p> <p>DG Hanger on Stud Wall with Trusses</p> <p>DG hanger width plus 1/4"</p> </div>

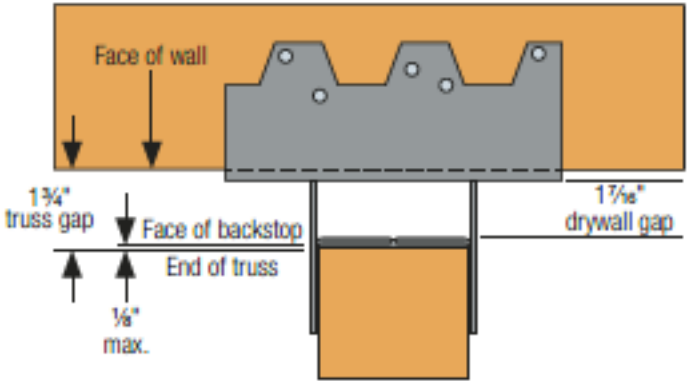
Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	 <p>DGH Hanger (DG Similar) Top View with Gap</p>  <p>DG Hanger with I-Joists</p>
<p>cutting an opening into an exterior edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing,</p>	<p>Simpson instructs users of Simpson’s DG, DGB, and DGH Hangers to cut notches into the fire retardant drywall sheathing as part of the installation of the fire-retardant wall assembly:</p>

Claim 1/[Claim 27]	Simpson DG/DGB/DGH
<p>and opening outwardly from the exterior edge of the fire retardant sheathing; and</p> <p>[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]</p>	 <p style="text-align: center;">Drywall Notches</p> <p>The notches that Simpson instructs users to cut into the fire retardant drywall sheathing as part of the installation of the fire-retardant wall assembly extend through the front face and rear face of the fire-retardant sheathing. The notch is cut from the exterior edge of the fire-retardant sheathing, such that the resultant opening (open top of the opening) faces outwardly, away from the exterior edge of the fire-retardant sheathing.</p>
<p>after mounting the fire wall hanger on the frame 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 wall frame,</p> <p>[after mounting the</p>	<p>Simpson instructs users of Simpson’s DG, DGB, and DGH Hangers to install the fire retardant drywall sheathing with respect to the frame wall so that the rear face of the sheathing faces toward the studs of the wall frame:</p>

Claim 1/[Claim 27]	Simpson DG/DGB/DGH
<p>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 the rear face of the fire retardant sheathing faces toward the studs of the frame wall,]</p>	<p>The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a continuous fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DG/DGH/DGB hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall  <p>DGH Hanger (DG Similar) Top View with Gap</p>

Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	 <p data-bbox="505 898 639 911">DG Hanger with I-Joists</p>
<p>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</p> <p>[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]</p>	<p>Simpson instructs users of Simpson’s DG, DGB, and DGH Hangers to install the fire retardant drywall sheathing by inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall:</p> <p>The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It’s ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a continuous fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DG/DGH/DGB hangers do not reduce the two-hour fire wall assembly rating.</p>

Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	<p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall  <p>DGH Hanger (DG Similar) Top View with Gap</p>  <p>DG Hanger with I-Joists</p>
<p>moving the fire retardant sheathing relative to the fire wall hanger mounted on the frame wall so that</p>	<p>Installing the fire retardant drywall sheathing would necessarily require moving the sheathing relative to Simpson’s DG, DGB, and DGH Hangers mounted on the frame wall so that (1) an edge of the fire retardant drywall sheathing bounding the opening on said sheathing moves alongside the extension portion of the fire wall hanger, (2) the fire wall hanger extends through the opening in</p>

Claim 1/[Claim 27]	Simpson DG/DGB/DGH
<p>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.</p> <p>[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.]</p>	<p>the fire retardant drywall sheathing, and (3) part of the extension portion of the fire wall hanger is received in the opening in the fire retardant sheathing:</p> <p>The DG fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a continuous fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DG/DGH/DGB hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall  <p>DGH Hanger (DG Similar) Top View with Gap</p>

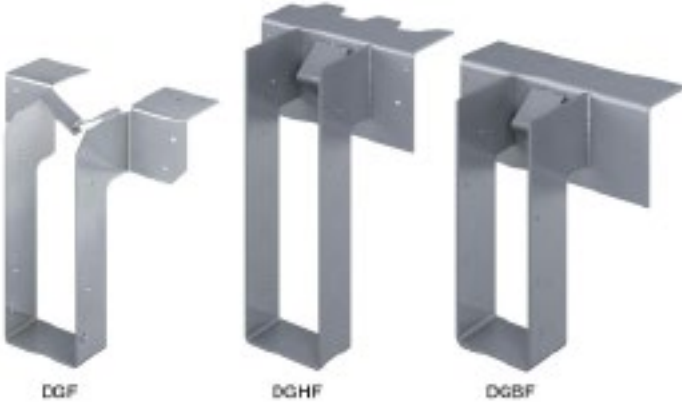
HIGHLY CONFIDENTIAL – ATTORNEY’S EYES ONLY

Claim 1/[Claim 27]	Simpson DG/DGB/DGH
	 <p data-bbox="506 898 641 913">DG Hanger with I-Joists</p>

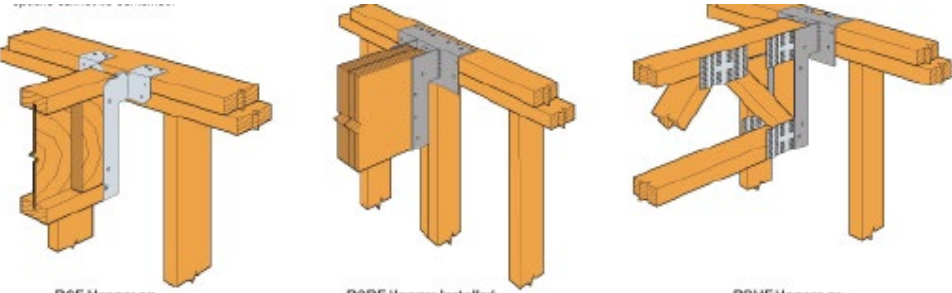
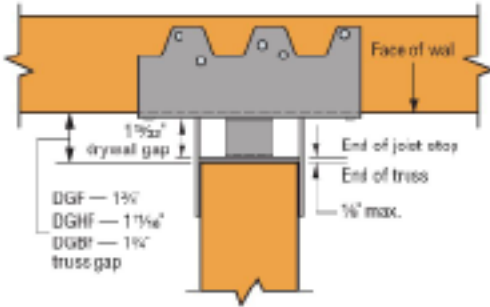
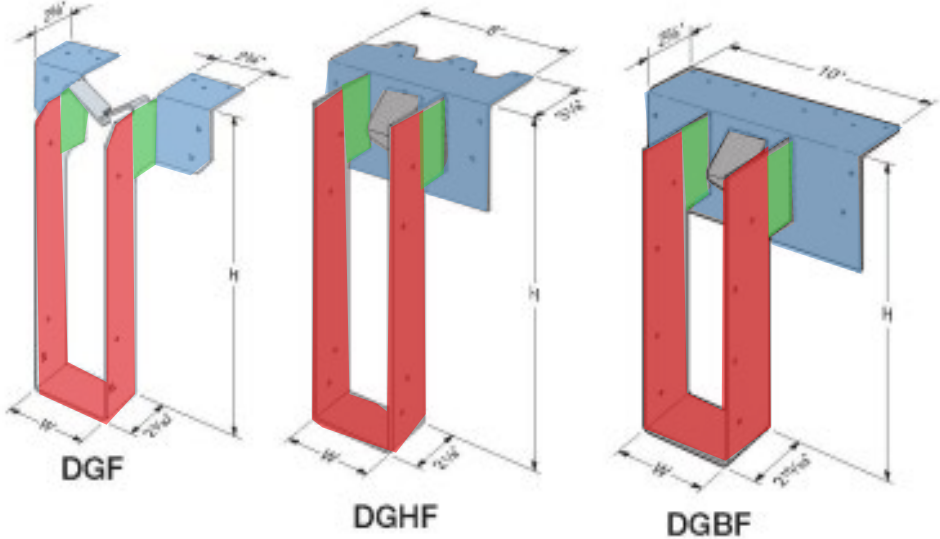
APPENDIX C

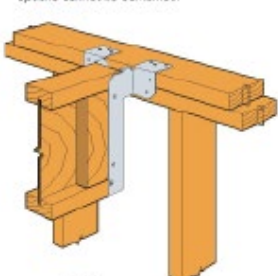
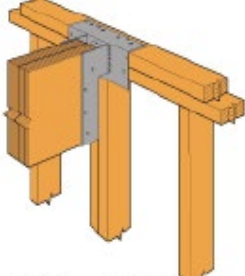
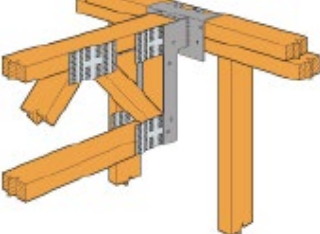
Mapping of Simpson’s DGF/DGBF/DGHF Series of Hangers to Claims 1 and 27 of the ‘339 Patent

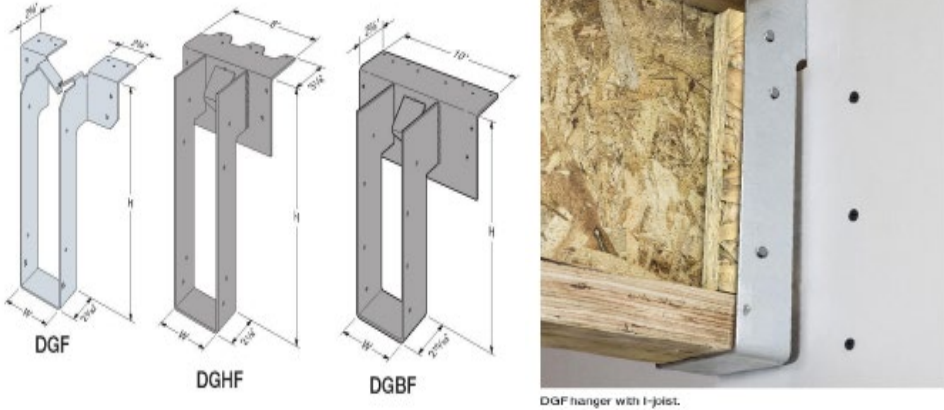
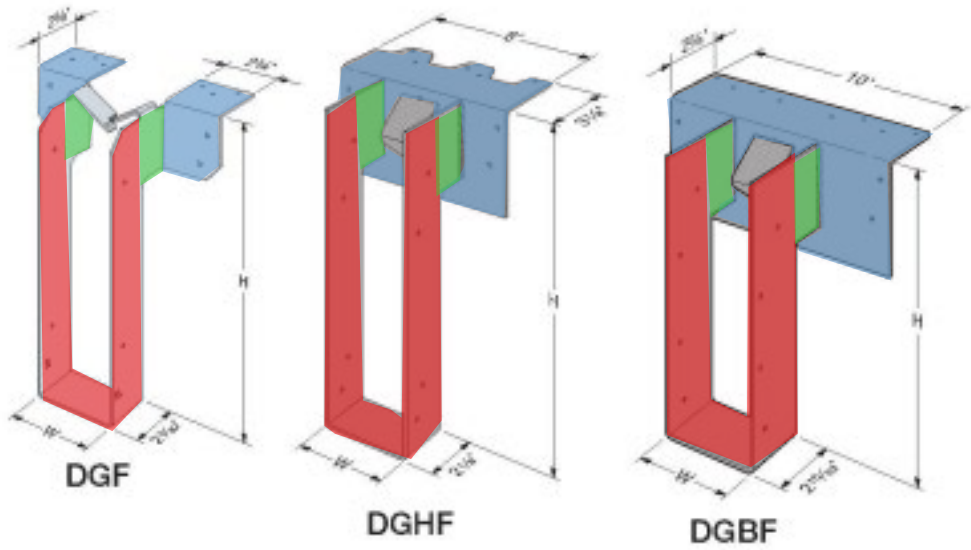
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
<p>A method of constructing a fire-resistive wall assembly, the method comprising:</p> <p>[A method of constructing a fire-resistive wall assembly, the method comprising:]</p>	<p>Users of Simpson’s DGF/DGBF/DGHF Fire Wall Hangers perform a method of constructing a fire-resistant wall assembly when using Simpson’s DGF/DGBF/DGHF Fire Wall Hangers according to the instructions provided by Simpson:</p> <p>The DGF fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It’s ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This fire wall series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a two-hour fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DGF/DGHF/DGBF hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall

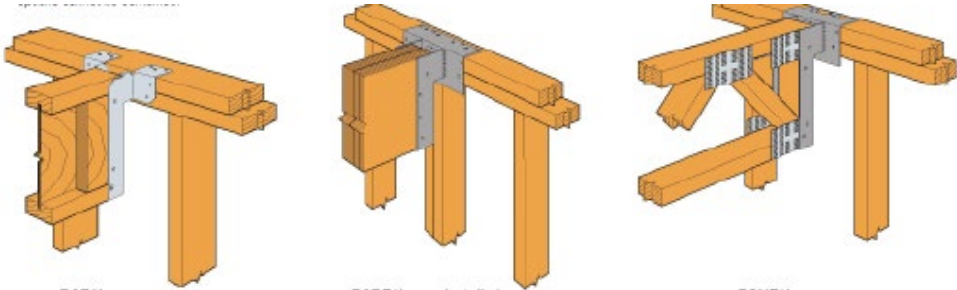
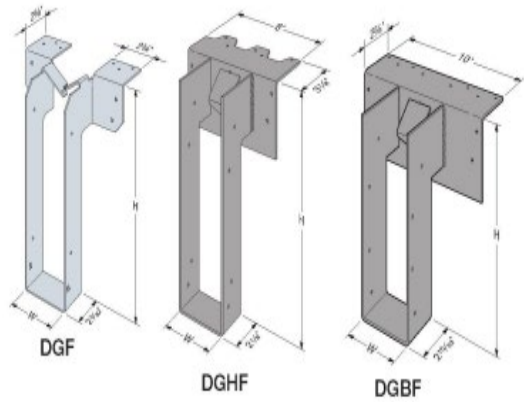
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
	<p>Two-Hour Fire Wall Assembly Rated</p> <p>Simpson Strong-Tie has completed ASTM E814 standard testing verifying that the DGF/DGHF/DGBF hangers do not reduce the two-hour assembly rating.</p>  <p>DGF DGHF DGBF</p>  <p>DGF hanger with I-joist.</p>
<p>mounting a fire wall hanger on a frame wall,</p> <p>[mounting a fire wall hanger on a frame wall,]</p>	<p>Simpson instructs users of Simpson’s DGF/DGBF/DGHF Fire Wall Hangers to mount the fire wall hangers on a frame wall:</p> <p>Installation</p> <ul style="list-style-type: none"> • Use all specified fasteners. Joists require web stiffeners. • DGF/DGHF/DGBF hangers are mounted like a standard top-flange hanger.

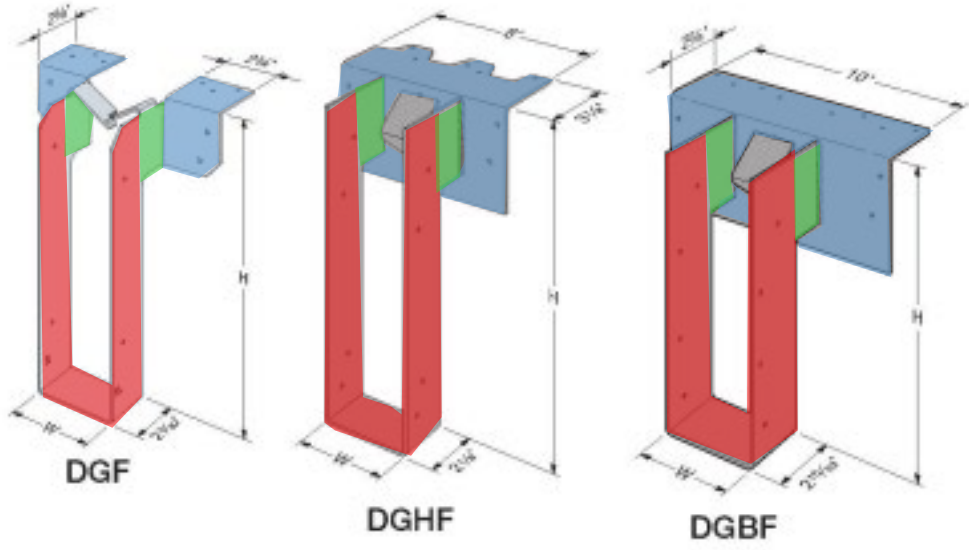
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
	<p>The DGF fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This fire wall series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a two-hour fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DGF/DGHF/DGBF hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall <div data-bbox="495 919 1446 1696"> <p>The diagrams illustrate the three models of top-flange hangers: DGF Hanger on Stud Wall with I-Joists, DGBF Hanger Installed with Double Studs, and DGHF Hanger on Stud Wall with Trusses. A detailed top view of the DGHF Hanger (DGF Similar) shows a 1 1/8" drywall gap, a 1/2" max. gap for the end of the joist stop, and a 1/2" max. gap for the end of the truss. The hanger is shown with a top plate and a plurality of studs extending down from the top plate.</p> </div>
the frame wall including a top plate and a plurality	The frame wall on which users of Simpson’s DGF/DGBF/DGHF Fire Wall Hangers are instructed to mount the hangers includes a top plate and a plurality of studs extending down from the top plate:

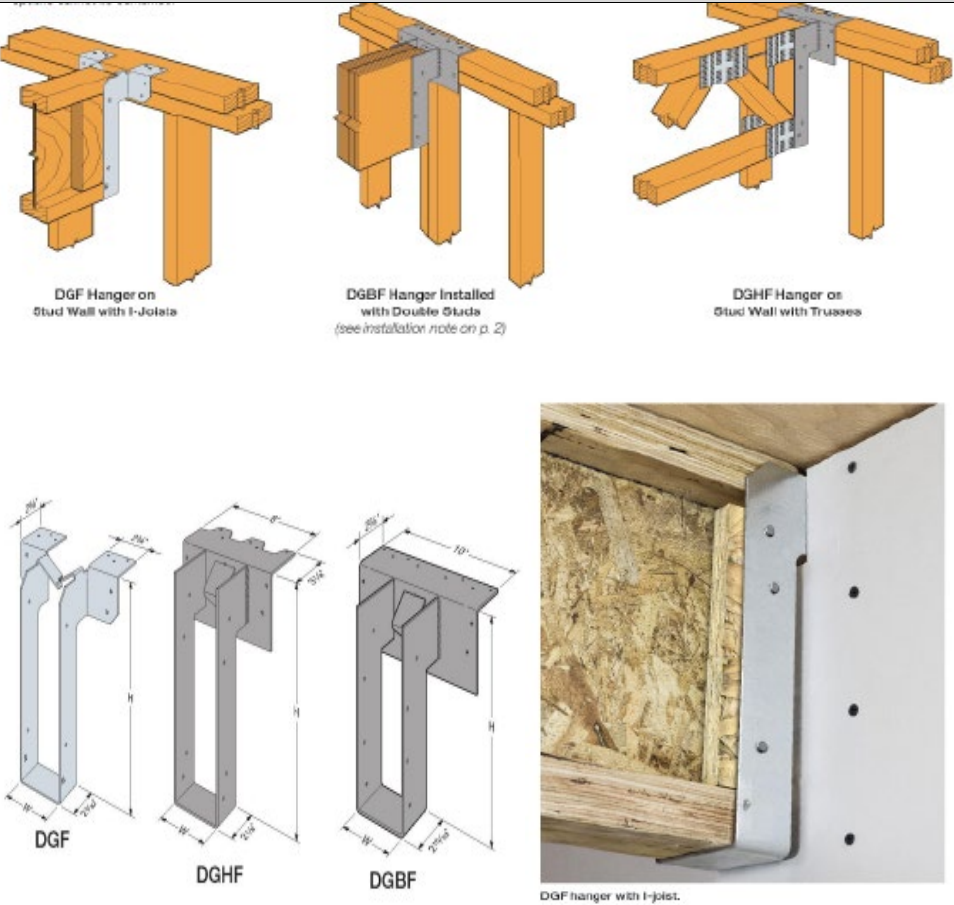
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
<p>of studs extending down from the top plate, and</p> <p>[the frame wall including a top plate and a plurality of studs extending down from the top plate, and]</p>	 <p>DGF Hanger on Stud Wall with I-Joist</p> <p>DGBF Hanger installed with Double Studs (see installation note on p. 2)</p> <p>DGHF Hanger on Stud Wall with Trusses</p>  <p>DGHF Hanger (DGF Similar) Top View with Gap</p> <p>Face of wall</p> <p>1 1/2" max. drywall gap</p> <p>End of joist stop</p> <p>End of truss</p> <p>1/2" max.</p> <p>DGF — 1 1/2"</p> <p>DGHF — 1 1/2"</p> <p>DGBF — 1 1/2" truss gap</p>
<p>the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component,</p> <p>[the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component,]</p>	<p>Simpson’s DGF/DGBF/DGHF Fire Wall Hangers include a channel-shaped portion (highlighted red below) sized and shaped to receive a structural component:</p>  <p>DGF</p> <p>DGHF</p> <p>DGBF</p>

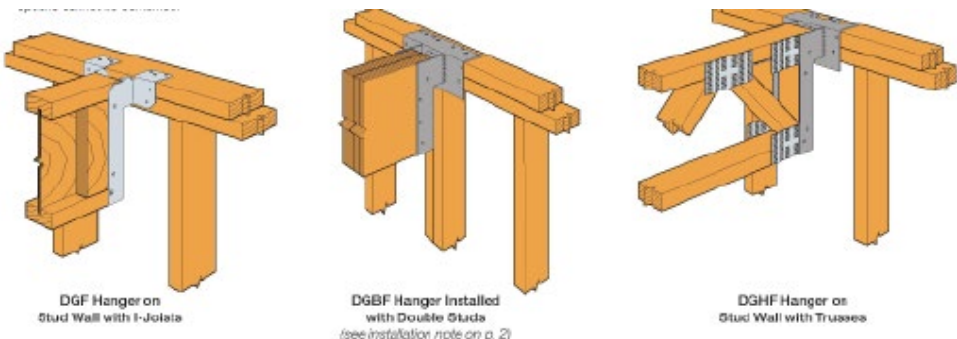
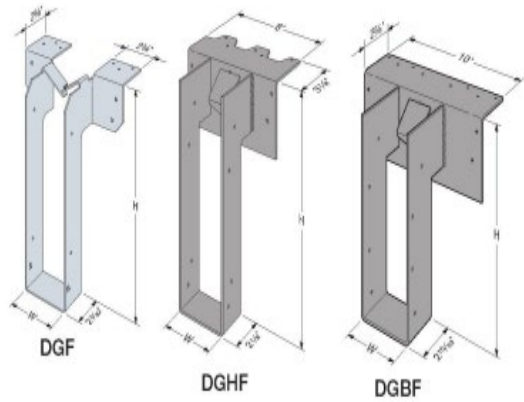
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
	<p>The DGF fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This fire wall series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a two-hour fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DGF/DGHF/DGBF hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall <div style="display: flex; justify-content: space-around; align-items: flex-end; margin-top: 20px;"> <div style="text-align: center;">  <p>DGF Hanger on Stud Wall with I-Joists</p> </div> <div style="text-align: center;">  <p>DGBF Hanger Installed with Double Studs <small>(see installation note on p. 2)</small></p> </div> <div style="text-align: center;">  <p>DGHF Hanger on Stud Wall with Trusses</p> </div> </div>

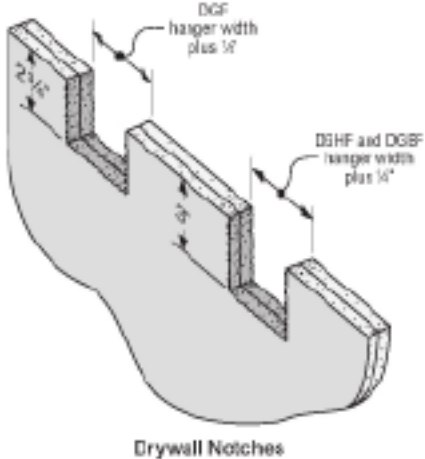
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
	 <p>DGF hanger with I-joint.</p>
<p>a connection portion configured for attachment to the frame wall and</p> <p>[a connection portion configured for attachment to the frame wall and]</p>	<p>Simpson’s DGF/DGBF/DGHF Fire Wall Hangers include a connection portion (highlighted blue below) configured for attachment to the frame wall:</p>  <p>DGF DGHF DGBF</p>

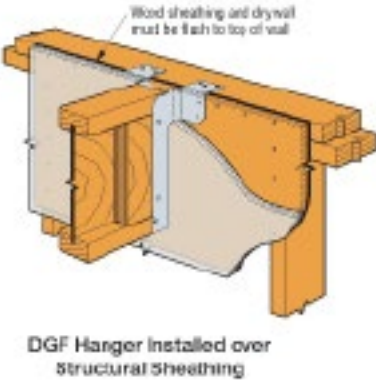
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
	<p>The DGF fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This fire wall series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a two-hour fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DGF/DGHF/DGBF hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall <div data-bbox="495 919 1446 1255">  <p>DGF Hanger on Stud Wall with I-Joists</p> <p>DGBF Hanger Installed with Double Studs (see installation note on p. 2)</p> <p>DGHF Hanger on Stud Wall with Trusses</p> </div> <div data-bbox="495 1318 1015 1717">  <p>DGF</p> <p>DGHF</p> <p>DGBF</p> </div>
an extension portion	Simpson's DGF/DGBF/DGHF Fire Wall Hangers include an extension portion (highlighted green below) interconnecting the channel-shaped portion and the

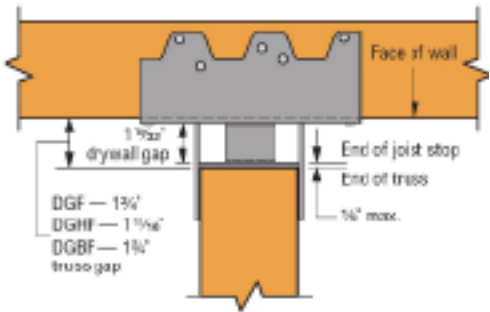
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
<p>interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,</p> <p>[an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,]</p>	<p>connection portion and providing a 1 15/32” drywall gap between the channel-shaped portion and the connection portion (i.e., spacing the channel-shaped portion from the connection portion):</p>  <p>The DGF fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This fire wall series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a two-hour fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DGF/DGHF/DGBF hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall

Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
	 <p>DGF Hanger on Stud Wall with I-Joists</p> <p>DGBF Hanger Installed with Double Studs (see installation note on p. 2)</p> <p>DGHF Hanger on Stud Wall with Trusses</p> <p>DGF</p> <p>DGHF</p> <p>DGBF</p> <p>DGF hanger with I-joist.</p>
<p>said step of mounting the fire wall hanger includes securing the connection portion of the firewall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;</p> <p>[said step of mounting the fire wall hanger includes securing the connection</p>	<p>Simpson instructs users of Simpson’s DGF/DGBF/DGHF Fire Wall Hangers to mount the fire wall hanger by 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:</p>

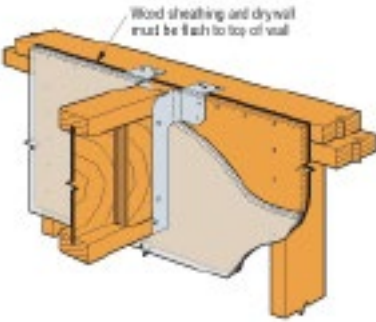
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
<p>portion of the fire wall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;]</p>	<p>The DGF fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This fire wall series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a two-hour fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DGF/DGHF/DGBF hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall  <p>DGF Hanger on Stud Wall with I-Joists DGBF Hanger Installed with Double Studs (see installation note on p. 2) DGHF Hanger on Stud Wall with Trusses</p>  <p>DGF DGHF DGBF</p>
<p>cutting an opening into an exterior edge of fire retardant sheathing, the opening</p>	<p>Simpson instructs users of Simpson’s DGF/DGBF/DGHF Fire Wall Hangers to cut notches into the fire retardant drywall sheathing as part of the installation of the fire-retardant wall assembly:</p>

Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
<p>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</p> <p>[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]</p>	 <p>The diagram, titled "Drywall Notches", shows a cross-section of a drywall assembly. It illustrates two types of notches: one for a "DGF hanger width plus 1/4\" data-bbox="311 131 571 348"/></p> <p>The notches that Simpson instructs users to cut into the fire retardant drywall sheathing as part of the installation of the fire-retardant wall assembly extend through the front face and rear face of the fire-retardant sheathing. The notch is cut from the exterior edge of the fire-retardant sheathing, such that the resultant opening (the open top of the opening) faces outwardly, away from the exterior edge of the fire-retardant sheathing.</p>
<p>after mounting the fire wall hanger on the frame 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 wall</p>	<p>Simpson instructs users of Simpson’s DGF/DGBF/DGHF Fire Wall Hangers to install the fire retardant drywall sheathing with respect to the frame wall so that the rear face of the sheathing faces toward the studs of the wall frame:</p>

Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
<p>frame,</p> <p>[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 the rear face of the fire retardant sheathing faces toward the studs of the frame wall,]</p>	<p>The DGF fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This fire wall series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a two-hour fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DGF/DGHF/DGBF hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall <div data-bbox="500 1010 873 1388">  <p>DGF Hanger installed over structural sheathing</p> </div> <div data-bbox="889 919 1295 1398">  <p>DGF hanger with I-joist.</p> </div>
<p>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</p> <p>[said step of installing the fire</p>	<p>Simpson instructs users of Simpson’s DGF/DGBF/DGHF Fire Wall Hangers to install the fire retardant drywall sheathing by inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall:</p>

Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
<p>retardant sheathing includes: inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and]</p>	<p>The DGF fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It's ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This fire wall series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a two-hour fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DGF/DGHF/DGBF hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall  <p>DGHF Hanger (DGF Similar) Top View with Gap</p>

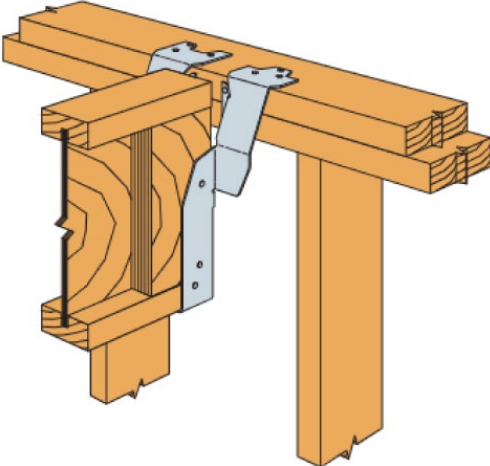
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
	 <p>The diagram on the left shows a cross-section of a wall assembly with a DGF hanger installed over structural sheathing. A label points to the top of the wall assembly, stating: 'Wood sheathing and drywall must be flush to top of wall'. Below the diagram is the caption: 'DGF Hanger installed over Structural Sheathing'. To the right is a photograph showing a DGF hanger with a joist installed in a wall, with the caption: 'DGF hanger with I-joist'.</p>
<p>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.</p> <p>[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</p>	<p>Installing the fire retardant drywall sheathing would necessarily require moving the sheathing relative to Simpson’s DGF/DGBF/DGHF Fire Wall Hangers mounted on the frame wall so that (1) an edge of the fire retardant drywall sheathing bounding the opening on said sheathing moves alongside the extension portion of the fire wall hanger, (2) the fire wall hanger extends through the opening in the fire retardant drywall sheathing, and (3) part of the extension portion of the fire wall hanger is received in the opening in the fire retardant sheathing:</p> <p>The DGF fire wall hanger is the next generation in the drywall hanger series from Simpson Strong-Tie. It’s ideal for multi-family, multi-level building construction and easily installs on a two-hour wood stud fire wall (e.g., Type III construction) during framing.</p> <p>This fire wall series features three models of top-flange hangers that connect floor trusses and joists to wood stud walls. The hangers feature enough space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete. The joist hanger gives the completed assembly the ability to function as a two-hour fire-rated wall.</p> <p>All three fire wall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DGF/DGHF/DGBF hangers do not reduce the two-hour fire wall assembly rating.</p> <p>Key Features</p> <ul style="list-style-type: none"> • The hanger features a gap wide enough to install two layers of 5/8" drywall

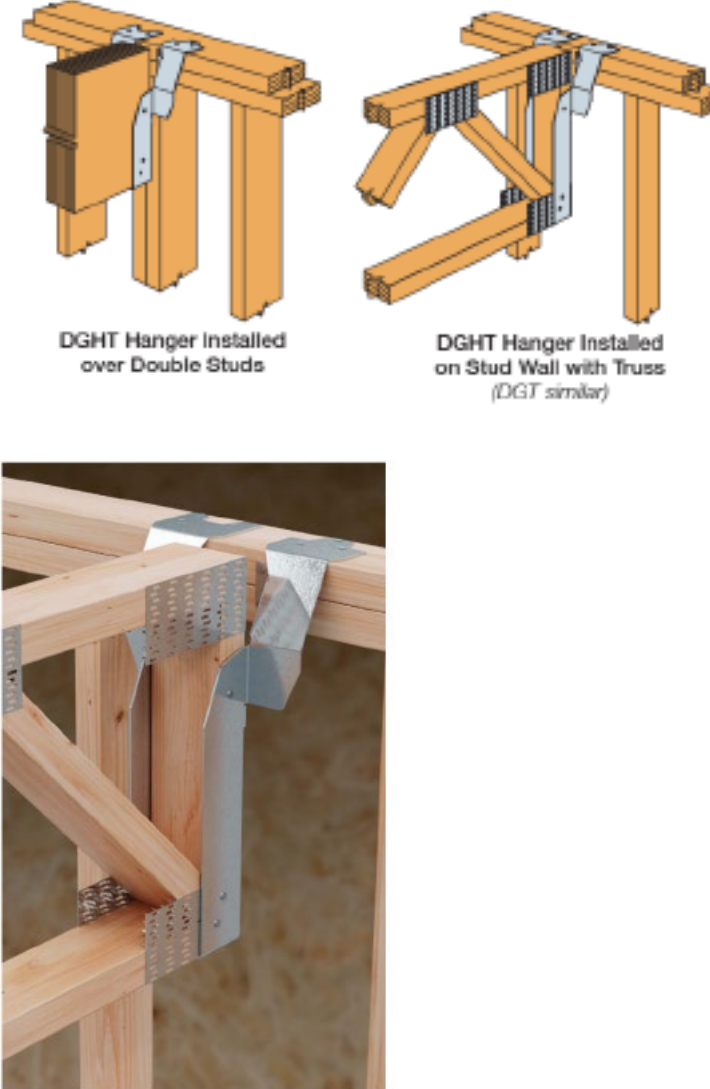
Claim 1/[Claim 27]	Simpson DGF/DGBF/DGHF
<p>is received in the opening in the fire retardant sheathing.]</p>	<div data-bbox="500 384 873 762">  <p>DGF Hanger installed over structural sheathing</p> </div> <div data-bbox="889 289 1295 772">  <p>DGF hanger with I-joist.</p> </div>

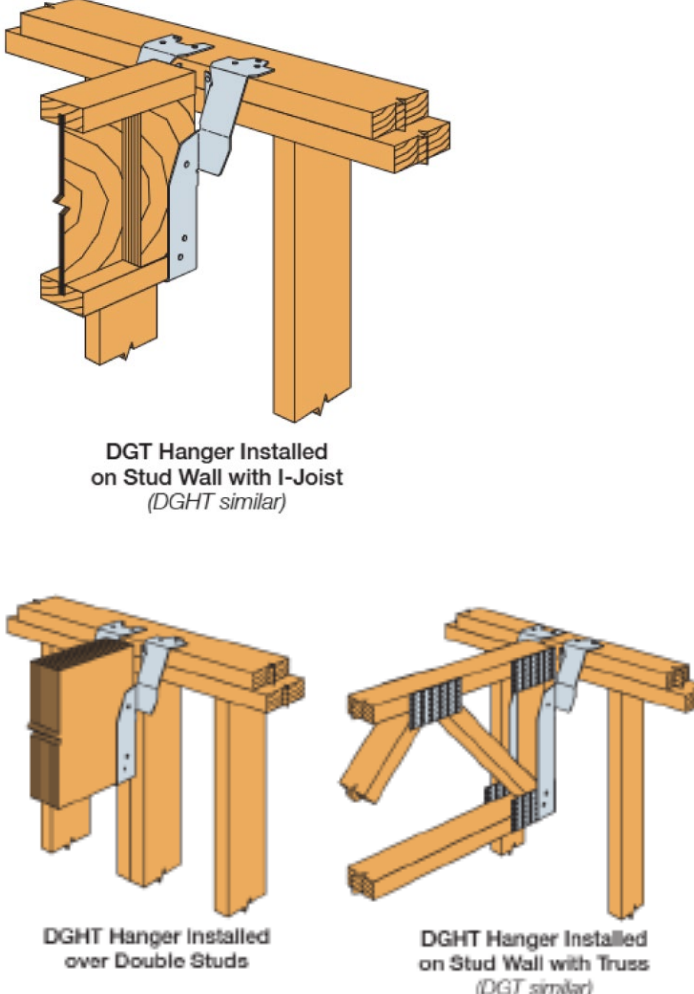
APPENDIX D

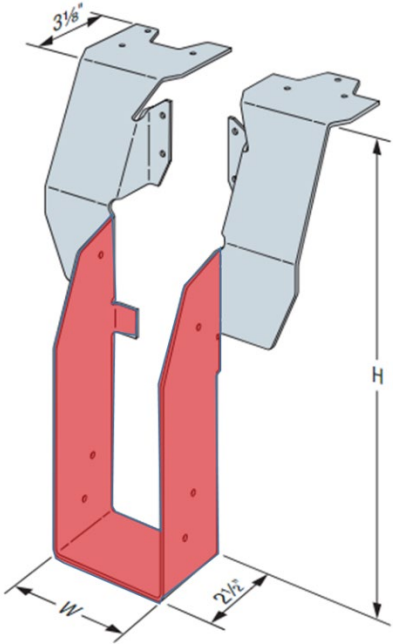
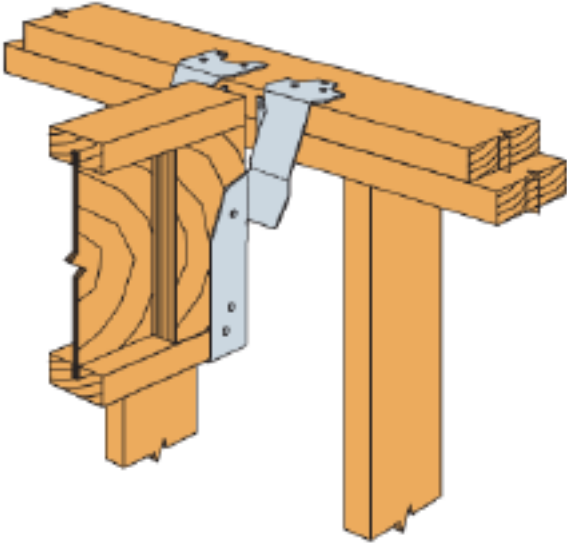
Mapping of Simpson’s DGT/DGHT Series of Hangers to Claims 1 and 27 of the ‘339 Patent

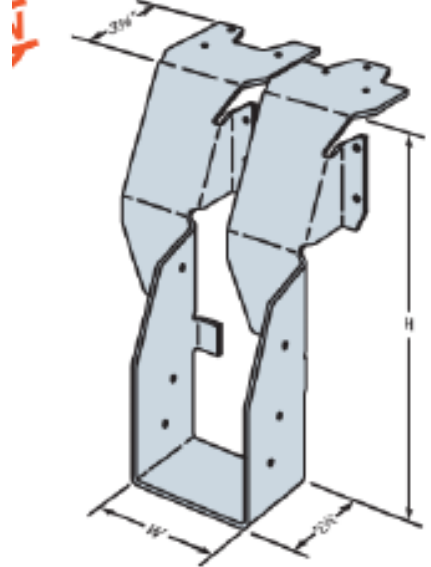
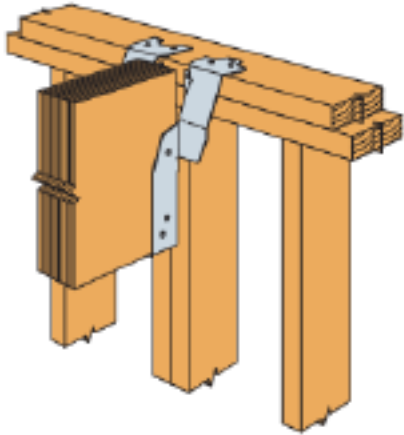
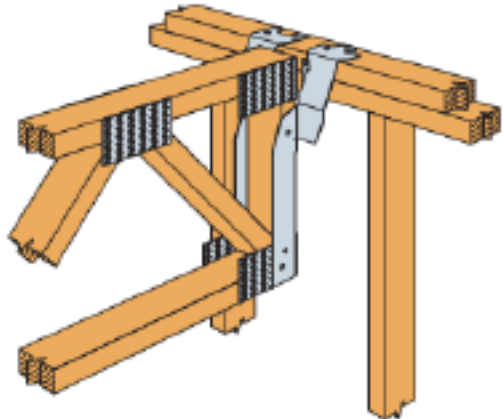
Claim 1/[Claim 27]	Simpson DGT/DGHT
<p>A method of constructing a fire-resistive wall assembly, the method comprising:</p> <p>[A method of constructing a fire-resistive wall assembly, the method comprising:]</p>	<p>Users of Simpson’s DGT and DGHT Top-Flange Fire Wall Hangers perform a method of constructing a fire-resistant wall assembly when using the DGT and DGHT Top-Flange Fire Wall Hangers according to the instructions provided by Simpson:</p> <div data-bbox="513 709 1247 758" data-cs="2" data-kind="parent"> <p><i>Simpson Strong-Tie® Wood Construction Connectors</i></p> </div> <div data-kind="ghost"></div> <div data-bbox="553 768 878 816" data-cs="2" data-kind="parent"> <p>DGT™/DGHT™</p> </div> <div data-kind="ghost"></div> <div data-bbox="553 858 932 913" data-cs="2" data-kind="parent"> <p>Fire Wall Hangers</p> </div> <div data-bbox="553 940 1232 1125" data-cs="2" data-kind="parent"> <p>Ideal for multi-family, multi-level Type III residential construction, the new patent-pending DGT and DGHT hangers are load-tested firewall hangers with a two-hour fire rating. They’re the first fire wall hangers designed to install with a power nailer during framing, which helps save time before hanging drywall and keeps construction projects on schedule.</p> </div> <div data-bbox="553 1140 1232 1293" data-cs="2" data-kind="parent"> <p>These two top-flange hangers connect floor trusses and joists to wood stud walls. Both models are offered in a wide range of sizes, making them simple to select and use. Both the DGT and DGHT hangers feature space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete.</p> </div> <div data-bbox="553 1308 1196 1461" data-cs="2" data-kind="parent"> <p>These fire wall hangers have been tested according to ASTM E814 and received a two-hour fire rating for use on one or both sides of the wall. This rating verifies that the DGT and DGHT hangers do not reduce the two-hour fire wall assembly rating.</p> </div>
<p>mounting a fire wall hanger on a frame wall,</p> <p>[mounting a fire wall hanger on a frame wall,]</p>	<p>Simpson instructs users of its DGT and DGHT Top-Flange Fire Wall Hangers to mount the fire wall hangers on a frame wall:</p>

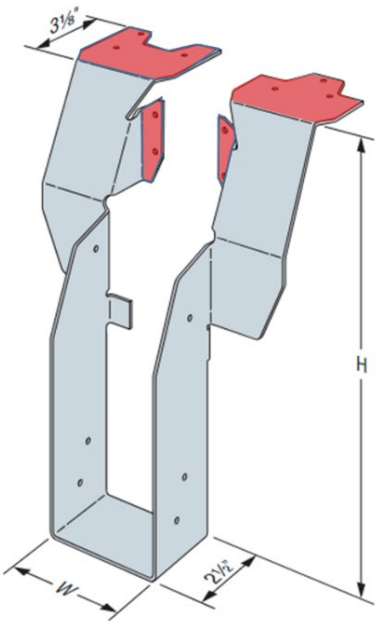
Claim 1/[Claim 27]	Simpson DGT/DGHT
	 <p data-bbox="607 764 899 848">DGT Hanger Installed on Stud Wall with I-Joist <i>(DGHT similar)</i></p>  <p data-bbox="500 1486 737 1507">DGT fire wall hanger installation.</p>

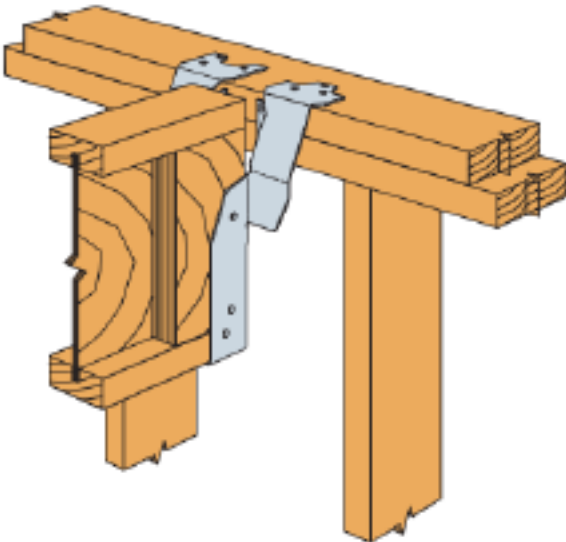
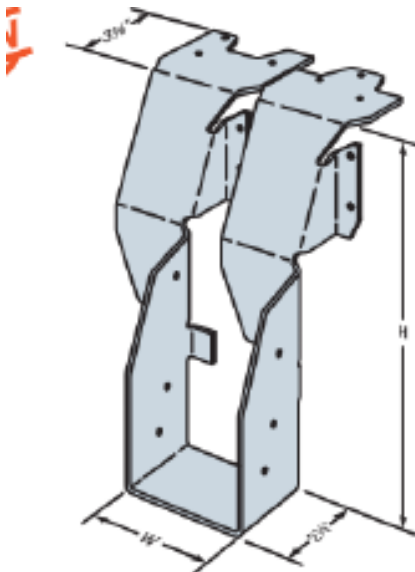
Claim 1/[Claim 27]	Simpson DGT/DGHT
	 <p data-bbox="548 630 779 682">DGHT Hanger Installed over Double Studs</p> <p data-bbox="922 630 1153 703">DGHT Hanger Installed on Stud Wall with Truss (DGT similar)</p> <p data-bbox="495 1390 678 1402">DGHT fire wall hanger installation.</p>
<p data-bbox="203 1459 462 1669">the frame wall including a top plate and a plurality of studs extending down from the top plate, and</p> <p data-bbox="203 1711 462 1890">[the frame wall including a top plate and a plurality of studs extending down from the top</p>	<p data-bbox="490 1459 1515 1564">The frame wall on which users of Simpson’s DGT and DGHT Top-Flange Fire Wall Hangers are instructed to mount the hangers includes a top plate and a plurality of studs extending down from the top plate:</p>

Claim 1/[Claim 27]	Simpson DGT/DGHT
plate, and]	 <p>The diagrams illustrate three different installation scenarios for Simpson DGT and DGHT hangers:</p> <ul style="list-style-type: none"> DGT Hanger Installed on Stud Wall with I-Joist (DGHT similar): A 3D perspective view showing a metal hanger with a channel-shaped portion (highlighted in black) installed over a vertical stud and an I-joist. DGHT Hanger Installed over Double Studs: A 3D perspective view showing a metal hanger installed over two vertical studs. DGHT Hanger Installed on Stud Wall with Truss (DGT similar): A 3D perspective view showing a metal hanger installed over a vertical stud and a truss.
<p>the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component,</p> <p>[the fire wall hanger including a channel-shaped portion sized and shaped to receive a structural component,]</p>	<p>Simpson’s DGT and DGHT Top-Flange Fire Wall Hangers include a channel-shaped portion (highlighted below) sized and shaped to receive a structural component:</p>

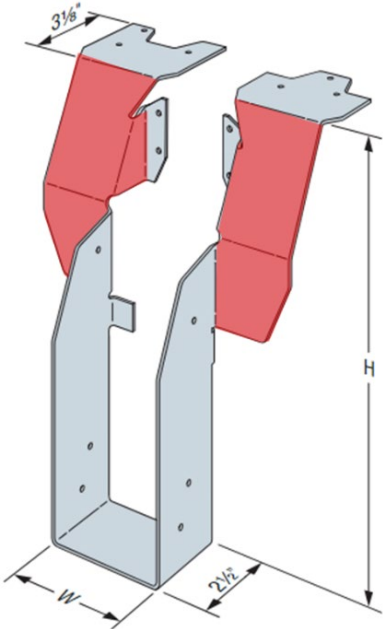
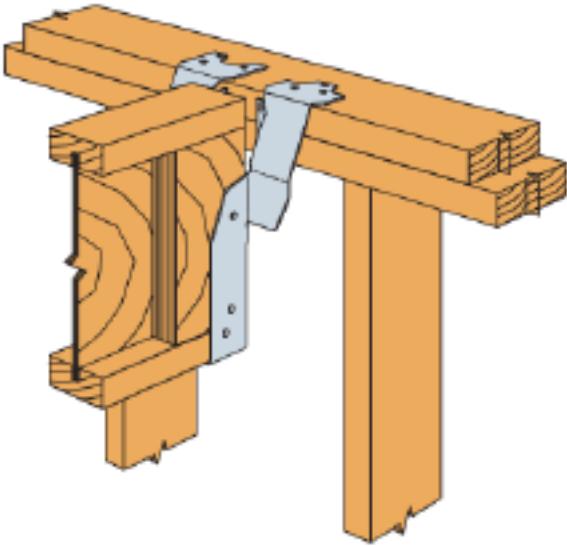
Claim 1/[Claim 27]	Simpson DGT/DGHT
	 <p data-bbox="565 928 857 1003">DGT Fire Wall Hanger (DGHT similar)</p>  <p data-bbox="609 1617 933 1717">DGT Hanger Installed on Stud Wall with I-Joist (DGHT similar)</p>

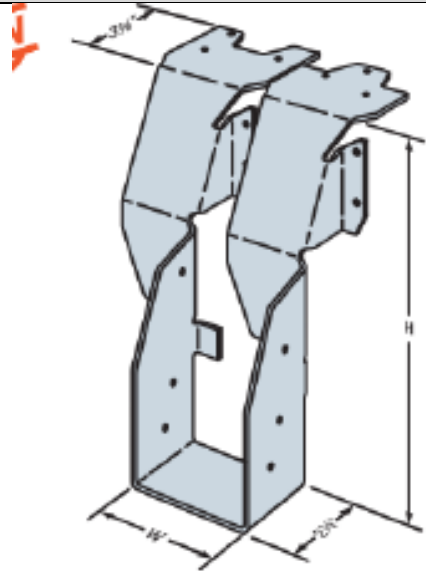
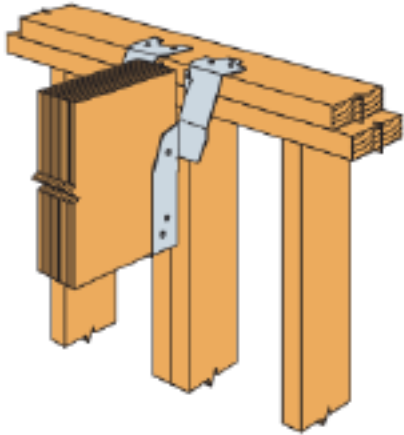
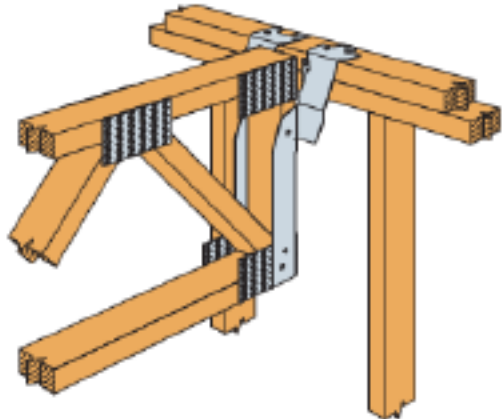
Claim 1/[Claim 27]	Simpson DGT/DGHT
	<div data-bbox="500 289 982 926">  <p data-bbox="500 926 737 947">DGT fire wall hanger installation.</p> </div> <div data-bbox="1003 268 1430 936">  <p data-bbox="1105 846 1403 936">DGHT Installation with Right Flange Concealed <i>(left similar)</i></p> </div> <div data-bbox="505 1041 906 1541">  <p data-bbox="553 1482 857 1541">DGHT Hanger Installed over Double Studs</p> </div> <div data-bbox="943 1056 1442 1581">  <p data-bbox="1052 1482 1365 1581">DGHT Hanger Installed on Stud Wall with Truss <i>(DGT similar)</i></p> </div>

Claim 1/[Claim 27]	Simpson DGT/DGHT
	 <p>DGHT fire wall hanger installation.</p>
<p>a connection portion configured for attachment to the frame wall and</p> <p>[a connection portion configured for attachment to the frame wall and]</p>	<p>Simpson’s DGT and DGHT Top-Flange Fire Wall Hangers include a connection portion (highlighted below) configured for attachment to the frame wall:</p>  <p>DGT Fire Wall Hanger (DGHT similar)</p>

Claim 1/[Claim 27]	Simpson DGT/DGHT
	 <p data-bbox="610 869 932 961">DGT Hanger Installed on Stud Wall with I-Joist <i>(DGHT similar)</i></p>  <p data-bbox="587 1625 883 1717">DGHT Installation with Right Flange Concealed <i>(left similar)</i></p>

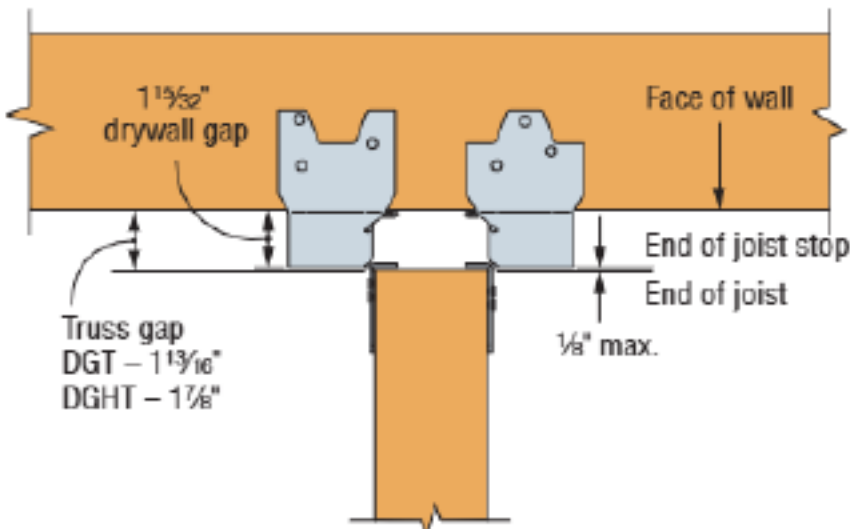
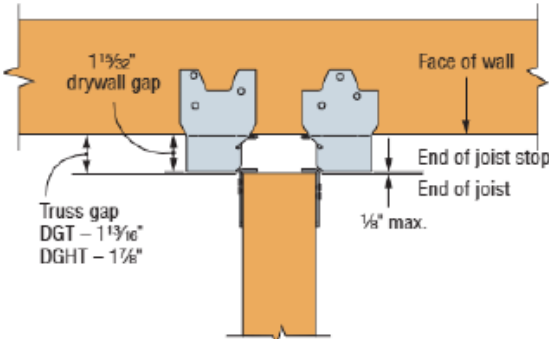
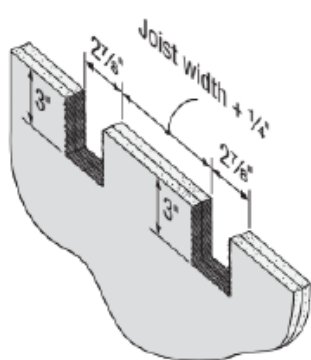
Claim 1/[Claim 27]	Simpson DGT/DGHT
	<div data-bbox="505 300 906 730" data-label="Image"> <p>A 3D perspective diagram showing a metal hanger bracket installed over two vertical wooden studs. The bracket has a channel-shaped top flange that fits over the top of the studs and a vertical connection flange on the side.</p> </div> <div data-bbox="553 737 860 800" data-label="Caption"> <p>DGHT Hanger Installed over Double Studs</p> </div> <div data-bbox="943 317 1442 730" data-label="Image"> <p>A 3D perspective diagram showing a metal hanger bracket installed on a wall made of vertical studs and horizontal trusses. The bracket's channel-shaped top flange is positioned over the top of a stud, and its vertical connection flange is attached to a truss.</p> </div> <div data-bbox="1049 737 1364 835" data-label="Caption"> <p>DGHT Hanger Installed on Stud Wall with Truss (DGT similar)</p> </div> <div data-bbox="493 926 919 1625" data-label="Image"> <p>A close-up photograph of a metal hanger bracket installed in a wooden frame. The bracket is secured with screws to the wooden studs and trusses. The channel-shaped top flange is clearly visible, showing its profile and how it fits over the studs.</p> </div> <div data-bbox="493 1625 699 1644" data-label="Caption"> <p>DGHT fire wall hanger installation.</p> </div>
<p>an extension portion interconnecting the channel-shaped portion and the connection portion</p>	<p>Simpson’s DGT and DGHT Top-Flange Fire Wall Hangers include an extension portion (highlighted below) interconnecting the channel-shaped portion and the connection portion and providing a 1 15/32” drywall gap between the channel-shaped portion and the connection portion (i.e., spacing the channel-shaped portion from the connection portion):</p>

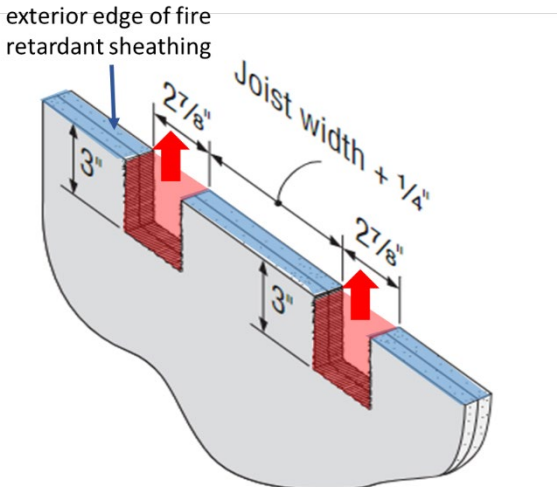
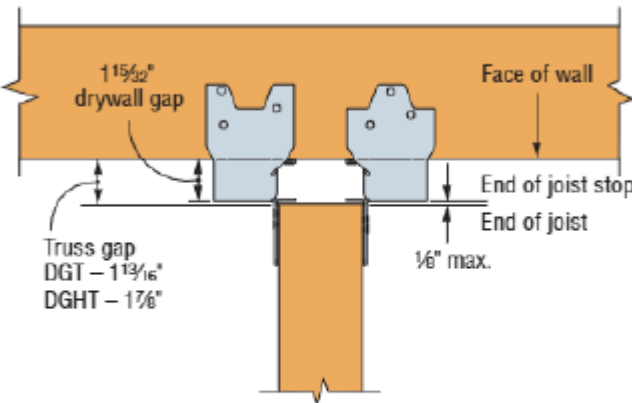
Claim 1/[Claim 27]	Simpson DGT/DGHT
<p>and spacing the channel-shaped portion from the connection portion,</p> <p>[an extension portion interconnecting the channel-shaped portion and the connection portion and spacing the channel-shaped portion from the connection portion,]</p>	 <p>DGT Fire Wall Hanger (DGHT similar)</p>  <p>DGT Hanger Installed on Stud Wall with I-Joist (DGHT similar)</p>

Claim 1/[Claim 27]	Simpson DGT/DGHT
	<div data-bbox="500 289 982 947">  <p data-bbox="500 926 737 947">DGT fire wall hanger installation.</p> </div> <div data-bbox="1003 264 1425 936">  <p data-bbox="1105 842 1404 936">DGHT Installation with Right Flange Concealed <i>(left similar)</i></p> </div> <div data-bbox="505 1041 906 1541">  <p data-bbox="553 1482 857 1541">DGHT Hanger Installed over Double Studs</p> </div> <div data-bbox="943 1056 1442 1577">  <p data-bbox="1052 1482 1365 1577">DGHT Hanger Installed on Stud Wall with Truss <i>(DGT similar)</i></p> </div>

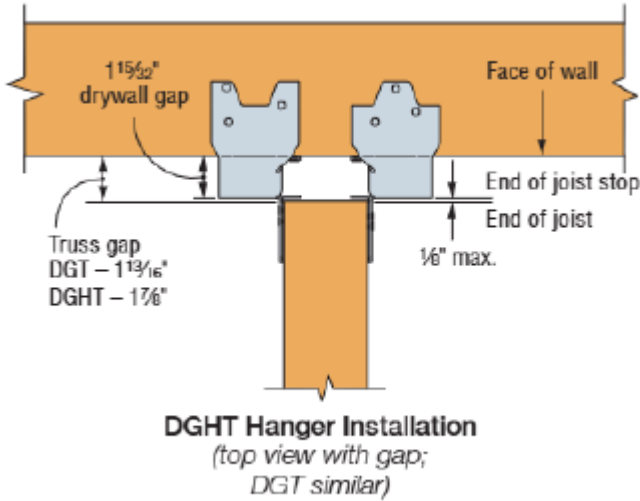
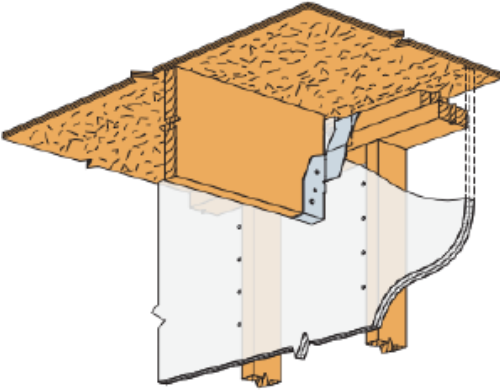
Claim 1/[Claim 27]	Simpson DGT/DGHT
	 <p data-bbox="493 856 659 869">DGHT fire wall hanger installation.</p> <p data-bbox="513 903 1442 1108">These two top-flange hangers connect floor trusses and joists to wood stud walls. Both models are offered in a wide range of sizes, making them simple to select and use. Both the DGT and DGHT hangers feature space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete.</p>
<p data-bbox="201 1138 454 1604">said step of mounting the fire wall hanger includes securing the connection portion of the firewall hanger to the top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;</p> <p data-bbox="201 1646 454 1892">[said step of mounting the fire wall hanger includes securing the connection portion of the fire wall hanger to the</p>	<p data-bbox="493 1138 1516 1276">Simpson instructs users of its DGT and DGHT Top-Flange Fire Wall Hangers to mount the fire wall hanger by 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:</p> <p data-bbox="513 1339 704 1377">Installation:</p> <ul data-bbox="513 1402 1425 1549" style="list-style-type: none"> • Use all specified fasteners. I-joists require web stiffeners. • DGT/DGHT hangers are mounted like a standard top-flange hanger.

Claim 1/[Claim 27]	Simpson DGT/DGHT
<p>top plate of the frame wall so that the channel-shaped portion is spaced from the frame wall;]</p>	<div data-bbox="508 289 1023 777"> <p>DGT Hanger Installed on Stud Wall with I-Joist (DGHT similar)</p> </div> <div data-bbox="503 930 911 1367"> <p>DGHT Hanger Installed over Double Studs</p> </div> <div data-bbox="954 947 1446 1367"> <p>DGHT Hanger Installed on Stud Wall with Truss (DGT similar)</p> </div>

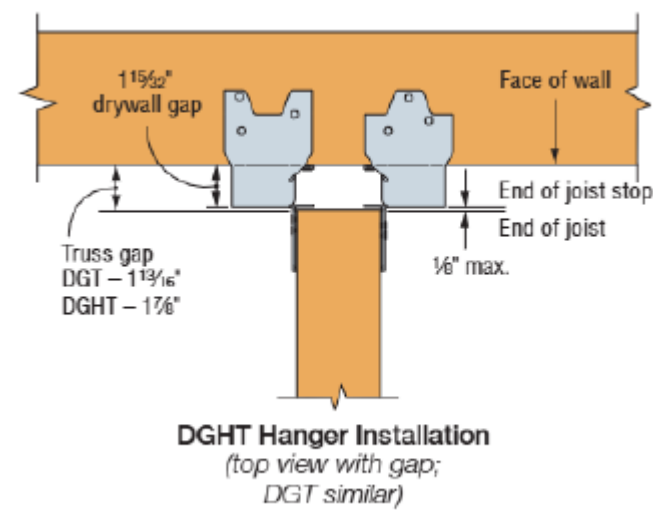
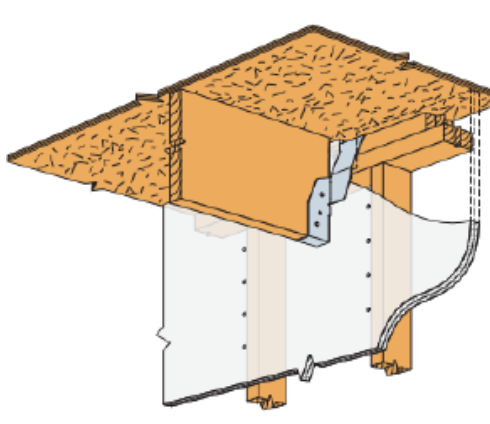
Claim 1/[Claim 27]	Simpson DGT/DGHT
	 <p style="text-align: center;">DGHT Hanger Installation (top view with gap; DGT similar)</p>
<p>cutting an opening into an exterior edge of fire retardant sheathing, the opening extending through a front face of the fire retardant sheathing and through a rear face of the fire retardant sheathing, and opening outwardly from the exterior edge of the fire retardant sheathing; and</p> <p>[cutting an opening into an edge of fire retardant sheathing, the opening extending through a</p>	<p>Simpson instructs users of its DGT and DGHT Top-Flange Fire Wall Hangers to cut notches into the fire retardant drywall sheathing as part of the installation of the fire-retardant wall assembly:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div data-bbox="500 1268 1045 1696">  <p style="text-align: center;">DGHT Hanger Installation (top view with gap; DGT similar)</p> </div> <div data-bbox="1127 1268 1435 1675">  <p style="text-align: center;">Drywall Notches</p> </div> </div> <p>The notches that Simpson instructs users to cut into the fire retardant drywall sheathing as part of the installation of the fire-retardant wall assembly extend through the front face and rear face of the fire-retardant sheathing. The notch is</p>

Claim 1/[Claim 27]	Simpson DGT/DGHT
<p>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]</p>	<p>cut from the exterior edge of the fire-retardant sheathing, such that the resultant opening (the open top of the opening) faces outwardly, away from the exterior edge of the fire-retardant sheathing.</p>  <p style="text-align: center;">Drywall Notches</p>
<p>after mounting the fire wall hanger on the frame 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 wall frame,</p> <p>[after mounting the fire wall hanger on the frame wall and after cutting the opening into the edge of the fire retardant sheathing,</p>	<p>Simpson instructs users of its DGT and DGHT Top-Flange Fire Wall Hangers to install the fire retardant drywall sheathing with respect to the frame wall so that the rear face of the sheathing faces toward the studs of the wall frame:</p>  <p style="text-align: center;">DGHT Hanger Installation (top view with gap; DGT similar)</p>

Claim 1/[Claim 27]	Simpson DGT/DGHT
<p>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,]</p>	<div data-bbox="488 300 989 688" data-label="Image"> </div> <div data-bbox="656 701 902 758" data-label="Caption"> <p>DGT Hanger Installation (DGHT similar)</p> </div> <div data-bbox="513 800 1433 1010" data-label="Text"> <p>These two top-flange hangers connect floor trusses and joists to wood stud walls. Both models are offered in a wide range of sizes, making them simple to select and use. Both the DGT and DGHT hangers feature space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete.</p> </div> <div data-bbox="498 1045 1065 1757" data-label="Image"> </div> <div data-bbox="500 1757 779 1782" data-label="Caption"> <p>DGT fire wall hanger installation.</p> </div>
<p>said step of installing the fire</p>	<p>Simpson instructs users of its DGT and DGHT Top-Flange Fire Wall Hangers to install the fire retardant drywall sheathing by inserting the fire retardant</p>

Claim 1/[Claim 27]	Simpson DGT/DGHT
<p>retardant sheathing includes: inserting the fire retardant sheathing between the channel-shaped portion of the fire wall hanger and the frame wall; and</p> <p>[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]</p>	<p>sheathing between the channel-shaped portion of the fire wall hanger and the frame wall:</p>  <p>DGHT Hanger Installation (top view with gap; DGT similar)</p>  <p>DGT Hanger Installation (DGHT similar)</p> <p>These two top-flange hangers connect floor trusses and joists to wood stud walls. Both models are offered in a wide range of sizes, making them simple to select and use. Both the DGT and DGHT hangers feature space for two layers of 5/8" gypsum board (drywall) to be slipped into place after the framing is complete.</p>

Claim 1/[Claim 27]	Simpson DGT/DGHT
	 <p data-bbox="500 991 779 1018">DGT fire wall hanger installation.</p>
<p data-bbox="203 1073 467 1690">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.</p> <p data-bbox="203 1728 467 1900">[arranging the fire retardant sheathing relative to the fire wall hanger so that the fire wall hanger</p>	<p data-bbox="490 1073 1516 1360">Installing the fire retardant drywall sheathing would necessarily require moving the sheathing relative to the DGT and DGHT Top-Flange Fire Wall Hangers mounted on the frame wall so that (1) an edge of the fire retardant drywall sheathing bounding the opening on said sheathing moves alongside the extension portion of the fire wall hanger, (2) the fire wall hanger extends through the opening in the fire retardant drywall sheathing, and (3) part of the extension portion of the fire wall hanger is received in the opening in the fire retardant sheathing:</p>

Claim 1/[Claim 27]	Simpson DGT/DGHT
<p>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.]</p>	 <p>DGHT Hanger Installation (top view with gap; DGT similar)</p>  <p>DGT Hanger Installation (DGHT similar)</p> <p>These two top-flange hangers connect floor trusses and joists to wood stud walls. Both models are offered in a wide range of sizes, making them simple to select and use. Both the DGT and DGHT hangers feature space for two layers of $\frac{5}{8}$" gypsum board (drywall) to be slipped into place after the framing is complete.</p>

Claim 1/[Claim 27]	Simpson DGT/DGHT
	 <p data-bbox="500 989 781 1014">DGT fire wall hanger installation.</p>