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

U.S. Patent No. 11,649,626
Case PGR2023-00047

DECLARATION OF W. ANDREW FENNELL IN SUPPORT OF PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

Mail Stop "PATENT BOARD"
Patent Trial and Appeal Board
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

TABLE OF CONTENTS

I. INTRODUCTION 1
II. LEVEL OF ORDINARY SKILL IN THE ART 4
III. UNDERSTANDING OF THE LAW 5
IV. OVERVIEW OF THE '626 PATENT 6
V. CLAIM CONSTRUCTION 6
A. "channel-shaped portion" 7
VI. GROUND 1: THE CHALLENGED CLAIMS WOULD HAVE BEEN OBVIOUS OVER YAMAGUCHI IN VIEW OF BUNDY 9
A. A POSITA would have understood that Yamaguchi's hanger, as modified by Bundy, would secure the joist away from the wall by the distance corresponding to its extension flanges. 9
B. The extension portion of Yamaguchi's modified hanger permits two layers of 5/8"-thick-drywall to be received between the channel-shaped portion and the back flange plane. 16
C. Yamaguchi discloses a first extension flange extending from the back flange of the connection portion to the channel-shaped portion. 22
VII. GROUND 2: THE CHALLENGED CLAIMS WOULD HAVE BEEN OBVIOUS OVER CULLEN IN VIEW OF BUNDY. 26
A. Cullen-Bundy renders obvious an extension portion spacing the channel-shaped portion from the back flange plane by a distance large enough to permit two layers of 5/8"-thick drywall. 26
B. A POSITA would have been motivated to combine the teachings of Bundy's drywall space with Cullen's hanger. 30
VIII. GROUND 3: THE CHALLENGED CLAIMS WOULD HAVE BEEN OBVIOUS OVER ADAMS IN VIEW OF BUNDY. 32
A. Adams-Bundy renders obvious an extension portion spacing the channel-shaped portion from the back flange plane by a distance large enough to permit two layers of 5/8"-thick drywall. 32
B. A POSITA would have been motivated to combine the teachings of Bundy's drywall space with Adams's hanger. 36
IX. CONCLUSION 39

I, W. Andrew Fennell, declare as follows:

I. INTRODUCTION

1. I have been asked by Simpson Strong-Tie Company Inc. ("Petitioner") to provide my opinions in the above-captioned post-grant review ("PGR") proceeding involving U.S. Patent No. 11,649,626 ("the '626 patent," EX1001), which is titled "Hanger for Fire Separation Wall." I previously submitted a declaration (EX1003) in support of the Petition for post-grant review of the '626 patent. This declaration is in support of Petitioner's Reply to Patent Owner's Response in the same proceeding, PGR2023-00047.

2. I understand that Patent Owner Columbia Insurance Company submitted a Patent Owner Response (Paper 9) ("POR"). I understand that Patent Owner did not submit a declaration from an expert witness to support their POR.

3. My background and qualifications were provided in paragraphs 6-10 of my original declaration, Exhibit 1003, and my CV was submitted as Exhibit 1004. My statements in my original declaration regarding my review of the '626 patent and related materials remain unchanged. In reaching my opinions, I carefully reviewed the POR, the Petition for post-grant review of the '626 patent, my original declaration, and the materials reviewed as part of my original declaration. EX1003, ¶11 (listing references considered in my prior declaration). In addition, I reviewed and refer to the following materials:

Paper	Description
7	Institution Decision
9	Patent Owner's Response

Exhibit No.	Description
1001	U.S. Patent No. 11,649,626 to Brekke et al. ("the '626 patent")
1002	Prosecution History of the '626 patent
1003	Declaration of W. Andrew Fennell in Support of Petition for Post-Grant Review of U.S. Patent No. 11,649,626
1004	*Curriculum Vitae* of W. Andrew Fennell
1005	U.S. Publication No. 2002/0078656 to Leek et al. ("Leek")
1006	U.S. Patent No. 10,024,049 to Brekke et al. ("Brekke'049")
1007	U.S. Patent No. 9,394,680 to Bundy et al. ("Bundy")
1008	U.S. Publication No. 2005/0155307 to Timony et al. ("Timony")
1009	Japanese Application No. 19991014482 to Tsukamoto ("Tsukamoto")
1010	U.S. Patent No. 4,261,155 to Gilb ("Gilb'155")
1011	U.S. Patent No. 4,230,416 to Gilb ("Gilb'416")
1012	U.S. Patent No. 4,827,684 to Allan ("Allan")
1013	U.S. Publication No. 2014/0338282 to Sidhu ("Sidhu")
1014	U.S. Patent No. 10,184,242 to Brekke et al. ("Brekke'242")
1015	U.S. Publication No. 2001/0054270 to Rice ("Rice")
1016	*Fire-Rated Assemblies in Commercial Construction ("The Purple Book")*, National Gypsum Properties, LLC (November 5, 2013)

Exhibit No.	Description
1017	*GA-600-2012 Fire Resistance Design Manual, 20th Ed.*, Gypsum Association (June 2012).
1018	*2012 International Building Code*, International Code Council, June 2011 ("IBC-2012")
1019	Prosecution History of Brekke'049
1020	Prosecution History of the Brekke'242
1021	U.S. Patent No. 804,451 to Carlson
1022	U.S. Patent No. 3,601,428 to Gilb
1023	U.S. Patent No. 3,633,950 to Gilb
1024	U.S. Patent No. 3,752,512 to Gilb
1025	U.S. Patent No. 4,480,941 to Gilb
1026	U.S. Patent No. 4,717,279 to Commins
1027	U.S. Publication No. 2015/0184370 to Brekke ("Brekke'370")
1028-1029	*Intentionally Left Blank*
1030	G. Waller and D.J. Cochrane, "Stainless Steel for Durability, Fire-resistance and Safety," Nickel Development Institute, Technical Series 10042, Toronto, Ontario, Canada
1031	Patent Owner's Infringement Claim Chart, *Columbia Insurance Company et al v. Simpson Strong-Tie Company Inc.*, 3-19-cv-04683 (N.D. Cal.), filed August 12, 2019.
1032	U.S. Patent No. 4,005,942 to Gilb ("Gilb'942")
1033	English-language Translation of Japanese Patent Application Publication No. H7-229225, with attached translator's certification.
1034	Complaint for Patent Infringement, *Columbia Insurance Company et al v. Simpson Strong-Tie Company Inc.*, 3-19-cv-04683 (N.D. Cal.), filed August 12, 2019.
1035	U.S. Patent No. 4,422,792 to Gilb ("Gilb'792")

Exhibit No.	Description
1036	U.S. Patent No. 10,316,510 to Brekke *et al*. ("the '510 Patent")
1037	Oxford Compact English Dictionary, Second Edition, Oxford University Press, (2000).
1038	U.S. Patent No. 11,021,867 to Brekke et al. ("the '867 patent")
1039	GB Patent App. Pub. No. 2,451,853A (Cullen)
1040	EP Patent No. 0210744 B1 to Adams (Adams)
1041	Japanese Design Patent No. D1213894 to Yamaguchi (Yamaguchi) with attached certified English-language translation
1042	Complaint for Patent Infringement, Columbia Insurance Company et al v. Simpson Strong-Tie Company Inc., 3-23-cv-02432 (N.D. Cal.), filed May 17, 2023.
1043	U.S. Patent No. 5,341,619 to Dunagan et al. (Dunagan)
1044	U.S. Patent No. 5,220,766 to Hills, Sr. (Hills)
1045	Simpson Strong-Tie, "Connector Update," Vol. 2, No. 3 (November 1990)
1047	Deposition Transcript of December 22, 2022 Deposition of Dr. Reynaud Serrette in PGR2019-00063

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

5. My work on this case is being billed at a rate of $375 per hour, with reimbursement for actual expenses. My compensation is not contingent upon the outcome of this post-grant review.

II. LEVEL OF ORDINARY SKILL IN THE ART

6. I incorporate by reference my understanding of the person of ordinary skill in the art ("POSITA") as set forth in paragraph 15 of my previous declaration.

III. UNDERSTANDING OF THE LAW

7. I incorporate by reference my understanding of the legal principles, including my discussion of claim construction and obviousness, as set forth in my previous declaration. EX1003, ¶¶12-31. I include here certain additional legal understandings.

8. As stated in my prior declaration, I understand that a patent claim can be considered obvious to a POSITA at the time the application was filed and that the teachings of two or more prior art references may be combined if that combination would have been obvious to a POSITA. EX1003, ¶¶26-31.

9. I further understand that whether a prior art reference teaches away from the claimed invention is a factor to be considered in determining obviousness. I also understand that it is improper to combine references that teach away from their combination. I understand that though a reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, the mere disclosure of alternative designs does not teach away.

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

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

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

IV. OVERVIEW OF THE '626 PATENT

13. I previously discussed and stand by my overview of the '626 Patent, including my discussion of the technology background, the prosecution history, and the alleged invention of the '626 patent, as set forth in my previous declaration. EX1003, ¶¶32-55.

V. CLAIM CONSTRUCTION

14. I maintain my understanding of claim construction, including my discussion of the particular terms set forth in my previous declaration. EX1003, ¶¶16-20.

15. I understand that Patent Owner proposes constructions for a term discussed below. Patent Owner's Response (POR), Paper 9, 19-20. In my opinion, Patent Owner's proposed claim constructions are improper, as explained below.

A. "channel-shaped portion"

16. It is my understanding that Patent Owner asserts in its Response that the limitation "channel-shaped portion" should be construed to mean a "portion of the hanger that forms a channel configured to receive the structural component." POR, 19. Patent Owner further attempts to narrow the recited "channel-shaped portion" by asserting that "all portions of the hanger which directly bound the channel that receives the structural component constitute the channel shaped portion." POR, 19.

17. I have been informed that one of the claim construction principles in patent law is that the claims must be construed to be consistent with the specification. Based on my review of the '626 patent's disclosure, Patent Owner's construction is not supported by the '626 patent specification.

18. Here, the '626 patent specification describes the "channel-shaped portion" as "includ[ing] a seat or base 44 and a pair of side panels 46 extending upward from the base." EX1001, 4:37-41. The '626 patent specification further describes that "base 44, side panels 46, and back panels 48 form a channel 52 configured to receive the floor truss 12." EX1001, 4:44-47. While describing base 44, side panels 46, and back panels 48 as collectively forming channel 52 to receive floor truss 12, the '626 patent specification does not describe any other part or section of the hanger as forming the channel. Furthermore, according to my review, the '626 patent specification does not even mention the term "bound," let

alone describing any portion of the hanger that "bounds" channel 52 as constituting part of channel-shaped portion 38. Accordingly, a POSITA would not have understood that "channel-shaped portion" as including a portion of the hanger that directly "bounds" the channel for receiving the joist.

19. In addition, Patent Owner's claim construction focuses on the wall assembly intended to be used with the recited hanger. POR, 19-20, 22-23, 31-33, 36-37. Patent Owner's assertions about how the claimed "hanger" is intended to be used with a wall assembly should not further limit the scope of the claims. It is my understanding that the scope of claims directed to an apparatus, such as the '626 patent claims directed to a "hanger," should be based on the structural elements recited in the claims, not the intended use of the hanger. For example, when assessing what part of a hanger constitutes a "channel-shaped portion" and an "extension portion," a POSITA would consider the physical features of the hanger itself and the natural divisions between those features. A POSITA would not assess the claim language and its application to the prior art by solely considering how an installer might later install the hanger with a joist or an entire wall assembly. Based on my years of experience in the field, the hanger's intended use with a wall assembly (e.g., how the hanger interfaces with the wall members or how the hanger is secured to truss/joist or the wall member) differs from installation to installation.

20. Claim 1 requires that the hanger include "a channel-shaped portion configured to receive the structural component" and an "extension portion spacing the channel-shaped portion from the back flange plane" by a certain distance. EX1001, 12:18-33. When applying the claim language to the cited art, a POSITA would look to the divisions naturally present in the hanger, such as where the hanger starts to change direction from vertical to angled (shown by the side flap of Yamaguchi or edge 16 of Adams) or where the hanger changes shape (Cullen).

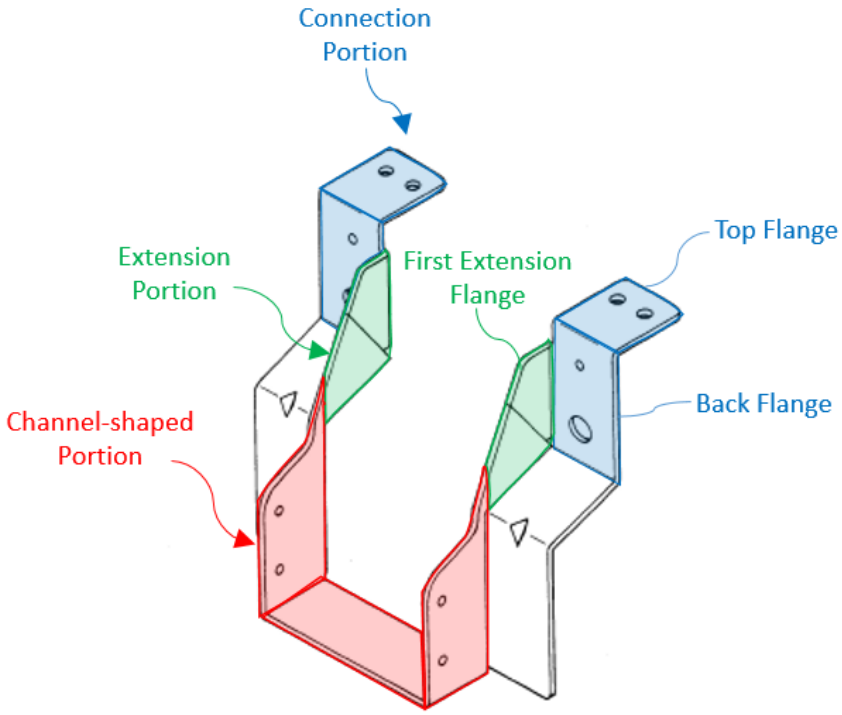
VI. GROUND 1: THE CHALLENGED CLAIMS WOULD HAVE BEEN OBVIOUS OVER YAMAGUCHI IN VIEW OF BUNDY.

21. As explained in my previous declaration, all of the claimed structural elements are found in the Yamaguchi-Bundy combination. EX1003, ¶¶73-145. From my review of the POR, Patent Owner attempts to distinguish the claims over the Yamaguchi-Bundy combination by focusing on the intended use of Yamaguchi's hanger and arguing against the references individually. I maintain my opinion that the Yamaguchi-Bundy *combination* discloses all the elements of the challenged claims for the reasons set forth in my previous declaration and below.

A. A POSITA would have understood that Yamaguchi's hanger, as modified by Bundy, would secure the joist away from the wall by the distance corresponding to its extension flanges.

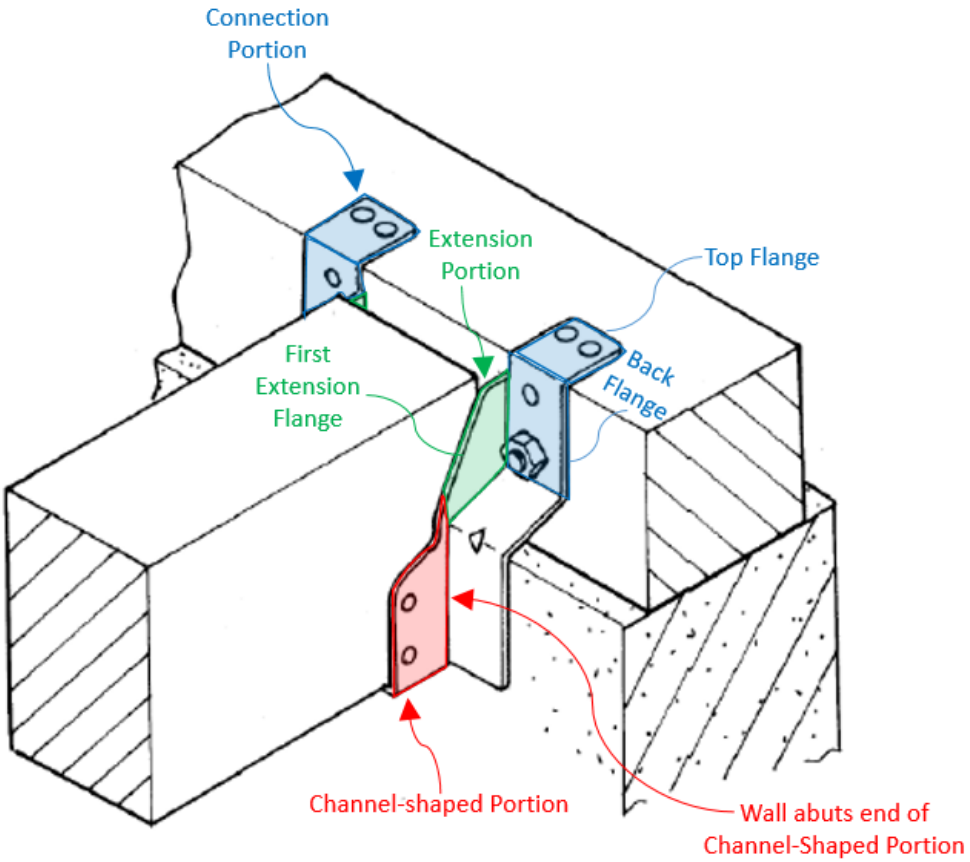
22. I agree with the Board's Institution Decision finding based on my initial Declaration that "Yamaguchi's extension portion (green) already defines a space between Yamaguchi's back flange plane (blue) and channel-shaped portion (red)"

and that it would have been obvious to size Yamaguchi's extension portion to receive two layers of 5/8"-thick drywall in this space based on the teachings of Bundy. Institution Decision (DI), Paper 7, 38-40.



EX1041, 2, Perspective View (annotations from EX1003, ¶93).

23. Patent Owner asserts that the green annotated section of Yamaguchi's hanger does not equate to the recited "extension portion" because "the joist is received not only in the portion of the hanger shaded red in the Simpson drawings, but also in the portion shaded green." POR, 22-23. I disagree.



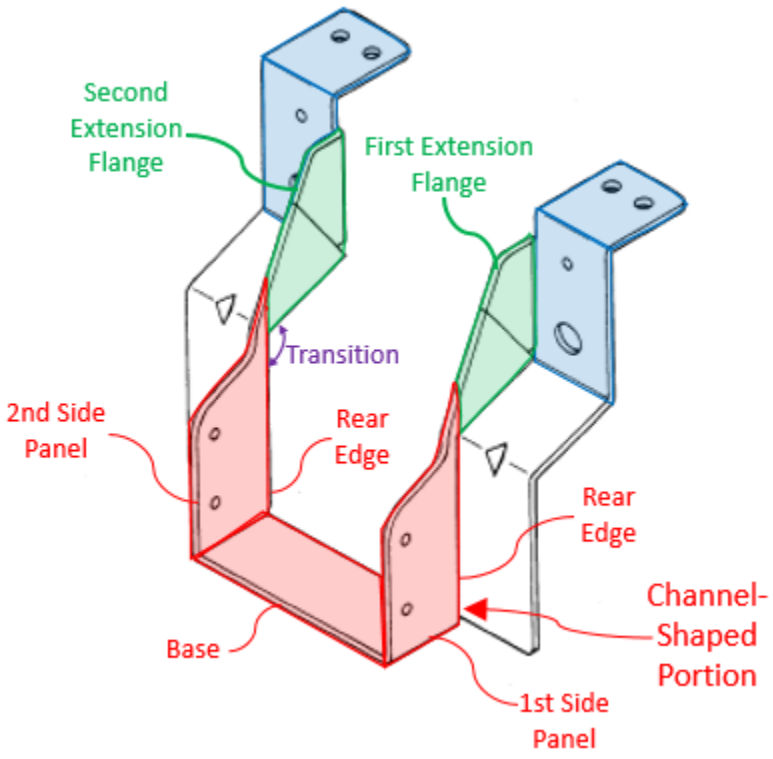
EX1041, 5, Usage View (annotations from EX1003, ¶93 and additional annotations).

24. First, Patent Owner's assertion that the joist is received in the space defined by the extension portion (green) of Yamaguchi's hanger is inaccurate. While the Usage View of Yamaguchi may appear to show that a line of the illustrated joist is received in the space defined by the extension flange space, a POSITA would have understood that Yamaguchi's joist would actually stop at the dividing line between Yamaguchi's channel-shaped portion (red) and extension portion (green), and could not be pushed any further back because that positioning

would be prevented by the presence of Yamaguchi's wall member. As shown above in the Usage View of Yamaguchi, the back end of the channel-shaped portion (red) of Yamaguchi's hanger abuts the wall member. The wall member—whose edge is aligned with the boundary between the channel-shaped portion and the extension portion—prevents the joist from being pushed further back and into the extension portion. Accordingly, a joist would not be received in the space defined by the extension flanges (green) of Yamaguchi's hanger.

25. Because the joist is stopped where the wall member abuts the end of the channel-shaped portion (red) of Yamaguchi's hanger, a POSITA would have understood even from Yamaguchi alone that the extension portion (green) of Yamaguchi's hanger is configured to spatially separate the end of the joist from a top plate of the wall assembly. Specifically, a POSITA would have understood that the joist would be separated from the back flange (blue) of Yamaguchi's hanger by a distance corresponding to the length of the extension flanges (green) of Yamaguchi's hanger. In any event, a POSITA would have understood that the natural dividing line between two portions of the hanger is where the hanger's overall figure changes shape or where the hanger's edge changes direction. Here, the rear edge of Yamaguchi's hanger changes from extending in a vertical direction to extending at an oblique angle with respect to the vertical direction, as shown below. A POSITA would have understood this transition from the vertical

edge to the angled edge to be the natural division between a channel-shaped portion that holds a beam and an extension portion that separates the channel-shaped portion from the connection portion.



EX1041, 2, Perspective View (annotated).

26. Second, neither independent claim 1 nor independent claim 53 exclude a joist from being received in the space defined by the extension flange. Based on my understanding of claim construction principles, when claims recite the transitional phrase "comprising," this renders the scope of the claims open-ended. According to my review, independent claims 1 and 53 of the '626 patent recite the transitional phrase "comprising," and therefore, are open-ended. EX1001, 12:14-

17, 18:16-19. Because the scope of claims 1 and 53 is open-ended, it is my understanding that claims 1 and 53 do not preclude a joist from being partially received in the space defined by the extension flange, unless the claim explicitly excludes this feature.

27. I also understand that when analyzing the claim language and applying the prior art to the claims, limitations should not be imported into a claim that are not explicitly recited in the claim. Claim 1 specifies that the "extension portion" spaces the "channel-shaped portion from the back flange plane by a distance sized large enough" to receive "two layers of 5/8-inch-thick drywall," without excluding a joist being received in the space defined by the extension portion. Thus, even if the prior art discloses both a joist and two layers of drywall received in the space defined by the extension flange, the prior art still discloses the limitation "two layers of 5/8-inch-thick drywall of the fire separation wall to be received between the channel-shaped portion and the back flange plane."

28. Third, Patent Owner is not properly considering what the combination of Yamaguchi and Bundy would have suggested to a POSITA. It is my understanding that a finding of obviousness cannot be overcome by attacking references individually where the rejection is based upon the teachings of a combination of references. I have been further informed that the test for

obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art.

29. As explained in my First Declaration, Bundy teaches to locate drywall between the channel-shaped portion of a hanger and the front face of the wall's support member. EX1007, 4:24-28 ("Preferably, the one or more panels 6 are between the joist hanger 2 and the structural support member."), 5:10-18 ("The one or more panels 6 preferably are drywall panels 6. … In the present invention, two layers of 5/8-inch drywall is preferred."). A POSITA would have been motivated to receive two layers of 5/8-inch-thick drywall between Yamaguchi's back flange and channel-shaped portion to "cover and protect the structural members" of the wall, such as a wooden frame wall. EX1007, 5:18-19; EX1003, ¶¶78-79. For example, it is common practice to add drywall to a wall assembly to achieve a particular fire rating that satisfies building codes. When combining the teachings of Bundy's drywall space with Yamaguchi, a POSITA would have understood how to modify the size of Yamaguchi's extension portion to accommodate two layers of 5/8"-thick drywall while still allowing Yamaguchi's hanger to secure a joist's end to a frame wall. EX1003, ¶81; EX1007, 4:46-53. Given that drywall would be located between Yamaguchi's back flange plane and the channel-shaped portion in the Yamaguchi-Bundy combination, a joist would not be inserted all the way back so that its end was engaged with the wall frame, as purported by the Patent Owner,

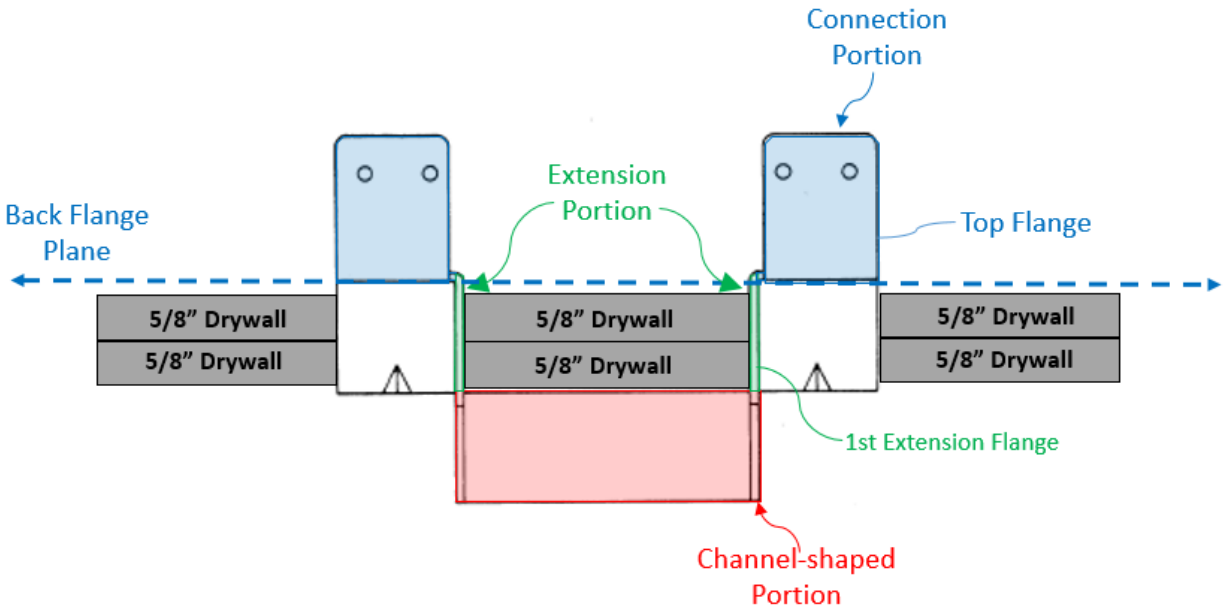
even in the combined wall structure where the top plate edge was even with the wall framing. The joist would only be received in the channel-shaped portion (red) of Yamaguchi's hanger, as modified by Bundy. Thus, even under Patent Owner's narrow construction of the "channel-shaped portion," the combination of Yamaguchi and Bundy renders obvious the recited "extension portion" of claims 1 and 53.

B. The extension portion of Yamaguchi's modified hanger permits two layers of 5/8"-thick-drywall to be received between the channel-shaped portion and the back flange plane.

30. Patent Owner argues that Yamaguchi has "no component of the hanger that prevents the back face of the drywall (or any portion thereof) being secured directly to the face of the wall framing," and that "Yamaguchi's hanger design does not have a construction which will accept drywall … between the channel-shaped portion and the back flange plane" due to the presence of "forward projecting pieces of the Yamaguchi hanger." POR, 25-26. I disagree because Patent Owner's arguments are based on features that are not recited in claims 1 and 53.

31. First, the back flange plane recited in claim 1 extends beyond the edges of the back flange itself. As such, the presence of Yamaguchi's "forward projecting pieces" have no bearing on whether drywall is received between the channel-shaped portion and the back flange *plane*.

32. Second, Patent Owner's arguments presume (1) that the entire wall assembly has been completely constructed at the time the extension portion distance is evaluated, and (2) that the drywall can only ever be placed in one of many possible positions with respect to the wall frame. Patent Owner does not consider other mounting arrangements, standard construction practices and tolerances, or even that the drywall must first be received into the channel prior to completion of the wall assembly.



EX1041, 3, Plan View (annotations from EX1003, ¶96).

33. Based on my review of the claim language (EX1001, 12:26-33), independent claims 1 and 53 require only that "the extension portion spac[e] the channel-shaped portion from the back flange plane by a distance sized large enough to *permit* the two layers of 5/8-inch-thick drywall of the fire separation

wall to be received between the channel-shaped portion and the back flange plane." EX1001, 12:28-33, 18:30-35 (emphasis added). Because claims 1 and 53 are directed to a "fire wall hanger," claims 1 and 53 are not further limited by the frame wall, the drywall, the placement of the drywall relative to the frame wall, or the method of installing the drywall. As I explained in my First Declaration, Yamaguchi-Bundy's modified hanger has an extension portion that is long enough to *permit* two layers of 5/8-inch-thick drywall (i.e., an extending flange having a length over 1 and 1/4 inches) to be *received* between the channel-shaped portion and the back flange plane. EX1003, ¶96. The claims do not require any more than what was explained in my First Declaration.

34. In arguing that the back surface of the drywall would be flush with the front surface of the wall frame, such that the total distance from the back flange plane to the channel-shaped portion would be less than 1 and 1/4 inch, Patent Owner appears to presume that the channel-shaped portion in the Yamaguchi-Bundy combination would be located *precisely* 1 and 1/4 inch from the wall face, and no more. But this leaves no room for standard manufacturing tolerances, and almost ensures that the drywall could not be received between the channel-shaped portion and the wall without damage. A POSITA would have known that the size of the extension portion would have to be larger than the width of the intended

drywall, to allow the drywall to move between the channel-shaped portion and the wall with no damage.

35. In previous proceeding PGR2019-00063 covering related U.S. Patent No. 10,316,510, Patent Owner's declarant Dr. Serrette's testimony about the "tolerance" between the size of the extension flanges and the width of the drywall panels supports this notion. Specifically, Dr. Serrette described that "you cannot fit two pieces of material of a certain thickness in a space that has exactly the same width," and therefore, you need a "tolerance" to allow "one thing that needs to fit into another." EX1047, 43:7-44:18. I agree with that statement. Applying this "tolerance" principle to claims 1 and 53, a POSITA would have understood that the combined hanger's extension flanges would extend somewhat beyond 1 and 1/4 inches to provide tolerance for a user to insert two layers of 5/8"-thick drywall between the channel-shaped portion and the back flange of the hanger. In this scenario, Yamaguchi's hanger, as modified by Bundy, would have been configured to receive the two layers of drywall between its channel-shaped portion and its back flange plane before the drywall layers are permanently mounted to the wall.

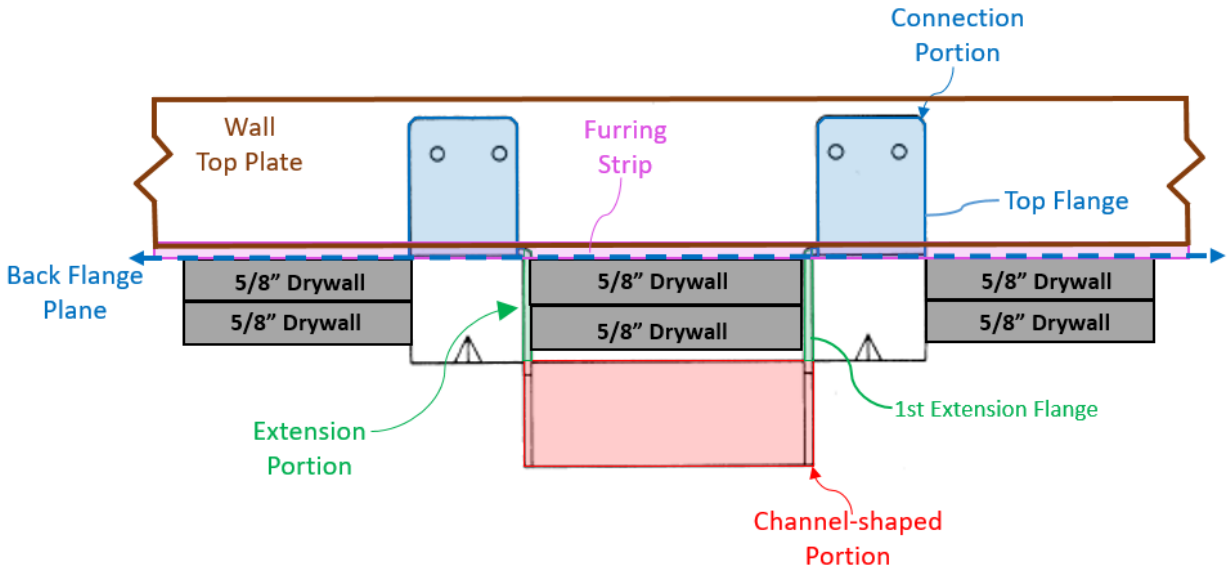
36. Accordingly, in designing the Yamaguchi-Bundy hanger, a POSITA would have known to size the hanger's extension flange larger than 1 and 1/4 inch, such that the width would be large enough to "permit" the two layers of drywall to

be "received between the channel-shaped portion and the back flange plane" even considering the thickness of the back flange.

37. Additionally, Patent Owner's arguments only consider the placement of the drywall relative to the hanger *after* the drywall is permanently attached to the wall. But, prior to permanently attaching the drywall to the wall, a user may insert the two layers of drywall by sliding them up next to the channel-shaped portion, (and so between the back flange plane and the channel-shaped portion) when initially positioning the drywall over the wall frame and before mounting the drywall flush against the wall frame. Based on my years of experience in the field, a POSITA would have understood that when installing drywall after a joist hanger is mounted to the wall, the user would need to shimmy the drywall around the hanger's extension flanges before mounting the drywall permanently to the wall members.

38. Furthermore, a POSITA would have understood that two layers of 5/8-inch-thick drywall can be mounted to the wall in a non-flush configuration. For example, a POSITA would have understood that additional material equal to or greater than the thickness of Yamaguchi's back flange, such as shims or furring strips, can be (and commonly were) applied to the wall such that the two layers of drywall would be located between the back flange plane and the channel-shaped portion of Yamaguchi's hanger, as shown below. Assembling multiple wall layers

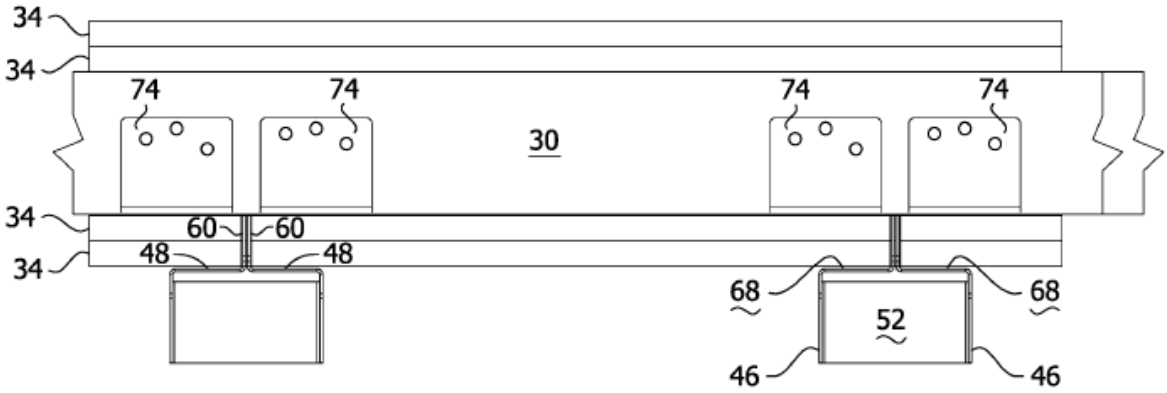
and establishing the plane of an outer finished wall were already well known to a skilled artisan. For example, applying furring strips to the wall assembly was common practice for protecting the wall members from moisture or ensuring a flat mounting surface for the wall cover. A POSITA would have understood that the extension flanges of Yamaguchi's hanger would be larger than two layers of 5/8"-thick drywall to account for the added material and for manufacturing tolerances.



EX1041, 3, Plan View (annotated).

39. Finally, by arguing that Yamaguchi-Bundy's back flange plane would not "define" or "bound" the space that receives the drywall, Patent Owner disregards that the interface between the drywall and the back flange plane defined by Yamaguchi-Bundy's hanger corresponds to how the drywall and the back flange plane are depicted in the '626 patent. As shown in Figures 10A-12, 14A, and 34-36 of the '626 patent, the drywall is disposed flushed against the wall, as it

would be in the space behind the channel-shaped portion below the back flange. The embodiments disclosed in the '626 patent have the same interface between the back flange plane and the drywall beyond the flange itself as that demonstrated in Yamaguchi-Bundy.



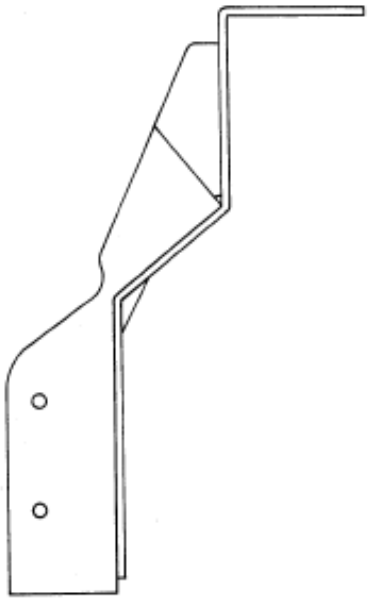
EX1001, FIG. 11.

40. Thus, in my opinion, the extension portion of Yamaguchi's hanger, as modified by Bundy, would have *permitted* two layers of 5/8-inch-thick drywall of the fire separation wall to be *received* between the channel-shaped portion and the back flange plane.

C. Yamaguchi discloses a first extension flange extending from the back flange of the connection portion to the channel-shaped portion.

41. Patent Owner contends that the green annotated section of Yamaguchi's hanger does not equate to the recited "first extension flange" of claim 1 because Yamaguchi's extension flange is "a composite of two separate flanges—one

extending from the connection portion, the other extending from the back flange." POR, 27-28. I disagree because Patent Owner's arguments are directed to a feature—the first extension flange consisting of a single piece with no joints—not recited in the claims.



EX1041, 4, Side View.

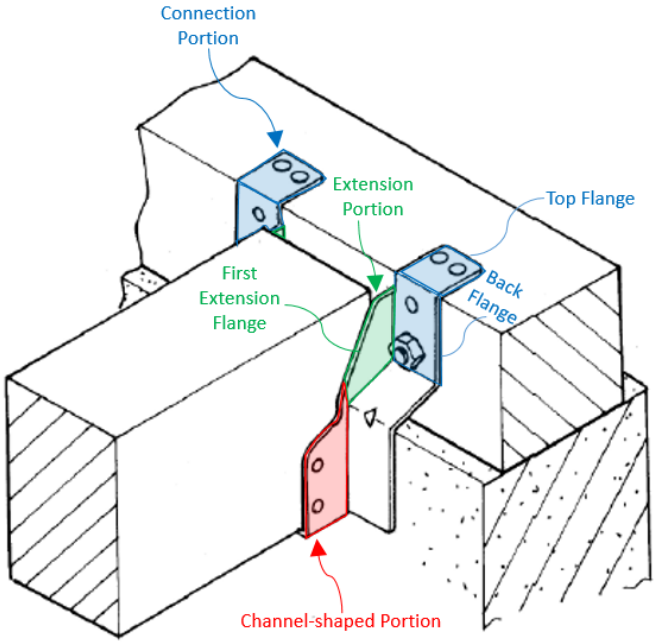
42. Based on my review of the claim language, claim 1 does not recite any limitations specifying that the first extension flange must have originated as a single piece. Because claim 1 does not specify that the first extension flange must be a single piece, claim 1 should be construed to include both extension flanges formed from a single piece and multiple pieces.

43. As explained in my First Declaration, Yamaguchi's hanger shown in the perspective, plan, front, and side views includes a planar-shaped flange extending

from the channel-shaped portion to the connection portion with no intervening components therebetween. EX1003, ¶94. A POSITA would have understood that the combination of the two pieces (annotated in green) equates to the "first extension flange" because the two pieces of metal collectively form a thin metal sheet extending from the channel-shaped portion to the back flange of the connection portion to define a space between the channel-shaped portion and the wall. EX1003, ¶94.

44. Furthermore, a POSITA would have understood that the line shown across the extension flange of Yamaguchi's hanger in the perspective, plan, front, and side views may be a weld line between two abutting sections of sheet metal. EX1003, ¶94. By being welded together, the two sections of Yamaguchi's extension flange shown in the perspective, plan, front, and side views are permanently fastened to each other. Accordingly, the two sections of extension flange (green) shown in the perspective, plan, front, and side views of Yamaguchi constitute a single piece extension flange.

45. Even if a POSITA were to construe the "first extension flange" of claim 1 as being a single piece, Figure 5 of Yamaguchi discloses this limitation, as shown below.



EX1041, 5, Usage View (annotations from EX1003, ¶93).

46. As explained in my First Declaration, the usage view of Yamaguchi's hanger would have suggested to a POSITA that the extension flange consists of a single contiguous piece of sheet metal that is folded along the side edge of the back flange. EX1003, ¶94. The absence of the join line along the extension flange in Figure 5 indicates that a contiguous piece of sheet metal is folded at a fold line located between the extension flange (green) and the back flange (blue) of Yamaguchi's hanger. Furthermore, in related proceeding PGR2023-00048, I explained how Yamaguchi's hanger, including the first extension flange, can be formed from a single piece of sheet metal. Using common CAD tools, a POSITA would have been able to create a single sheet blank that maintains the fundamental shape of Yamaguchi's hanger and provide bend lines in the blank to provide a

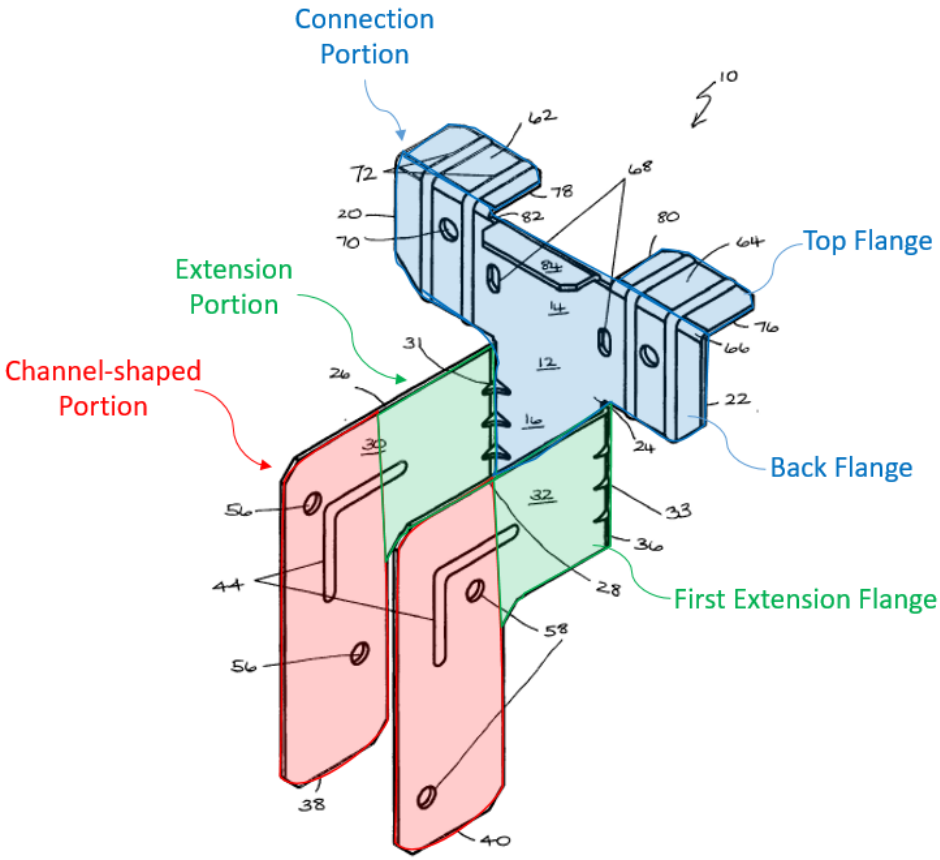
single piece extension flange as shown in the Usage View of Yamaguchi. Accordingly, even under Patent Owner's claim construction, the Usage View of Yamaguchi discloses "the first extension flange" limitation.

VII. GROUND 2: THE CHALLENGED CLAIMS WOULD HAVE BEEN OBVIOUS OVER CULLEN IN VIEW OF BUNDY.

47. As explained in my previous declaration, all of the claimed structural elements are found in the Cullen-Bundy combination. I maintain this position, even in view of Patent Owner's arguments.

A. Cullen-Bundy renders obvious an extension portion spacing the channel-shaped portion from the back flange plane by a distance large enough to permit two layers of 5/8"-thick drywall.

48. The Board's Institution Decision further correctly found, based on my First Declaration, that "Cullen's back plate 12 and legs 38, 40 already define a space therebetween" and that it would have been obvious to size Cullen's sidewalls 30, 32 to receive two layers of 5/8"-thick drywall in this space based on the teachings of Bundy. DI, 56-58.



EX1039, FIG. 1 (annotations from EX1003, ¶166).

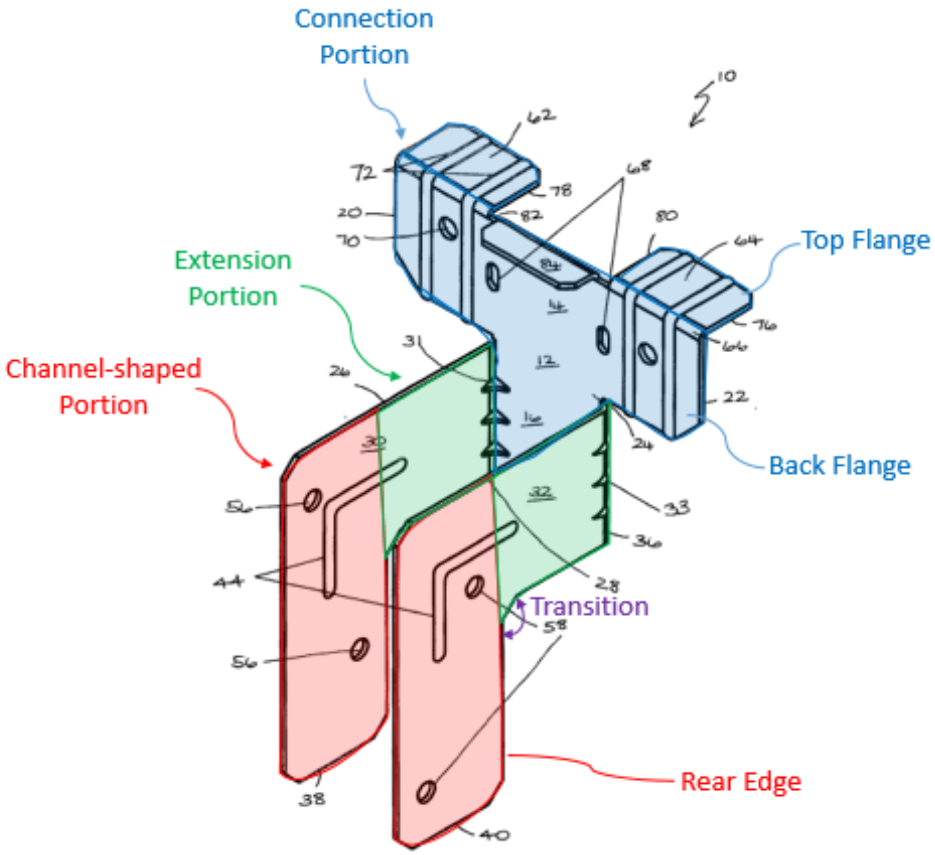
49. Patent Owner contends that the green annotated section of Cullen's hanger does not equate to the recited "extension portion" because Cullen's sidewalls 30, 32 allegedly do "not serve to create any spacing between the joist and the wall structure" but instead "engage the joist until it meets the barbing present where the side walls meet the back flange (31, 33)." POR, 31-33. I disagree because Patent Owner is not properly considering what the combination of Cullen and Bundy would have suggested to a POSITA.

50. As explained in my First Declaration, Bundy teaches to locate drywall between the channel-shaped portion of a hanger and the connection of a hanger "to cover and protect the structural members of a building." EX1007, 4:24-25 ("Preferably, the one or more panels 6 are between the joist hanger 2 and the structural support member."), 5:10-18 ("The one or more panels 6 preferably are drywall panels 6. … In the present invention, two layers of 5/8-inch drywall is preferred."); EX1003, ¶150. A POSITA would have been motivated to combine the teachings of Bundy's drywall space when using Cullen's hanger for "timber building construction." EX1039, 1:4-6, 5:7-8; EX1003, ¶¶150-151. Specifically, a POSITA would have been motivated to receive two layers of 5/8"-thick drywall between Cullen's back flange (back plate 12) and channel-shaped portion (legs 38, 40) to provide a fire-resistant wall assembly. EX1003, ¶¶150-151.

51. In combining the teachings of Bundy with Cullen, a POSITA would have understood how to modify the size of Cullen's extension portions (sidewalls 30, 32) to accommodate two layers of 5/8"-thick drywall while still allowing Cullen's hanger to secure a joist's end to a frame wall. EX1003, ¶150-151; EX1007, 4:46-53. Given that drywall would be located between the Cullen's back flange plane and the channel-shaped portion in the Cullen-Bundy combination, a joist would not be engaged with the green annotated section of Cullen's sidewalls 30, 32, as purported by the Patent Owner. The joist would only be received in the

channel-shaped portion of Cullen's hanger, as modified by Bundy. Thus, the combination of Cullen and Bundy renders obvious the recited "extension portion" of claims 1 and 53.

52. Additionally, the natural dividing line between two portions of the hanger would be at a place where the hanger's overall figure changes shape or the hanger's edge changes direction. Here, the rear edge of Cullen's hanger changes from extending in a vertical direction (defined along Cullen's legs 38, 40) to extending in a horizontal direction (defined along Cullen's sidewalls 30, 32), as shown below. A POSITA would have understood that this transition from the vertical direction to a horizontal direction as the natural division between a channel-shaped portion that holds a beam and an extension portion that separates the channel-shaped portion from the connection portion.



EX1039, FIG. 1 (annotated).

B. A POSITA would have been motivated to combine the teachings of Bundy's drywall space with Cullen's hanger.

53. As explained in my First Declaration, Bundy's and Cullen's hangers serve similar purposes—supporting a floor joist/structural beam at a top end of a wall. EX1003, ¶¶148, 158. A POSITA would have had an expectation of success in modifying Cullen's hanger 10 to include a space large enough to receive two layers of 5/8"-thick drywall between its back plate 12 and legs 38, 40 because doing so would still allow Cullen's hanger to perform its intended function of securing a joist to a wall. EX1039, 5:7–8; EX1003, ¶152.

54. Patent Owner contends that combining the teachings of Bundy's drywall space with Cullen's hanger would change Cullen's principle of operation—using the hanger "to abut the end of the joist against the back flange." POR, 30. Patent Owner's assertion that Cullen's principle of operation is to abut the end of the joist against the back flange is inaccurate.

55. Based on my review of Cullen's disclosure, Cullen does not describe that the joist must abut the back flange of the hanger to mount the joist to the wall assembly. Moreover, Patent Owner does not cite to any section of Cullen to support its notion that a joist must engage back plate 12 of the hanger. *See* POR, 30. Rather, Cullen's principle of operation is to secure a joist in a timber construction that ensures aligning the joist's top surface with the top surface of the frame's top plate. EX1039, Abstract ("The bracket includes … a locating tab (84) against which the joist is aligned to ensure alignment between the surface of the joist and sill for locating timber boards upon."), 13:1-5 ("The tab 84 is arranged so that a the [sic] top surface of a joist located against it at the surface 86 will align with the top surface of the sill or bearing member."), 16:29-30 ("The required alignment between the top surfaces 90, 98 of the sill and joist 30 is achieved with either method.").

56. A POSITA would have understood that combining the teachings of Bundy's extension portion to accommodate two layers of 5/8" drywall with

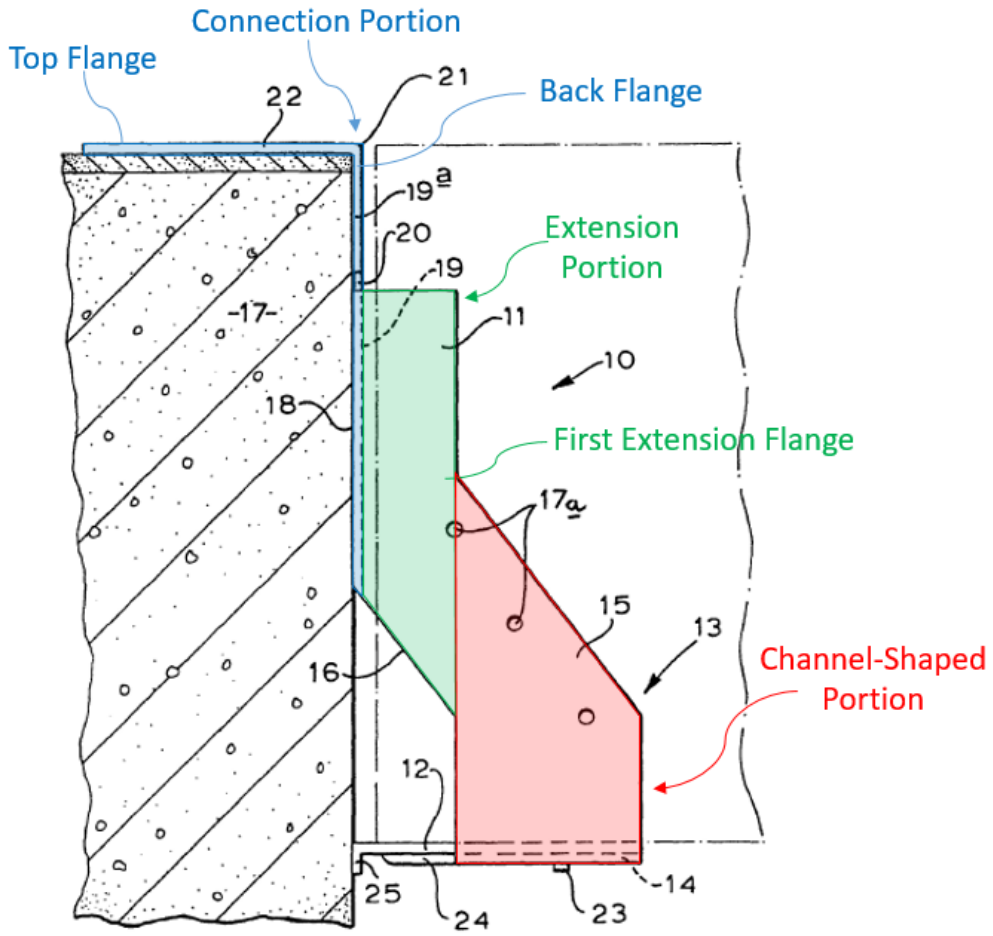
Cullen's hanger would still allow Cullen's modified hanger to align the top surface of the wall frame's top plate with the joist's top surface, as explained in my First Declaration. EX1003, ¶153. Specifically, a POSITA would have understood to cut a longer extension from fold line 116 shown in Figure 4 to provide location tab 84 with adequate length to extend across two layers of 5/8" drywall. EX1003, ¶153. Thus, in my opinion, combining the teachings of Bundy's drywall space with Cullen's hanger would not change Cullen's principle of operation.

VIII. GROUND 3: THE CHALLENGED CLAIMS WOULD HAVE BEEN OBVIOUS OVER ADAMS IN VIEW OF BUNDY.

57. As explained in my previous declaration, all of the claimed structural elements are found in the Adams-Bundy combination. EX1003, ¶¶226-306.

A. Adams-Bundy renders obvious an extension portion spacing the channel-shaped portion from the back flange plane by a distance large enough to permit two layers of 5/8"-thick drywall.

58. The Board's Institution Decision also correctly found, based on my First Declaration, that Adams's "abutment portion 19 and base 14 already define a space therebetween" and that it would have been obvious to size Adams's sidewalls 15 to receive two layers of 5/8"-thick drywall in this space based on the teachings of Bundy. DI, 73-75.



EX1040, FIG. 2 (annotations from EX1003, ¶244).

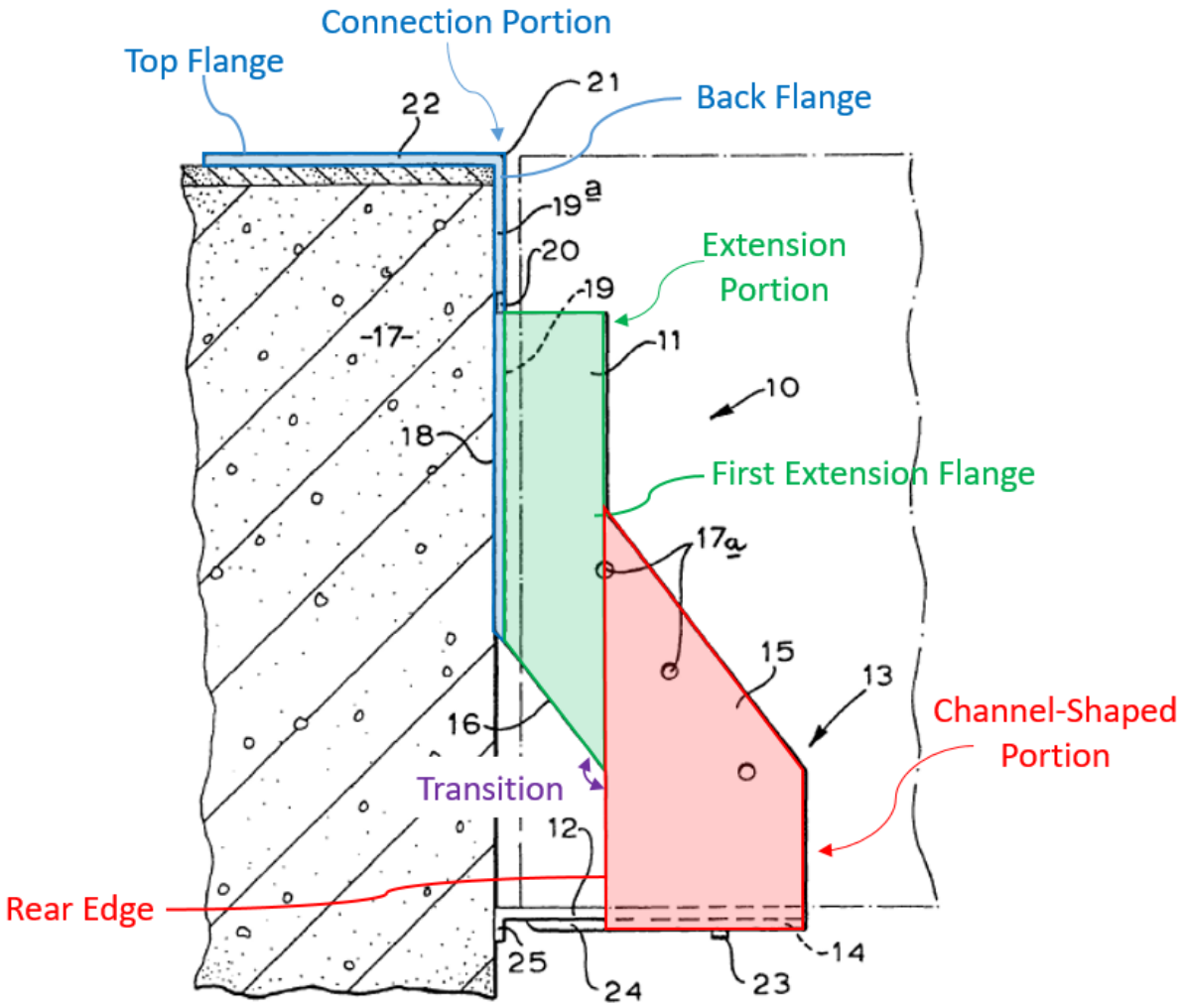
59. Patent Owner asserts that the green annotated section of Adams's hanger does not equate to the recited "extension portion" because the sidewalls 15 of Adams's hanger "do[] not serve to create any spacing between the joist and the wall structure." POR, 34-37. I disagree because Patent Owner is not properly considering what the combination of Adams and Bundy would have suggested to a POSITA.

60. First, Patent Owner disregards that Adams explicitly teaches to spatially separate the end of the joist from the wall member and abutment portion 19 of the hanger to avoid making the joist "vulnerable to moisture damage." EX1040, 1:53-55, 4:15-19 ("[T]he end of the joist can be ventilated through the opening behind the inclined edge 16 of the side walls."). In view of Adams alone, a POSITA would have understood that Adams's sidewalls 15 are configured to separate a joist from the wall to define a gap therebetween.

61. Second, as explained in my First Declaration and described above, Bundy teaches to locate drywall between the channel-shaped portion of a hanger and the connection of a hanger "to cover and protect the structural members of a building." EX1007, 5:17-21; EX1003, ¶¶230-231. When using Adams's hanger to mount base 14 "away from" a "timber" wall (EX1040, 4:11-21), a POSITA would have been motivated to receive two layers of 5/8-inch-thick drywall between Adams's back flange (abutment portion 19) and channel-shaped portion (base 14 and portions of sidewalls 15 thereabove) to provide a fire-resistant wall assembly. EX1003, ¶¶231-232. In doing so, a POSITA would have understood how to modify the size of Adams's extension portions (sidewalls 15) to accommodate two layers of 5/8"-thick drywall while still allowing Adams's hanger to secure a joist's end to a frame wall. EX1003, ¶231; EX1007, 4:46-53.

62. Given that drywall would be located between the Adams's back flange plane (outer surface abutment portion 19) and the channel-shaped portion (base 14 and portions of sidewalls 15 thereabove) in the Adams-Bundy combination, a joist would not be inserted all the way back such that the green annotated sections of the sidewalls 15 would engage the joist, as purported by the Patent Owner. The joist would only be received in the channel-shaped portion of Adams's hanger, as modified by Bundy. Thus, even under Patent Owner's claim construction, the combination of Adams and Bundy renders obvious the recited "extension portion" of claims 1 and 53.

63. In any event, the natural dividing line between two portions of the hanger would be at a place where the hanger's overall figure changes shape or the hanger's edge changes direction. Here, the rear edge of Adams's hanger changes from extending in a vertical direction to extending at an oblique angle with respect to the vertical direction (inclined edge 16), as shown below. A POSITA would have understood that this transition from the sidewall's vertical edge to the sidewall's inclined edge 16 as the natural division between a channel-shaped portion that holds a beam and an extension portion that separates the channel-shaped portion from the connection portion.



EX1040, FIG. 2 (annotated).

B. A POSITA would have been motivated to combine the teachings of Bundy's drywall space with Adams's hanger.

64. As explained in my First Declaration, Adams's hanger is intended for securing its base 14 "away from the supporting element 17" of a "timber" wall, and therefore, a POSITA would have been motivated to receive drywall in the space between Adams's base 14 and abutment portion 19 based on the teachings of Bundy's drywall space. EX1003, ¶229-231.

65. Patent Owner contends that a POSITA would not have been motivated to combine the teachings of Bundy's drywall space with Adams's hanger. POR, 37-41. Patent Owner asserts that Adams "contemplates that there would be registration between [the] hanger and the wall surface at or near its base" due to the presence of a shoe plate or an extended stirrup. POR, 38-40. Patent Owner asserts that removing Adams's shoe plate or the extension of its stirrup to receive drywall would "completely change" its "principle of operation." POR, 40. I disagree.

66. First, a POSITA would have understood that two layers of drywall can still be received between the channel-shaped portion (base 14 and portions of sidewalls 15 thereabove) and the back flange plane (outer surface of abutment portion 19) of Adams's hanger even with the presence of the shoe plate. EX1003, ¶247. I previously explained that an insert of two layers of 5/8" drywall tailored to the space defined between sidewalls 15 above shoe plate 12 can be received in such space. EX1003, ¶247. Based on my years of experience in the field, it was well within the level of routine skill in the art to trim a piece of drywall panel and locate it between sidewalls 15 of Adams's hanger. A POSITA would have been motivated to do so to cover all wall members with two layers of drywall, which would shield the wall members and increase the fire resistance of the wall assembly. EX1003, ¶231; EX1007, 5:10-20.

67. Second, I also previously explained that Adams's shoe plate is "optional" and removing Adams's optional shoe plate would not require its base 14 to be extended to the wall frame to mount Adams's hanger securely to the wall frame. EX1003, ¶¶248-249. A POSITA would have understood that receiving drywall between base 14 and supporting element 17, as taught by Bundy, would allow the base's rear edge to abut drywall, rather than hang without any support, thereby allowing Adams's hanger to counter any moment forces by the received joist. EX1003, ¶248. In doing so, a POSITA would have understood to construct Adams's hanger from a sufficiently-thick metal sheet to counter any moment forces. EX1003, ¶248. A POSITA would have understood that changing the thickness of the metal sheet used for constructing the hanger changes the hanger's response to load. It was well within the level of routine skill in the art to modify the thickness of the sheet metal used for constructing a joist hanger to achieve a desired load rating for the hanger. Moreover, because Adams's hanger 10 is already supported by its bearing portion 22 resting on the top surface of a wall frame member, and also because abutment portion 19 extends downwards from bearing portion 22 and rests against wall, the counter moment force applied by base 14 to drywall would be minimized, not damaging the drywall. EX1003, ¶248.

68. Thus, in my opinion, combining the teachings of Bundy's drywall space with Adams's hanger would not change Adams's principle of operation.

IX. CONCLUSION

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

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

Executed on this 5th day of September 2024, at Calistoga, California.

/ W. Andrew Fennell /

W. ANDREW FENNELL