

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

FREIGHTCAR AMERICA, INC.,

Petitioner,

v.

NATIONAL STEEL CAR LIMITED,

Patent Owner

Case IPR2025-01048

Patent No. 8,132,515

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBIT LIST	
2001	Declaration of Dr. Mark J. Viz, Ph.D., P.E. signed August 18, 2025 in support of Patent Owner's Request for Discretionary Denial of Institution
2002	Scheduling Order, D.I. 38, No. 24-cv-00594-JLH-CJB (D. Del.)
2003	Docket Sheet, No. 24-cv-00594-JLH-CJB (D. Del.)
2004	Plaintiff's Second Amended Complaint, D.I. 56, No. 24-cv-00594-JLH-CJB (D. Del.)
2005	Report and Recommendations Denying FreightCar's Motion to Dismiss, D.I. 45, No. 24-cv-00594-JLH-CJB (D. Del.)
2006	Order Adopting Report and Recommendation Denying Motion to Dismiss, D.I. 49, No. 24-cv-00594-JLH-CJB (D. Del.)
2007	FILED UNDER SEAL - Answer to Second Amended Complaint, D.I. 68, No. 24-cv-00594-JLH-CJB (D. Del.)
2008	Petitioner's Invalidity Contentions from No. 24-cv-00594-JLH-CJB (D. Del.)
2009	Petitioner's <i>Sotera</i> Stipulation
2010	Portions of United States District Courts—National Judicial Caseload Profile for 12-month period ending March 31, 2025; available at https://www.uscourts.gov/data-news/reports/statistical-reports/federal-court-management-statistics
2011	Time to Milestones for the District of Delaware, DocketNavigator
2012	U.S. Provisional Application No. 61/977,753
2013	WIPO Publication No. WO2015/157734
2014	U.S. Patent No. 10,017,191
2015	Inventor's Declaration from file history of U.S. Patent No. 10,017,191
2016	Information Disclosure Statement Dated October 10, 2016 from File History for the Application that Issued as U.S. Patent No. 10,017,191
2017	U.S. Patent No. 10,710,612
2018	Inventor's Declaration from file history of U.S. Patent No. 10,710,612
2019	Information Disclosure Statement Dated July 10, 2018 from File History for the Application that Issued as U.S. Patent No. 10,710,612
2020	U.S. Provisional Application No. 62/650,472
2021	WIPO Publication No. WO2019/191762
2022	U.S. Patent Publication No. 2021/0009,169 (U.S. App. No. 17/038,205)
2023	Inventor's Declaration from file history of U.S. App. No. 17/038,205

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2024	Complaint for Patent Infringement in <i>National Steel Car Ltd. v. FreightCar America, Inc.</i> , No. 11-cv-08743 (N.D. Ill.).
2025	Complaint for Patent Infringement in <i>National Steel Car Ltd. v. FreightCar America, Inc.</i> , No. 15-cv-03418 (N.D. Ill.).
2026	Complaint for Patent Infringement in <i>National Steel Car Ltd. v. FreightCar America, Inc.</i> , No. 15-cv-08643 (N.D. Ill.).
2027	FILED UNDER SEAL - 2017 Settlement Agreement between National Steel Car Limited and FreightCar America, Inc.
2028	FILED UNDER SEAL - Email Between National Steel Car Limited Employees
2029	Statistics for Judge Hall in Patent Cases Since January 1, 2021, DocketNavigator
2030	Tarmac PGA Stone Wagons
2031	Agreed Protective Order Regarding the Disclosure and Use of Discovery Material, D.I. 42, No. 24-cv-00594-JLH-CJB (D. Del.)
2032	Company, FreightCar America Webpage, available at https://freightcaramerica.com/company/
2033	FILED UNDER SEAL - FreightCar America's Response to Interrogatory No. 7
2034	Notice of Allowance for the patent application that issued as U.S. Patent 8,166,892
2035	Declaration of Mark J. Viz Ph.D., P.E. Under 37 C.F.R. § 1.68

I. INTRODUCTION

In response to FreightCar America, Inc.'s ("Petitioner") copying of patent owner National Steel Car Limited's ("Patent Owner") railroad hopper car, Patent Owner sued Petitioner for infringement of two patents, including U.S. Patent No. 8,132,515 ("the '515 patent"). The petition for *inter partes* review (the "Petition") of claims 1-44 (the "challenged claims") of the '515 Patent attempts to create inefficiency with a cumulative, parallel Patent Trial and Appeal Board ("PTAB" or "Board") proceeding that trails a district court action but fails to provide basis, or articulate rationale supported by evidence and logic, sufficient for trial under the standards of *inter partes* review.

Petitioner's challenge to the '515 Patent claims is fundamentally deficient. At the outset, Petitioner fails to address each and every limitation of any challenged claim, let alone provide a coherent analysis of any claim as a whole. These failures alone render the Petition legally insufficient under the standards of *inter partes* review.

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Moreover, Petitioner does not offer a credible motivation to combine the asserted art references¹ in a manner that would lead to the claimed invention of any challenged claim. The Petition lacks any articulated rationale supported by evidence or logic that would compel a person of ordinary skill in the art at the relevant time (“POSITA”) to make any of the proposed combinations of asserted art references. Without such a motivation, the asserted obviousness grounds collapse.

The report of Petitioner’s expert Dr. Ahmadian is of no avail to the Petition’s deficiencies. The report fails to address each and every limitation of any challenged claim and it improperly reaches the ultimate conclusion of obviousness. Moreover, Dr. Ahmadian’s report is a near verbatim reproduction of the Petition, rendering his analysis unhelpful to the Board.

Further, the Petition and Dr. Ahmadian’s report amend the exhibits of the asserted art to add details that are not present from the low-resolution images provided in the exhibits. In this way, the Petition and Dr. Ahmadian substitute what they would like the asserted art to show for what is actually shown in the exhibits of the asserted art.

¹ As explained in Patent Owner’s Discretionary Denial Brief (Paper 7 [redacted], 8 [under seal]), Petitioner’s asserted art is cumulative to what has already been considered by the Office during prosecution of the ’515 Patent.

In sum, the Petition is not only procedurally inadequate but also substantively unsupported. The Board should decline to institute trial, as the Petition fails to establish a reasonable likelihood that any challenged claim is unpatentable.

II. FACTUAL BACKGROUND

Patent Owner has earned a reputation as North America's leading railroad freight car manufacturer. For over a century, when its first wood and steel freight cars left the production line, Patent Owner has been designing and making a wide range of freight cars tailored to meet the evolving needs of the rail transportation industry. Its freight cars include open-top railroad hopper cars for transporting material such as iron ore. The railroad hopper cars are designed so that material such as iron ore can be deposited into the top of each car. The deposited material sits on a mechanically-driven floor that opens in order to gravity-feed the material into a ship loader or other conveyance system positioned below the rail car.

Patent Owner designed, built, and sold hundreds of such open-top hopper with bottom discharge rail cars (colloquially referred to as "jennies") to Canadian National Railway Company ("CN") for use on its Duluth, Missabe and Iron Range Railway ("DMIR") subsidiary in or around 2009. Unique requirements of docks on which the jennies would be used by DMIR in Two Harbors, Minnesota led Patent Owner to innovate novel features for the rail cars, covered by the challenged claims.

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Images of one of the jennies as manufactured by Patent Owner and used by DMIR are shown below:



Patent Owner filed for the '515 Patent to cover innovations it made in the design and construction of the above jenny.

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The '515 Patent identifies several design constraints stemming from the requirements of the railways and docks on the DMIR, rendering prior art designs unsuitable and leading to the distinctive design of the Patent Owner's patented rail cars. For example, the patent discusses maximizing the hopper and lading volume, while designing the car within limited dimensional profiles. *See* '515 Patent (Ex. 1001) at 1:47-2:18. The claimed arrangements in the challenged claims was developed to address the limitations presented by the abnormally short dimensions required for the rail car.

In April 2024 Petitioner announced that it sold 600 new 1,150 cubic foot iron ore hopper cars that were built at its Mexican manufacturing facility to CN for use by DMIR. Ex. 2004 at ¶39. Images of one of these cars is shown below:





Ex. 2004 at ¶50. Patent Owner initiated patent infringement litigation against Petitioner in the U.S. District Court for the District of Delaware on May 17, 2024, for infringement of the '515 Patent. Ex. 2003.

III. OVERVIEW OF THE '515 PATENT

The Petition misreads the '515 Patent and ignores its claim language. Claim 1 is reproduced below with emphasis added and with Petitioner's annotations "1a"- "1i":

1. [1a] A railroad hopper car for carrying particulate material, said hopper car comprising:
a hopper;
first and second end sections for carriage by respective first and second rail road car trucks for

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rolling motion along railroad tracks in a longitudinal direction;

said hopper being suspended between said first and second end sections,

[1b] said hopper having a discharge section through which to release lading, and first and second end slope sheets oriented toward said first and second end sections, said end slope sheets being inclined in the longitudinal direction to feed said discharge section;

[1c] said first end section including a draft sill extending in the longitudinal direction, a main bolster extending cross-wise to said draft sill, and a shear plate mounted to said draft sill and to said main bolster, said shear plate extending lengthwise along said draft sill and cross-wise from side to side of said hopper car;

[1d] said first end slope sheet of said hopper overhanging said shear plate of said first end section;
and

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[1e] *said hopper car being free of primary structure directly above said shear plate of said first end section under said overhang of said first end slope sheet of said hopper;*

[1f] one of:

(a) said first end slope sheet has an upper margin and said hopper car includes an end post extending upwardly from said draft sill to said upper margin of said first end slope sheet; and

(b) said first end slope sheet has an upper margin terminating at an end wall, and said hopper car includes an end post extending upwardly from draft stub sill to said end wall;

[1g] said shear plate has a longitudinally outboard margin and said draft sill has a striker located outboard of said longitudinally outboard margin of said shear plate, and said end post is one of:

(a) rooted to said draft sill adjacent to said striker;

(b) rooted to said shear plate adjacent to said longitudinally outboard margin of said shear plate;

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[1h] *said bolster has first and second laterally outboard distal ends, and said hopper car has corner posts extending upwardly from said distal ends of said bolster to said first end slope sheet; and*

[1i] *said hopper car has a machinery space bounded by (a) said first end slope sheet; (b) said shear plate of said first end section; (c) said end post; and (d) said corner posts, and said machinery space is free of any other primary structure.*

Petition at 1-2; '515 Patent 23:8-56.

Independent claims 7, 18, 20, 24, and 32 contain similar limitations. Petition at 3-5, 6-8, 9-10, 11-12, and 14-15, respectively; '515 Patent 24:24-25:5, 25:55-26:45, 26:59-27:41, 27:59-28:46, and 29:19-30:13, respectively. The remaining claims are dependent claims, each depending, directly or through one or more intervening claims, on one of the independent claims.

As discussed below, the Petition's analysis systematically ignores the actual language of the claims, including many of the limitations discussed above.

IV. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner contends that a POSITA “would have had at least a bachelor’s degree in a discipline related to mechanical engineering, physics, structural design, or an equivalent discipline, and at least two years of experience designing or analyzing rail cars or similar vehicles.” Petition at 30. Petitioner’s proposed POSITA is incorrect because a person having only designed “similar vehicles” to rail cars would not necessarily have knowledge applicable to the art of the ’515 Patent. *See* Declaration of Mark J. Viz Ph.D., P.E. (Ex. 2035, hereinafter “Dr. Viz Decl.”) ¶¶33-40.

A POSITA in the field of the ’515 Patent would have at least a bachelor’s degree in a discipline related to mechanical engineering, physics, structural design, or an equivalent discipline, and at least two years of experience designing or analyzing rail cars. *See* Dr. Viz Decl. ¶35.

Although Dr. Ahmadian’s background includes academic research in multi-body railcar truck dynamics, which is relevant to the dynamic performance of a railcar, Dr. Ahmadian’s background does not include actual industry experience with railcar structures. Dr. Viz Decl. ¶40. As a result, Dr. Ahmadian makes the wrong conclusions and conflates various concepts that a POSITA with practical industry experience and knowledge of rail cars would not. *Id.*

V. CLAIM CONSTRUCTION

A petitioner must observe the basic statutory and regulatory content requirements of a petition in showing with particularity that their grounds meet the challenged claims as they construe them. *See, e.g.*, 35 U.S.C. §322(a)(3) (requiring “particularity”); 37 C.F.R. §42.204(b)(3)-(4). Petitioner’s failure to comply with these statutory and regulatory requirements provides sufficient reason on its own to deny the Petition.

The Petition claims it does not advance any claim constructions. *See* Petition at 29. However, as explained below, the Petition does rely on certain proposed claim constructions, sometimes leading to inconsistent positions. Instead of evaluating the claim language, specification, and prosecution history in proposing these constructions, as required by law, Petitioner merely cites to the asserted art or other extrinsic documents. *See Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) (intrinsic evidence must be considered for claim construction). Petitioner’s failure to justify the proposed constructions and to show with particularity that the grounds meet the challenged claims as Petitioner construes them, as required by statute and regulation (35 U.S.C. §322(a)(3); 37 C.F.R. §42.204(b)(3)-(4)), warrants denial of institution.

For the purpose of this preliminary response, no construction of the challenged claims, other than the “ordinary and customary meaning” as understood

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by a POSITA in view of the '892 Patent specification and prosecution history, is required to deny institution. *See Phillips*, 415 F.3d at 1312-13; 37 C.F.R. §42.100(b).

VI. THE PETITION FAILS TO ESTABLISH A REASONABLE LIKELIHOOD THAT IT WILL PREVAIL ON ANY CHALLENGED CLAIM

The Petition asserts nine (9) grounds of unpatentability (Petition at 19), none of which establish a reasonable likelihood that Petitioner will prevail on any challenged claim.

A. Legal Standard

A patent claim is unpatentable under 35 U.S.C. §103(a) if the differences between the claimed subject matter and the prior art are “such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, *i.e.*, secondary considerations. Thus, the obviousness inquiry is based on factual inquiries including the differences between the claimed invention and the prior art. *Id.*

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To establish obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *See CFMT, Inc. v. Yieldup Int'l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003). The fact that prior art references deal with the same subject matter is not in itself sufficient rationale for combining them to reach the claimed invention. In order to combine prior art references, some suggestion, motivation, or reasonable basis must exist, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the teachings in the references. *See, e.g., KSR*, 550 U.S. at 418-19. Indeed, Petitioner must credibly explain why a person of ordinary skill in the art would have been prompted to combine particular available elements of knowledge, as evidenced by prior art, to reach the claimed invention. *Id.*; *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[O]bviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”); *see Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1379 (Fed. Cir. 2012) (“Obviousness requires a court to walk a tightrope blindfolded (to avoid hindsight) – an enterprise best pursued with the safety net of objective evidence.”). As explained below, Petitioner has failed to make these required showings. In particular, the Petition’s overarching shortcoming is that it lacks an “articulated reason[] with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d at 988. Virtually no effort

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is made to explain how or where the references differ from the challenged claims, how one of ordinary skill in the art would go about combining their disparate elements, or what modifications one of ordinary skill in the art would necessarily have made in order to combine the disparate elements. The inadequacy of the obviousness analysis in the Petition and the accompanying declaration is readily apparent when the disparate elements of the references are scrutinized closely, and the Board should decline to search through the record and piece together those teachings that might support Petitioner's positions.

B. The Petition Improperly Relies on an Ipse Dixit Assertion That Rail Cars Sold to Two Separate Customers by NSC Were the Same.

Every ground in the Petition relies on the 1946 Cyclopeda (Ex. 1004, hereinafter the "1946 Cyclopeda") as basis for Petitioner's challenge against the '892 Patent claims. *See* Petition at 19. The 1946 Cyclopeda contains dozens of examples of rail cars. *See* 1946 Cyclopeda. The primary examples asserted by Petitioner are grouped together as the 1946 NSC Ore Cars (Ex. 1004 at 27 and 28, hereinafter the "NSC Ore Cars") in the Petition. The first is a schematic drawing of a rail car captioned as being for use by Canadian Pacific, a large rail operator. *See* 1946 Cyclopeda at 27. The second is a picture of a rail car captioned and shown as being used by CN, a competitor of Canadian Pacific. *See* 1946 Cyclopeda at 28. The Petition and accompanying expert report of Dr. Ahmadian fail to establish that

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the design of the rail car in the schematic is the same as the picture, or vice-versa; or if they are not, that a POSITA would have been motivated to combine these two separate disclosures to arrive at any challenged claim.

This is not a trivial flaw in the Petition, as the Petition relies on and conflates the schematic and the picture in each of its grounds against the challenged claims. *See, e.g.*, Petition at 36, 39, 66, 70-71, 76-77, 99-101. This *ipse dixit* conflation of a schematic and picture relating to different NSC Ore Cars, without establishing the identity of those designs, undermines any assertion by Petitioner that there is a reasonable likelihood that any claim is invalid as obvious.

C. Dr. Ahmadian's Failure to Consider All Claim Limitations in Any Challenged Claim Renders His Assessment and Opinions on Motivations to Combine Speculative and Insufficiently Substantiated

Dr. Ahmadian reaches an ultimate conclusion that the challenged claims are obvious. Declaration of Mehdi Ahmadian (Ex. 1003, hereinafter "Dr. Ahmadian Decl.") ¶123. However, in evaluating the challenged claims he fails to consider each and every element as set forth in any challenged claim. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) ("A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."). Dr. Ahmadian also fails to consider the differences between the asserted art and any challenged claim as a

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whole—the question for any obviousness assessment is not whether the differences between the asserted art and the claims would have been obvious, but whether the claimed invention **as a whole** would have been obvious. 35 U.S.C. § 103; *see also Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530 (Fed. Cir. 1983).

For instance, Dr. Ahmadian's report discusses claim limitations [1b]-[1f] and [1g]-[1i] with respect to Ground 1, but **ignores limitations [1a] and [1h] and [1j], as well as claim 1 as a whole.** Dr. Ahmadian's report is similarly deficient with respect to the other independent claims and the dependent claims.

Having improperly limited his analysis of the asserted art to only a few claim limitations, Dr. Ahmadian failed to consider the impact of those claim limitations on, as well as the interaction with, other limitations in each challenged claim, or the invention as a whole of any challenged claim. Therefore, Dr. Ahmadian's opinions regarding the proposed combinations of asserted art references with respect to any challenged claim are deficient and unhelpful.

Accordingly, Dr. Ahmadian's opinions should not be given any weight.

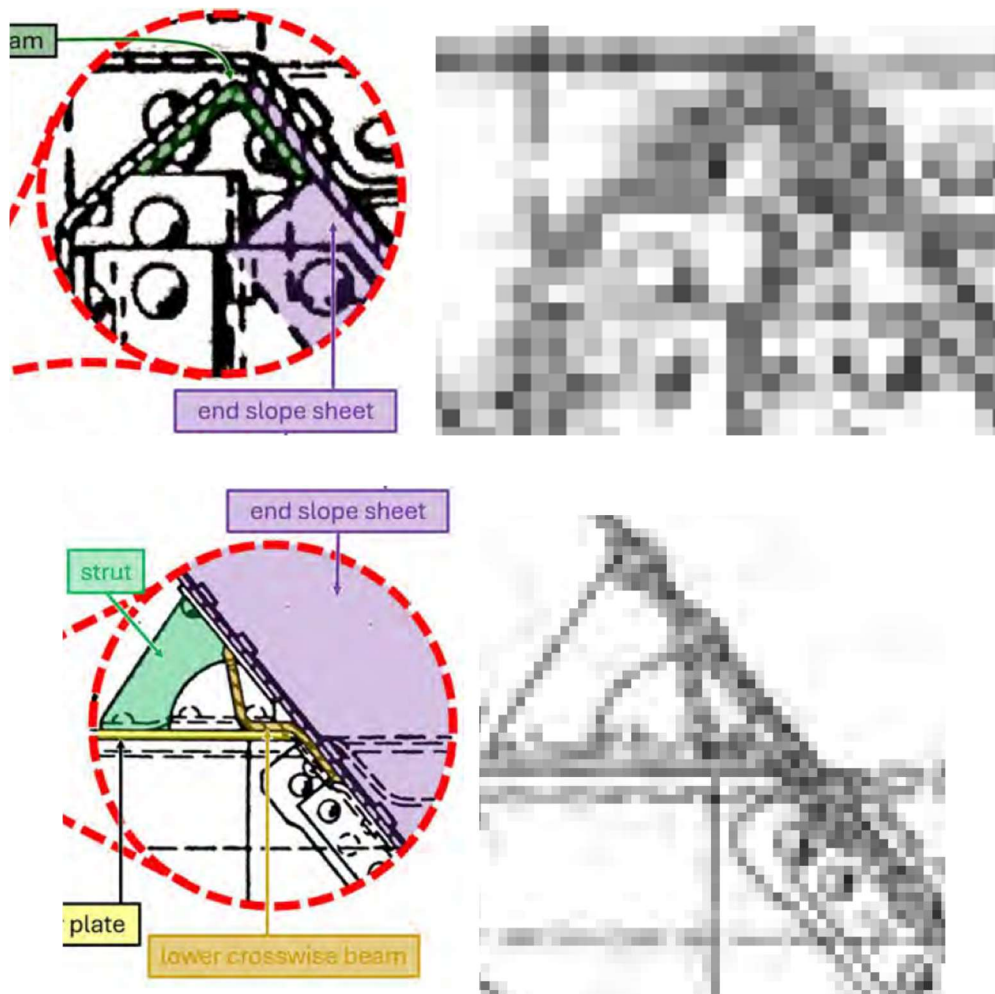
D. The Petition and Dr. Ahmadian Rely on Pictures with Greater Detail than Shown in the Exhibits

The Petition relies on several pieces of asserted art that are ancient, with some of the asserted art dating back over 100 years. This asserted art comes from patents

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or printed publications that have apparently been copied numerous times resulting in a considerable loss of resolution.

Petitioner and its expert Dr. Ahmadian seek to cure this deficiency of the asserted art with computer-generated vector graphics and by including their interpretations of the images as if they were presented in high definition. This occurs throughout the Petition. For example, the callout below from Petition contains far more detail than the Exhibit:



Petition at 50; Ex. 1004 at 27.

Petitioner provides no basis to support its unstated assertion that a POSITA would have had the ability to reconstruct illegible figures in prior art documents at the time the inventions of the '515 Patent were made. Its lack of analysis and improper substitution of its own interpretation of the asserted art over what is actually shown, without establishing that this is something a POSITA would be able to do, fails to satisfy Petitioner's burden to show a reasonable likelihood that any claims are invalid as obvious. The Petition should be denied.

E. Ground 1 Should Not be Instituted

Petitioner asserts as Ground 1 that claims 1-2, 5-6, 20, and 23 of the '515 Patent are obvious over the 1946 Cyclopedia and either Coates or the 1922 Cyclopedia. *See* Petition at 33. As set forth below, the Petition fails to establish a reasonable likelihood that 1946 Cyclopedia and either Coates or the 1922 Cyclopedia render 1-2, 5-6, 20, and 23 obvious. *See* Dr. Viz Decl. ¶54.

i. Claim Limitation 1e

Limitation 1e requires “said hopper car being free of primary structure directly above said shear plate of said first end section under said overhang of said first end slope sheet of said hopper.” *See* Petition at 46-54.

As conceded by Petitioner, the 1946 Cyclopedia's NSC Ore Cars (the “NSC Ore Cars”) include numerous “struts” that are located “directly above said shear

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plate of said first end section under said overhang of said first end slope sheet of said hopper.” *See* Petition at 48-51; Dr. Viz Decl. ¶55.

Petitioner suggests replacing the multiple struts in the NSC Ore Cars with cross-wise beams. Dr. Viz Decl. ¶56. Neither the Petition nor Dr. Ahmadian explain why it would be routine or simple for a POSITA to redesign the NSC Ore Car to remove its primary structure from above the shear plate and below the first end slope sheet and replace it with cross-wise beams. *See id.* ¶57.

The Petition appears to be picking and choosing pieces from different rail cars, each of which is suitable for its intended purposes, without consideration of what those rail cars individually and as a combination would have suggested to a POSITA. *See* Dr. Viz Decl. ¶58.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶55-59.

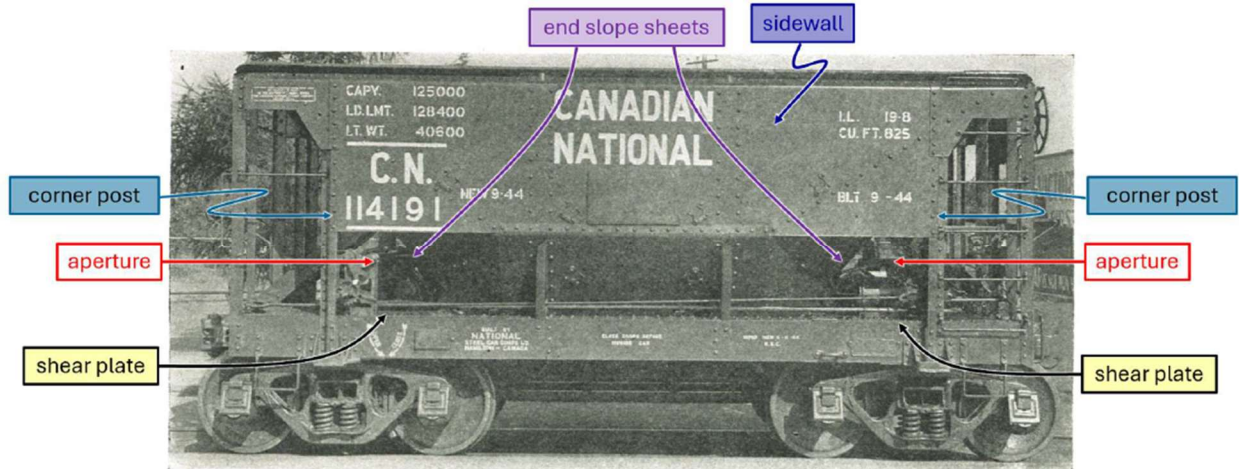
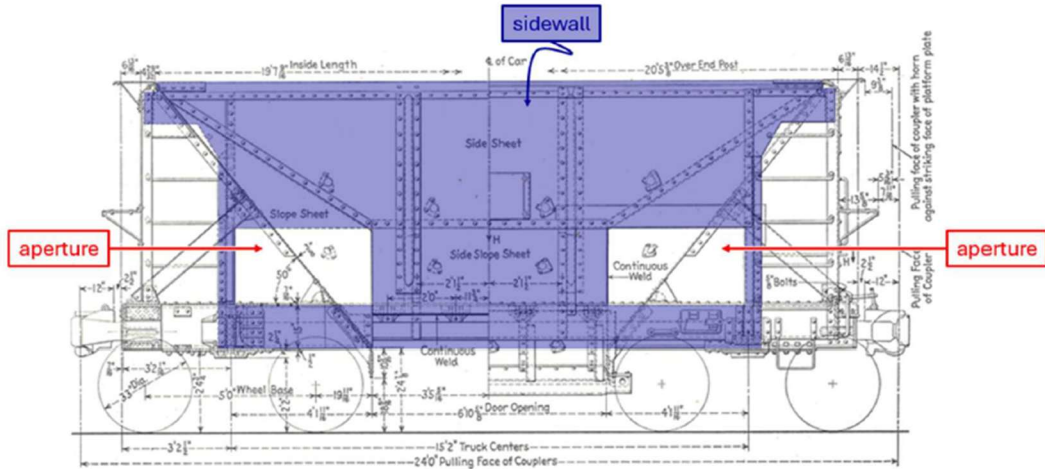
ii. Claim Limitation 1h

Petitioner alleges, without support from Dr. Ahmadian, that the NSC Ore Cars have “corner posts extending upwardly from said distal ends of said bolster to said first end slope sheet.” *See* Petition, at 60-61. Patent Owner disagrees.

The annotated figures that Petitioner relies upon in the Petition, at 61, do not show that the corner posts extend upwardly to said first end slope sheet. Dr. Viz Decl. ¶ 60. In fact, based on the geometry of the NSC Ore Cars, as it can be understood

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from images in the annotated figures, the corner posts extend upwardly to meet the sidewall of the NSC Ore Cars. *Id.* Petitioner appears to recognize this fact:



Petition at 77; Ex. 1003 ¶ 88.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶60-61.

iii. Claim Limitation 1i

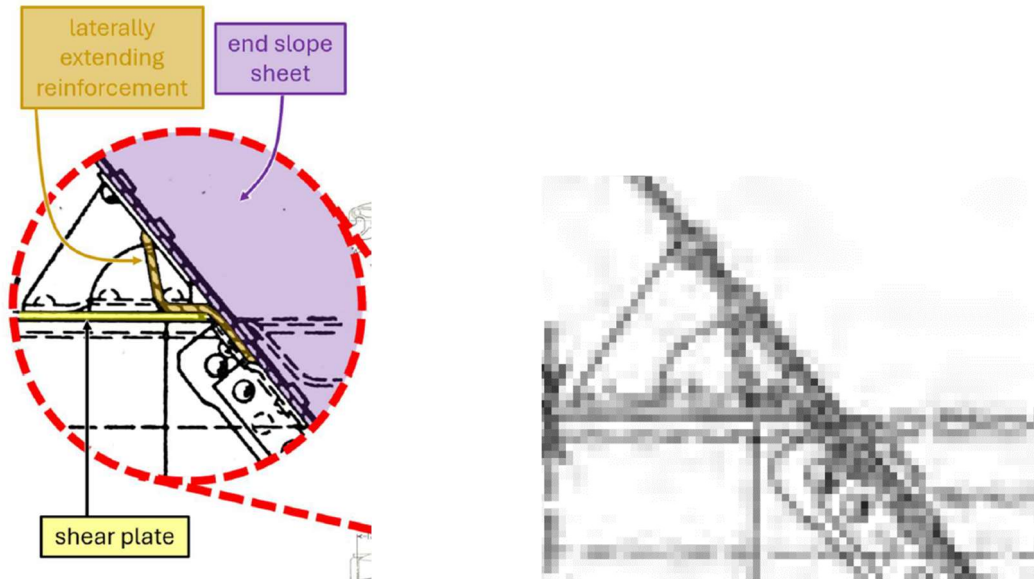
The NSC Ore Cars, whether taken alone or in the combination proposed by Petitioner, do not teach, suggest, or render obvious the claimed “machinery space.” *See* Dr. Viz Decl. ¶62. Petitioner fails to explain how the structures it identifies as “corner posts” meet this or other limitations of the challenged claims. Without the features in, for example, claim 1 that “bound” the “machinery space,” such a machinery space cannot exist. There is no reasonable basis, rationale, or reason in the Petition why a POSITA would have been motivated to modify or combine the asserted art as Petitioner suggests to reach this claim limitation. *See* Dr. Viz Decl. ¶62.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶62-63.

iv. Claim Limitation 20f

Petitioner asserts that the NSC Ore Cars meet this limitation. *See* Petition at 72. Patent Owner disagrees.

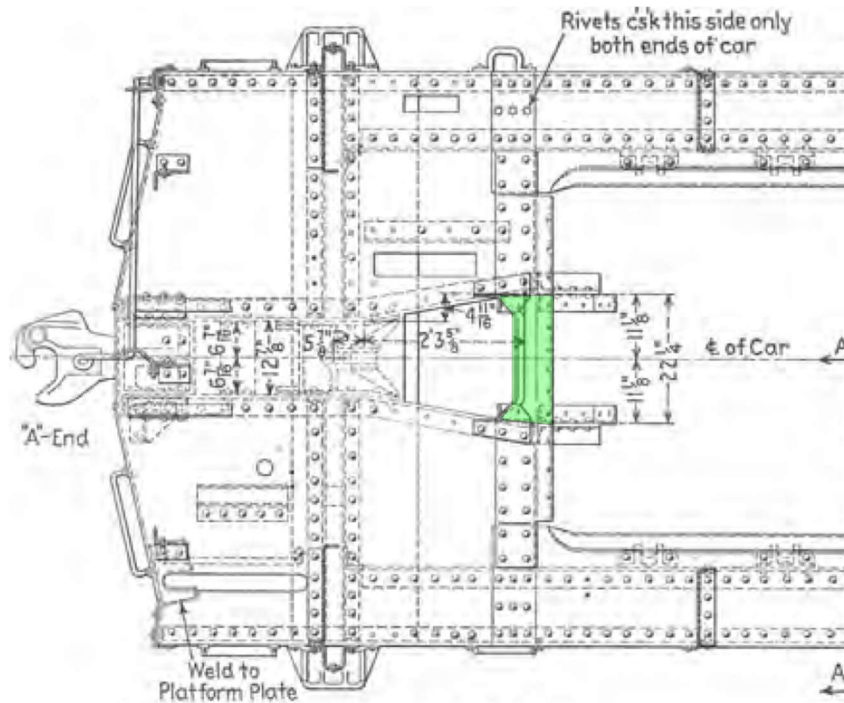
As an initial matter, Petitioner’s zoomed-in call-outs include far more detail than what is actually disclosed in the 1946 Cyclopedia. For example, Petitioner includes the callout below on the left--however, zooming in on this section of the illustration in the 1946 Cyclopedia does not show this level of detail:



Compare Petition at 72 with Ex. 1004 at 294.

It is impossible to determine from the alleged drawings of the NSC Ore Cars that there is a “first laterally extending reinforcement.” *See* Dr. Viz Decl. ¶¶64-65.

Even assuming it could, the structure that Petitioner identifies as a “laterally extending reinforcement” does not “extend[] across said hopper car between said first and second side walls” as required by the claim. Instead, it extends between the two structures that Petitioner identifies as “struts.” Petitioner attempt to make the alleged “laterally extending reinforcement” look longer by showing it in a single color. The actual portion identified by Petitioner is shown below:



See Ex. 1004 at 27. The structure that Petitioner identifies as a “laterally extending reinforcement” does not extend “between said first and second side walls,” as required in the claim.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. See Dr. Viz Decl. ¶¶64-66.

v. Claim Limitation 20h

Petitioner relies on its discussion of claim limitation 1h for this claim limitation. See Petition at 75. Accordingly, for the reasons discussed regarding claim limitation 1h in Section VI.E.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶67.

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Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶67-68.

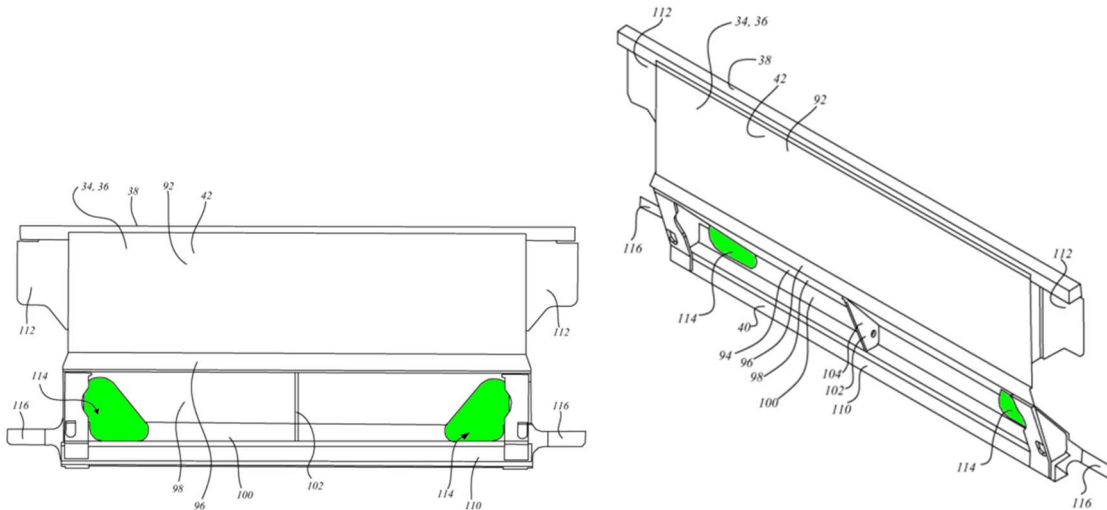
vi. Claim Limitation 20j

Petitioner relies on its discussion of claim limitation 1i for this claim limitation. *See* Petition at 75-76. Accordingly, for the reasons discussed regarding claim limitation 1i in Section VI.E.iii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶69.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶69-70.

vii. Claim 23

Petitioner asserts that the NSC Ore Cars disclose the features of this claim. *See* Petition at 76. As explained in the '515 Patent specification, “[t]he lower region of the main sidewall sheet also includes lightening apertures 114, in the space between the corner posts and the slope of the end slope sheets.” '515 Patent at 16:26-29. As such, a POSITA would understand that the claimed “openings” are the apertures in the sidewall sheet:



'515 Patent Figs. 2b and 2a (shown above with annotations to highlight apertures 114 in green); Dr. Viz Decl. ¶¶71-72.

The 1946 NSC Ore Cars do not have openings or apertures in the sidewall sheet. Dr. Viz Decl. ¶72. Petitioner appears to consider the claimed “corner posts” as part of the claimed “side wall.” *Id.* ¶73 Petitioner provides no reasonable basis in the specification or the challenged claims that would cause a POSITA to consider or construe any of the corner posts to be part of the “side wall”; and Petitioner does not provide any reasonable basis for considering the structure they identify as “corner posts” to be part of the structure they identify as the “side wall.” *Id.*

In fact, in other portions of the Petition, Petitioner does not include those structures it identifies as corner posts to be a part of the structure it identifies as the sidewall:

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viii. The Petition has not met its burden with respect to Ground 1

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 1 and institution on this ground should be denied.

F. Ground 2 Should Not Be Instituted

Petitioner asserts as Ground 2 that claims 3 and 21-22 of the '515 Patent is obvious over the 1946 Cyclopedia, Coates or the 1922 Cyclopedia, and Schuller. *See* Petition at 78. As set forth below, the Petition fails to establish a reasonable likelihood that 1946 Cyclopedia, Coates or the 1922 Cyclopedia, and Schuller render claims 3 and 21-22 obvious. *See* Dr. Viz Decl. ¶77.

i. Claim Limitation 3b

For the reasons discussed in Section VI.E.iii, with respect to claim limitation 1i, the asserted art, whether taken alone or in the proposed combination, does not teach, suggest, or render obvious the claimed “machinery space.” *See* Dr. Viz Decl. ¶78. Moreover, Schuller does not show or suggest a “longitudinally acting pneumatic actuator is at least partially lodged in said machinery space.” *See id.* Thus, Petitioner’s proposed combination of the NSC Ore Cars and Schuller for the “longitudinally acting pneumatic actuator” in claim 3 cannot be said to be “at least partially lodged in said machinery space directly above said draft sill,” as also required by the same claim 3.

A POSITA would not be motivated to modify the NSC Ore Cars to incorporate Schuller's door-opening mechanism because the proposed combination would render the NSC Ore Cars unsatisfactory for its intended purpose. *See* Dr. Viz Decl. ¶79. As explained with respect to claim limitation 1e in Section VI.E.i, a POSITA would not be motivated to remove the multiple struts from the NSC Ore Cars and replace them with crosswise beams. *See id.* The Petition provides no basis for asserting that a POSITA would find it obvious to modify the NSC Ore Cars' end sections, with either struts or crosswise beams present, to include a longitudinally acting pneumatic actuator. *See id.*

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶78-80.

ii. Claim 21

Petitioner relies on its discussion of claim limitation 3b for this claim limitation. *See* Petition at 80. Accordingly, for the reasons discussed regarding claim limitation 3b in Section VI.F.i, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶81.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶81-82.

iii. Claim 22

Petitioner relies on its discussion of claim 23 for this claim limitation. *See* Petition at 80. Accordingly, for the reasons discussed regarding claim 23 in Section VI.E.vii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶83.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶83-84.

iv. The Petition has not met its burden with respect to Ground 2

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 2 and institution on this ground should be denied.

G. Ground 3 Should Not Be Instituted

Petitioner asserts as Ground 3 that claim 4 of the '515 Patent is obvious over the 1946 Cyclopedia, Coates or the 1922 Cyclopedia, Schuller, and Karig. *See* Petition at 80. As set forth below, the Petition fails to establish a reasonable likelihood that the 1946 Cyclopedia, Coates or the 1922 Cyclopedia, Schuller, and Karig render claim 4 obvious. *See* Dr. Viz Decl. ¶85.

i. Claim 4

For the reasons discussed in Section VI.E.iii with respect to claim limitation 1i, the Petition fails to show that the asserted art teaches, suggests, or renders obvious

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the claimed “machinery space.” *See* Dr. Viz Decl. ¶86. Thus, claim 4’s “brake reservoir” cannot be “at least partially lodged in said machinery space directly above said draft sill.” Moreover, Petitioner does not provide any reasonable basis or rationale why a POSITA would be motivated to include both a “longitudinally acting pneumatic actuator” and a “brake reservoir” in the same area that Petitioner identifies as a “machinery space.” *Id.*

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶86-87.

ii. The Petition has not met its burden with respect to Ground 3

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 3 and institution on this ground should be denied.

H. Ground 4 Should Not Be Instituted

Petitioner asserts as Ground 4 that claims 7–16, 18–19, 24–27, 30–35, and 38–42 of the ’515 Patent are obvious over the 1946 Cyclopedia and Wong. *See* Petition at 81. As set forth below, the Petition fails to establish a reasonable likelihood that the 1946 Cyclopedia and Wong claims 7–16, 18–19, 24–27, 30–35, and 38–42 obvious. *See* Dr. Viz Decl. ¶88.

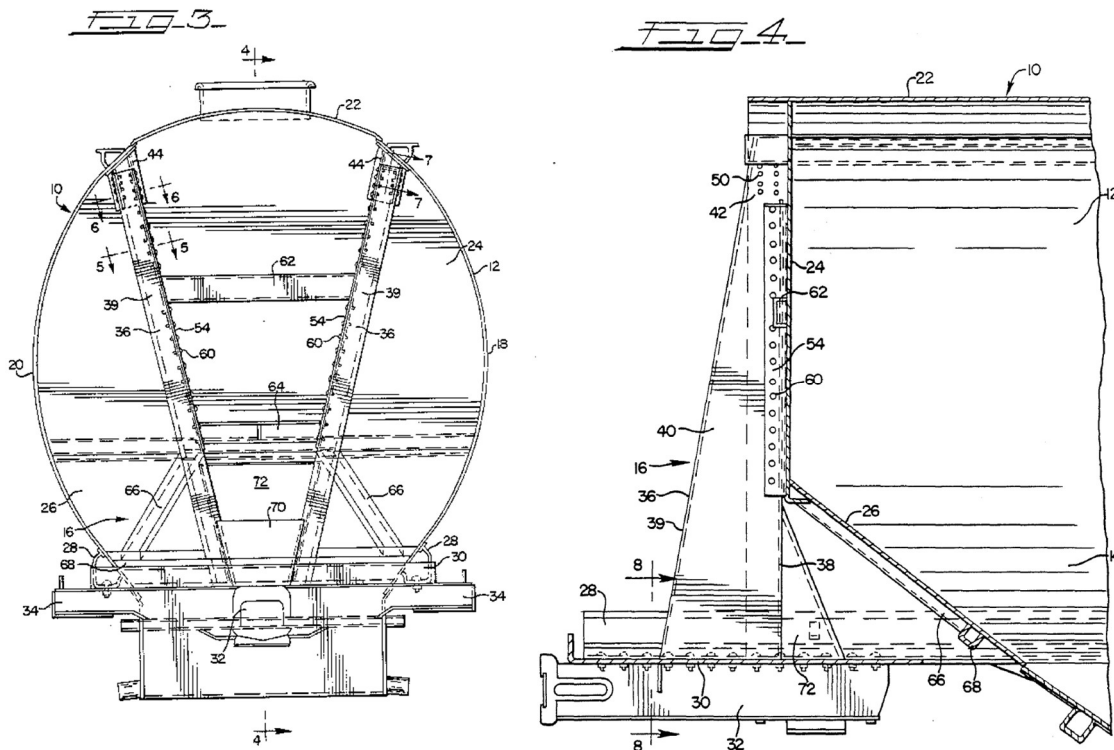
i. Claim Limitation 7f

Petitioner relies on its discussion of claim limitation 20f for this claim limitation. *See* Petition at 83. Accordingly, for the reasons discussed regarding claim limitation 20f in Section VI.E.iv, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶89.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶89-90.

ii. Claim Limitation 7h

The Petition states that a POSITA would combine the 1946 NSC Ore Cars with Wong to add a first cross-wise extending beam. *See* Petition at 85. Patent Owner disagrees. Wong teaches a covered hopper rail car with a steel end structure:



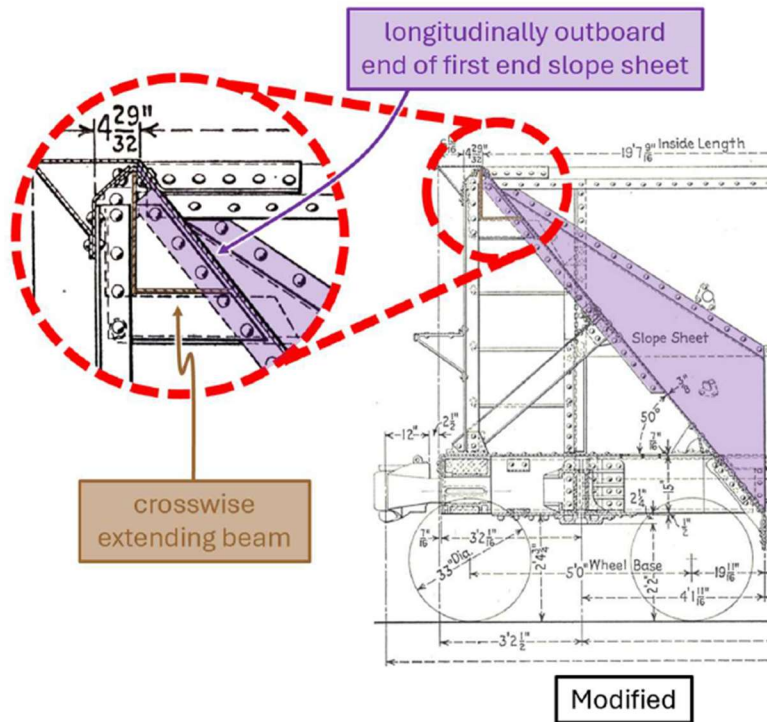
See Ex. 1006, Wong Figs. 3, 4; Dr. Viz Decl. ¶ 92.

Wong is about how to combine steel and aluminum structure to get needed strength while avoiding the corrosion issues that arise because steel and aluminum are galvanically coupled and will corrode if in contact with each other. *Id.* ¶ 92. Wong is far less concerned regarding lateral reinforcing beams. *Id.* The L-bracket detail shown in Wong is not similar to the claimed “first end wall member”/“second hollow section beam” in the ’515 Patent because it is the joint where the slope sheet is connected to the end vertical sheet. *Id.* Wong does not provide reinforcement, but simply shows two sheets being connected for lading containment and load transfer. *Id.*

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The claimed “first end wall member”/“second hollow section beam” in the ’515 Patent provides reinforcement to the slope sheet; a POSITA in the relevant time frame would understand and appreciate this difference. *Id.* ¶93. Accordingly, in my opinion, a POSITA would not look towards Wong to improve the end structure of the NSC Ore Cars. *Id.*

In fact, the proposed combination of the NSC Ore Cars and Wong is unsatisfactory for either rail car’s intended purpose. *Id.* ¶ 94. It is not clear how the proposed cross-wise beam in the NSC Ore Cars would transfer load straight down from the end slope sheet to the undercarriage of the car:



Petition at 53, Ex. 1003 at ¶ 56; Dr. Viz Decl. ¶ 94.

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The NSC Ore Car already has structure for holding up the end slope sheet. Dr. Viz Decl. ¶ 95. For example, a POSITA would have understood that adding a redundant beam would require time investments for the redesign and requisite analyses. *Id.*

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶92-95.

iii. Claim 9

For the reasons discussed in Section VI.E.iv with respect to the claimed “laterally extending reinforcement [or member],” the asserted art does not teach, suggest, or render obvious a “laterally extending reinforcement[or member]” as recited in claim 9, let alone the other elements of this claim. *See* Dr. Viz Decl. ¶96.

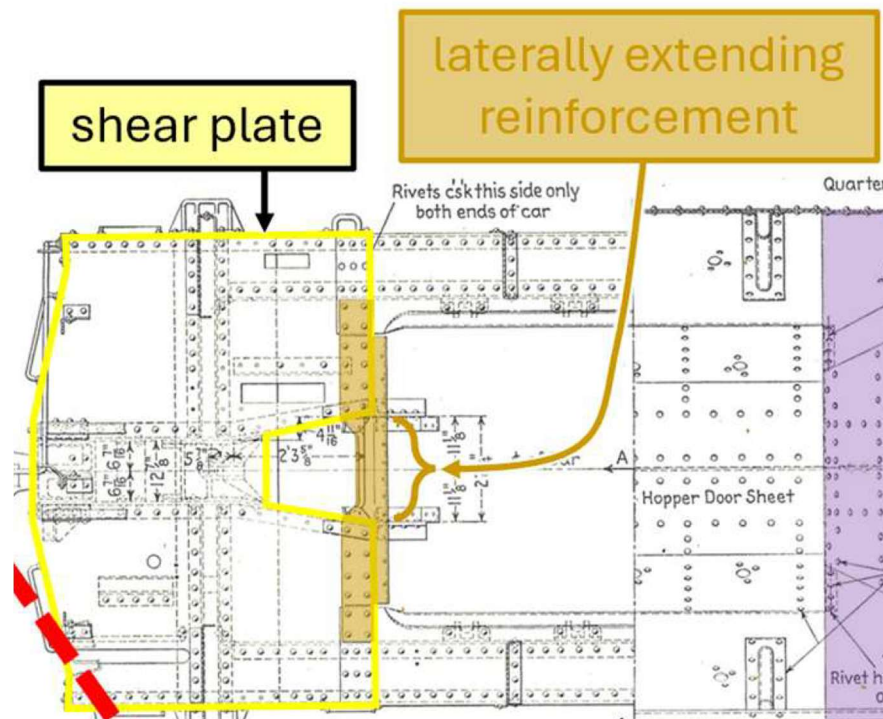
Moreover, it does not appear that the structure the Petition identifies as the “laterally extending member” is “mounted” to the structure that the Petition identifies as the “end slope sheet.” Instead, it appears that flanges that extend laterally and longitudinally beyond the portion identified as the “laterally extending reinforcement” are mounted to other structure. At a minimum, Petitioner fails to explain how the structure the Petition identifies as the “laterally extending reinforcement” is “mounted” to the structure the Petition identifies as the “end slope sheet.”

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶96-97.

iv. Claim 10

Petitioner repeats its discussion of claim 9 for this claim. *See* Petition at 94. Accordingly, for the reasons discussed regarding claim 9 in Section VI.H.iii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. *Dr. Viz Decl.* ¶98.

In addition, Petitioner assert that the structure they identify as a “laterally extending reinforcement” has a back mounted to the structure they identify as a “shear plate.” However, the structure identified as the shear plate specifically carves-out the area under the structure the Petitioner identifies as the laterally extending reinforcement:



See Petition at 95, Ex. 1003 ¶ 104.

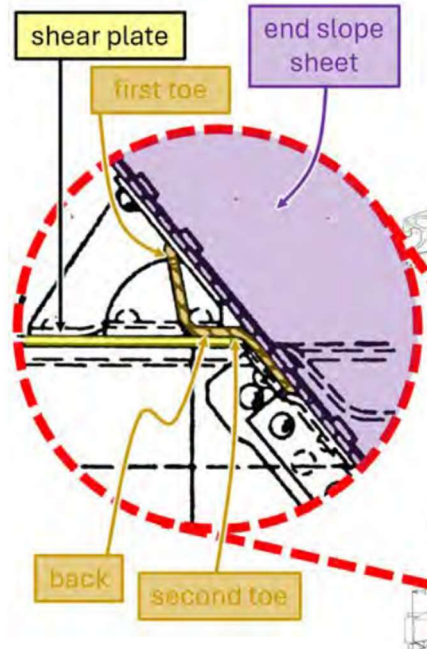
PATENT OWNER'S PRELIMINARY RESPONSE

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶98-99.

v. Claim 11

For the reasons discussed in Section VI.E.iv with respect to the claimed “laterally extending reinforcement [or member],” the asserted art does not teach, suggest, or render obvious a “laterally extending reinforcement[or member]” as recited in claim 11, let alone the other elements of this claim. *See* Dr. Viz Decl. ¶100.

Petitioner relies on a definition of “angle iron” from the Merriam Webster Dictionary, but fails to introduce that definition as an exhibit. *See* Petition at 95. Regardless, the definition proffered by Petitioner requires that an angle iron be “a piece of structural steel rolled with an L-shaped section.” *See id.*; Ex. 1003 ¶ 105. Despite Petitioner using a higher-resolution image than what is presented in the Exhibit, a POSITA would not understand the structure identified by Petitioner as a “laterally extending reinforcement” to be “L-shaped” because it is S- or Z-shaped according to Petitioner’s own improved screenshots:



See Ex. 1003 at 82.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. See Dr. Viz Decl. ¶¶100-101.

vi. Claim 12

The Petition alleges that this limitation is met by the combination of Hart and Wong discussed in connection with limitation 7h. See Petition at 96. Accordingly, for the reasons discussed regarding claim limitation 7h in Section VI.H.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶102.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. See Dr. Viz Decl. ¶¶102-103.

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Petitioner has not demonstrated that the alleged intermediate beam “extends across said first end slope sheet between said first and second side walls,” as required in the claim. Dr. Viz Decl. ¶ 107. As discussed above regarding claim limitation 1e, Petitioner has not demonstrated that a POSITA would be motivated to add cross-wise beams to the NSC Ore Car from Wong. *Id.* ¶ 108.

Moreover, a POSITA would find no motivation from either the NSC Ore Car or Wong to modify the NSC Ore Car as suggested by Petitioner. *Id.* ¶ 109. First, Wong does not have an intermediate beam. *Id.* Instead, it has a number of “channel stiffener members” that are used as part of a larger structure to transfer load from the structure the Petition identifies as an end slope sheet to the end stiffener member 36. *Id.* In fact, of the channel stiffener members identified by Petitioner, only one of them, labeled 68, is on the structure the Petitioner identifies as an end slope sheet; the others are on the end wall and the door. *Id.* Thus, a POSITA would not look towards Wong to modify the NSC Ore Car to include the claimed intermediate beam. *Id.*

In addition, the combination of the would be unsatisfactory for the intended purpose. *Id.* ¶ 110. The NSC Ore Car's intermediate beam is two-part due to the end sheet geometry. Incorporating a channel stiffener member from Wong would require an entire redesign of the NSC Ore Car. *Id.*

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As a result, this combination shows hindsight bias in that it takes an unrelated element from Wong and uses it to modify without any rational basis other than to form an obviousness argument. *Id.* ¶ 111.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶106-112.

ix. Claim 16

Petitioner relies only on its discussion of claim 15 for this claim. *See* Petition at 102. Accordingly, for the reasons discussed regarding claim 15 in Section VI.H.viii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶113.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶113-114.

x. Claim Limitation 18f

Petitioner relies only on its discussion of claim limitation 20f for this claim limitation. *See* Petition at 103. Accordingly, for the reasons discussed regarding claim limitation 20f in Section VI.E.iv, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. . Viz Decl. ¶115.

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Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. Dr. Viz Decl. ¶115-116.

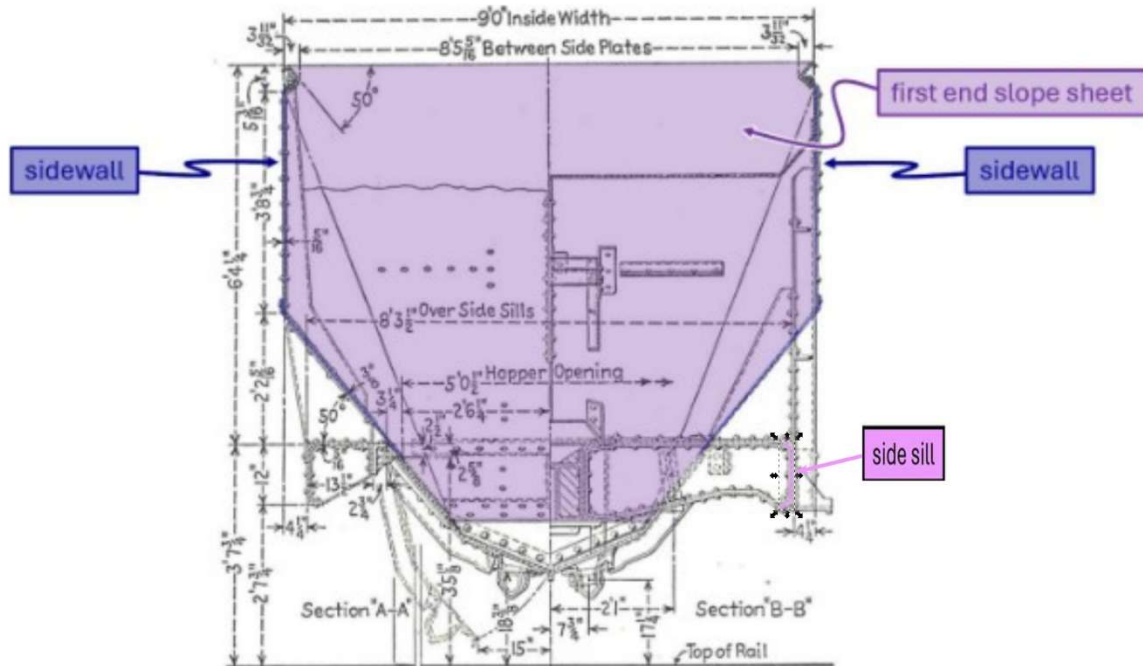
xi. Claim Limitation 18i

Petitioner relies on its discussion of claim limitation 14 and claim limitation 7h for this claim limitation. *See* Petition at 104. Accordingly, for the reasons discussed in Sections VI.H.vii and VI.H.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶116.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶116-117.

xii. Claim Limitation 18j

The Petition does not show and does not identify any structure or feature of the 1946 NSC Ore Cars that include, explicitly or inherently, the claimed “said first and second side walls extending upwardly of said first and second side sills respectively.” Dr. Viz Decl. ¶118. Rather, as seen in the diagram provided in the Petition, the structure that the Petitioner identifies as a “sidewall” never meets the structure the Petitioner identifies as a “side sill”:



See Ex. 1004 at 27 (annotated); Dr. Viz Decl. ¶118.

To the extent that Petitioner is relying on the structures it identifies as corner posts being part of the structures Petitioner identifies as the sidewalls, this proposition is refuted for the reasons explained in Section VI.E.vii regarding claim 23, as Petitioner's argument lacks appropriate basis. Dr. Viz Decl. ¶119.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. See Dr. Viz Decl. ¶¶118-120.

xiii. Claim 19

Petitioner relies only on its discussion of claim limitation 7h for this claim. See Petition at 107; Dr. Viz Decl. ¶121. Accordingly, for the reasons discussed regarding claim limitation 7h in Section VI.H.ii, the asserted art does not teach,

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suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶121.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶121-122.

xiv. Claim Limitation 24f

Petitioner relies only on its discussion of claim limitation 7h for this claim. *See* Petition at 109. Accordingly, for the reasons discussed regarding claim limitation 7h in Section VI.H.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶123.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶123-124.

xv. Claim Limitation 24i

Petitioner relies only on its discussion of claim 12 and claim limitation 7h for this claim limitation. *See* Petition at 111. Accordingly, for the reasons discussed in Sections VI.H.vi and VI.H.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶125.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶125-126.

xvi. Claim 25

Petitioner relies only on its discussion of claim 14 and claim limitation 7h for this claim. *See* Petition at 111. Accordingly, for the reasons discussed in Sections VI.H.vii and VI.H.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶127.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶127-128.

xvii. Claim 26

Petitioner relies only on its discussion of claim limitation 7h for this claim limitation. *See* Petition at 111. Accordingly, for the reasons discussed in Section VI.H.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶129.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶129-130.

xviii. Claim 27

Petitioner relies on its discussion of claim limitation 1h for this claim limitation. *See* Petition at 112. Accordingly, for the reasons discussed regarding claim limitation 1h in Section VI.E.ii, the asserted art does not teach, suggest, or

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render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶131.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶131-132.

xix. Claim 30

Petitioner relies on its discussion of claim limitation 7f for this claim limitation. *See* Petition at 112. Accordingly, for the reasons discussed regarding claim limitation 7f in Section VI.H.i, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶133.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶133-134.

xx. Claim 31

Petitioner relies on its discussion of claims 15 and 16 for this claim. *See* Petition at 112. Accordingly, for the reasons discussed regarding claims 15 and 16 in Section VI.H.viii and VI.H.ix, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶135.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶135-136.

xxi. Claim Limitation 32g

Petitioner relies only on its discussion of claim limitation 7h for this claim limitation. *See* Petition at 120. Accordingly, for the reasons discussed in Section VI.H.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶137.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶137-138.

xxii. Claim Limitation 32h

Petitioner relies on its discussion of claim limitation 7h for this claim limitation. *See* Petition at 120. Accordingly, for the reasons discussed in Section VI.H.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶139.

For at least this reason, Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶139-140.

xxiii. Claim Limitation 32i

Petitioner relies on its discussion of claim limitation 7h for this claim limitation. *See* Petition at 121. Accordingly, for the reasons discussed in Section VI.H.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶141.

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Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶141-142.

xxiv. Claim Limitation 32k

Petitioner relies on its discussion of claim limitation 20f for this claim limitation. *See* Petition at 123. Accordingly, for the reasons discussed in Section VI.E.iv, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶143.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶143-144.

xxv. Claim 33

Petitioner relies on its discussion of claim 15 for this claim. *See* Petition at 123. Accordingly, for the reasons discussed in Section VI.H.viii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶145.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶145-146.

xxvi. Claim 34

Petitioner relies on its discussion of claims 15 and 16 for this claim. *See* Petition at 123. Accordingly, for the reasons discussed in Section VI.H.viii and

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VI.H.ix, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶147.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶147-148.

xxvii. Claim 35

Petitioner relies on its discussion of claim limitation 1h for this claim limitation. *See* Petition at 123. Accordingly, for the reasons discussed regarding claim limitation 1h in Section VI.E.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶149.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶149-150.

xxviii. Claim Limitation 38a

Petitioner relies on its discussion of claim limitation 1h for this claim limitation. *See* Petition at 124. Accordingly, for the reasons discussed regarding claim limitation 1h in Section VI.E.ii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶151.

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Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶151-152.

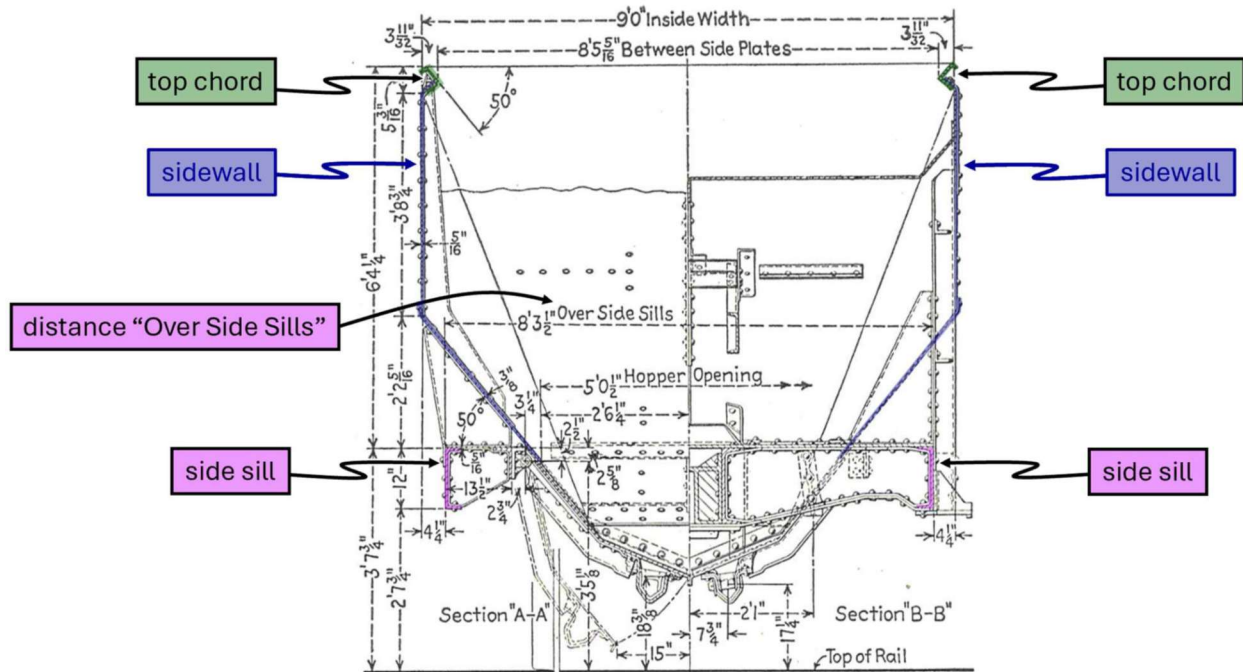
xxix. Claim Limitation 38b

Petitioner relies on its discussion of claim 23 for this claim limitation. *See* Petition at 124. Accordingly, for the reasons discussed regarding claim limitation 1h in Section VI.E.vii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶153.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶153-154.

xxx. Claim Limitation 40b

As explained with respect to claim limitation 18j (Section VI.H.xii), the structure that Petitioner identifies in the 1946 NSC Ore Cars as a side wall does not extend from the structure the Petitioner identifies as a side sill, as it never is in contact with the structure identified as the side sill:



See Petition at 127; Dr. Viz Decl. ¶155.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. See Dr. Viz Decl. ¶¶155-156.

xxxi. Claim Limitation 40h

The Petition appears to assert, without any support, that “web continuity” only requires that claim elements be “in the same vertical plane.” Dr. Viz Decl. ¶157.

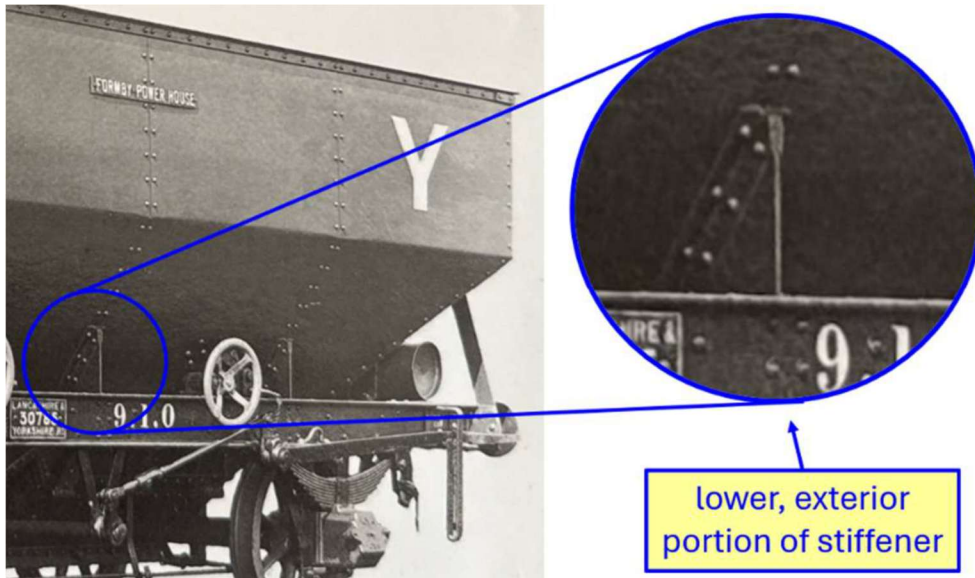
The sidewall stiffening elements from Lindström and the NSC Ore Cars do not have webs. Dr. Viz Decl. ¶158. The drawings for the NSC Ore Cars appear to have sections that are fastened to the side wall. *Id.* There is no disclosure of web continuity between a flange and a web that is perpendicular to the flange that would be considered a side sheet of the car. *Id.*; see '515 Patent at 15:59-62 (“In this

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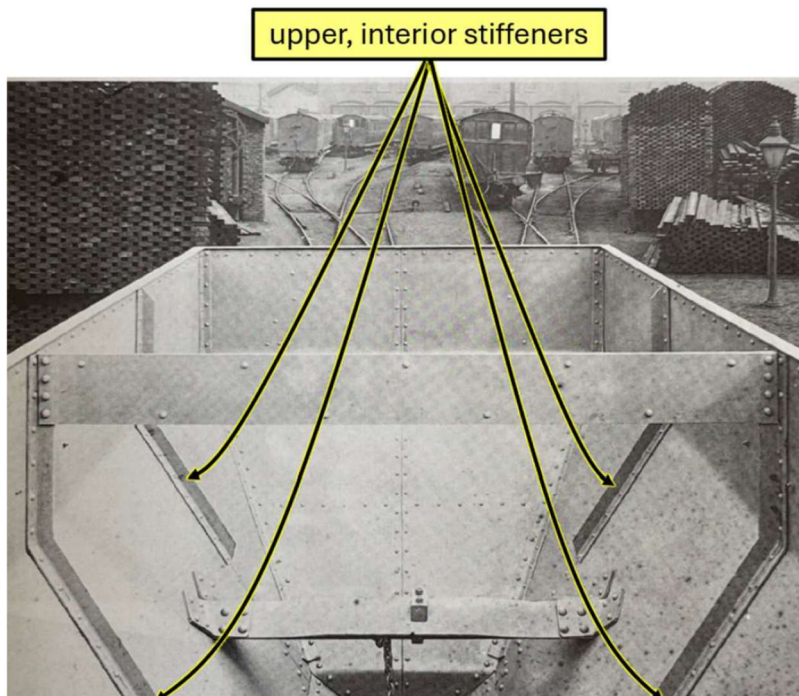
arrangement, the vertical stiffener, 102, acts as the web of a T-section, and the local region of the wall section to which it is joined functions as the flange of that T-section.”). A POSITA would not conclude that what is shown in the drawings relied on by Petitioner is the same thing as what is claimed in the '515 Patent. Dr. Viz Decl. ¶158.

The '515 Patent teaches that the web of the stiffener is matched to the side wall as if the side wall were the flange of an I-beam. Dr. Viz Decl. ¶159. Even if a POSITA could reconstruct the drawings in the asserted art, the web continuity of the I-beam formation feature of the '515 Patent differentiates the claims over that asserted art which utilized L-brackets for securing the lower portion of the stiffener to the side wall and includes a single L-bracket on the interior with no discernible sidewall stiffener. *See id.*

The L&Y Ore Car described in Coates shows an example of the same general type of L-brackets used in the drawings relied on by Petitioner:



Dr. Viz Decl. ¶159.



Dr. Viz Decl. ¶159.

The Petition fails to present any asserted art that teaches, suggests, or would have rendered obvious the claimed “sidewall stiffener having web continuity”

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together with the remaining elements and limitations in any one of the challenged claims. *See* Dr. Viz Decl. ¶160.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See id.* ¶¶157-161.

xxxii. Claim 42

For the reasons discussed regarding claim limitation 40h in Section VI.H.xxxi, the asserted art does not teach, suggest, or render obvious “sidewall stiffeners” having “web continuity”, either alone or in combination. Dr. Viz Decl. ¶162.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶162.

xxxiii. The Petition has not met its burden with respect to Ground 4

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 4 and institution on this ground should be denied.

I. Ground 5 Should Not Be Instituted

Petitioner asserts as Ground 5 that claim 17 of the '515 Patent are obvious over the 1946 Cyclopedia, Wong, and Campbell '051. *See* Petition at 138. As set forth below, the Petition fails to establish a reasonable likelihood that the 1946

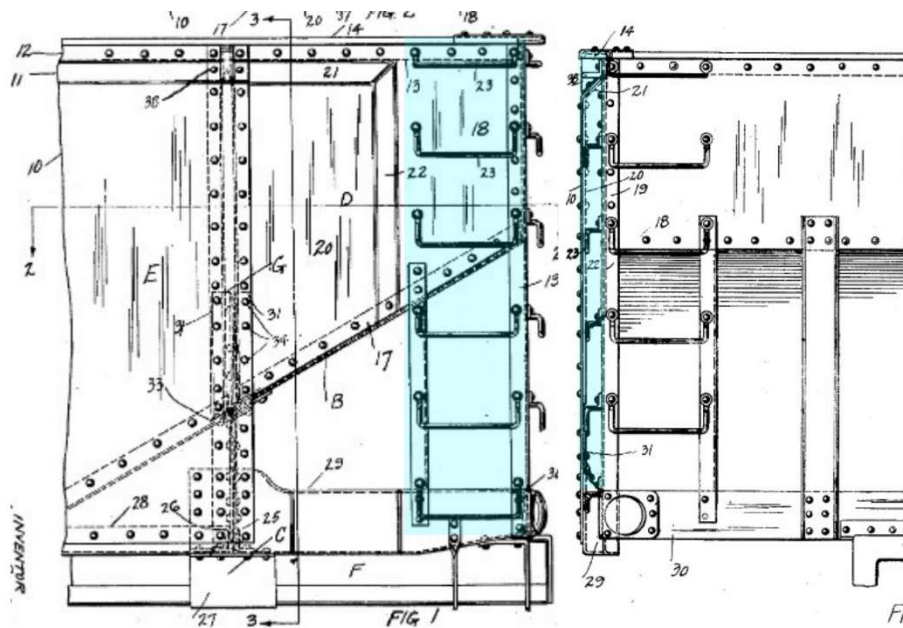
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Cyclopedia, Wong, and Campbell '051 render claim 17 obvious. *See* Dr. Viz Decl.

¶¶163-164.

i. Claim 17

Petitioner asserts that the combination of the 1946 NSC Ore Cars and Campbell '051 meets this claim limitation. *See* Petition at 138. As recognized by Petitioner, Campbell '051 includes an “offset section 18 for the purpose of accommodating the usual ladder rungs 23 within the permissible overall width of the car.” *See* Ex. 1012 at 1:90-94; Petition at 139-40; Dr. Viz Decl. ¶165.



Ex. 1012 at Figs. 1 (side view) and 5 (front view) (highlighting added); Dr. Viz Decl.

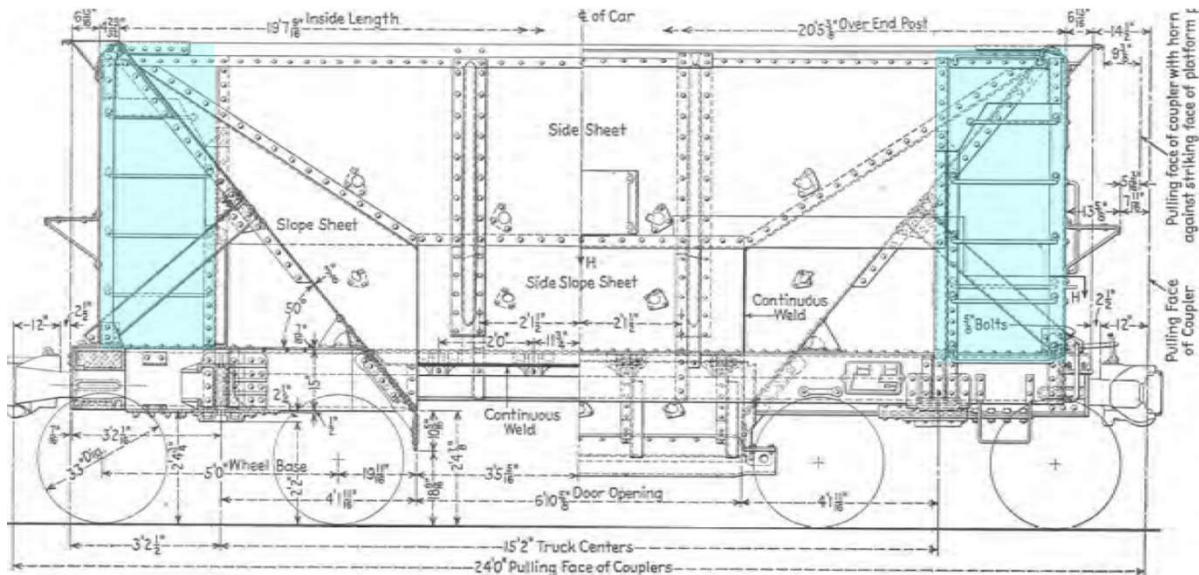
¶165.

Petitioner does not explain how incorporating Campbell '051's stepped sections into the 1946 NSC Ore Cars would impact the rail car, nor does Petitioner

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consider that such a modification would actually make the 1946 NSC Ore Cars inoperable for their intended purpose. Dr. Viz Decl. ¶166.

The 1946 NSC Ore Cars have ladders on the ends of each rail car:



See Ex. 1004 at 27 (highlighting ladders in blue); Dr. Viz Decl. ¶170. These ladders are already within the “permissible overall width of the car” of the 1946 NSC Ore Cars, which is the only motivation to combine provided by Petitioner. See Petition at 139-40.

Petitioner does not explain how incorporating Campbell '051's stepped sections into the NSC Ore Cars would impact the rail car, nor does Peittioner consider that such a modification would make the NSC Ore Cars inoperable for their intended purpose. See Dr. Viz Decl. ¶166.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. See Dr. Viz Decl. ¶¶165-167.

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ii. The Petition has not met its burden with respect to Ground 5

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 5 and institution on this ground should be denied.

J. Ground 6 Should Not Be Instituted

Petitioner asserts as Ground 6 that claim 28 of the '515 Patent is obvious over the 1946 Cyclopeda, Wong and Coates or the 1922 Cyclopeda. *See* Petition at 140. As set forth below, the Petition fails to establish a reasonable likelihood that the 1946 Cyclopeda, Wong and Coates or the 1922 Cyclopeda render claim 28 obvious. *See* Dr. Viz Decl. ¶¶168-169.

i. Claim 28

Petitioner relies on its discussion of claim limitations 7h and 1i for this claim. Dr. Viz Decl. ¶170. Accordingly, for the reasons discussed in Sections VI.H.ii and VI.E.iii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. *Id.*

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶170-171.

ii. The Petition has not met its burden with respect to Ground 6

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 6 and institution on this ground should be denied.

K. Ground 7 Should Not Be Instituted

Petitioner asserts as Ground 7 that claim 29 of the '515 Patent is obvious over the 1946 Cyclopedias, Wong, Coates or the 1922 Cyclopedias, and Schuller. *See* Petition at 140. As set forth below, the Petition fails to establish a reasonable likelihood that the 1946 Cyclopedias, Wong, Coates or the 1922 Cyclopedias, and Schuller render claim 29 obvious. *See* Dr. Viz Decl. ¶¶172-173.

i. Claim Limitation 29a

Petitioner relies on its discussion of claim 23 for this claim. *See* Petition at 140. Accordingly, for the reasons discussed regarding claim 23 in Section VI.E.vii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶174.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶174-175.

ii. Claim Limitation 29b

Petitioner relies on its discussion of claim limitations 7h and 3b for this claim. *See* Petition at 141. Accordingly, for the reasons discussed in Sections VI.H.ii and VI.F.i, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶176.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶176-177.

iii. The Petition has not met its burden with respect to Ground 7

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 7 and institution on this ground should be denied.

L. Ground 8 Should Not Be Instituted

Petitioner asserts as Ground 8 that claims 36-37 of the '515 Patent are obvious over the 1946 Cyclopedia, Wong and Schuller. *See* Petition at 141. As set forth below, the Petition fails to establish a reasonable likelihood that the 1946 Cyclopedia, Wong and Schuller render claims 36-37 obvious. *See* Dr. Viz Decl. ¶¶178-179.

i. Claim 36

The Petition relies on its discussion of limitation 3b for this claim. *See* Petition at 141. For the reasons explained in Section IV.D.1, the asserted art does not teach, suggest, or render obvious this claim limitation. Dr. Viz Decl. ¶181.

There is no reasonable basis or support in the Petition for the area in the asserted art Petitioner identified as “a machinery space” much less “a machinery space ... defined above said shear plate and under said first end slope sheet.” Dr. Viz Decl. ¶180-181. Indeed, there is no reasonable basis or rationale in the Petition for the Petitioner's assertion that the proposed combination of asserted art renders obvious claim 36. *See id.*

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Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶180-181.

ii. Claim Limitation 37b

Petitioner relies on its discussion of claim 23 for this claim. *See* Petition at 142. Accordingly, for the reasons discussed in Section VI.E.vii, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶183.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶183-184.

iii. Claim Limitation 37c

Petitioner relies on its discussion of claim limitation 3b for this claim. *See* Petition at 142. Accordingly, for the reasons discussed in Section VI.F.i, the asserted art does not teach, suggest, or render obvious this claimed feature, either alone or in combination. Dr. Viz Decl. ¶185.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶185-186.

iv. The Petition has not met its burden with respect to Ground 8

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 8 and institution on this ground should be denied.

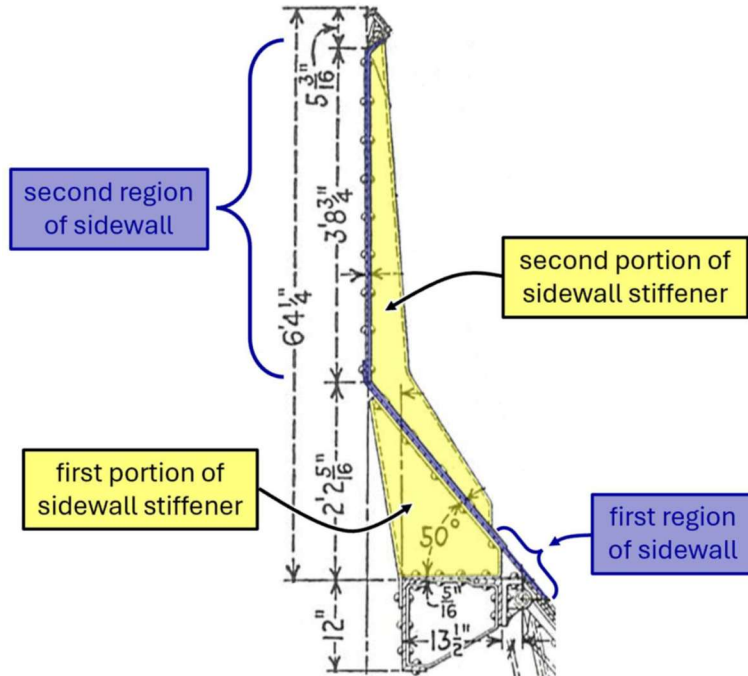
M. Ground 9 Should Not Be Instituted

Petitioner asserts as Ground 9 that claims 43-44 of the '515 Patent are obvious over the 1946 Cyclopedia, Wong and Lindström.. *See* Petition at 143. As set forth below, the Petition fails to establish a reasonable likelihood that the 1946 Cyclopedia, Wong and Lindström render claims 43-44 obvious. *See* Dr. Viz Decl. ¶¶187-188.

i. Claim Limitation 43b

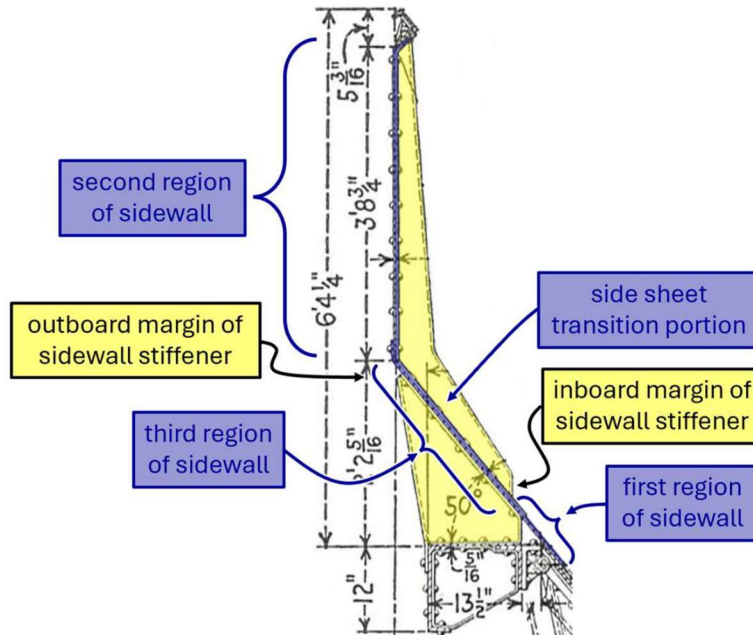
Petitioner uses a claim construction for “sloped side sheets” based on an infringement claim chart for Claim 6 in the District Court Litigation. Dr. Viz Decl. ¶189; *see* Petition at 143. This claim limitation requires “first and second sloped side sheets,” yet Petitioner only identifies a single structure for a sloped side sheet, ignoring the plain language of this claim limitation. Dr. Viz Decl. ¶190.

Petitioner initially identifies the following structures as the claimed “first portion” and “second portion” of the “sidewall stiffener” and “first region” and “second region” of the “sidewall” (Petition at 135):



Dr. Viz Decl. ¶191.

Petitioner also identifies the following structures as the claimed “third region” and “side sheet transition portion”:



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See Petition at 137; Dr. Viz Decl. ¶192. Petitioner thus admits that the 1946 NSC Ore Cars do not teach or suggest the claimed “sloped side sheet.” Dr. Viz Decl. ¶193.

Petitioner attempts to use Lindström to show that which is missing from the 1946 NSC Ore Cars. Dr. Viz Decl. ¶194. At a minimum, Lindström does not teach or suggest a “sloped side sheet.” *Id.*

However, Petitioner argues that a POSITA would, based on Lindström, (1) wrap the sidewall of the 1946 NSC Ore Cars around the lower portion of the structure they identify as a sidewall stiffener and (2) add back a sloped side sheet that was removed to wrap the side wall around the structure identified as the sidewall stiffener. Dr. Viz Decl. ¶195.

A POSITA would not modify the 1946 NSC Ore Cars in view of Lindström as proposed by Petitioner because the modification would have been superfluous. *Id.* Indeed, Petitioner fails to provide any reason or reasonable basis for its proposed modifications. *Id.* Instead, the Petition appears to arbitrarily pick structures from some of the asserted art and incorporate them into other of the asserted art based solely on the disclosure and teachings of the '515 Patent, without any reasonable basis or rationale for making such modifications to the asserted art. *Id.*

For example, Petitioner states that “it would have been obvious to add a sloped side sheet, as shown below in green, to ensure the side wall of the hopper has a continuous sloped surface without discontinuities that could impede the movement

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of the lading to the hopper doors.” *See* Petition at 145. However, this is the exact teaching of the ’515 Patent, indicating that Petitioner has used the ’515 Patent disclosure and claims as a roadmap to pick and choose pieces from the asserted art in an attempt to meet the claim limitations, without regard to whether a POSITA would have been motivated to make any of the proposed modifications, or whether the proposed modifications would have resulted in the claimed invention. Dr. Viz Decl. ¶196.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶189-197.

ii. The Petition has not met its burden with respect to Ground 9

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 9 and institution on this ground should be denied.

VII. Conclusion

For the foregoing reasons, institution should be denied.

Respectfully Submitted,

Date: September 18, 2025

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PATENT OWNER'S PRELIMINARY RESPONSE

CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

I hereby certify that the foregoing complies with the type-volume limitation of 37 C.F.R. §42.24 and contains 10,630 words based on the word count indicated by the word-processing system used to prepare the paper, excluding the table of contents, table of authorities, exhibit list, certificate of service, certificate of word count, and signature block.

Respectfully Submitted,

Date: September 18, 2025

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PATENT OWNER'S PRELIMINARY RESPONSE
CERTIFICATE OF SERVICE

The undersigned hereby certifies that the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** was served electronically in its entirety on September 18, 2025 via electronic mail to the following attorneys of record:

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