

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PRIMESOURCE BUILDING PRODUCTS, INC.
Petitioner

v.

NATIONAL NAIL, CORP.
Patent Owner

Case No. IPR2024-01100
U.S. Patent No. 10,378,218

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 10,378,218**

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EX. 1001	U.S. Patent No. 10,378,218 (the “218 Patent”)
EX. 1002	File History of U.S. Patent No. 10,378,218
EX. 1003	Declaration of Dr. Richard W. Klopp, Ph.D., P.E., F.A.S.M.E. (“Dr. Klopp”)
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I. INTRODUCTION

PrimeSource Building Products, Inc. (“Petitioner”) submits this Petition for *Inter Partes* Review (“IPR”) of Claim 17 (the “Challenged Claim”) of U.S. Patent No. 10,378,218 (the “’218 Patent”) under 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.100 *et seq.* The ’218 Patent “relates to a fastener unit configured to fasten workpieces, such as boards, to support structures, such as joists, and more particularly to a fastener unit that engages a groove in the side of a board to secure the board to a support structure.” *See* EX. 1001, 1:6-10. The Challenged Claim recites a fastener unit with various structural elements. *See id.*, Claim 17.

However, as explained in the Declaration of Dr. Richard W. Klopp, Ph.D., P.E., F.A.S.M.E. (EX. 1003) and Section VIII below, these elements, and all claimed aspects thereof, were well-known in the prior art before the priority date of the ’218 Patent. Thus, the ’218 Patent represents no novel or non-obvious advance over the prior art. *See infra* Section VIII.

Accordingly, Petitioner respectfully requests institution of IPR and a finding that the Challenged Claim is unpatentable.

II. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(A)(1)

A. Real Party-in-Interest under 37 C.F.R. § 42.8(b)(1)

The real party in interest is PrimeSource Building Products, Inc. No other parties exercised or could have exercised control over this Petition; no other parties

funded or directed this Petition. *See* Office Patent Trial Practice Guide, 77 Fed. Reg. 48759-60.

B. Related Matters under 37 C.F.R. § 42.8(b)(2)

National Nail, Corp. (“Patent Owner”) has asserted the ’218 Patent against Petitioner in a co-pending litigation, *National Nail, Corp. v. PrimeSource Building Products, Inc.*, 3-23-cv-02746 (NDTX). The Original Complaint in that litigation was filed on December 12, 2023. *See* EX. 1008.

C. Lead and Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel.

LEAD COUNSEL	BACK-UP COUNSEL
Chad C. Walters BAKER BOTTS L.L.P. 2001 Ross Ave., Suite 900 Dallas, TX 75201-2980 Phone: (214) 953-6511 Fax: (214) 661-4511 chad.walters@bakerbotts.com USPTO Reg. No. 48,022	Samir A. Bhavsar BAKER BOTTS L.L.P. 2001 Ross Avenue, Suite 900 Dallas, Texas 75201-2980 Tele: (214) 953-6581 Fax: (214) 661-4581 samir.bhavsar@bakerbotts.com USPTO Reg. No. 41,617 Matthew D. Chuning BAKER BOTTS L.L.P. 2001 Ross Ave., Suite 900 Dallas, TX 75201-2980 Phone: 214-953-6473 Fax: 214-661-4473 matthew.chuning@bakerbotts.com USPTO Reg. No. 80,863

D. Service Information under 37 C.F.R. § 42.8(b)(4)

A copy of this entire Petition, including all Exhibits, are being served by FEDERAL EXPRESS, costs prepaid, to the address of the attorney or agent of record at the USPTO:

**WARNER NORCROSS + JUDD LLP
INTELLECTUAL PROPERTY GROUP
150 OTTAWA AVE NW STE 1500
GRAND RAPIDS, MI 49503, UNITED STATES**

Petitioner consents to electronic service at the addresses provided above for lead and back-up counsel. A Power of Attorney is filed concurrently herewith under 37 C.F.R. § 42.10(b).

III. FEES

The Office is authorized to charge any required fees in connection with this Petition to Deposit Account No. 02-0384 and any required additional fees.

IV. REQUIREMENTS UNDER 37 C.F.R. § 42.104

A. Certification of Grounds for Standing

Petitioners certify that the '218 Patent is eligible for IPR and that Petitioners are not barred or estopped from requesting IPR of the '218 Patent.

B. Priority Date

The '218 Patent was filed on June 18, 2018. EX. 1001, Face. The '218 Patent claims priority on its face as a continuation-in-part of application No. 29/649,771, filed on June 1, 2018, and as a continuation-in-part of application No. 29/648,131,

filed on May 18, 2018 (now Pat. No. Des. 850,897). *Id.*, Face. The '218 Patent also claims priority on its face to provisional application No. 62/674,247, filed on May 21, 2018, provisional application No. 62/635,745, filed on February 27, 2018, and provisional application No. 62/545,709, filed on August 15, 2017. *Id.*, Face. The earliest possible priority date for the '218 Patent is August 15, 2017.

C. Prior Art

- **JP2016-61061 (EX. 1004, “*Kitaura*”)**¹ – *Kitaura* is a Japanese Unexamined Patent Application Publication. *Kitaura* was published on April 25, 2016, well before the earliest potential priority date of the '218 Patent, which is August 15, 2017. EX. 1004, Face. *Kitaura* is prior art under at least 35 U.S.C. §102(a)(1).
- **US2015/0354204 (EX. 1006, “*Kinnunen*”)** – *Kinnunen* is a United States Patent Application Publication. *Kinnunen* was published on December 10, 2015, well before the earliest potential priority date of the '218 Patent, which is August 15, 2017. EX. 1006, Face. *Kinnunen* is prior art under at least 35 U.S.C. §102(a)(1).

D. Identification of Challenge & Statement of Precise Relief Requested

Petitioner requests IPR of Claim 17 of the '218 Patent based on these grounds:

¹ *Kitaura* was published in Japanese and a certified English translation of it is included in EX. 1004.

Ground	Type	Summary
1	§102	Claim 17 is anticipated by <i>Kitaura</i>
2a/2b	§103	Claim 17 is obvious over <i>Kitaura</i> in view of <i>Kinnunen</i> and/or the background knowledge of a POSITA

Submitted with this Petition is the Declaration of Dr. Richard W. Klopp, Ph.D., P.E., F.A.S.M.E. (EX. 1003), who has over 40 years of experience in mechanical engineering design.

E. Institution is Proper under § 314(a)

The factors set forth in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 6 (P.T.A.B. Mar. 20, 2020) (“*Fintiv-I*”) (precedential) and the Interim Guidance (EX. 1009) favor institution. The Board should not exercise its discretion to deny institution because the merits of this petition are compelling. *See* EX. 1009, pp. 4-5. Additionally, the related litigation is just beginning, and thus the *Fintiv* factors favor institution. EX. 1009, pp. 3, 8-9.

“[I]t is often reasonable for a petitioner to wait to file its petition until it learns which claims are being asserted against it in the parallel proceeding.” *Fintiv-I*, at 11. Here, Petitioner promptly filed this Petition within nine weeks of receiving infringement contentions. Due to Petitioner’s diligence, it would be premature at the time of this Petition to argue regarding the timing of respective milestones in this

proceeding versus the litigation.² Thus, if Patent Owner raises § 314(a) arguments in a preliminary response, Petitioner respectfully requests the opportunity to reply before institution, to address expected schedules and the issues raised.

F. Institution is Proper Under § 325(d)

The Board should not exercise its discretion to deny institution under 35 U.S.C. § 325(d).

None of the *Becton, Dickinson* factors weigh in favor of discretionary denial under 35 U.S.C. § 325(d). *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (Dec. 15, 2017) (precedential). All references used in Grounds 1 and 2 below are new references that were neither cited nor considered during prosecution. Additionally, none of the asserted references are cumulative of the prior art used by the Examiner during prosecution.

Thus, this Petition does not present a situation in which “the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d).

² Trial in the related litigation is set for the Court’s three-week docket beginning January 12, 2026. *See* EX. 1013.

V. OVERVIEW OF THE '218 PATENT

A. Summary of '218 Patent Subject Matter

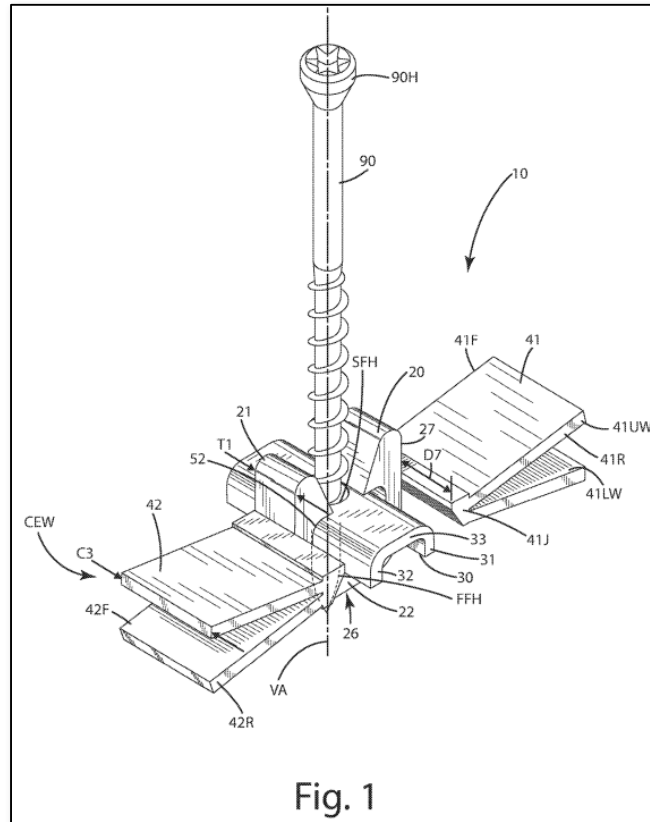
The '218 Patent is titled “Hidden Fastener Unit and Related Method of Use.” EX. 1001, Face. The '218 Patent “relates to a fastener unit configured to fasten work pieces, such as boards, to support structures, such as joists, and more particularly to a fastener unit that engages a groove in the side of a board to secure the board to a support structure.” *Id.*, 1:6-10. The '218 Patent states that “nails or screws” used to fasten boards to joists “can frequently become discolored over time[] or can work themselves loose from the board and project upward from the board surface.” *Id.*, 1:19-21. The '218 Patent explains that “[n]ot only are these results aesthetically displeasing, they can present safety hazards.” *Id.*, 1:21-22.

The '218 Patent concedes that hidden fastener systems existed before the priority date of the '218 Patent:

Some manufacturers have developed hidden fastener systems that fit loosely within grooves of adjacent boards. These hidden fasteners typically include a biscuit-shaped upper plate having two horizontal flanges that fit into the grooves defined by the sides of adjacent deck boards, a single center hole through which a fastener extends to secure to the underlying joist, and a base that extends downward from the upper plate to an underlying joist.

Id., 1:23-30.

FIG.1 is representative of the disclosure of the '218 Patent and is reproduced below.



Id., FIG. 1. The Challenged Claim is reproduced below.

17. A fastener unit adapted to secure at least one board to a support, the fastener unit comprising:

a spacer block defining a first fastener hole, the spacer block having a thickness extending from a front surface to a rear surface, the thickness corresponding to a gap between a first board and a second adjacent board, the spacer block including a vertical axis;

a grip element extending from the spacer block, the grip element configured to fit in and engage a first groove defined by the first board, without the spacer block extending into the first groove, the grip element configured to receive a fastener through at least a portion of the grip element;

wherein the spacer block includes a first resilient compression element extending from the spacer block, the first resilient compression element being vertically compressible toward a first plane that is transverse to the vertical axis, the first resilient compression element configured to compress and fit in, and forcibly expand within the first groove of the first board, thereby securing the spacer block in a position adjacent the first groove defined by the first board, with the spacer block being disposed in the gap between the first board and the second adjacent board.

Id., Claim 17; *see also id.*, 1:56-63.

B. Claim Listing

A full claim listing is included as EX. 1007 and this Petition adopts the labeling scheme reflected therein.

C. Relevant Prosecution History of Application 16/011,213

Application 16/011,213, which issued as the '218 Patent, was first filed June 18, 2018. EX. 1001, Face. The Examiner issued an *Ex Parte* Quayle Action on May

31, 2019, objecting to Claims 1-20. EX. 1002, 33-34. Specifically, the examiner included the following objections, stating the application was otherwise in condition for allowance:

4. This application is in condition for allowance except for the following formal matters:
 - a. **Claim 1** (approx. 2nd line from the end): delete the phrase “can be” and replace with --is--.
 - b. **Claim 8** (approx. line 3): delete the phrase “can establish” and replace with --establishes--.
 - c. **Claim 9** (approx. 2nd line from the end): delete the phrase “can be” and replace with --is--.
 - d. **Claim 12** (approx. 2nd line from the end): delete the phrase “can be” and replace with --is--.
 - e. **Claim 20** (1st step): “providing a fastener unit including...” should be --providing the fastener unit including...--.
 - f. **Claim 20** (2nd to last line of the 1st step): delete the word “generally”.

EX. 1002, 35-36.

On June 14, 2019, the Examiner issued a Notice of Allowance. *Id.*, 8. The examiner gave the following reasons for allowance:

2. The following is the Examiner's statement of reasons for allowance:

The prior art of record neither teaches nor suggests as a whole, either alone or in combination, a fastener unit having the combination of structural elements set forth in the independent claims, the structural cooperative relationships of elements set forth in the independent claims and the recited configuration providing the capability of performing the functions set forth in the independent claims. In this regard, it is the Examiner's view, based on a totality of the record, that it would not have been obvious to modify the relevant prior art to arrive at the claimed invention, as any modification of the prior art of record that would arrive at the claimed invention would require improper hindsight. In this instance, the preponderance of evidence lies on the side of Applicant.

Id., 13. As described above, the Examiner did not issue *any* prior art rejections during the prosecution of application 16/011,213. *See id.*, *generally*. Notably, the Examiner had not considered *Kitaura* (EX. 1004), *Kinnunen* (EX. 1006), or the Declaration of Dr. Klopp (EX. 1003) when the Notice of Allowance was issued. *Id.*

D. Level of Ordinary Skill in the Art

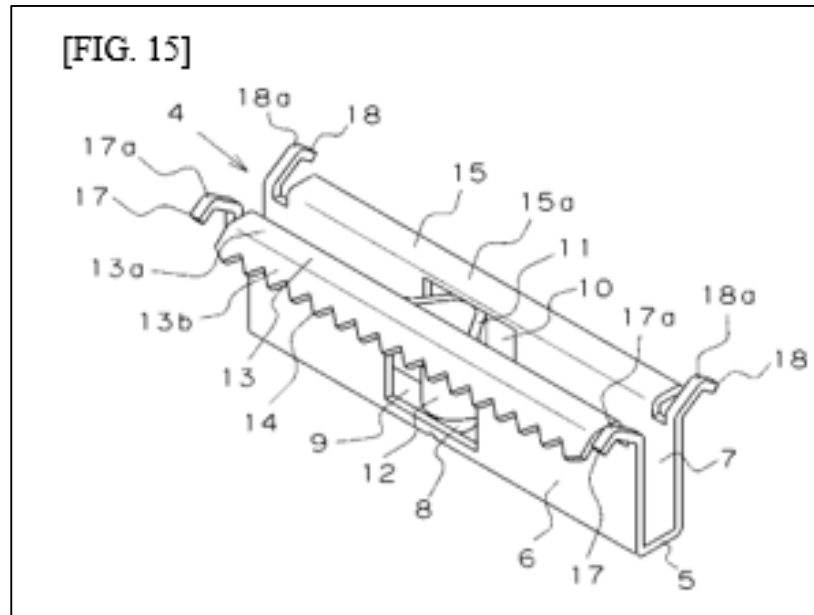
A POSITA would have at least an Associate's Degree in Mechanical Engineering or a related field with at least two years of experience in the design or analysis of fastening and joining methods applicable to wood and composite materials in construction. Additional education can compensate for less experience and vice versa.

VI. SUMMARY OF PRIOR ART

As explained by Dr. Klopp in the attached declaration (EX. 1003), the subject matter of the claims of the '218 Patent was well known before August 15, 2017, the earliest possible priority date of the '218 Patent. *See* EX. 1003, ¶¶ 45-164. In addition to the background knowledge that a POSITA would have brought to bear on the subject matter discussed in the '218 Patent, the following prior art demonstrates that the subject matter of Claim 17 would have been well-known and obvious to a POSITA. *Id.*

A. *Kitaura* (EX. 1004)

Kitaura is an Unexamined Patent Application Publication published by the Japanese Patent Office titled “Deck Board Mounting Bracket and deck Board Mounting Structure.” EX. 1004, Face; *see also* EX. 1003, ¶ 36. *Kitaura* “relates to a deck board mounting bracket and a deck board mounting structure for mounting deck boards forming a deck floor in a veranda, a balcony, a rooftop, a park, a boardwalk, or the like to a deck board supporting member such as a lumber girder or floor joist.” EX. 1004, [0001]; *see also* EX. 1003, ¶ 36. *Kitaura*’s FIG. 15 is representative of its disclosure and reproduced below:



EX1004, FIG. 15; *see also* EX. 1003, ¶ 36.

Kitaura describes several problems with existing mounting brackets which it attempts to address, including:

- “there being little capacity to absorb temperature-change-induced expansion and contraction of the deck boards in the widthwise direction,” (EX. 1004, [0007]);
- “water and debris readily accumulating between the first half and the second half, creating a risk of corrosion depending on the material of the mounting bracket,” (*id.*); and
- “the upper parts of the mounting brackets being readily visible to individuals above the deck boards, potentially marring appearance” (*id.*).

See EX. 1003, ¶ 37.

Kitaura describes that its mounting bracket includes a bottom part which corresponds to the space between a “leading deck board” and “a following deck board.” *See id.*, [0028], [0036], and FIG. 12; *see also* EX1003, ¶ 38. Using the terminology of the ’218 Patent, the bottom part is a “spacer block.” *See infra*. Section VIII.A.2-4; *see also* EX. 1003, ¶ 38.

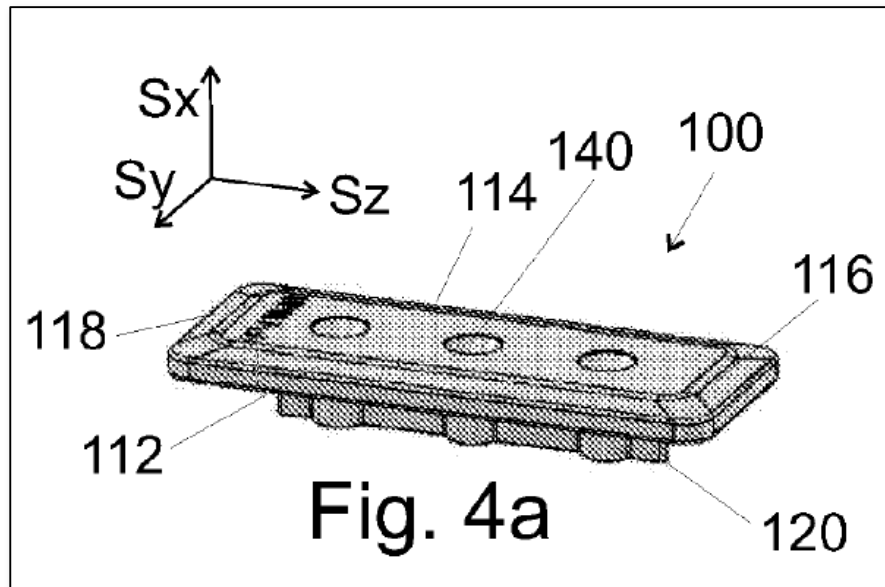
Kitaura also describes that its mounting bracket includes elements used in conjunction to secure the mounting bracket to the boards 1 while allowing for expansion and/or contraction in widthwise and lengthwise directions. *See* EX. 1004, [0041]-[0044]; *see also* EX. 1003, ¶ 39. Using the terminology of the ’218 Patent, these elements are a “grip element.” *See infra*. Section VIII.A.5-7; *see also* Ex. 1003, ¶ 39.

Finally, *Kitaura* describes that its mounting bracket includes “temporary fastening protrusions, which keep[] the mounting bracket from falling over and becoming dislodged from the groove in the deck board, or deviating from its prescribed position in the groove in the deck board groove contrary to the intent of a worker while the deck boards are being mounted.” EX. 1004, [0022]; *see also* EX. 1003, ¶ 40. Using the terminology of the ’218 Patent, at least one temporary fastening protrusion is a “resilient compression elements.” *See infra*. Section VIII.A.8-11; *see also* EX. 1003, ¶ 40.

B. Kinnunen (EX. 1006)

Kinnunen is a United States Patent Application Publication titled “A Fastening Member for Fastening Elongated Terrace Elements and an Arrangement Comprising

the Same.” EX. 1006, Face; *see also* EX. 1003, ¶ 41. *Kinnunen* “relates to a fastening member for elements such [as] boards” and “an arrangement wherein the elements are fastened using such fastening members.” Ex. 1006, [0001]; *see also* EX. 1003, ¶ 41. *Kinnunen*’s FIG. 4a is representative of its disclosure and reproduced below:



EX. 1006, FIG. 4a; *see also* EX. 1003, ¶ 41.

Kinnunen describes a problem with existing fastening members where “screws[] while penetrating through the elements both deteriorate the visual appearance and also provide a leakage for fluids, e.g. water, and moisture to penetrate into the element.” EX. 1006, [0002]; *see also* EX. 1003, ¶ 42. *Kinnunen* notes that “[t]his may reduce the service life of the decking board.” Ex. 1006, [0002]; *see also* EX. 1003, ¶ 42.

Kinnunen describes that its fastening member includes a “foot part 120” “[f]or a controlled separation between two elements.” EX. 1006, [0114]; *see also* EX. 1003,

¶ 43. Using the terminology of the '218 Patent, foot part 120 is a “spacer block.” *See infra*. Section VIII.B.3-5; *see also* EX. 1003, ¶ 43.

Kinnunen describes that its fastening member includes “extension 112” connected to “extension 114” to secure the mounting bracket to the elements. EX. 1006, [0094]-[0096] (“[A] fastening member 100 comprises *a first extension 112* ... extending in a second direction Sy, ... *a second extension 114 connected to the first extension 112* and extending in a direction -Sy...”); *see also id.*, [0207] (“Preferably at least the extensions 112 (optionally 114, 116, 118) ... fix the elements to a support.”); EX. 1003, ¶ 44. Using the terminology of the '218 Patent, “extension 112” connected to “extension 114” is a “grip element.” *See infra*. Section VIII.A.3-5; *see also* EX. 1003, ¶ 44. Specifically, *Kinnunen* describes a unified grip element because first and second extensions 112 and 114 are connected. *See* EX. 1003, ¶ 44.

VII. CLAIM CONSTRUCTION

Petitioner applies the ordinary and customary meanings of the claim terms.³ Express construction are not needed because the prior art invalidates the claims under any plausible construction.

³ Petitioner reserves all rights to challenge the claims under §112 or other relevant laws or regulations in district court or any other venue.

VIII. ASSERTED GROUNDS OF INVALIDITY

A. Grounds 1: Claim 17 is Anticipated by *Kitaura* Under 35 U.S.C. § 102

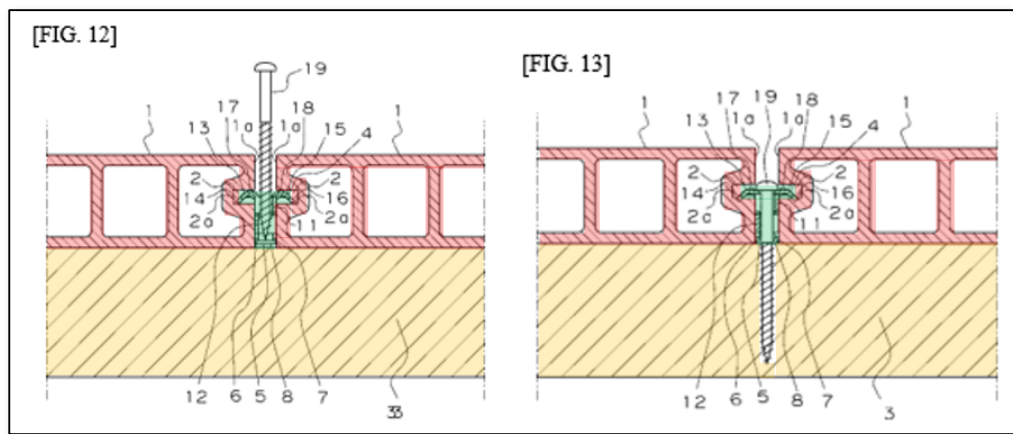
Claim 17 is anticipated by *Kitaura* for the reasons set forth below.⁴ *See* EX. 1003, ¶¶ 46-120.

1. Claim 17[p]: “A fastener unit adapted to secure at least one board to a support, the fastener unit comprising:”

Kitaura discloses the preamble to the extent it is limiting. *See* EX. 1003, ¶ 47. For example, *Kitaura* describes that “[t]he *deck board 1 is mounted on a deck board supporting member 3* shown in FIGS. 10–14, such as a lumber girder or floor joist composed of wood, engineered wood, a metal such as steel, or the like, *using a deck*

⁴ *Kitaura* includes two examples. *See* EX. 1004, [0025], [0051]. *Kitaura* states that in its second example, “the shapes and installation positions of the first and second temporary fastening protrusions 17, 18 have been modified” (EX. 1004, [0051]) but clarifies that “the other features are the same as in example 1,” and that “...the same effects as in example 1 can be obtained” (*see* EX. 1004, [0053] and [0058]). Accordingly, for “the shapes and installation positions” of the temporary fastening protrusions (*i.e.*, the “recited resilient compression element”) the Petition cites to the description and FIGs. associated with *Kitaura*’s example 2, and for all other features, the Petition cites to all description and FIGs. of *Kitaura* interchangeably.

board mounting bracket 4... EX. 1004, [0026].⁵ Here, a POSITA would have understood that the recited “fastener unit” is the disclosed “deck board mounting bracket 4,” that the recited “at least one board” is the disclosed “deck board 1,” and that the recited “support” is the disclosed “deck board supporting member 3.” See EX. 1003, ¶ 47. The spatial relationship of these elements is shown below in the annotated FIGs. 12 and 13 from *Kitaura. Id.*



EX. 1004, FIGs. 12 and 13 (annotated to show deck boards 1 in red, deck board supporting member 3 in orange, and deck board mounting bracket 4 in green).⁶

⁵ All emphasis is added unless otherwise noted.

⁶ As shown in the annotated FIGs. 12 and 13, deck board 1 may be multiple deck boards 1. See e.g., EX. 1004, [0038] (“...thereby allowing *the leading and following deck boards 1* to be tightened via the deck board mounting bracket 4.”); see also EX. 1003, ¶ 47, fn. 28.

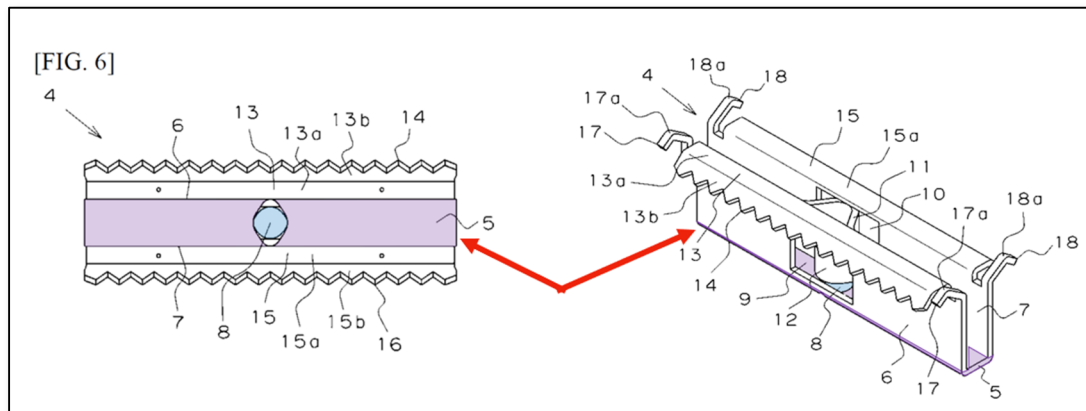
As shown above, mounting bracket 4 in green (*i.e.*, the recited “fastener unit”) secures deck boards 1 in red (*i.e.*, the recited “board”) to supporting member 3 in orange (*i.e.*, the recited “support”) as the fastener is inserted. *See* EX. 1004, [0038] (“. . . the screw 19 progressively descends, passes through the screw insertion hole 8 in the bottom part 5 of the deck board mounting bracket 4, and enters the deck board supporting member 3, ***thereby allowing the leading and following deck boards 1 to be tightened via the deck board mounting bracket 4.***”); *see also* EX. 1004, [0001]; EX. 1003, ¶ 48.

For at least these reasons, a POSITA would have understood that *Kitaura* discloses the preamble. EX. 1003, ¶ 49.

2. Claim 17[a]: “a spacer block defining a first fastener hole,”

Kitaura discloses “a spacer block defining a first fastener hole.” EX. 1003, ¶ 50. For example, *Kitaura* describes “[a] ***bottom part 5*** ha[ving] an elongated, flat, and rectangular shape that extends in a plane that is horizontal when the deck board mounting bracket 4 is placed horizontally.” EX. 1004, [0028]; *see also* EX. 1003, ¶ 51. *Kitaura* further describes that “[a] ***screw insertion hole 8 is provided in the bottom part 5.***” EX. 1004, [0028]; *see also* EX. 1003, ¶ 51. Here, a POSITA would have understood that the recited “spacer block” is the disclosed “bottom part 5” and that the recited “first fastener hole” is the disclosed “screw insertion hole 8.” EX. 1003, ¶ 52. The spatial relationship of these elements is shown below in the

annotated FIGs. 6 and 15 from *Kitaura. Id.*



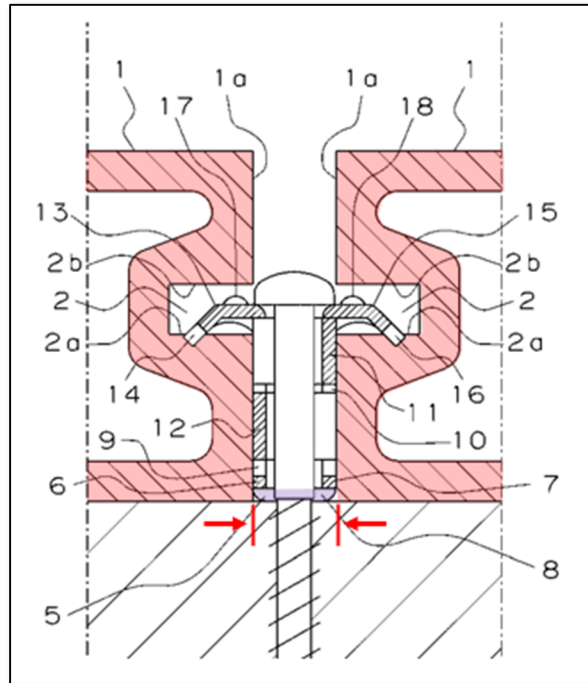
EX. 1004, FIGs. 6 and 15 (annotated to show bottom part 5 in purple and screw insertion hole 8 in blue). As shown above, bottom part 5 (*i.e.*, the recited “spacer block”) defines a screw insertion hole 8 (*i.e.*, the recited “first fastener hole”). See EX. 1003, ¶ 53.

Bottom part 5 is the recited “spacer block” at least because its thickness corresponds to the gap between deck boards 1. See *Id.*, ¶ 54. For example, *Kitaura* describes that:

A bottom part 5 has an elongated, flat, and rectangular shape that extends in a plane that is horizontal when the deck board mounting bracket 4 is placed horizontally. A first rising face 6 and a second rising face 7 that are flat and *bent in the orthogonal direction upward from the bottom part 5 are provided at both ends of the bottom part 5 in the widthwise direction.*

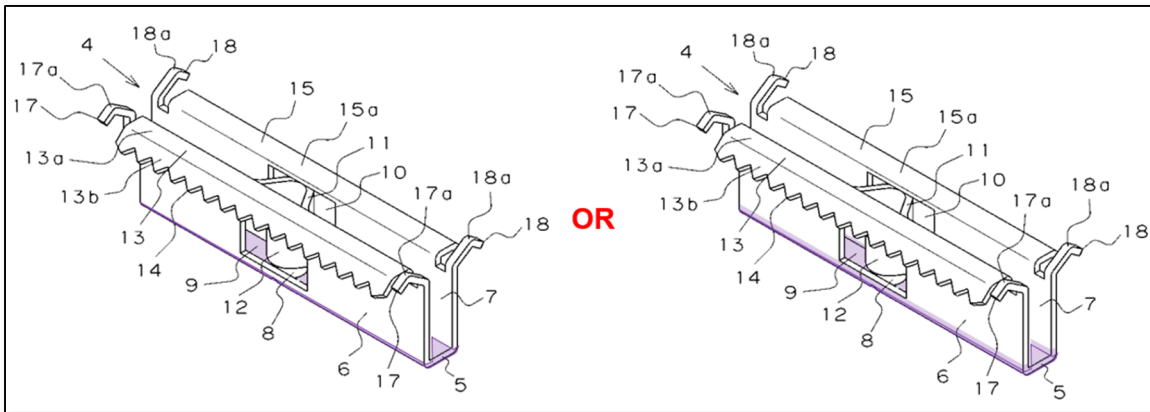
EX. 1004, [0028]. Accordingly, deck boards 1 are spaced apart by a distance defined

by the ends of bottom part 5 in the widthwise direction. See EX. 1003, ¶ 55. This spatial relationship is illustrated below in the annotated FIG. 14 from *Kitaura. Id.*

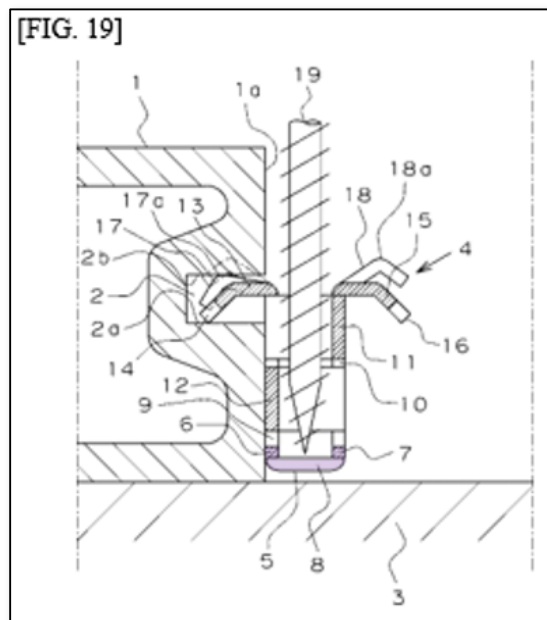


EX. 1004, FIG 14 (excerpted and annotated to show bottom part 5 in purple and deck boards 1 in red).

Alternatively, a POSITA would have understood that portions of first rising face 6 and second rising face 7 may be considered part of the recited “spacer block.” EX. 1003, ¶ 57. Specifically, a POSITA would have understood that the bottom of first open part 9 and second open part 10 provide a natural delineation for which portions of rising faces 6 and 7 belong to the recited “spacer block” as shown below. *Id.*



EX. 1004, FIGs. 15 (annotated to show the recited “spacer block” as bottom part 5 only (left) highlighted in purple and the alternative where the recited “spacer block” also includes portions of first rising face 6 and second rising face 7 up to the bottom of first open part 9 and second open part 10, also highlighted in purple).



EX. 1004, FIG. 19 (annotated to show a profile view of the mounting bracket with the portions making up the alternative embodiment of recited “spacer block” in

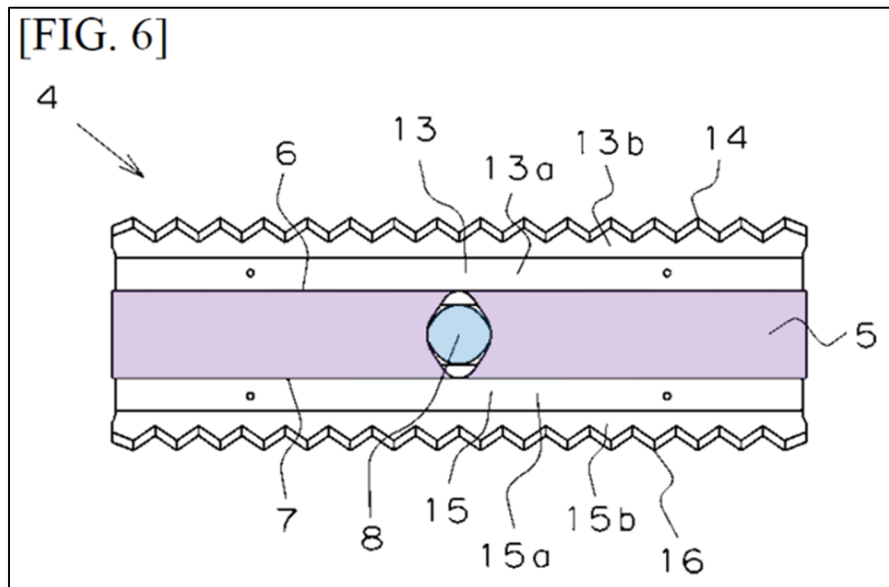
purple).

Besides the natural delineation of first open part 9 and second open part 10, a POSITA would have understood that the portions of first rising face 6 and second rising face 7 acting as a “grip element” (explained *infra*. Section VIII.A.5-7) would deform more in portions away from bottom part 5 and that the portions closest to bottom part 5 would be unlikely to deform at all. EX. 1003, ¶ 57. Thus, a POSITA would have understood that the lowest portion of first rising face 6 and second rising face 7 act as part of the recited “spacer block.” *Id.*

Screw insertion hole 8 is the recited “first fastener hole” at least because it is a hole designed for the fastener to pass through. *See* EX. 1004, [0035] (“... a screw 19 is inserted part way into ***an insertion path for the screw 19 constituted by the screw insertion hole 8*** ...”); [0038] (“Next, when ***the screw 19*** is rotated in the tightening direction, the screw 19 progressively descends, ***passes through the screw insertion hole 8 in the bottom part 5*** of the deck board mounting bracket 4, and enters the deck board supporting member 3, ...”); *see also* EX. 1003, ¶ 58.

Bottom part 5 (*i.e.*, the recited “spacer block”) defines screw insertion hole 8 (*i.e.*, the recited “first fastener hole”) as claimed at least because screw insertion hole 8 is a hole punched out of bottom part 5 and bottom part 5 surrounds screw insertion hole 8. *See* EX. 1004, [0028] (“A screw insertion hole 8 is provided in the bottom part 5. In the present example, the screw insertion hole 8 is formed by first punching

a hole in the sheet of metal, . . .”); *see also* EX. 1003, ¶ 59.



EX. 1004, FIG. 6 (bottom view of mounting bracket 4 annotated to show bottom part 5 in purple and screw insertion hole 8 in blue).

Thus, *Kitaura* discloses Claim 17[a]. *See* EX. 1003, ¶¶ 60-61.

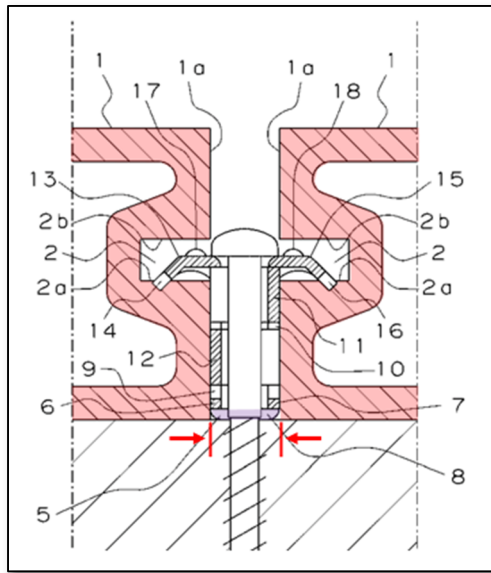
3. Claim 17[b]: “the spacer block having a thickness extending from a front surface to a rear surface, the thickness corresponding to a gap between a first board and a second adjacent board,”

Kitaura discloses “the spacer block having a thickness extending from a front surface to a rear surface, the thickness corresponding to a gap between a first board and a second adjacent board.” EX. 1003, ¶ 62. As discussed above, a POSITA would have understood the bottom part 5 disclosed in *Kitaura* as the recited “spacer

block.”⁷ EX. 1003, ¶ 63. *Kitaura* describes that “[a] first rising face 6 and a second rising face 7 that are flat and bent in the orthogonal direction upward from the bottom part 5 are provided ***at both ends of the bottom part 5 in the widthwise direction.***” EX. 1004, [0028]; *see also* EX. 1003, ¶ 63. Here, a POSITA would have understood that the recited “front surface” is the disclosed first end of “bottom part 5” and the recited “rear surface” is the disclosed second end of “bottom part 5.”⁸ *See* EX. 1003, ¶ 63. A POSITA would have understood the recited “thickness extending from a front surface to a rear surface,” is the disclosed distance between “the ends of the bottom part 5 in the widthwise direction.” *See* EX. 1003, ¶ 64. The spatial relationship of these elements is shown below in the annotated FIG. 14 from *Kitaura*. *Id.*

⁷ Or, as explained above, a POSITA would understand portions of first rising face 6 and second rising face 7 may combine with bottom part 5 to form the recited “spacer block”).

⁸ A POSITA would have understood that in the embodiment where portions of first rising face 6 and second rising face 7 make up part of the recited “spacer block,” the front surface may alternatively be the outer surface of first rising face 6 and the rear surface may alternatively be the outer surface of second rising face 7. EX. 1003, ¶ 63, fn. 37. The recited thickness is the same. *Id.*



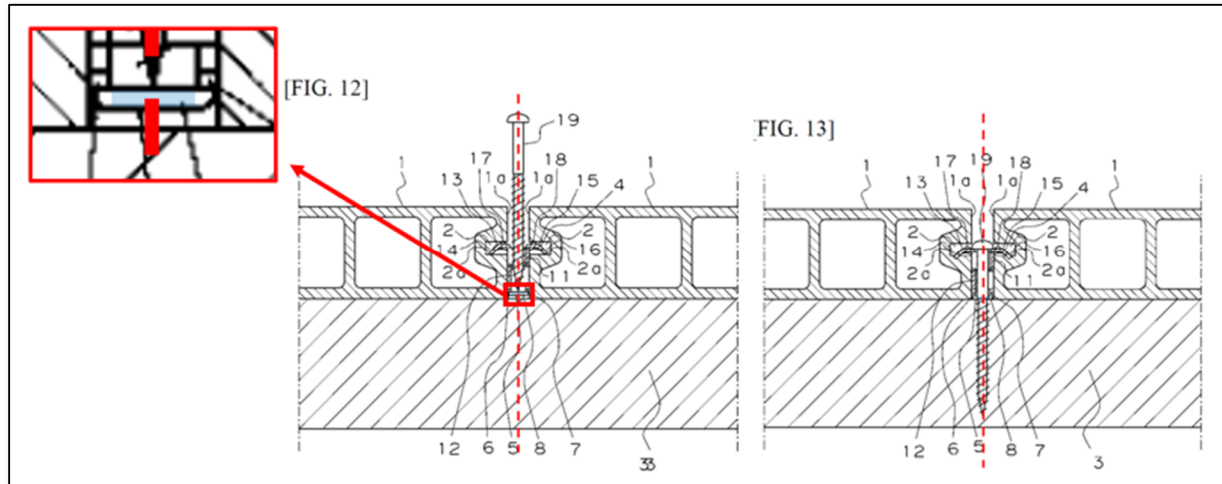
EX. 1004, FIG. 14 (excerpted and annotated to show bottom part 5 in purple and deck boards 1 in red). As discussed above, deck boards 1 will be spaced apart at a distance defined by *the ends of bottom part 5 in the widthwise direction* (i.e., the recited “thickness corresponding to [the] gap”). See EX. 1003, ¶ 65.

Thus, *Kitaura* discloses Claim 17[b]. *See id.*, ¶ 66.

4. **Claim 17[c]: “the spacer block including a vertical axis;”**

Kitaura discloses “the spacer block including a vertical axis.” *See id.*, ¶ 67. For example, *Kitaura* describes that “[a] screw insertion hole 8 is provided in the bottom part 5” and that “bottom part 5 has [a] . . . shape that extends in a plane that is horizontal when the deck board mounting bracket 4 is placed horizontally.” EX. 1004, [0028]. Thus, a POSITA would have understood that the axis running through screw insertion hole 8, is the recited vertical axis. *See* EX. 1003, ¶ 68. The spatial

relationship of these elements is shown below in the annotated FIGs. 12 and 13 from *Kitaura. Id.*

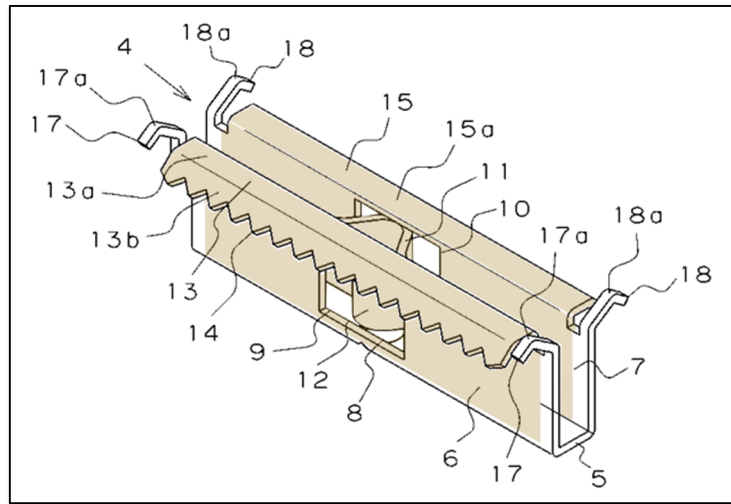


EX. 1004, FIGs. 12 and 13 (annotated to show screw insertion hole 8 in blue and the vertical axis as a dashed red line).

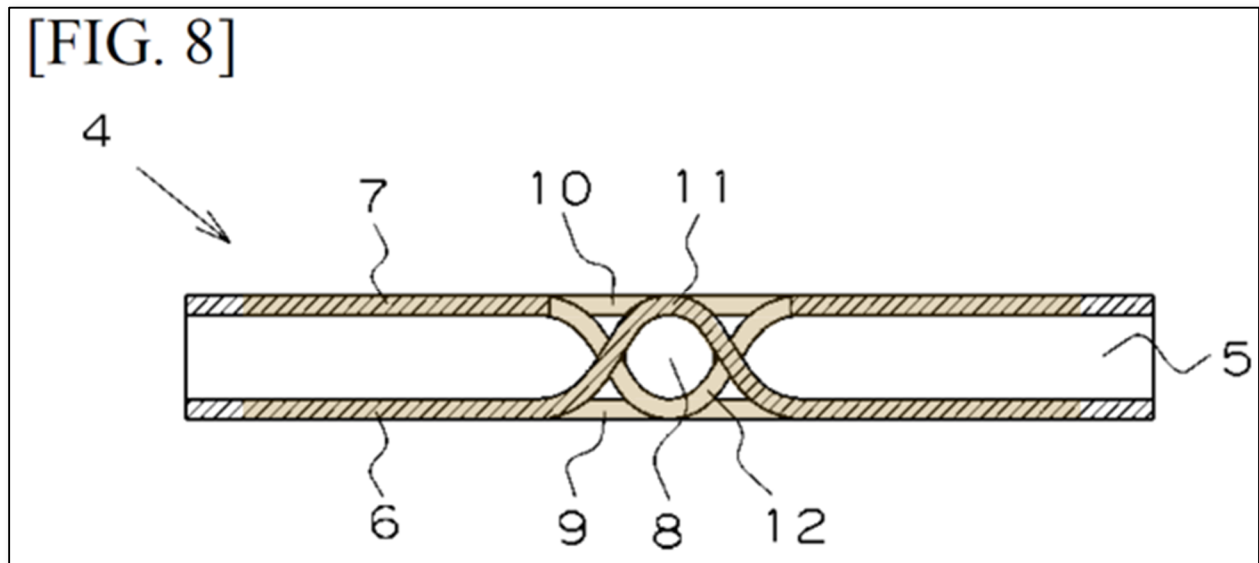
Thus, *Kitaura* discloses Claim 17[c]. See EX. 1003, ¶ 70.

5. Claim 17[d]: “a grip element extending from the spacer block,”

Kitaura discloses “a grip element extending from the spacer block.” See EX. 1003, ¶ 71. For the reasons discussed below, the portions of *Kitaura*’s mounting bracket 4 highlighted in brown are the recited “grip element”:



EX. 1004, FIG. 15 (annotated to show the elements making up the recited “grip element” in brown). See EX. 1003, ¶ 71.



EX. 1004, FIG. 8 (annotated to show the recited “grip element” in brown). See EX. 1003, ¶ 71.

For example, *Kitaura* first describes:

A first fastening part 13 that bends from the upper end of

the *first rising face 6* in the lateral direction away from the second rising face 7 is formed on said upper end. Downward-projecting triangular tooth-shaped first fastening part *biting protrusions 14* are provided on the distal end of the *first fastening part 13*. More specifically, the *first fastening part 13* comprises a first horizontal part 13a having a flat main part that is bent in the orthogonal direction from the *first rising face 6* and a *first slanted part 13b* that is bent diagonally downward from the *first horizontal part 13a*, and the first fastening part *biting protrusions 14* are provided on the distal end of the *first slanted part 13b* and project diagonally downward.

EX. 1004, [0030]. A POSITA would have understood that all of first fastening part 13, biting protrusions 14, and portions of rising face 6 form part of the recited “grip element” for the reasons discussed below. *See* EX. 1003, ¶¶ 72-73.

Next, *Kitaura* describes:

Similarly, a *second fastening part 15* that bends from the upper end of the *second rising face 7* in the lateral direction away from the first rising face 6 is formed on said upper end. Downward-projecting triangular tooth-shaped second fastening part *biting protrusions 16* are provided on the distal end of the *second fastening part 15*. More specifically, the *second fastening part 15* comprises a *second horizontal part 15a* having a flat main part that is

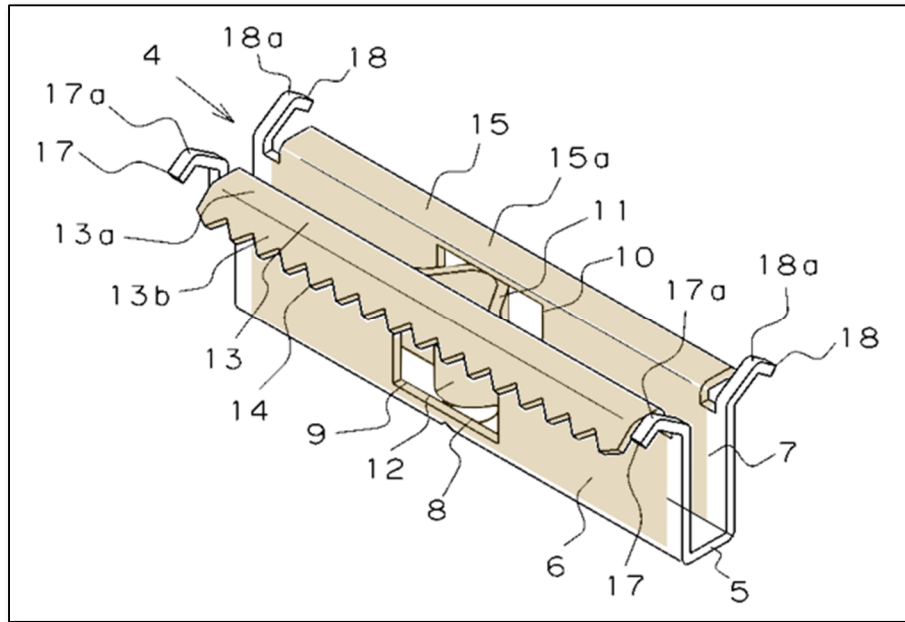
bent in the orthogonal direction from the *second rising face 7* and a *second slanted part 15b* that is bent diagonally downward from the *second horizontal part 15a*, and the *second fastening part biting protrusions 16* are provided on the distal end of the *second slanted part 15b* and project diagonally downward.

EX. 1004, [0031]. A POSITA would have understood that all of second fastening part 15, biting protrusions 16, and portions of rising face 7 form part of the recited “grip element” as discussed below. See EX. 1003, ¶¶ 74-75.

Finally, *Kitaura* describes:

A *first screw-supporting part 11* projecting into the second open part 10 is formed in the center of the first rising face 6 on the upper side by leaving both ends of the first rising face 6 in the lateral direction uncut, and curvingly projecting the same toward the second rising face 7 so as to form a general arc shape, the axial direction thereof being in the vertical direction. A *second screw-supporting part 12* projecting into the first open part 9 is formed in the center of the upper side of the second rising face 7 by leaving both ends of the second rising face 7 in the lateral direction uncut and curvingly projecting the same toward the first rising face 6 so as to form a general arc shape the axial direction thereof being in the vertical direction.

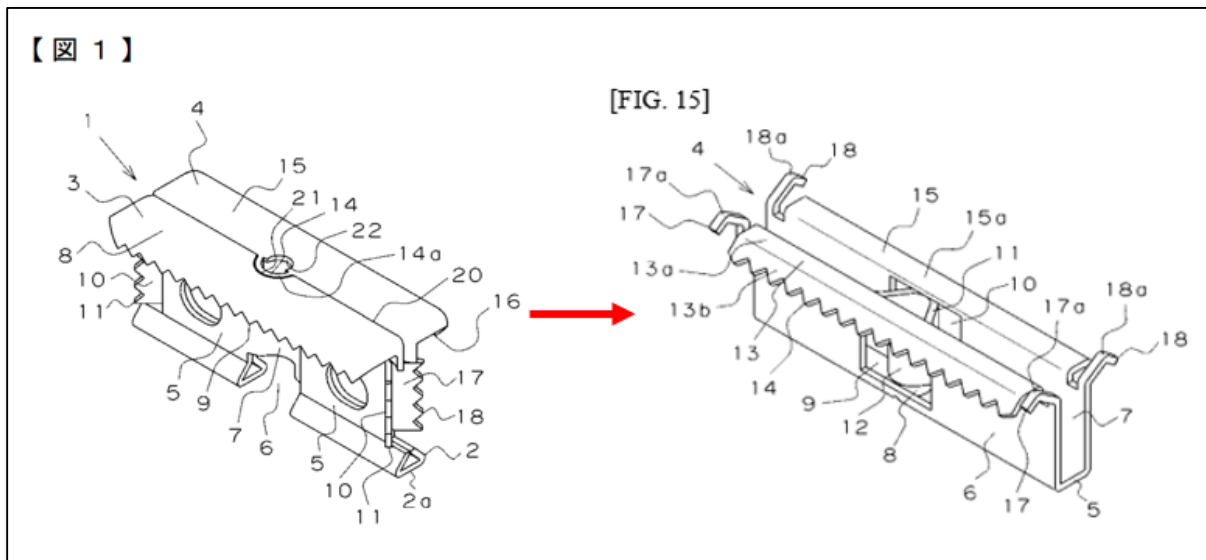
EX. 1004, [0029]. A POSITA would have understood that all of first screw-supporting part 11 and second screw supporting part 12 form part of the recited “grip element” as discussed below. *See* EX. 1003, ¶¶ 76-77. The spatial relationship of these components is shown below in the annotated FIG. 15 from *Kitaura. Id.*



EX. 1004, FIG. 15 (annotated to show the elements forming the recited “grip element” in brown).

A POSITA would have understood that the above-described elements (*i.e.*, those described above and highlighted in brown in the annotated figure above) form the recited “grip element” at least because they work together to secure the mounting bracket 4 to the boards 1 in a way consistent with *Kitaura*’s described design goals. *See* EX. 1003, ¶ 78. For example, *Kitaura* describes “one object of the present invention is to provide a deck board mounting bracket and a deck board mounting

structure that are capable of increasing the amount of temperature-change-induced expansion and contraction of deck boards in the widthwise direction of the deck boards that can be absorbed.” EX. 1004, [0009]. *Kitaura* was concerned with improving on JP 2011-236601 (*Kitaura* ’601) (EX. 1011) which is referred to in *Kitaura* as “Patent Document 2.” EX. 1004, [0006]. *Kitaura* recognized a problem in *Kitaura* ’601 where “the folded-back part that forms the boundary between the first half and the second half progressively narrows in width towards the top, and the first opposing face of the first half and the second opposing face of the second half are provided in proximity to each other, resulting in problems such as (a) there being little capacity to absorb temperature-change-induced expansion and contraction of the deck boards in the widthwise direction . . .” EX. 1004, [0007]. *Kitaura* addressed this identified problem of *Kitaura* ’601 by increasing the distance between the “first half” and the “second half” described above. *See* EX. 1003, ¶ 78.



Kitaura '601 at FIG. 1 and EX. 1004, FIG. 15 (showing *Kitaura* '601 (left) and *Kitaura* (right)). As shown above, besides increasing the distance between the “first half” and the “second half,” *Kitaura* also adds first screw-supporting part 11 and second screw supporting part 12 to its design, as compared to *Kitaura* '601. See EX. 1003, ¶ 79.

Kitaura describes how the above-described components act in concert to meet *Kitaura*'s design goal of securing boards 1 to deck board supporting member 3 while allowing for expansion and/or contraction of the boards 1. See *id.*, ¶ 80. For example, *Kitaura* describes that “[i]n this deck board mounting bracket 4 and deck board mounting structure, when the screw 19 is tightened, the **first fastening part biting protrusions 14** and the **second fastening part biting protrusions 16 bite into the lower surfaces 2a of the mounting grooves 2 in the deck boards 1 on both sides**

and fasten the deck boards 1 on both sides, thus making it possible to prevent *unrestricted movement of the deck boards 1 in the widthwise direction and the lengthwise direction.*” EX. 1004, [0040]. In other words, *Kitaura* describes that the first and second fastening parts 13 and 15 (including first and second fastening part biting protrusions 14 and 16) act to limit the unrestricted movement of deck boards 1 in both the widthwise and lengthwise directions. *See* EX. 1003, ¶ 80.

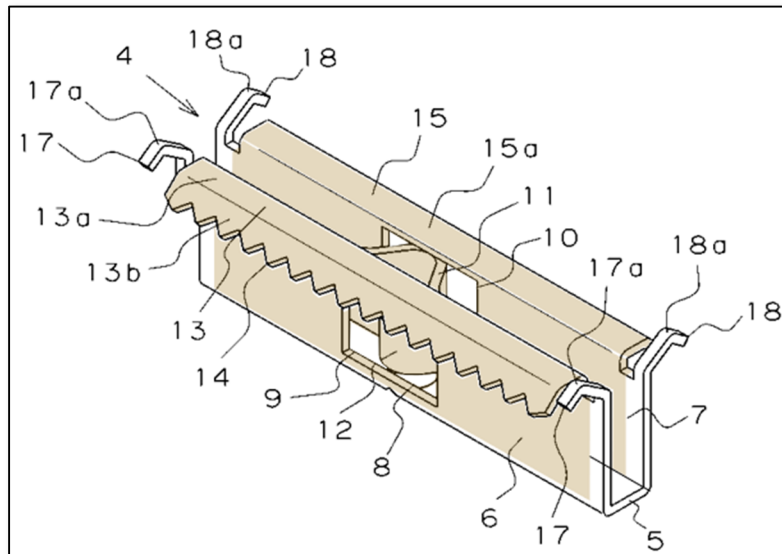
However, as discussed above, *Kitaura* recognized that the deck boards 1 may expand and/or contract and thus *Kitaura* describes that “even if the deck boards 1 expand or contract in the widthwise direction of the deck boards 1 (the left-right direction in FIGS. 13 and 14) due to changes in temperature, the distance between the *first rising face 6 and the second rising face 7 changes in such a way that the distance between the first fastening part 13 and the second fastening part 15 changes . . . thus making it possible to absorb the expansion or contraction of the deck boards 1.*” EX. 1004, [0041]. Accordingly, *Kitaura* describes how rising faces 6 and 7 act—with fastening parts 13 and 15 (including first and second fastening part biting protrusions 14 and 16)—to allow *Kitaura*’s grip element to absorb expansion or contraction in the **widthwise** direction. *See* EX. 1003, ¶ 81.

Kitaura also describes how its grip element accommodates lengthwise expansion and/or contraction of the deck boards 1. *See* EX. 1003, ¶ 82. For example, *Kitaura* explains “[a]s concerns the lengthwise direction of the deck boards 1 [],

by making the inner diameter of the part of the deck board mounting bracket 4 into which the screw 19 is inserted (*between the inner surface of the first screw-supporting part 11 and the inner surface of the second screw-supporting part 12* and into the screw insertion hole 8) sufficiently larger than the shank diameter of the screw 19 and creating play therebetween, *or through elastic deformation of the first screw-supporting part 11 and the second screw-supporting part 12*, relative movement between the screw 19 and the deck board mounting bracket 4 becomes possible, thus making it possible to absorb expansion and contraction of the deck boards 1 caused by changes in temperature.” EX. 1004, [0042]. Accordingly, *Kitaura* describes how first screw-supporting part 11 and second screw-supporting part 12 act—with rising faces 6 and 7 as well as fastening parts 13 and 15 (including first and second fastening part biting protrusions 14 and 16)—to allow *Kitaura*’s grip element to absorb expansion and/or contraction in the *lengthwise* direction. See EX. 1003, ¶ 82.

Accordingly, a POSITA would have understood that all of portions of rising face 6, portions of rising face 7, first fastening part 13, biting protrusions 14, second fastening part 15, biting protrusions 16, first screw-supporting part 11, and second screw supporting part 12 form the recited grip element at least because they all work together to secure the mounting bracket 4 to the boards 1 while allowing for expansion and/or contraction of the boards 1 according to an express design goal of

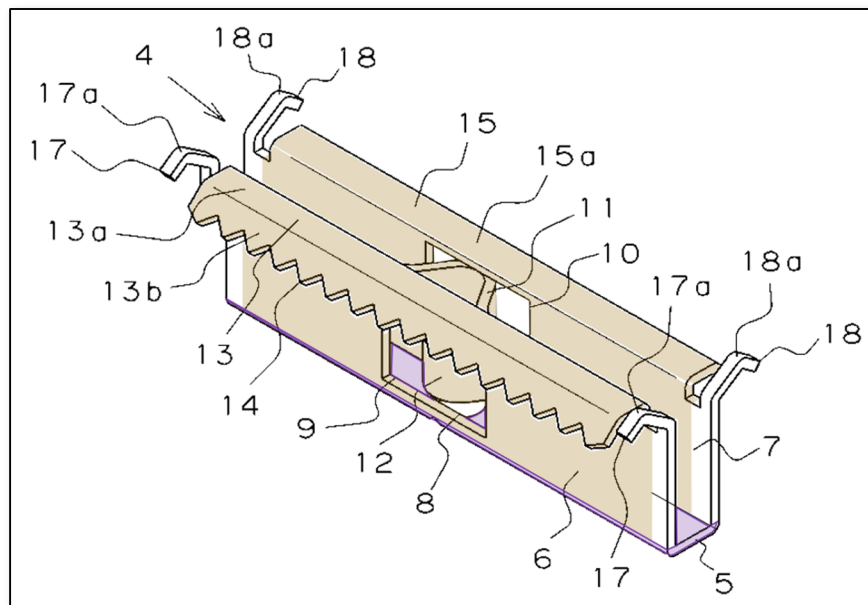
Kitaura. See EX. 1003, ¶ 83. Thus, a POSITA would have understood the elements highlighted in brown in the annotated FIG. 15 of *Kitaura* below as being the recited “grip element.” *Id.*



EX. 1004, FIG. 15 (annotated to show the elements forming the recited “grip element” in brown).

A POSITA further would have understood that *Kitaura*’s grip element extends from bottom part 5 (*i.e.*, the recited “spacer block”). See EX. 1003, ¶ 84. For example, *Kitaura* describes “[a] first rising face 6 and a second rising face 7 that are flat and bent in the orthogonal direction upward from the bottom part 5 are provided at both ends of the bottom part 5 in the widthwise direction.” EX. 1004, [0028]. *Kitaura* also describes that “a first fastening part 13 that bends from the upper end of the first rising face 6 in the lateral direction away from the second rising face 7 is

formed on said upper end” and “a second fastening part 15 that bends from the upper end of the second rising face 7 in the lateral direction away from the first rising face 6 is formed on said upper end.” EX. 1004, [0030] and [0031]. *Kitaura* further describes “first screw-supporting part 11 projecting into the second open part 10 is formed in the center of the first rising face 6” and “a second screw-supporting part 12 projecting into the first open part 9 is formed in the center of the upper side of the second rising face 7.” EX. 1004, [0029]. The spatial relationship of these elements is shown below in the annotated FIG. 15 from *Kitaura*. See EX. 1003, ¶ 80.



EX. 1004, FIG. 15 (annotated to show the “grip element” in brown and bottom part 5 (*i.e.*, the recited “spacer block”) in purple). As shown above and described in the above excerpts from *Kitaura*, the portions of rising faces 6 and 7 in *Kitaura*’s grip element are “provided at both ends of the bottom part 5 [(*i.e.*, the recited “spacer

block”)] in the widthwise direction.”⁹ See EX. 1004, [0028]. Accordingly, a POSITA would have understood that *Kitaura*’s grip element extends from bottom part 5 (*i.e.*, the recited “spacer block”). See EX. 1003, ¶ 85.

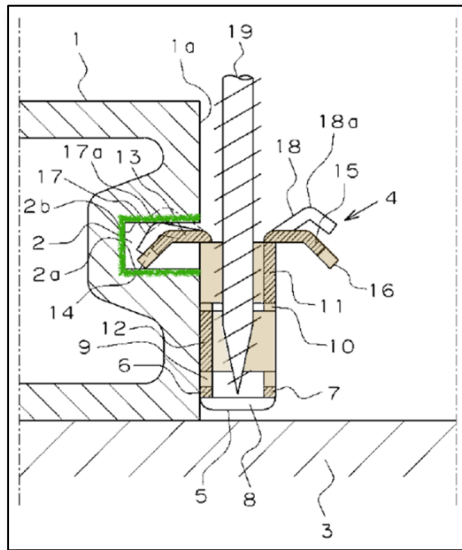
Thus, *Kitaura* discloses Claim 17[d]. See *id.*, ¶ 86.

6. Claim 17[e]: “the grip element configured to fit in and engage a first groove defined by the first board, without the spacer block extending into the first groove”

Kitaura discloses “the grip element configured to fit in and engage a first groove defined by the first board, without the spacer block extending into the first groove.” See EX. 1003, ¶ 87. First, *Kitaura* discloses that the grip element fits in the groove of the first board. See *id.*, ¶ 88. For example, *Kitaura* describes that “the first fastening part 13 is inserted into the mounting groove 2 in the deck board 1, and the first rising face 6 is brought into contact with the side surface 1a of the deck board 1.” EX. 1004, [0035]. *Kitaura* also describes that “first rising face 6 and a second rising face 7 [] are flat and bent in the orthogonal direction upward from the bottom part 5 [] at both ends of the bottom part 5 in the widthwise direction.” EX. 1004, [0028]. The spatial relationship of these elements is shown below in the annotated

⁹ This is true whether the recited “spacer block” is bottom part 5 only, as shown, or if it includes portions of rising faces 6 and 7 as described in the alternative discussed above with respect to Claim 17[a]. See *supra*. Section VIII.A.2.

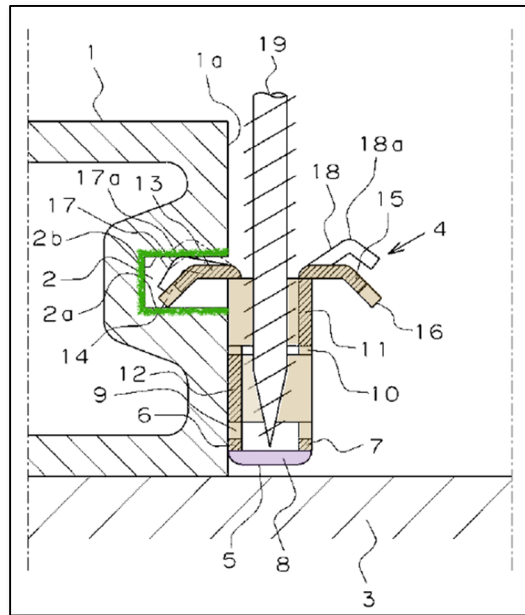
FIG. 19 from *Kitaura*. See EX. 1003, ¶ 89.



EX. 1004, FIG. 19 (annotated to show mounting groove 2 in green and the elements described above as disclosing the grip element in brown). As shown above, first fastening part 13 (*i.e.*, a portion of the recited “grip element” as discussed above) fits in mounting groove 2 (*i.e.*, the recited “first groove defined by the first board”). See EX. 1003, ¶ 90.

Next, *Kitaura* discloses that the grip element engages the groove. See *id.*, ¶ 91. For example, *Kitaura* describes that biting protrusions 14 (also part of the recited “grip element” as described above) “*bite* into the lower surfaces 2a of the mounting grooves 2 in the deck boards 1.” EX. 1004, [0038].

Finally, *Kitaura* discloses that bottom part 5 (*i.e.*, the recited “spacer block”) does not extend into the groove. See EX. 1003, ¶ 92. The spatial relationship of these components is shown below in the annotated FIG. 19 from *Kitaura*. See *id.*, ¶ 92.



EX. 1004, FIG. 19 (annotated to show mounting groove 2 in green, bottom part 5 in purple, and the elements described above as disclosing the grip element in brown). As shown above, bottom part 5 (*i.e.*, the recited “spacer block”) does not extend into mounting groove 2.¹⁰ See EX. 1003, ¶ 93.

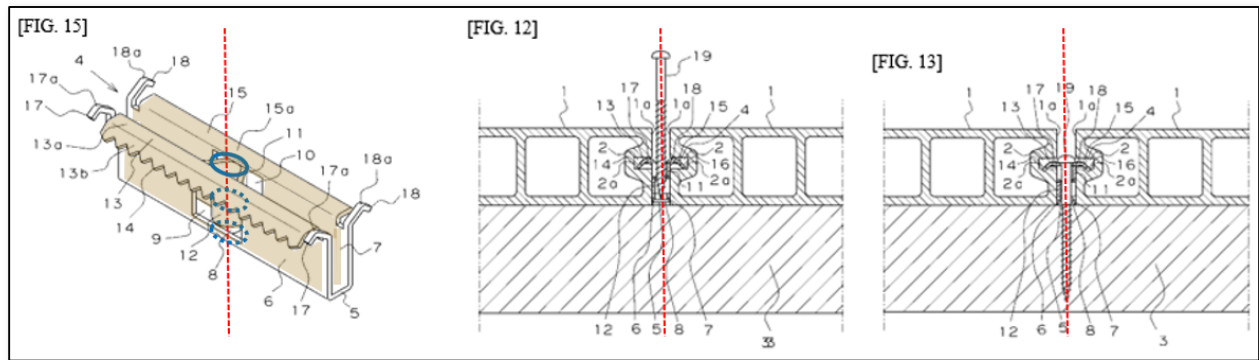
Thus, *Kitaura* discloses Claim 17[e]. See *id.*, ¶ 94.

7. Claim 17[f]: “the grip element configured to receive a fastener through at least a portion of the grip element”

Kitaura discloses “the grip element configured to receive a fastener through

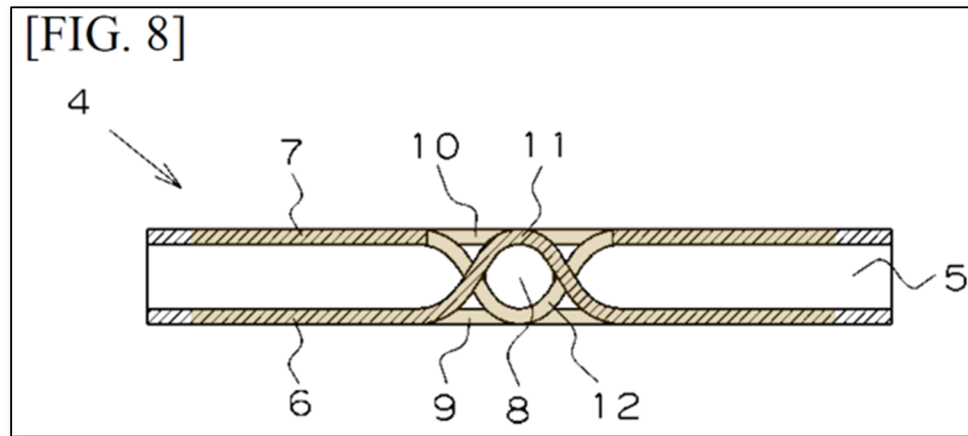
¹⁰ This is true whether the recited “spacer block” is bottom part 5 only, as shown, or if it includes portions of rising faces 6 and 7 as described in the alternative discussed above with respect to Claim 17[a]. See *supra*. Section VIII.A.2.

at least a portion of the grip element.” See EX. 1003, ¶ 95. For example, *Kitaura* describes that “... *the screw 19 is inserted (between the inner surface of the first screw-supporting part 11 and the inner surface of the second screw-supporting part 12 and into the screw insertion hole 8).*” EX. 1004, [0042]. *Kitaura* also describes that “[t]he screw insertion hole 8, the first screw-supporting part 11, and the second screw-supporting part 12 are arranged coaxially.” EX. 1004, [0029]. The spatial relationship of these components is shown below in the annotated FIG. 15 from *Kitaura*. See EX. 1003, ¶ 96.



EX. 1004, FIGs. 12, 13 and 15 (annotated to show the grip element in brown, the vertical axis as a red dashed line, and the coaxial characteristic of screw insertion hole 8, and the screw-supporting parts 11 and 12 in blue). As shown above, screw-supporting parts 11 and 12 (part of the recited “grip element” as discussed above), are part of the “grip element” of *Kitaura*, and configured to receive a screw 19 (*i.e.*, the recited fastener) as it passes through the mounting bracket 4 along the vertical axis (shown as a red dashed line) and into supporting member 3 (via screw insertion

hole 8). See EX. 1003, ¶ 97. FIG. 8 of *Kitaura* further confirms screw-supporting parts 11 and 12 are part of the recited “grip element” at least because screw-supporting part 11 is coupled with first rising face 6 and screw-supporting part 12 is coupled with second rising face 7:



EX. 1004, FIG. 8 (annotated to show the recited “grip element” in brown).

Thus, *Kitaura* discloses Claim 17[f]. See EX. 1003, ¶ 98.

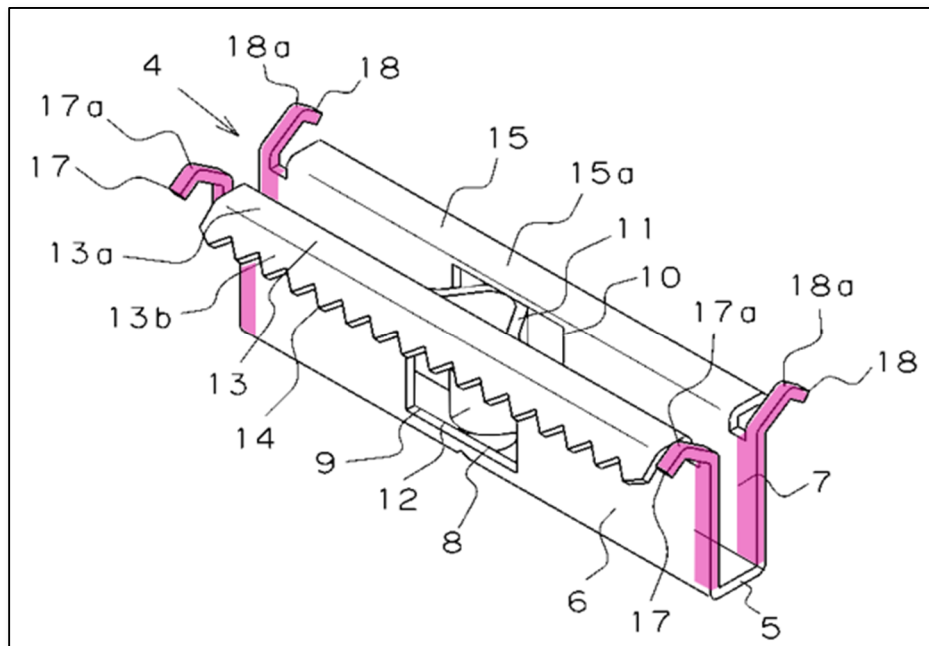
8. Claim 17[g]: “wherein the spacer block includes a first resilient compression element extending from the spacer block,”

Kitaura discloses “wherein the spacer block includes a first resilient compression element extending from the spacer block.” See *id.*, ¶ 99. For example, *Kitaura* describes:

In the present example, moreover, the *pair of first temporary fastening protrusions 17* extend elongatedly from the two upper ends *of the first rising face 6* toward the same side as the first fastening part 13, comprise *bends*

17a from an upward diagonal direction to a downward diagonal direction in their middles, and have free distal ends, and the greater part thereof, including the *bends 17a*, projects above the first fastening part 13 when no external force is acting thereupon. Similarly, the *pair of second temporary fastening protrusions 18* extend elongatedly from both upper ends of the *second rising face 7* to the same side as the second fastening part, comprise *bends 18a* from the upward diagonal direction to the downward diagonal direction in the middle, and have free distal ends, and the greater part thereof, including the *bends 18a*, projects above the second fastening part 15 when no external force is acting thereupon.

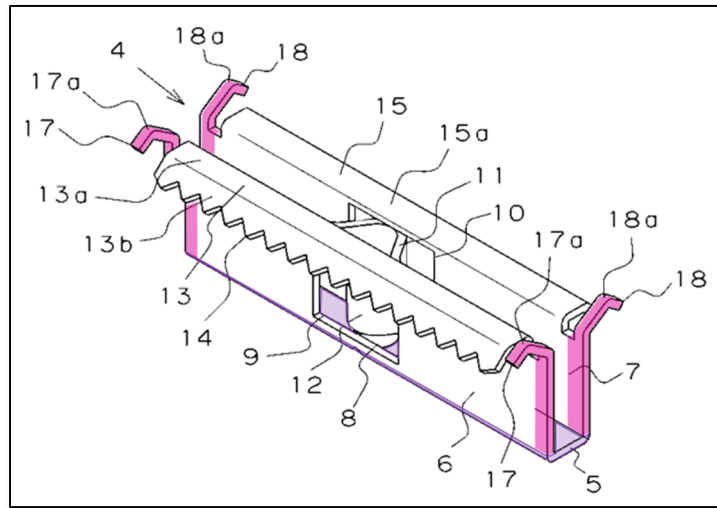
EX. 1004, [0052]; *see also* EX. 1003, ¶ 100. A POSITA would have understood that “first temporary fastening protrusions 17,” “second temporary fastening protrusions 18,” “bends 17a,” “bends 18a,” portions of “first rising face 6,” and portions of “second rising face 7” are the recited “resilient compression element[s].” *See id.*, ¶ 101. The spatial relationship of these elements is shown below in the annotated FIG. 15 from *Kitaura. Id.*



EX. 1004, FIG. 15 (annotated to show “first temporary fastening protrusions 17,” “second temporary fastening protrusions 18,” “bends 17a,” “bends 18a,” portions of “first rising face 6,” and portions of “second rising face 7” in pink).

Additionally, a POSITA would have understood that the elements forming the recited “resilient compression element” extend from bottom part 5 (*i.e.*, the recited “spacer block”) as shown below in the annotated FIG. 15 from *Kitaura*.¹¹ See EX. 1003, ¶ 102.

¹¹ This is true whether the recited “spacer block” is bottom part 5 only, as shown, or if it includes portions of rising faces 6 and 7 as described in the alternative discussed above with respect to Claim 17[a]. See *supra*. Section VIII.A.2.



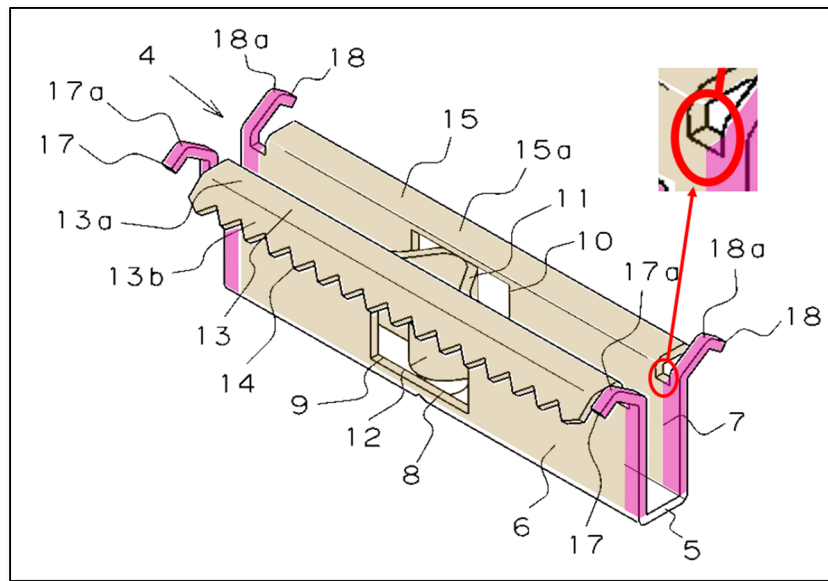
EX. 1004, FIG. 15 (annotated to show “first temporary fastening protrusions 17,” “second temporary fastening protrusions 18,” “bends 17a,” “bends 18a,” portions of “first rising face 6,” and portions of “second rising face 7” in pink, and bottom part 5 in purple). As shown, the portions of rising faces 6 and 7 directly under the first and second temporary fastening protrusions 17 and 18 (*i.e.*, the recited “resilient compression element[s]”) extend from bottom part 5 (*i.e.*, the recited “spacer block”). *See* EX. 1003, ¶ 103.

A POSITA would have understood that the portions of rising faces 6 and 7 directly under the first and second temporary fastening protrusions 17 and 18 are part of the recited “resilient compressions element[s]” at least because *Kitaura* describes “the pair of first temporary fastening protrusions 17 extend elongatedly from the two upper ends of the first rising face 6,” and that “the pair of second temporary fastening protrusions 18 extend elongatedly from both upper ends of the

second rising face 7” and that “the pairs formed by the first temporary fastening protrusion 17 and the second temporary fastening protrusion 18 are stamped from a single sheet of metal along with the other constituent elements.” EX. 1004, [0052]; *see* EX. 1003, ¶ 104.

A POSITA would have distinguished the portions of rising faces 6 and 7 that are part of the recited “resilient compressions element[s]” from the portions of rising faces 6 and 7 that form the recited “grip element” at least because *Kitaura* delineates between the two by providing a notch between the two portions. *See id.*, ¶ 105. For example, the spatial relationship between the two portions is shown below in the excerpted and annotated FIG. 15 from *Kitaura*.¹² *Id.*

¹² A POSITA would have understood that the delineation discussed below may be applied at different locations within the notch. For example, a POSITA would have understood the delineation of the notch could be in the middle, near side, or far side of the notch. *See* EX. 1003, ¶ 105, fn. 62.



EX. 1004, FIG. 15 (excerpted and annotated to show the notch circled in red that delineates the portions of rising face 7 that are part of the recited “grip element” in brown from the portions of rising face 7 that are part of the recited “resilient compression element” in pink). A POSITA would have understood the notch as providing a natural boundary between the portions of rising faces 6 and 7 that form part of the recited “grip element” and the portions of rising faces 6 and 7 that form part of the recited “resilient compression element.” See EX. 1003, ¶ 106.

Thus, *Kitaura* discloses Claim 17[g]. See *id.*, ¶ 107.

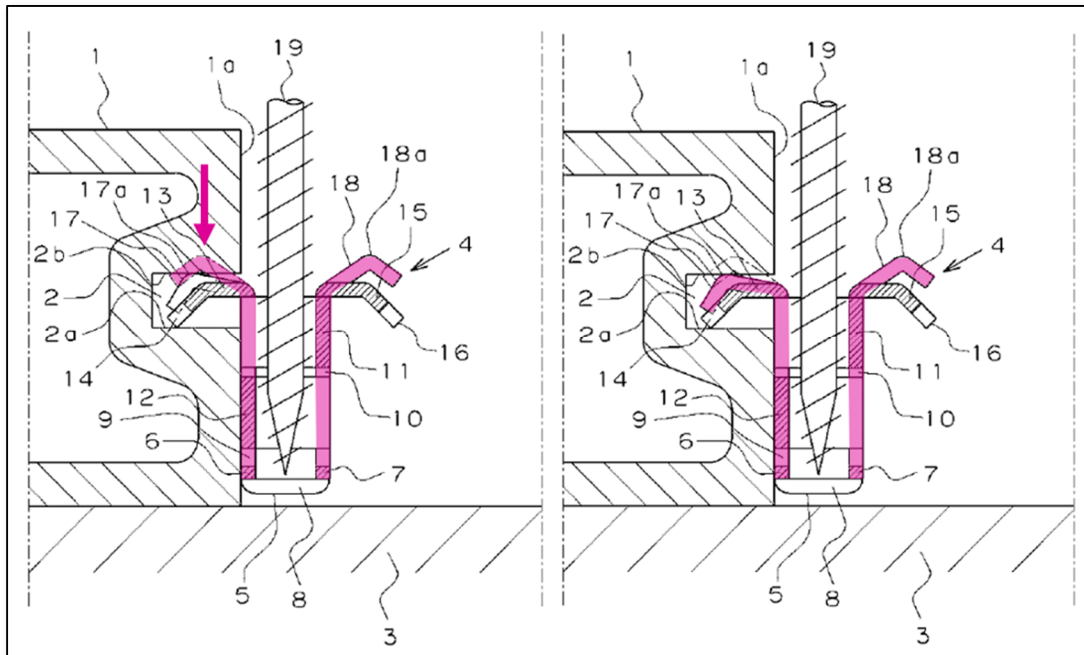
9. Claim 17[h]: “the first resilient compression element being vertically compressible toward a first plane that is transverse to the vertical axis”

Kitaura discloses “the first resilient compression element being vertically compressible toward a first plane that is transverse to the vertical axis.” See *id.*,

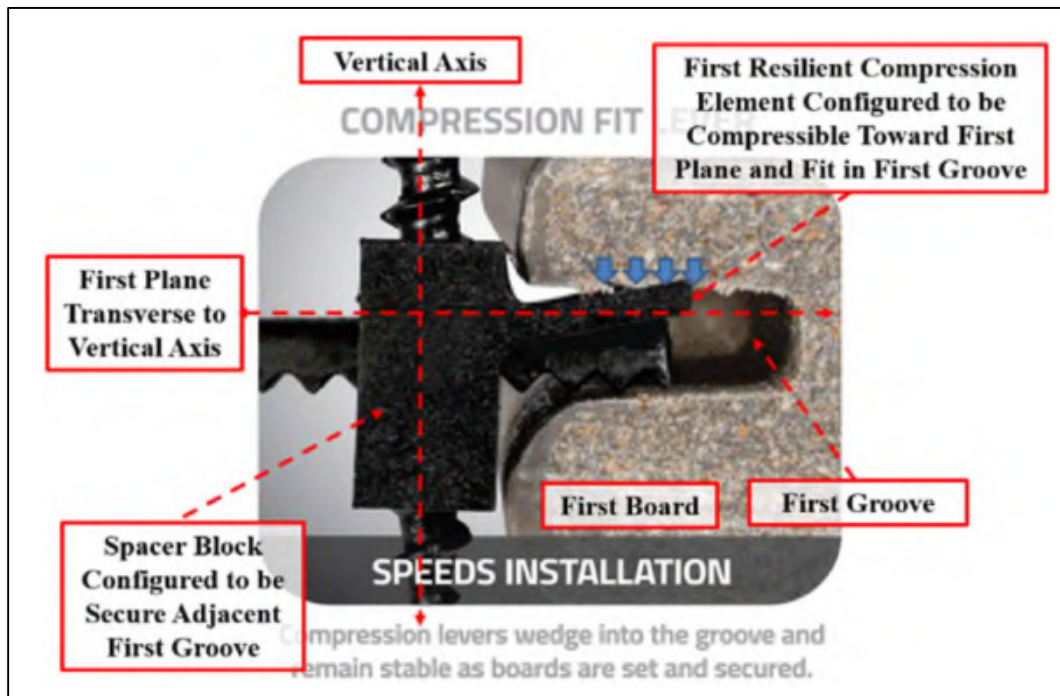
¶ 108. For example, *Kitaura* describes:

When the first fastening part 13 is inserted into the mounting groove 2 in the leading deck board 1 in the present example, as shown in FIG. 19, *the first temporary fastening protrusions 17 are pushed downward and deformed by the upper surfaces 2b of the mounting grooves 2*, and the vicinities of the bends 17a in the first temporary fastening protrusions 17 are pressed against the upper surfaces 2b of the mounting grooves 2 by the elastic restoring force of the first temporary fastening protrusions 17, thus temporarily fastening the deck board mounting bracket 4 in the mounting grooves 2 of the deck boards 1.

EX. 1004, [0054]; *see also id.*, [0056] (“In the present example, the first and second temporary fastening protrusions 17, 18 *readily elastically deform*, thus enabling more reliable temporary fastening effects to be obtained.”), [0057] (describing that the first and second bends 17a and 18a allow the temporary fastening protrusions to “easily be inserted into the mounting grooves 2 in the deck boards 1.”), EX. 1003, ¶ 108. The spatial relationship of these elements is shown below in the annotated FIGs. 19 from *Kitaura*. *See* EX. 1003, ¶ 109.



EX. 1004, FIG 19 (duplicated and annotated to show movement of *Kitaura's* resilient compression element). As shown and described above, *Kitaura's* resilient compression element is pressed **down** and deformed to fit in mounting groove 2. See EX. 1003, ¶ 110. A POSITA would have understood that moving **down** is towards a (horizontal) plane transverse to the vertical axis identified with respect to Claim 17[c] above. National Nail has asserted that a similar movement is “compression” in its Infringement Contentions served in the related litigation:



See EX. 1010, 10 (excerpt from National Nail’s Infringement Contentions in the related litigation stating that “the first resilient compression element [is] vertically compressible toward a first plane that is transverse to the vertical axis”); *see also* EX. 1003, ¶ 110.

Thus, at least under National Nail’s apparent interpretation of the claims, *Kitaura* discloses Claim 17[h]. See EX. 1003, ¶ 111.

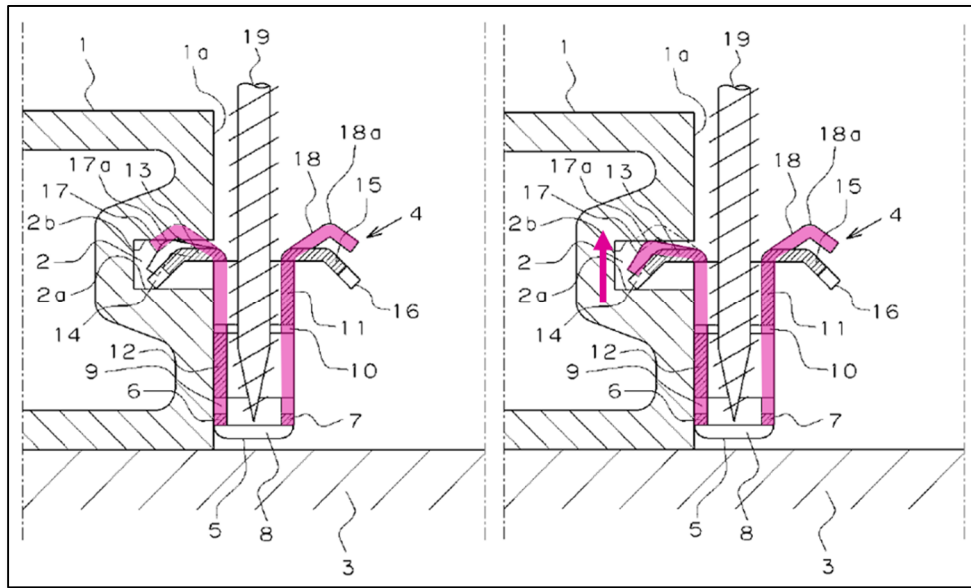
10. Claim 17[i]: “the first resilient compression element configured to compress and fit in, and forcibly expand within the first groove of the first board, thereby securing the spacer block in a position adjacent the first groove defined by the first board,”

Kitaura discloses “the first resilient compression element configured to compress and fit in, and forcibly expand within the first groove of the first board,

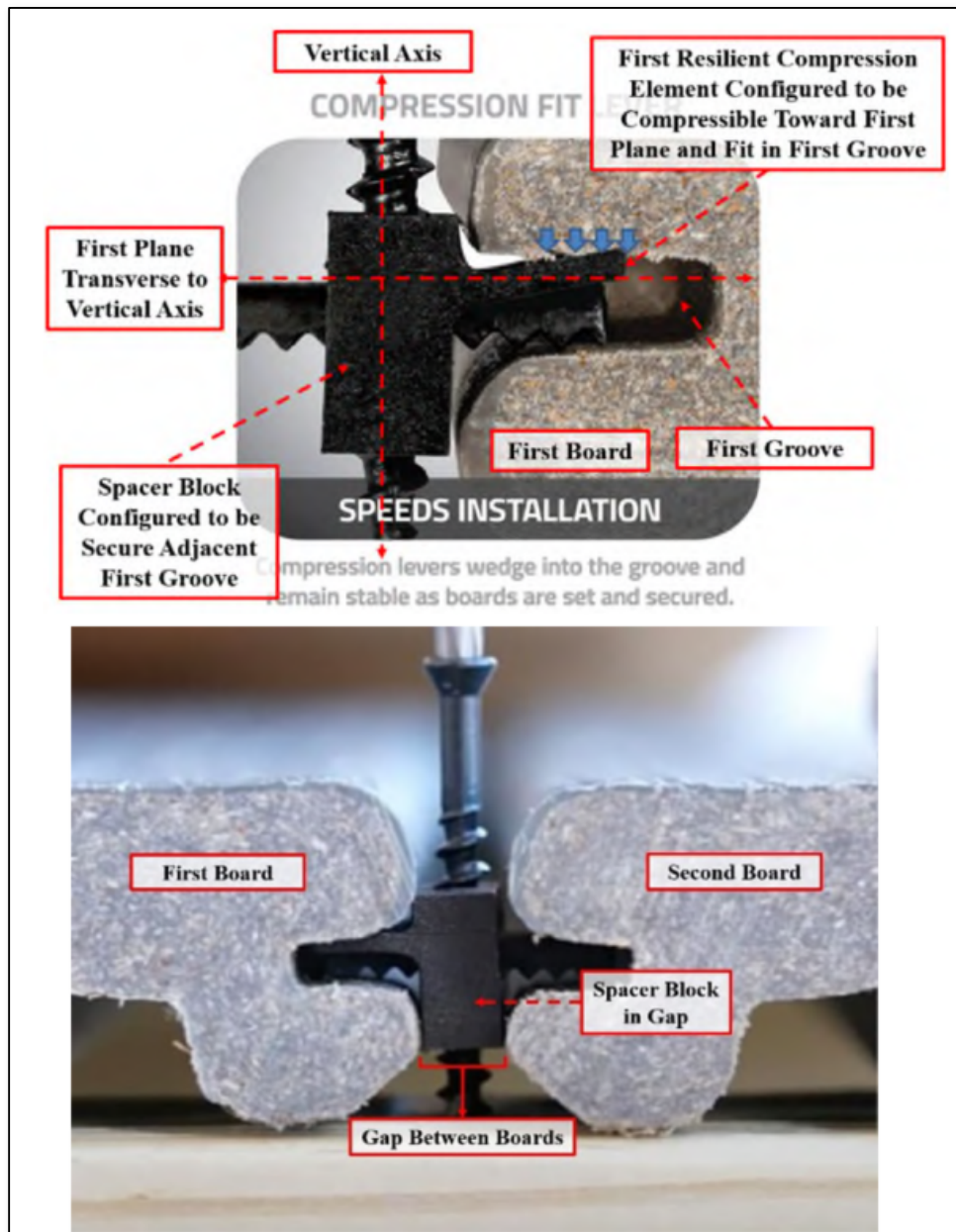
thereby securing the spacer block in a position adjacent the first groove defined by the first board.” *See id.*, ¶ 112. For example, *Kitaura* describes:

When the first fastening part 13 is inserted into the mounting groove 2 in the leading deck board 1 in the present example, as shown in FIG. 19, *the first temporary fastening protrusions 17 are pushed downward and deformed by the upper surfaces 2b of the mounting grooves 2, and the vicinities of the bends 17a in the first temporary fastening protrusions 17 are pressed against the upper surfaces 2b of the mounting grooves 2 by the elastic restoring force of the first temporary fastening protrusions 17, thus temporarily fastening the deck board mounting bracket 4 in the mounting grooves 2 of the deck boards 1.*

EX. 1004, [0054]; *see also id.*, [0056]; EX. 1003, ¶ 112. The spatial relationship of these elements is shown below in the annotated FIGs. 19 from *Kitaura*. *See* EX. 1003, ¶ 113.



EX. 1004, FIG 19 (duplicated and annotated to show movement of *Kitaura's* resilient compression element). As described above with respect to Claim 17[h], *Kitaura's* resilient compression element is pressed **down** and deformed to fit in mounting groove 2. See EX. 1003, ¶ 114. National Nail asserts that similar movement is “compression” in its Infringement Contentions served in the related litigation. See EX. 1010. As shown and described above, once in mounting groove 2, *Kitaura's* resilient compression element is pressed **up** “against the upper surfaces 2b of the mounting grooves 2 **by the elastic restoring force.**” EX. 1004, [0054]. National Nail asserts that a similar operation is “expansion” in its Infringement Contentions served in the related litigation:

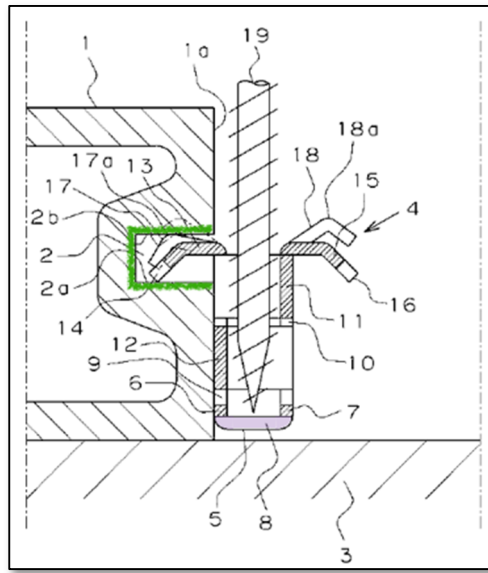


See EX. 1010, 10 (excerpt from National Nail's Infringement Contentions stating that "the first resilient compression element [is] configured to compress and fit in, and forcibly expand within the first groove of the first board, thereby securing the spacer block in a position adjacent the first groove defined by the first board").

A POSITA would have understood that the operation described above “secur[es] the spacer block in a position adjacent the first groove defined by the first board.” See EX. 1003, ¶ 115. For example, *Kitaura* describes:

When the first fastening part 13 is inserted into the mounting groove 2 in the leading deck board 1 in the present example, ***as shown in FIG. 19***, the first temporary fastening protrusions 17 are pushed downward and deformed by the upper surfaces 2b of the mounting grooves 2, and the vicinities of the bends 17a in the first temporary fastening protrusions 17 are pressed against the upper surfaces 2b of the mounting grooves 2 by the elastic restoring force of the first temporary fastening protrusions 17, ***thus temporarily fastening the deck board mounting bracket 4 in the mounting grooves 2 of the deck boards 1.***

EX. 1004, [0054]. Accordingly, the operation of the temporary fastening protrusions (*i.e.*, the recited resilient compression element) described above suspends bottom part 5 (*i.e.*, the recited “spacer block”) next to (*i.e.*, adjacent to) mounting groove 2 (*i.e.*, the recited “first groove defined by the first board”). See EX. 1003, ¶ 116. This spatial relationship is shown below in the annotated FIG. 19 from *Kitaura. Id.*

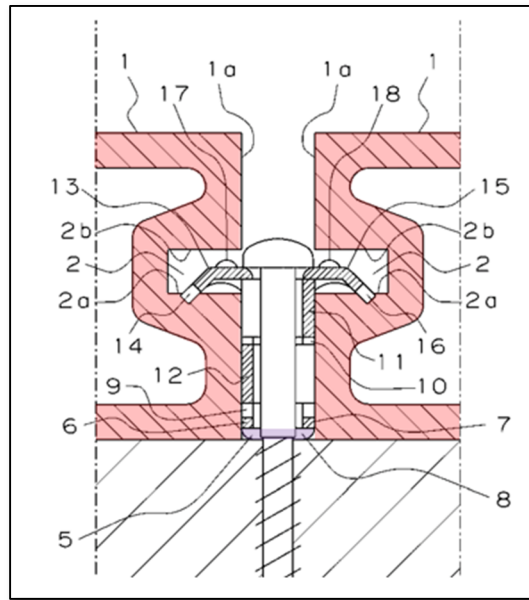


EX. 1004, FIG. 19 (annotated to show bottom part 5 in purple and mounting groove 2 in green).

Thus, at least under National Nail’s apparent interpretation of the claims, *Kitaura* discloses “Claim 17[i]. See EX. 1003, ¶ 117.

11. Claim 17[j]: “with the spacer block being disposed in the gap between the first board and the second adjacent board.”

Kitaura discloses “with the spacer block being disposed in the gap between the first board and the second adjacent board.” See EX. 1003, ¶ 118.



EX. 1004, FIG. 14 (annotated to show boards 1 (*i.e.*, the recited “first board and adjacent second board” in red and bottom part 5 (*i.e.*, the recited “spacer block” in purple). As shown above, bottom part 5 (*i.e.*, the recited “spacer block”) is disposed between boards 1 (*i.e.*, the recited “first board and adjacent second board”).¹³ See EX. 1003, ¶ 119.

Thus, *Kitaura* discloses Claim 17[j]. See *id.*, ¶ 120. Accordingly, for the reasons set forth above, Claim 17 is anticipated by *Kitaura*. See *id.*

¹³ This is true whether the recited “spacer block” is bottom part 5 only, as shown, or if it includes portions of rising faces 6 and 7 as described in the alternative discussed above with respect to Claim 17[a]. See *supra*. Section VIII.A.2.

B. Grounds 2a and 2b: Claim 17 is Obvious over *Kitaura* in view of *Kinnunen* and/or the Background Knowledge of a POSITA Under 35 U.S.C. § 103

Claim 17 is obvious over *Kitaura* in view of *Kinnunen* and/or in view of the background knowledge of a POSITA as explained below.¹⁴ *See id.*, ¶¶ 121-164.

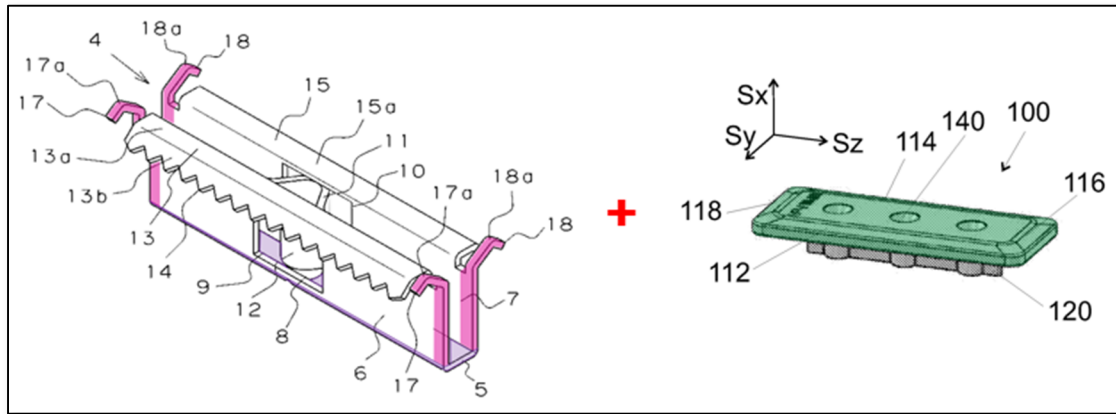
1. Motivation and Rationale to Combine

It would have been obvious to a POSITA to combine *Kinnunen*'s teaching of a unified grip element with a hole for the fastener with *Kitaura*. *See id.*, ¶ 122. This would have predictably resulted in enabling *Kitaura*'s system to cover the exposed space in the mounting bracket of *Kitaura*, thereby preventing water and debris from accumulating—reducing the risk of corrosion—and further hiding portions of *Kitaura*'s mounting bracket. *Id.*

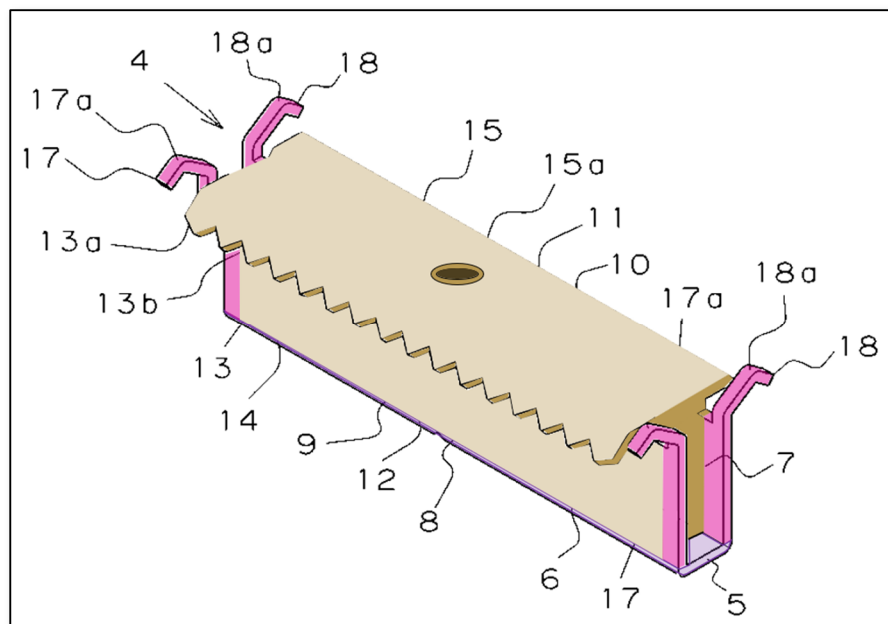
A POSITA motivated to make this change could have incorporated this teaching of *Kinnunen* into *Kitaura*'s system in several different ways—examples of which are described below and all of which would provide the benefits described further below. *See id.*, ¶ 123. For example, a POSITA could substitute all or a portion

¹⁴ This is true whether the recited “spacer block” is bottom part 5 only, as shown, or if it includes portions of rising faces 6 and 7 as described in the alternative discussed above with respect to Claim 17[a]. *See supra*. Section VIII.A.2.

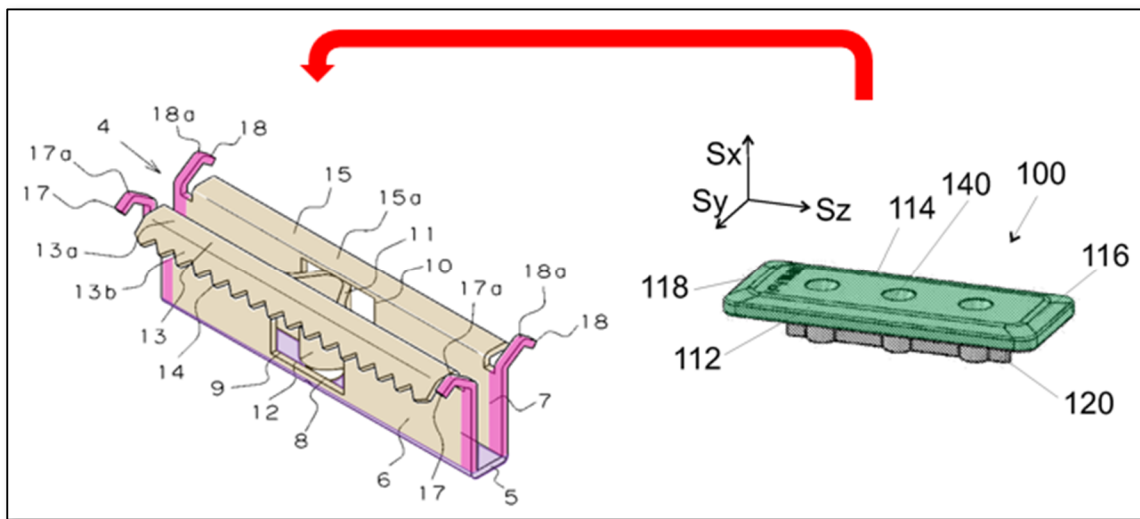
of *Kitaura*'s grip element for *Kinnunen*'s grip element. See *id.*



EX. 1004, FIG. 15 and EX. 1006, FIG. 4a (annotated to show *Kitaura*’s “spacer block” in purple and “resilient compression element[s]” in pink and *Kinnunen*’s grip element in green). As another example, a POSITA could have modified *Kitaura*’s existing grip element to have a unified structure like *Kinnunen*’s. See EX. 1003, ¶ 124.



EX. 1004, FIG. 15 (modified and annotated to show *Kitaura*'s "spacer block" in purple, "resilient compression element[s]" in pink, and "grip element" in brown). As yet another example, a POSITA could have modified *Kitaura*'s system by adding *Kinnunen*'s grip element on-top of *Kitaura*'s existing grip element. See EX. 1003, ¶ 125.



EX. 1004, FIG. 15 and EX. 1006, FIG. 4a (annotated to show *Kitaura*'s "spacer block" in purple, "resilient compression element[s]" in pink, grip element in brown and *Kinnunen*'s grip element in green (which could be added to *Kitaura*'s grip element)). A POSITA would have understood that any of these potential modifications would provide the benefits of *Kinnunen*'s unified grip element structure to the existing system of *Kitaura*. See EX. 1003, ¶ 126.

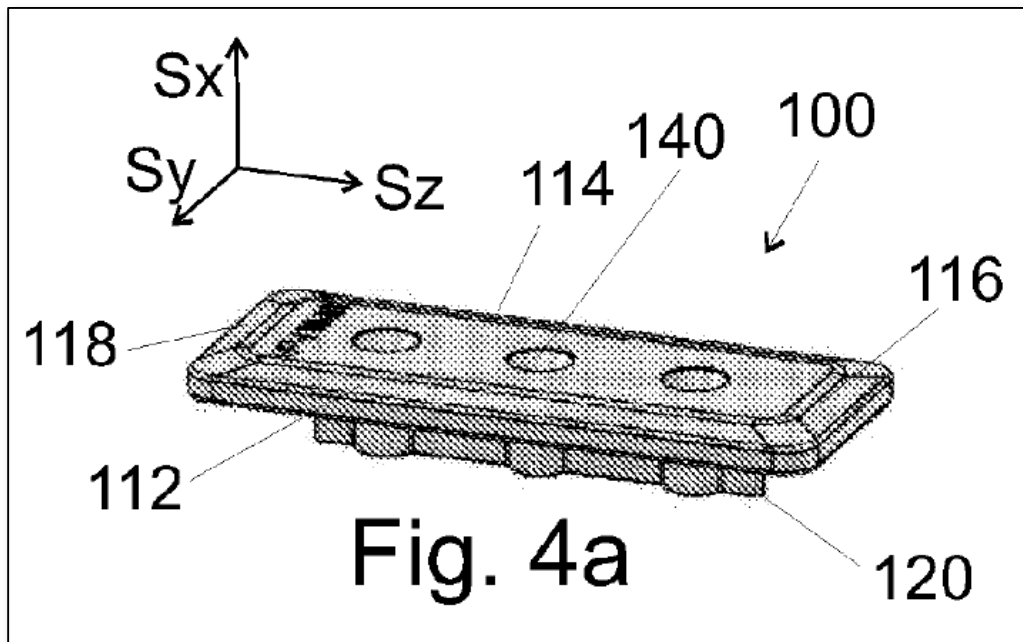
Kitaura provides express motivation to combine *Kitaura* with *Kinnunen*. See *id.*, ¶ 127. First, *Kitaura* specifically describes a problem where water and debris

accumulate between the first and second halves of its deck board mounting bracket leading to a risk of corrosion. *See* EX. 1004, [0007] (“resulting in problems such as . . . (b) water and debris readily accumulating between the first half and the second half, creating a risk of corrosion depending on the material of the mounting bracket”). Although *Kitaura* purports to address this problem by “impeding the accumulation of water and debris within the mounting bracket” by increasing the “interval between the first rising face and the second rising face” (EX. 1004, [0019] and [0044]), a POSITA would have understood that *Kitaura*’s solution does not fully address the stated problem. *See* Ex. 1003, ¶ 127. For example, the inner channel of *Kitaura*’s mounting bracket is still exposed to water. *See id.* Indeed, a POSITA would have understood that, at least in some scenarios, *Kitaura*’s solution may make the identified problem worse. *See id.* For example, widening the interval between the first half and the second half of the mounting bracket, as proposed in *Kitaura*, may allow for larger pieces of debris to become wedged in the mounting bracket. *See id.* Such debris may prevent the rising faces 6 and 7 of *Kitaura*’s mounting bracket from absorbing the expansion and/or contraction of the decking boards—a stated design goal in *Kitaura*. *See* EX. 1004, [0009] and [0041]; *see also* EX. 1003, ¶ 127. Thus, a POSITA would have been motivated to look for other solutions for inhibiting the accumulation of water and debris while still accommodating the expansion and/or contraction of the decking boards—such as the solution described

in *Kinnunen*. See EX. 1003, ¶ 127.

Second, *Kitaura* describes another problem where upper parts of the mounting bracket are “visible to individuals above the deck boards, potentially marring appearance.” See EX. 1004, [0007]; see also EX. 1003, ¶ 128. *Kitaura* describes that, according to its solution, “first fastening part 13 and the second fastening part 15 are substantially completely hidden in the mounting grooves 2 in the deck boards 1, thus making the mounting bracket 4 less visible to individuals above the deck boards 1 and less likely to mar appearance.” EX. 1004, [0045]. However, a POSITA would have understood that in *Kitaura*’s solution, bottom part 5 (*i.e.*, the recited “spacer block”) would be visible to individuals looking down from above the deck boards. See EX. 1003, ¶ 128. Thus, a POSITA would have been motivated to look for other solutions for hiding more of the mounting bracket—such as the solution described in *Kinnunen*. See *id.*

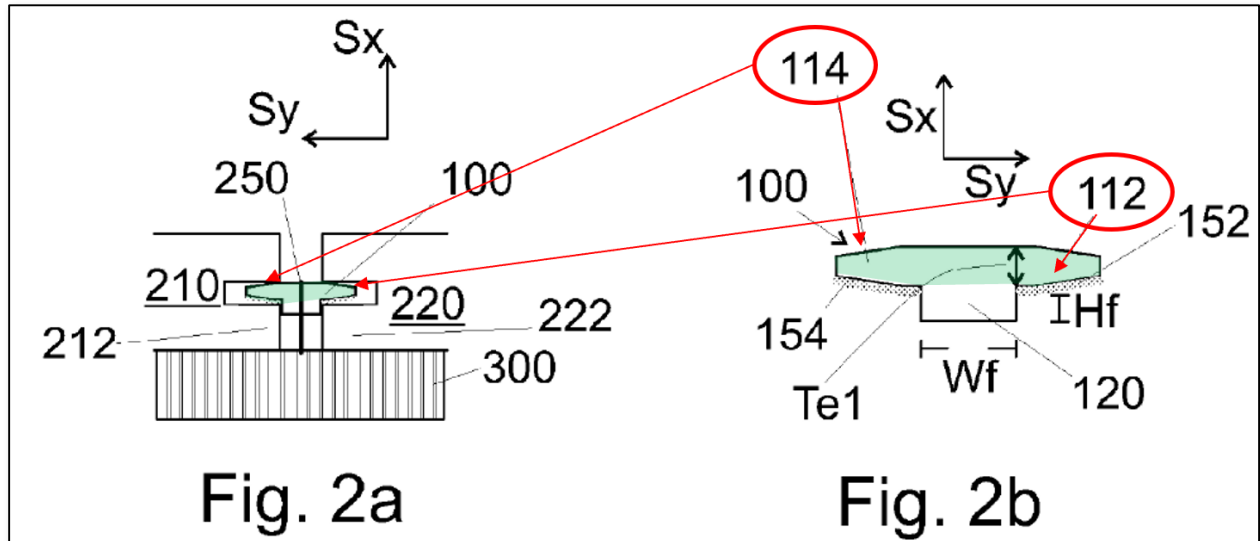
Kinnunen describes a “fastening member 100” with a “first extension 112” connected to “second extension 114” that can be “inserted into a groove.” See EX. 1006, [0090]; see also EX. 1003, ¶ 129.



EX. 1006, FIG. 4a (showing a three-dimensional view of an embodiment of *Kinnunen*). Like both *Kitaura* and the '218 Patent, *Kinnunen* discloses a grip element. See EX. 1003, ¶ 130. Here, the claimed “grip element” in *Kinnunen* is the disclosed “first extension 112” connected to “second extension 114” as explained below in Section VIII.B.3. See *infra*. Section VIII.B.3; see also EX. 1003, ¶ 130. However, as compared to *Kitaura*’s grip element, *Kinnunen*’s first and second extensions 112 and 114 do not leave room for water and debris to collect because of its unified structure.¹⁵ See *e.g.*, EX. 1006, [0094]-[0096] (“...fastening member 100

¹⁵ Although the pictured embodiment includes multiple holes 140, *Kinnunen* describes that there is “at least *one* hole 140.” See *e.g.*, EX. 1006, [0097].

comprises *a first extension 112* ... and extending in a second direction S_y , ..., *a second extension 114 connected to the first extension 112* and extending in a direction - S_y ..."); see also EX. 1003, ¶ 130.



EX. 1006, FIGs 2a and 2b (annotated to show first extension 112 and second extension 114 in green forming a unified structure). Additionally, *Kinnunen*'s grip element's unified structure hides *Kinnunen*'s spacer block (foot part 120 as explained in Section VIII.B.3) when *Kinnunen*'s fastening member is installed.

A POSITA would have been motivated to combine *Kitaura* and *Kinnunen* for at least three reasons. See EX. 1003, ¶ 131. First, both references are in the same field of endeavor and directed to solving the same problem as each other and the '218 Patent—systems and methods for mounting deck boards to supports—and are therefore analogous art. See e.g., EX. 1001, 1:6-10; EX. 1004, [0026]; EX. 1006, [0003]; see also Ex. 1003, ¶ 131.

Second, as discussed above, a POSITA would have been motivated to modify *Kitaura*'s system to keep water and debris from accumulating in *Kitaura*'s mounting bracket—a problem specifically identified by *Kitaura*. EX. 1004, [0007]; *see also* EX. 1003, ¶ 132. *Kinnunen* describes a similar problem of keeping water from getting into the elements. *See* EX. 1006, [0002] (“The screws, while penetrating through the elements both deteriorate the visual appearance and also provide a leakage for fluids, e.g. water, and moisture to penetrate into the element. This may reduce the service life of the decking board.”); *see also* EX. 1003, ¶ 132. As described above, *Kitaura*'s solution to this problem is at best incomplete, thus a POSITA would have looked to a reference like *Kinnunen* for different solutions to its problem. *See* E1003, ¶ 132. *Kinnunen* more completely addresses the problem identified by *Kitaura* because the unified structure of its grip element acts as a “cap”—inhibiting water and debris from reaching other parts of the fastener unit (referred to as a mounting bracket in *Kitaura*). *See id.*

Third, as discussed above, a POSITA would have been motivated to modify *Kitaura*'s system to hide more of the mounting bracket according to *Kitaura*'s stated design goals. *See* EX. 1003, ¶ 133. A POSITA would have understood that *Kinnunen*'s unified grip element structure would hide at least bottom part 5 (the recited “spacer block”) and thus would be an improvement on *Kitaura*'s design. *See id.* Accordingly, a POSITA would have been motivated to combine *Kinnunen*'s

unified grip element structure with *Kitaura*'s mounting bracket. *See id.*

A POSITA would have had a reasonable expectation of success in combining *Kitaura* with *Kinnunen*. *See id.*, ¶ 134. As discussed above, *Kitaura* and *Kinnunen* both describe systems for attaching decking boards to supports. *See id.* Adding *Kinnunen*'s teaching of a unified body grip element to *Kitaura*'s mounting bracket would simply involve, for example, replacing *Kitaura*'s grip element with *Kinnunen*'s, modifying *Kitaura*'s grip element to have a unified structure, or adding *Kinnunen*'s grip element structure on top of *Kitaura*'s existing grip element structure. *See id.* Examples of these combinations are discussed above. *See id.* These are simple mechanical changes, any of which would have been well within the capabilities of a POSITA at the time. *See id.*

Incorporating *Kinnunen*'s grip element into *Kitaura*'s mounting bracket would merely involve combining prior art elements according to known methods to yield predictable results. *See KSR*, 550 U.S. 398, 417 (2007) (“When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.”); *See EX. 1003*, ¶ 135. Indeed, several possible rationales may apply to the combination of *Kitaura* and *Kinnunen*.

Other examples of rationales for combining *Kitaura* with *Kinnunen* include

that *Kinnunen*'s grip element may, additionally or alternatively, be a "simple substitution of one known element for another to obtain predictable results." For similar reasons to those discussed above, a POSITA would understand that *Kitaura*'s non-unified grip element structure could be substituted for *Kinnunen*'s unified grip element structure. *See* EX. 1003, ¶ 135. Doing so would provide the same predictable and desirable result of inhibiting the accumulation of water and debris and/or hiding what is underneath. *See id.* Additionally, or alternatively, having a unified grip element was a known technique, thus combining *Kinnunen* with *Kitaura* may be "use of known technique to improve similar devices in the same way." *See id.* As discussed above, *Kitaura* and *Kinnunen* are analogous art and *Kinnunen*'s unified grip element solves a similar problem to the one faced by *Kitaura*. *See id.*

Kinnunen describes that its grip element may be made of a deformable material. *See* EX. 1006, [0106] ("Preferably, the projection 152 *is deformable*. . . . This can [] be achieved by proper selection of the material of the projection. However, for manufacturing reasons, *preferably the whole fastening member 100 is made of the same material*."); *see also* [0206] ("The fastening member may comprise polymer. The fastening member may comprise thermoplastic polymer. Preferably the fastening member 100 comprises polyolefin such as polyethylene, polypropylene, or copolymer thereof. The fastening member may be made of a composite comprising polyolefin and natural fibres."). Thus, a POSITA would have

understood that the grip element in the proposed *Kitaura-Kinnunen* combination is made of a deformable material such that it could absorb the expansion and/or contraction of the boards as taught by *Kitaura* while having a unified structure as taught by *Kinnunen*. See EX. 1003, ¶ 136.

2. Claims 17[p]-17[c] and Claims 17[g]-17[j]

As described above, *Kitaura* discloses Claims 17[p]-17[c]; Sections VIII.A.1-4 are incorporated herein by reference. Additionally, also as described above, *Kitaura* discloses Claims 17[g]-17[j]; Sections VIII.A.8-11 are incorporated herein by reference. For at least the reasons described above, a POSITA would have understood that the *Kitaura-Kinnunen* combination discloses Claims 17[p]-17[c] and Claims 17[g]-17[j]. See EX. 1003, ¶ 137.

3. Claim 17[d]

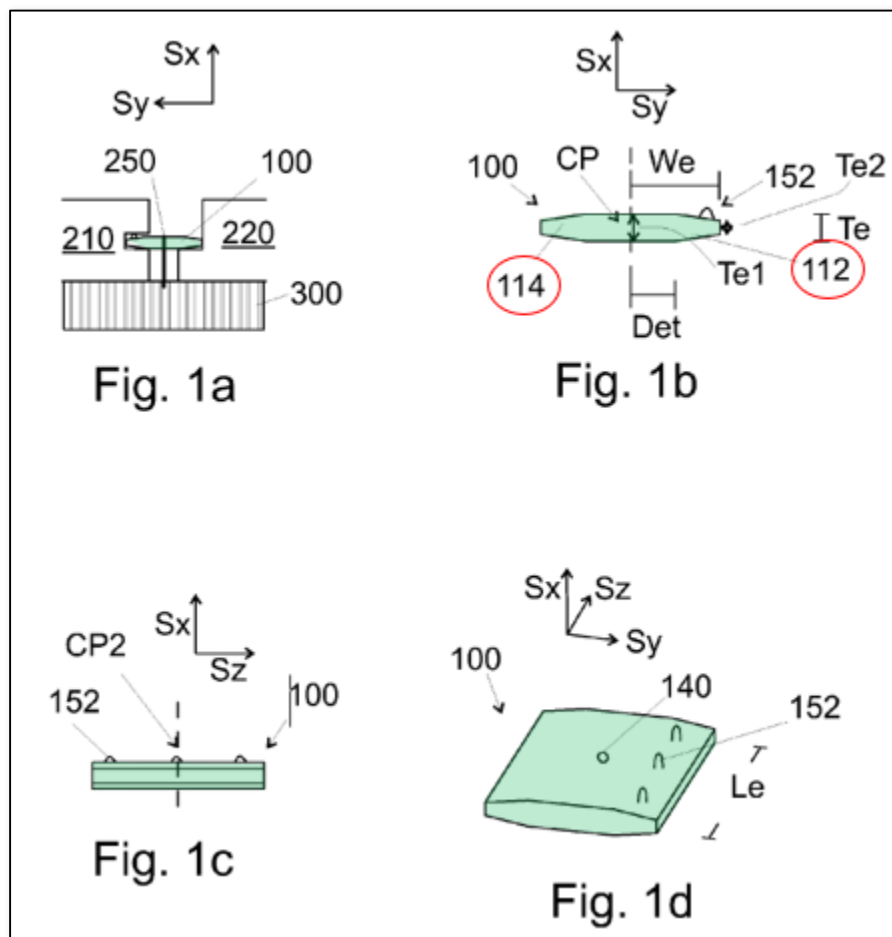
As described above, *Kitaura* discloses Claim 17[d]; Sections VIII.A.5 is incorporated herein by reference. However, to the extent Patent Owner argues that *Kitaura* alone does not disclose Claim 17[d], the *Kitaura-Kinnunen* combination discloses “a grip element extending from the spacer block,” rendering Claim 17 obvious. See EX. 1003, ¶ 138. For example, *Kinnunen* describes:

Referring to FIGS. 1b to 1d, a fastening member 100 comprises
a first extension 112 having a thickness T_e in a first direction S_x and extending in a second direction S_y ,

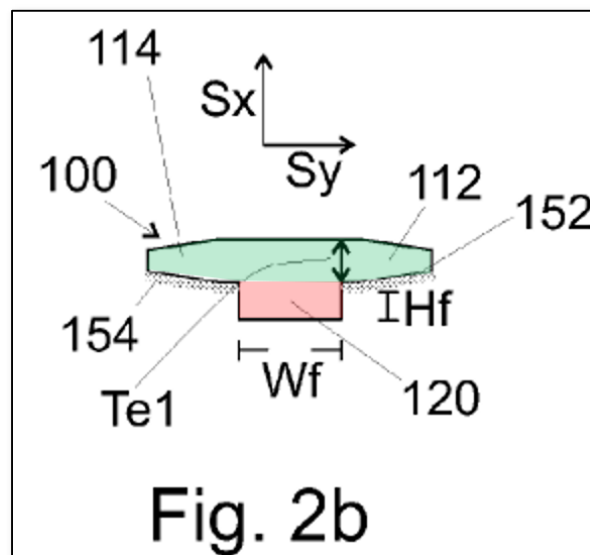
wherein the second direction S_y is perpendicular to the first direction S_x ,

a second extension 114 connected to the first extension 112 and extending in a direction $-S_y$ that is reverse to the second direction S_y ,

EX. 1006, [0094]-[0096]. Here, a POSITA would have understood that “first extension 112” connected to “second extension 114” together form the recited “grip element.” See EX. 1003, ¶ 139. The spatial relationship of these elements is shown below in the annotated FIGs. 1a-1d from *Kinnunen*. See *id*.



EX. 1006, FIGs. 1a-1d (annotated to show first extension 112 and second extension 114 in green). *Kinnunen* also describes an embodiment with a “foot part 120” that is the recited “spacer block.” See EX. 1006, [0114] (“However, often the depth of the groove (i.e. width of the corresponding tongue in the second direction S_y) varies a lot, whereby the fastening member cannot be used to control the spacing between two elements. For a controlled separation between two elements, the fastening member 100 may be equipped with a **foot part 120**.”); see also Ex. 1003, ¶ 140. The spatial relationship of these elements when a foot part 120 is included is shown below in the annotated FIG. 2b from *Kinnunen*. See EX. 1003, ¶ 140.



EX. 1006, FIG. 2b (annotated to show first extension 112 connected to second extension 114 (i.e., together the recited “grip element”) in green as well as foot part 120 (i.e., the recited “spacer block”) in red). As shown above, first extension 112

connected to second extension 114 (*i.e.*, together the recited “grip element”) extends from foot part 120 (*i.e.*, the recited “spacer block”). *See* EX. 1003, ¶ 141.

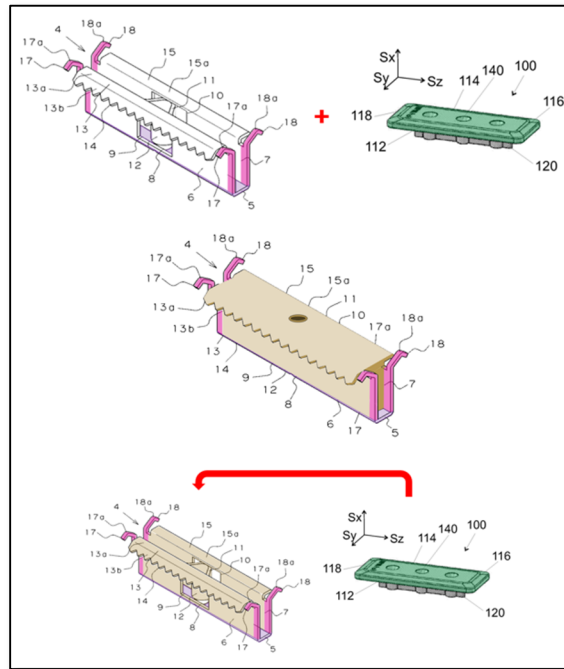
A POSITA would have understood first extension 112 connected to second extension 114 as the recited “grip element” at least because they enter the groove of the elements (*e.g.*, adjacent decking boards) and act to secure the elements to a support. *See e.g.*, EX. 1006, [0207] (“Preferably at least the extensions 112 (optionally 114, 116, 118) . . . fix the elements to a support.”); [0127]; *see also* EX. 1003, ¶ 142.

A POSITA would have understood foot part 120 as the recited “spacer block” at least because it corresponds to the space between first element 210 and second element 220 (which are the decking boards in *Kinnunen*).¹⁶ *See* EX. 1003, ¶ 143. For example, *Kinnunen* describes that “[f]or a ***controlled separation between two elements***, the fastening member 100 may be equipped with a ***foot part 120***.”). EX. 1006, [0114].

Thus, the *Kitaura-Kinnunen* combination discloses Claim 17[d]. In any of the proposed combinations the grip element is connected to the spacer block—

¹⁶ *See e.g.*, EX. 1006, [0081] (“The element 210, 220 may be *e.g.* panel or a board such as a ***decking board*** . . .”).

disclosing this element.¹⁷ See EX. 1003, ¶ 144.



EX. 1004, FIGs. 15 and 4a (excerpted, modified, and annotated showing that in the example combinations discussed above the grip element extends from the spacer block).

In addition, it would have been obvious to a POSITA at the time of the '218 Patent to modify *Kitaura* based on his background knowledge to include “a grip element extending from the spacer block.” See EX. 1003, ¶ 145. Indeed, the '218

¹⁷ This is true whether the recited “spacer block” is bottom part 5 only, as shown, or if it includes portions of rising faces 6 and 7 as described in the alternative discussed above with respect to Claim 17[a]. See *supra*. Section VIII.A.2.

Patent concedes this element was known in the art by describing it in its Background (admitted prior art) Section:

Some manufacturers have developed hidden fastener systems that fit loosely within grooves of adjacent boards. ***These hidden fasteners typically include a biscuit-shaped upper plate having two horizontal flanges that fit into the grooves*** defined by the sides of adjacent deck boards, a single center hole through which a fastener extends to secure to the underlying joist, and ***a base that extends downward from the upper plate to an underlying joist.***

EX. 1001, 1:23-30.

Indeed, several examples of this teaching exist in the background of the prior art as noted by Dr. Klopp. *See* EX. 1003, ¶ 146. One example, the Trex Hideaway® Hidden Fastening System was publicly advertised on the Trex website well before the priority date of the '218 Patent. *See* EX. 1014 (“Trex Website Background Reference”) (showing a Wayback Machine Archive date of March 3, 2016).



EX. 1014 (Excerpt from the Trex website Background Reference showing “a grip element extending from the spacer block”).

It would have been well within the skill of a POSITA at the time of the '218 Patent to implement “a grip element extending from the spacer block”—indeed, doing so would merely requiring applying known components in conventional ways to get a predictable result. *See* EX. 1003, ¶ 147. Other rationales for combining the teachings from the background of the prior art may include those described with respect to *Kinnunen* above (the same or similar teachings are proposed to modify *Kitaura*). *See supra*. Section VIII.B.1; *see also e.g.*, EX. 1003, ¶ 135.

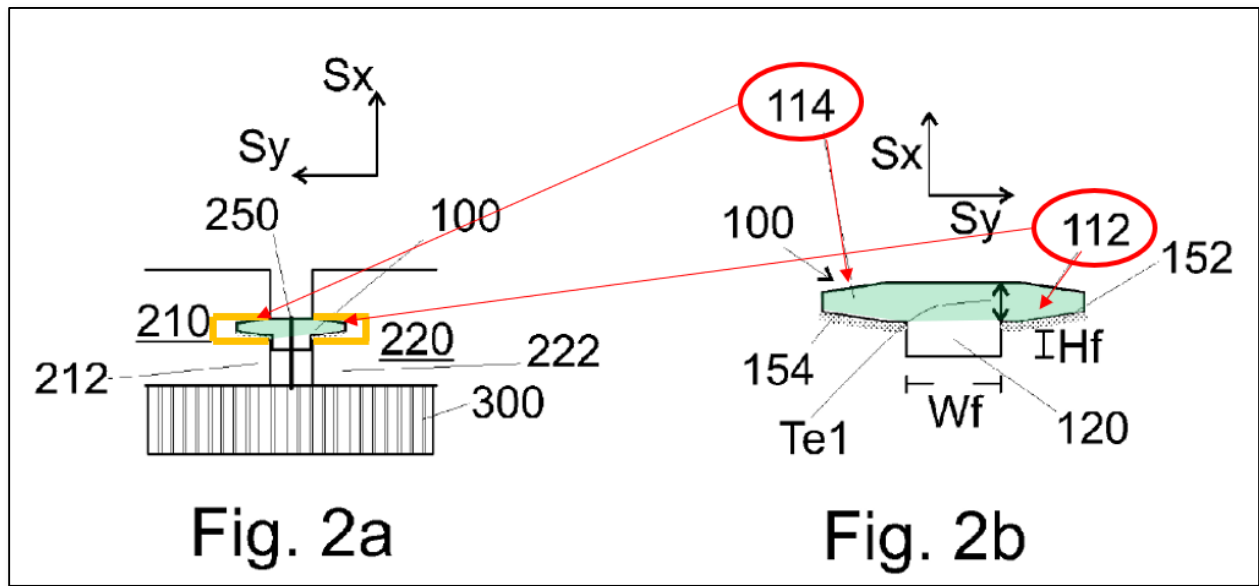
Thus, *Kitaura* combined with the background knowledge of a POSITA renders obvious Claim17[d]. *See* EX. 1003, ¶ 148.

4. Claim 17[e]

As described above, *Kitaura* discloses Claim 17[e]; Sections VIII.A.6 is

incorporated herein by reference. *See* EX. 1003, ¶ 149. However, to the extent *Kitaura* alone does not disclose Claim 17[e], the *Kitaura-Kinnunen* combination discloses “the grip element configured to fit in and engage a first groove defined by the first board, without the spacer block extending into the first groove.” *See id.*

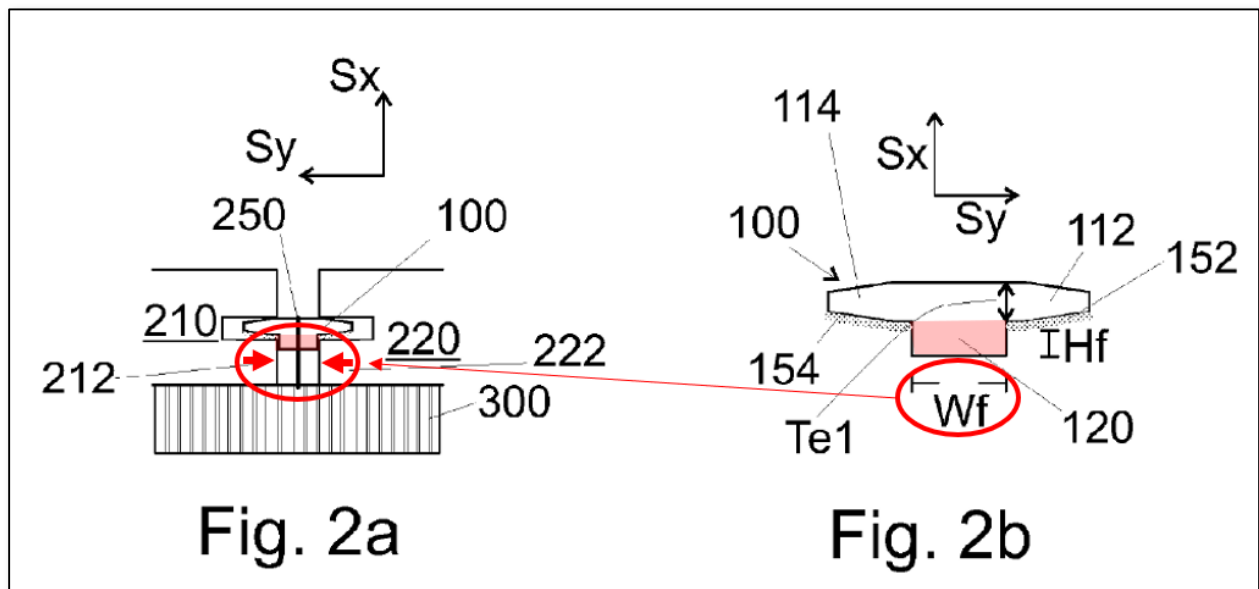
First, *Kinnunen*’s first extension 112 connected to second extension 114 are “configured to fit in and engage a first groove defined by the first board.” *See id.*, ¶ 150. For example, *Kinnunen* describes that “either the first extension 112 or the second extension 114 ***can be inserted into a groove*** in the described manner.” EX. 1006, [0127]. *Kinnunen* also describes that the boards define the grooves. For example, *Kinnunen* repeatedly describes the “grooves” as a “groove of the element 210” and “groove of the element 220.” *See e.g.*, EX. 1006, [0081], [0084], [0014]. The spatial relationship of these elements is shown below in the annotated FIG. 2a and 2b from *Kinnunen*. *See* EX. 1003, ¶ 150.



EX. 1006, FIGs 2a and 2b (annotated to show first extension 112 and second extension 114 in green and the groove elements 210 and 220 in orange).

Kinnunen also discloses that the foot part 120 (*i.e.*, the recited “spacer block”) does not extend into the first groove. *See* EX. 1003, ¶ 151. For example, *Kinnunen* describes that “[p]referably the whole first extension 112, ***excluding the foot part 120*** (if present), ***can be inserted into a groove*** with the prescribed force.” EX. 1006, [0090]. As another example, *Kinnunen* describes that “often the depth of the groove (*i.e.* width of the corresponding tongue in the second direction Sy) varies a lot, whereby the fastening member cannot be used to control the spacing between two elements. For a controlled separation between two elements, the fastening member 100 may be equipped with a foot part 120.” EX. 1006, [0114]. *Kinnunen* also describes that “the width Wf of the foot part 120 determines the separation of the

two elements 210, 220.” EX. 1006, [0117]. A POSITA would have understood that the width of foot part 120 would not determine the separation of the elements if it entered the groove (especially when the depth of the groove is *unknown* as described in the example above). See EX. 1003, ¶ 151. The spatial relationship of these elements is shown below in the annotated FIG. 2a and 2b from *Kinnunen*. See *id.*



EX. 1006, FIGs 2a and 2b (annotated to show foot part 120 in red as well as to show the width, W_f , of the foot part 120 not entering the groove). As discussed above, a POSITA would have understood foot part 120 as the recited “spacer block.” See EX. 1003, ¶ 152.

Thus, the *Kitaura-Kinnunen* combination discloses Claim 17[e]. See *id.*

Additionally, it would have been obvious to a POSITA at the time of the '218 Patent to modify *Kitaura* based on his background knowledge to include “the grip

element configured to fit in and engage a first groove defined by the first board, without the spacer block extending into the first groove.” *See* EX. 1003, ¶ 154. Indeed, the ’218 Patent concedes at least that “the grip element configured to fit in and engage a first groove defined by the first board” was known in the art by describing it in its Background (admitted prior art) Section. *See* EX. 1001, 1:23-30. A POSITA would have understood a spacer block that does not enter the groove as the most obvious implementation of a spacer block at least because it is the most direct implementation, avoiding the spacer block entering the groove helps determine a uniform distance between the boards (especially when the depth of the groove is unknown), and because simpler shapes (straight down without entering the groove) are typically easier to manufacture. *See* EX. 1003, ¶ 154, fn. 106.

Indeed, several examples of these teachings exist in the background of the prior art as noted by Dr. Klopp. *See* EX. 1003, ¶ 155. One example, the Trex Hideaway® Hidden Fastening System was publicly advertised on the Trex website well before the priority date of the ’218 Patent. *See* EX. 1014; *see also* EX. 1003, ¶ 155.



EX. 1014 (Excerpt from the Trex website Background Reference showing “the grip element configured to fit in and engage a first groove defined by the first board, without the spacer block extending into the first groove”).

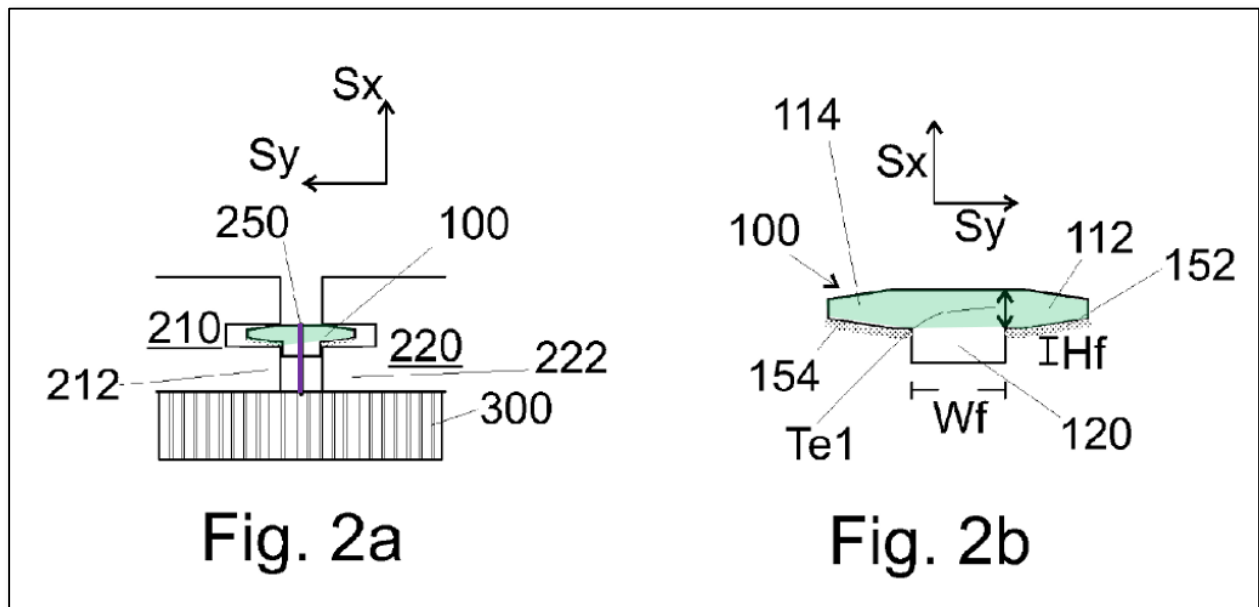
It would have been within the skill of a POSITA at the time of the '218 Patent to implement “the grip element configured to fit in and engage a first groove defined by the first board, without the spacer block extending into the first groove” into *Kitaura*’s system—indeed, doing so would merely requiring applying known components in conventional ways to get a predictable result as shown at least by the Trex Website Background Reference. *See* EX. 1003, ¶ 156. Other rationales for combining the teachings from the background of the prior art may include those described with respect to *Kinnunen* above (the same or similar teachings are proposed to modify *Kitaura*). *See supra*. Section VIII.B.1; *see also* E1003, ¶ 156.

Thus, *Kitaura* combined with the background knowledge of a POSITA

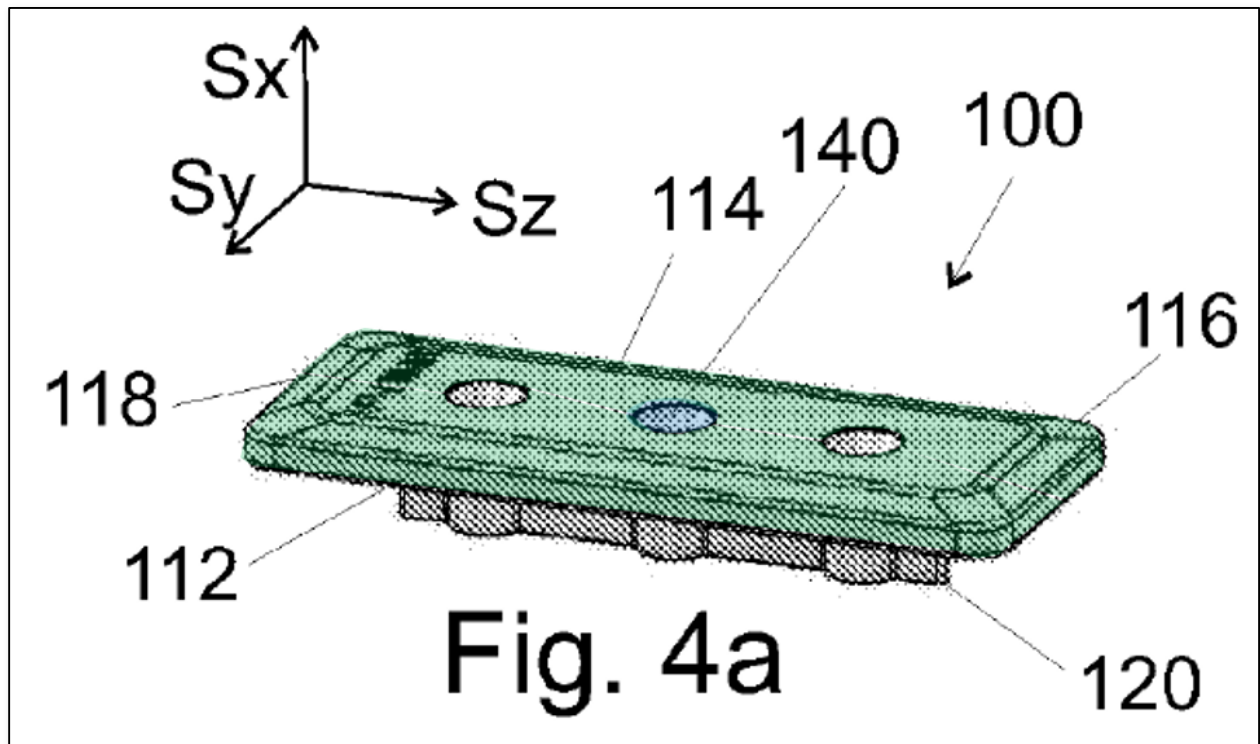
renders obvious Claim 17[e]. *See* EX. 1003, ¶ 157.

5. Claim 17[f]

The *Kitaura-Kinnunen* combination discloses “the grip element configured to receive a fastener through at least a portion of the grip element.” *See* E1003, ¶ 158. For example, *Kinnunen* describes that “arrangement (FIG. 2a) comprises a first element 210, a support 300, and a fixing means 250, such as a screw, *wherein the fixing means 250 penetrates through the hole 140 of the fastening means 100* to the support 300.” EX. 1006, [0134]. The spatial relationship of these elements—and the relationship of fastening means 100 to extensions 112 and 114—is shown in the annotated FIGs. 2a, 2b, and 4a from *Kinnunen* below. *See* EX. 1003, ¶ 158.



EX. 1006, FIG. 2a and 2b (annotated to show first extension 112 connected to second extension 114 in green and fixing means 250 in purple).



EX. 1006, FIG. 4a (annotated to show annotated to show first extension 112 connected to second extension 114 in green and hole 140 in blue). As shown and described above, the fixing means 250 (*i.e.*, the recited “fastener”) passes through hole 140 which itself goes through first extension 112 connected to second extension 114 (part of fastening member 100). *See* Ex. 1003, ¶ 159. A POSITA would have understood that hole 140 passes through *Kinnunen*’s “grip element” and thus the grip element is “configured to receive a fastener through at least a portion of the grip element.” *See id.* For example, as shown and described above, grip element is formed by the first extension 112 connected to the second extension 114 to collectively form a unified structure. *See id.* The hole 140 (for receiving the faster) passes through that

material (first and second extensions 112 and 114). *See id.* Thus, the hole 140 passes through the grip element and the grip element is configured to receive the fastener. *See id.*

Thus, the *Kitaura-Kinnunen* combination discloses Claim 17[f]. *See id.*, ¶ 160.

Additionally, it would have been obvious to a POSITA at the time of the '218 Patent to modify *Kitaura* based on his background knowledge to include “the grip element configured to receive a fastener through at least a portion of the grip element.” *See* EX. 1003, ¶ 161. Indeed, the '218 Patent concedes this element was known in the art by describing it in its Background (admitted prior art) Section:

Some manufacturers have developed hidden fastener systems that fit loosely within grooves of adjacent boards. These hidden fasteners typically include *a biscuit-shaped upper plate having two horizontal flanges that fit into the grooves defined by the sides of adjacent deck boards, a single center hole through which a fastener extends to secure to the underlying joist,* and a base that extends downward from the upper plate to an underlying joist.

EX. 1001, 1:23-30.

Indeed, several examples of this teaching exist in the background of the prior art as noted by Dr. Klopp. *See* EX. 1003, ¶ 162. For example, the Trex Hideaway®

Hidden Fastening System was publicly advertised on the Trex website well before the priority date of the '218 Patent. *See* EX 1014; *see also* EX. 1003, ¶ 162.



EX. 1014 (Excerpt from the Trex website Background Reference showing “the grip element configured to receive a fastener through at least a portion of the grip element”).

It would have been within the skill of a POSITA at the time of the '218 Patent to implement “the grip element configured to receive a fastener through at least a portion of the grip element” into *Kitaura*’s system—indeed, doing so would merely requiring applying known components in conventional ways to get a predictable result as shown at least by the Trex Website Background Reference. *See* EX. 1003, ¶ 163. Other rationales for combining the teachings from the background of the prior art may include those described with respect to *Kinnunen* above (the same or similar teachings are proposed to modify *Kitaura*). *See supra*. Section VIII.B.1; *see also*

EX. 1003, ¶ 163.

Thus, *Kitaura* combined with the background knowledge of a POSITA renders obvious Claim 17[f]. *See* EX. 1003, ¶ 164. Accordingly, for the reasons set forth above, Claim 17 is obvious over *Kitaura* in view of *Kinnunen* and/or in view of the background knowledge of a POSITA. *See id.*

IX. CONCLUSION

Petitioners respectfully request that *inter partes* review of the '218 Patent be instituted and that Claim 17 be cancelled as unpatentable under 35 U.S.C. § 318(b).

Respectfully submitted,

BAKER BOTTS L.L.P.



Chad C. Walters (Reg. No. 48,022)
Lead Attorney for Petitioner

Date: July 3, 2024

2001 Ross Ave., Suite 900
Dallas, TX 75201-2980
Phone: (214) 953-6511
Fax: (214) 661-4511
chad.walters@bakerbotts.com

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing Petition, exclusive of the exempted portions as provided in 37 C.F.R. § 42.24(a), contains no more than 13,780 words and therefore complies with the type-volume limitations of 37 C.F.R. § 42.24(a). The word count was calculated by starting with Microsoft Word's total document word count and subtracting the words for the Table of Contents, the Exhibit List, the Mandatory Notices, the Certificate of Compliance, and the Certificate of Service.

Respectfully submitted,

BAKER BOTTS L.L.P.



Chad C. Walters (Reg. No. 48,022)
Lead Attorney for Petitioner

Date: July 3, 2024

2001 Ross Ave., Suite 900
Dallas, TX 75201-2980
Phone: (214) 953-6511
Fax: (214) 661-4511
chad.walters@bakerbotts.com

CERTIFICATE OF SERVICE

In accordance with 37 C.F.R. §§ 42.6(e) and 42.105, the undersigned certifies that on the 3rd day of July, 2024 a complete and entire copy of this Petition for *Inter Partes* Review under 35 U.S.C. § 311 and 37 C.F.R. § 42.104, and all supporting exhibits were provided via Federal Express, postage prepaid, to the Patent Owner and its known representatives by serving the correspondence address of record for the '218 Patent holder and the patent holder's counsel:

**WARNER NORCROSS + JUDD LLP
150 OTTAWA AVE NW STE 1500
GRAND RAPIDS, MI 49503, UNITED STATES**

Respectfully submitted,

BAKER BOTTS L.L.P.



Chad C. Walters (Reg. No. 48,022)
Lead Attorney for Petitioner

Date: July 3, 2024

2001 Ross Ave., Suite 900
Dallas, TX 75201-2980
Phone: (214) 953-6511
Fax: (214) 661-4511
chad.walters@bakerbotts.com