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 IPR2025-01046

Patent No. 8,166,892

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 *Sotera* 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 December 20, 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 October 1, 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
2024	Complaint for Patent Infringement in *National Steel Car Ltd. v. FreightCar America, Inc.*, No. 11-cv-08743 (N.D. Ill.).
2025	Complaint for Patent Infringement in *National Steel Car Ltd. v. FreightCar America, Inc.*, No. 15-cv-03418 (N.D. Ill.).
2026	Complaint for Patent Infringement in *National Steel Car Ltd. v. FreightCar America, Inc.*, 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	U.S. Patent No. 8,132,515
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. 8,166,892 ("the '892 Patent"). The petition for *inter partes* review (the "Petition") of claims 1-15 (the "challenged claims") of the '892 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 a basis, or articulate a rationale supported by evidence and logic, sufficient for trial under the standards of *inter partes* review.

Petitioner's challenge to the '892 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.

Moreover, Petitioner does not offer a credible motivation to combine the asserted art references[1] 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 does not remedy 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]; Paper 8 [Under Seal]), Petitioner's asserted art is cumulative to what has already been considered by the Office during prosecution of the '892 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.

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

Patent Owner filed for the '892 Patent to cover innovations it made in the design and construction of the above jenny.

The '892 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* '892 Patent (Ex. 1001) at 1:36-2:13. The claimed arrangements in the challenged claims were 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 litigation against Petitioner in the U.S. District Court for the District of Delaware on May 17, 2024, for infringement of the '892 Patent. Ex. 2003.

III. OVERVIEW OF THE '892 PATENT

The Petition misreads the '892 Patent and ignores its claim language. Claim 1 is reproduced below with emphasis added and with Petitioner's additions of annotations "1a"-"1j":

> 1. [1a] A rail road hopper car comprising:
>
> [1b] a hopper carried between a pair of trucks, said hopper having first and second upstanding sidewalls running lengthwise therealong;
>
> [1c] said hopper having a lower discharge and convergent slope sheets giving onto said discharge;

[1d] ***said rail road car having a side sill and a top chord; said first upstanding sidewall extending from said side sill to said top chord***;

[1e] said first upstanding sidewall having a predominantly upwardly running sidewall stiffener mounted thereto, said sidewall stiffener being located at a longitudinal station intermediate the trucks;

[1f] said first upstanding sidewall having a first region, said first region being a lower region thereof;

said first upstanding sidewall having a second region, said second region being an upper region thereof;

[1g] said sidewall stiffener having a first portion, said first portion being a lower portion thereof, said first portion being mounted to said first region of said first upstanding sidewall;

said sidewall stiffener having a second portion, said second portion being an upper portion thereof, said second portion being mounted to said second region of said first upstanding sidewall;

[1h] said first portion of said first upstanding sidewall stiffener being laterally outboard of said first region of said first upstanding sidewall;

said second portion of said sidewall stiffener being laterally inboard of said second region of said first upstanding sidewall;

[1i] said first sidewall having a continuous section between said first and second regions thereof; and

[1j] ***said sidewall stiffener having web continuity between said first and second portions thereof***.

Petition at 1-2; '892 Patent at 23:1-37.

Claim 2 is reproduced below with emphasis added and with Petitioner's additions of annotations "2a"-"2u":

> 2. [2a] A rail road hopper car comprising:
>
> a hopper carried between a first end section and a second end section;
>
> said first and second end sections being carried by respective first and second trucks for rolling motion in a longitudinal direction along railroad tracks;
>
> [2b] said hopper having first and second upstanding sidewalls running lengthwise therealong;
>
> [2c] said hopper having a lower discharge and convergent slope sheets that slope downward toward said discharge;
>
> [2d] said discharge having a door movable between a closed position and an open position to govern egress of lading from said hopper;
>
> [2e] one of said convergent slope sheets being a first end slope sheet;
>
> said first end slope sheet extending laterally between said first and second upstanding sidewalls;
>
> said first end slope sheet having a first, lower, longitudinally inboard end proximate said discharge, and

a second, upper, longitudinally outboard end distant from said discharge;

[2f] said first end section having a first draft sill and a main bolster extending cross-wise to said first draft sill, said first draft sill and said main bolster intersecting at a first truck center, said first truck being located centrally under said first truck center;

[2g] said draft sill having a striker longitudinally outboard of said first truck center;

[2h] said first end section having a shear plate mounted overtop of said first draft sill and said main bolster;

said shear plate having a longitudinally inboard margin adjacent to said longitudinally inboard end of said first end slope sheet;

said shear plate having a longitudinally outboard cross-wise running margin traversing said draft sill longitudinally outboard of said truck center;

[2i] ***said upper, longitudinally outboard end of said first end slope sheet being reinforced by a first cross-wise extending beam***;

[2j] said lower, longitudinally inboard end of said first end slope sheet being reinforced by a second cross-wise extending beam;

[2k] said first end slope sheet overhanging said shear plate;

[2l] ***a door actuator mounted above said shear plate, said door actuator being at least partially overhung by***

said first end slope sheet; said door actuator being connected to said door by a mechanical transmission;

[2m] said first end section being free of longitudinally oriented elephant ears extending between said draft sill and said first end slope sheet;

[2n] said hopper having respective first and second top chords running longitudinally therealong;

said car having respective first and second side sills running longitudinally between said first and second end sections;

[2o] said first upstanding sidewall having a predominantly upwardly running sidewall stiffener mounted thereto, said sidewall stiffener being located at a longitudinal station intermediate the trucks;

[2p] said first upstanding sidewall having a first region, said first region being a lower region thereof;

said first upstanding sidewall having a second region, said second region being an upper region thereof;

[2q] said first and second regions of said sidewall adjoining each other at a height intermediate said first side sill and said first top chord;

said second region of said sidewall extending downwardly or said first top chord;

said first region of said sidewall extending downwardly and laterally inboard from said second region of said sidewall;

[2r] said sidewall stiffener having a first portion, said first portion being a lower portion thereof, said first portion being mounted to said first region of said first upstanding sidewall;

said sidewall stiffener having a second portion, said second portion being an upper portion thereof, said second portion being mounted to said second region of said first upstanding sidewall;

[2s] said first portion of said first upstanding sidewall stiffener being laterally outboard of said first region of said first upstanding sidewall;

said second portion of said sidewall stiffener being laterally inboard of said second region of said first upstanding sidewall;

[2t] said first sidewall having a continuous section between said first and second regions thereof; and

[2u] ***said sidewall stiffener having web continuity between said first and second portions thereof***.

Petition at 2-5; '892 Patent at 23:38-24:60.

The Petition fails to show that any combination of the asserted art teaches, or that it would have rendered obvious, any of the above-emphasized claim limitations in independent claims 1 or 2, much less either claim as a whole. As discussed in greater detail below, various other limitations of independent claims 1 and 2 are also not taught or rendered obvious by the asserted art combinations proposed in the

grounds of the Petition, as well as the further limitations recited in the dependent claims, each of which depends, directly or through one or more intervening claims, on independent claim 2.

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 16. Petitioner's proposed POSITA is incorrect because design or analysis experience with other industrial wheeled vehicles would not necessarily be applicable to the art of the '892 Patent. Declaration of Mark J. Viz Ph.D., P.E. (Ex. 2035, hereinafter "Dr. Viz Decl.") ¶¶38-39.

A POSITA in the field of the '892 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. Dr. Viz Decl. ¶¶34, 38.

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. ¶39. 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. Petition at 16. However, as explained below, the Petition takes numerous stances on claim construction and what claim terms should mean, sometimes leading to inconsistent positions. Instead of evaluating the claim language, specification, and prosecution history as required by law to construe the claims, 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 by a POSITA in view of the '892 Patent specification and prosecution history, is required to deny institution. *See Phillips v. AWH Corp.*, 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 seven (7) grounds of unpatentability (Petition at 8), none of which establish a reasonable likelihood that Petitioner will prevail on any challenged claim.

A. Legal Standard

"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." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co*., 868 F.2d 1226, 1236 (Fed. Cir. 1989). A generic statement regarding unspecified embodiments is inadequate to satisfy the

legal requirements for anticipation. *See, e.g., Enplas Display Device v. Seoul Semiconductor Co., Ltd*., 909 F.3d 398, 405 (Fed. Cir. 2018) (a disclosed embodiment that "must be modified to meet the disputed claim limitation does not anticipate the claim"); *see also In re Arkley*, 455 F.2d 586, 587-88 (C.C.P.A. 1972) (to be anticipating, a reference must "clearly and unequivocally disclose the claimed [invention] or direct those skilled in the art to the [claimed invention] without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference"); *accord Topliff v. Topliff*, 145 U.S. 156, 161 (1892) ("It is not sufficient to constitute an anticipation that the device relied upon might, by modification, be made to accomplish the function performed by the patent in question….").

. 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.*

To establish obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art and there must be a motivation to combine such features in the prior art to arrive at the claimed invention. *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 shortcomings are that the asserted art, whether taken alone or in any of the proposed combinations, fails teach or render obvious the subject matter of any one of the challenged claims, and that the Petition lacks an "articulated reason[] with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d at 988. The Petition fails to address the apparent differences between the asserted art and 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 inadequacies of the anticipation and obviousness analyses in the Petition and the accompanying declaration are readily apparent when the disparate elements of the references are scrutinized closely, and the Board should decline any invitation by Petitioner to search through the record to try 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 Cyclopedia (Ex. 1004, hereinafter the "1946 Cyclopedia") as a basis for Petitioner's challenge against the '892 Patent claims. *See* Petition at 8. The 1946 Cyclopedia contains dozens of examples of rail cars. *See* 1946 Cyclopedia. The primary examples asserted by

Petitioner are grouped together and relied upon as being a singular design for an NSC Ore Car (1946 Cyclopedia 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 Cyclopedia at 27. The second is a picture of a rail car captioned and shown as being used by CN, *i.e.* Canadian National, a competitor of Canadian Pacific. *See* 1946 Cyclopedia at 28. The Petition and accompanying expert report of Dr. Ahmadian fail to establish that the schematic is the same rail car design 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 20-22, 24, 26, 28, 30, 36, 61, 74. 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.") ¶89. However, in evaluating the challenged claims he fails to consider each and every element as set forth in any challenged claim. *See 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 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. *See* 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 [1a], [1c], [1d], and [1e] with respect to Ground 1a, but **ignores limitations [1b], [1f], [1g], [1h], [1i], and [1j], as well as claim 1 as a whole**; claim limitations [1d], [1e], [1g], and [1j] with respect to Ground 2a, but **ignores [1a], [1b], [1c], [1f], [1h], and [1i] as well as claim 1 as a whole**; claim limitations [2f], [2g], [2h], [2i], [2j], [2k], [2l], and [2m] with respect to Ground 1b, but **ignores limitations [2a]-[2e] and [2n]-**

[2u], as well as claim 2 as a whole; and claim limitations [2f], [2h], [2i], [2j], and [2m] with respect to Ground 2b, but **ignores limitations [2a]-[2e], [2g], [2k], [2l], and [2n]-[2u], as well as claim 2 as a whole**. Dr. Ahmadian Decl. ¶¶47-50, 72-75, 51-61, and 76-80, respectively. Dr. Ahmadian's report is similarly deficient with respect to 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.

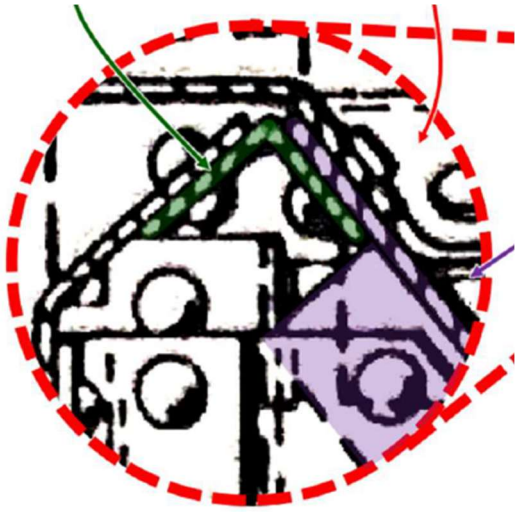
Accordingly, Dr. Ahmadian's opinions should not be given any weight.

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 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 51; Ex. 1004 at 27.

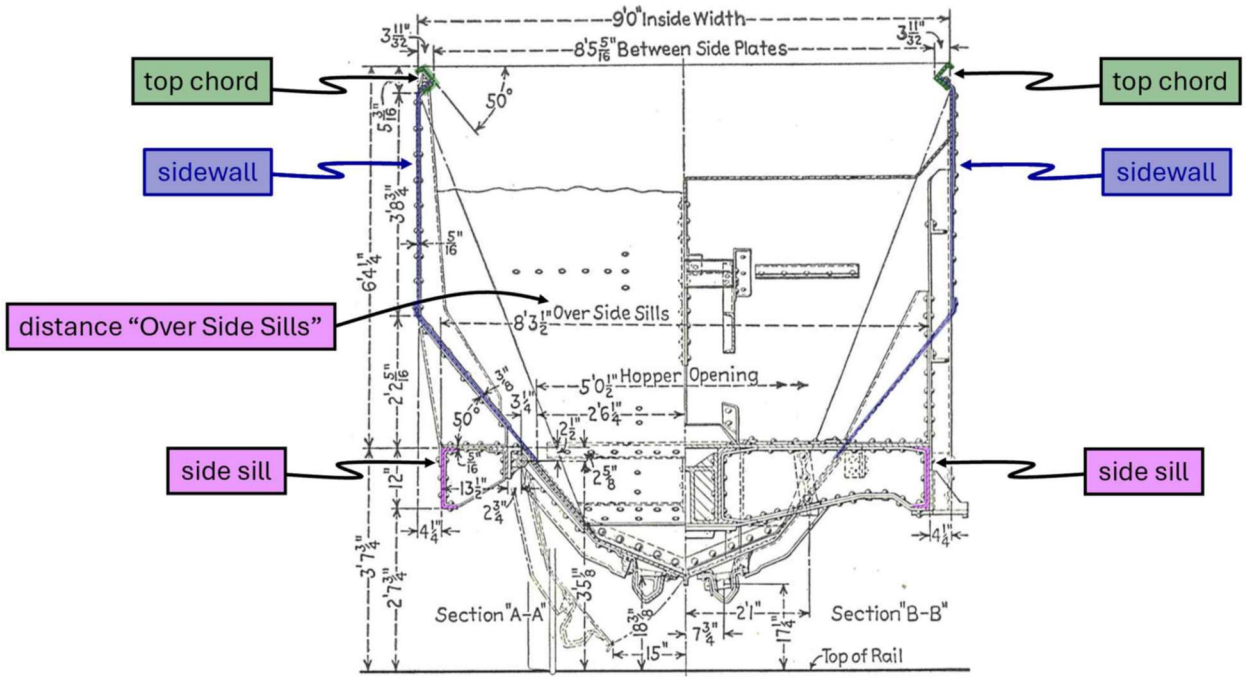
Petitioner provides no basis to support its unstated assertion that a POSITA would have had the ability to reconstruct illegible figures in prior art documents at the time the inventions of the '892 Patent were made. Its lack of analysis and improper substitution of its own interpretation of the asserted art over what is actually shown, without establishing that this is something a POSITA would be able to do, fails to satisfy Petitioners burden to show a reasonable likelihood that any claims is invalid as obvious. The Petition should be denied.

E. Ground 1a Should Not be Instituted

Petitioner asserts as Ground 1a that claim 1 of the '892 Patent is anticipated by the 1946 Cyclopedia. Petition at 18-19. As set forth below, the Petition fails to establish a reasonable likelihood that the 1946 Cyclopedia, which does not include, explicitly or inherently every claim element, anticipates claim 1. *See* Dr. Viz Decl. ¶42.

i. Claim Limitation 1d

The Petition fails to establish that the claimed "first upstanding sidewall extend[s] from said side sill to said top chord" is taught by the allegedly singular design NSC Ore Cars. Dr. Viz Decl. ¶43. Instead, as seen in the diagram (reproduced below) provided at page 25 of the Petition, the alleged sidewall never meets the alleged side sill:



Petition at 25; Dr. Viz Decl. ¶43. The sidewall in the drawing relied on by Petitioner is in fact at least two parts, the vertical part and the sloped part, both of which would be required to make up the claimed "sidewall." Dr. Viz Decl. ¶43. In the rendering above from Dr. Ahmadian, the "sidewall" does not extend to the side sill. *Id.* A POSITA in or before 2009 would have made this distinction. *Id.*

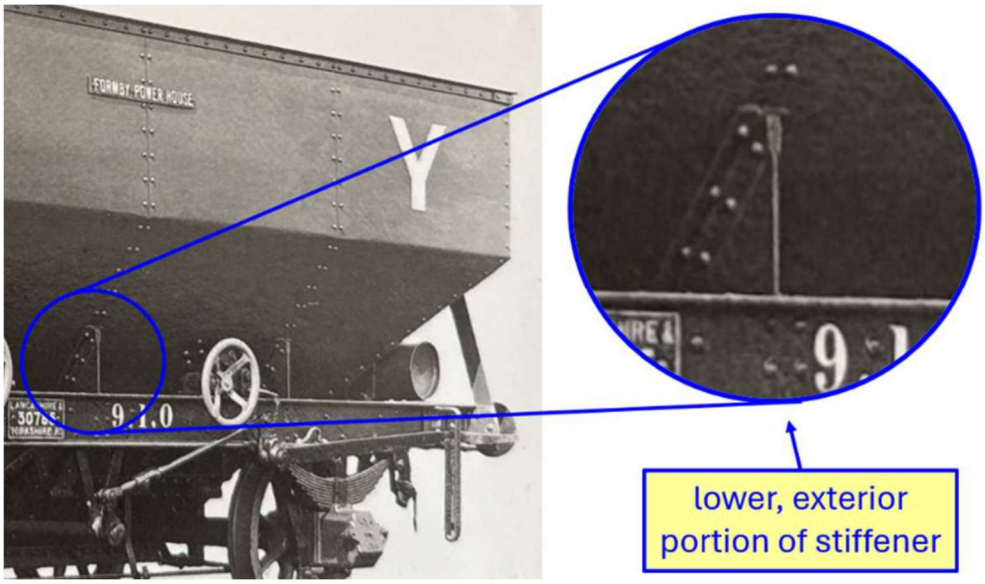
Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶43-44.

ii. Claim Limitation 1j

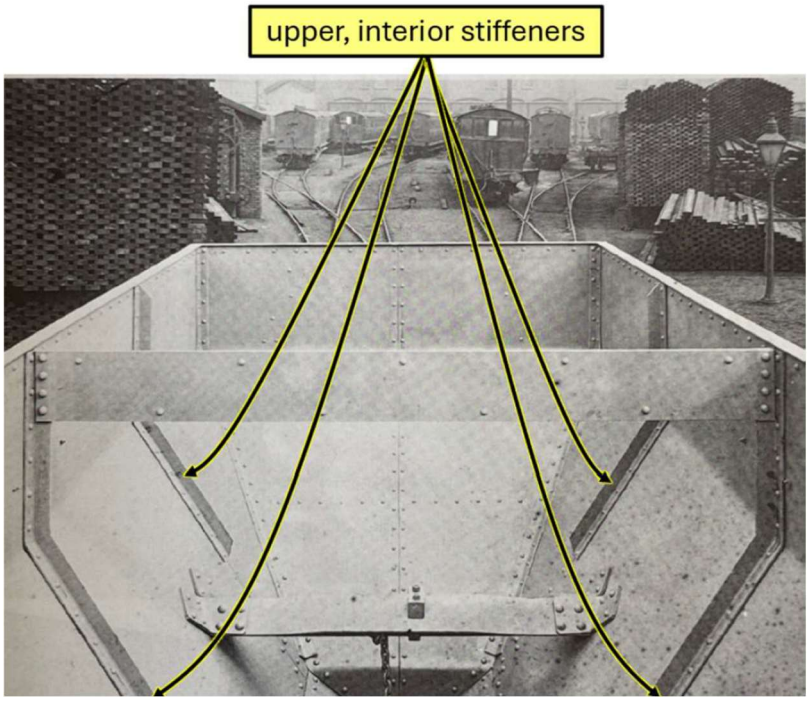
The Petition fails to establish that the claimed "sidewall stiffener having web continuity between said first and second regions thereof" is taught by the NSC Ore Cars. *See* Dr. Viz Decl. ¶45. The sidewall stiffening elements from the NSC Ore Cars

do not have webs. Dr. Viz Decl. ¶46. The drawings for the NSC Ore Cars appear to have sections that are fastened to the side wall. *Id.* 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* '892 Patent at 15:54-57 ("In this 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 Petition is the same thing as what is claimed in the '892 Patent. Dr. Viz Decl. ¶46.

Even if a POSITA could reconstruct the drawings in the asserted art, the web continuity of the I-beam formation feature of the '892 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.. *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:



Petition at 11; Ex. 1007 (Coates) at 1 (annotated and cropped); Dr. Viz Decl. ¶47.



Petition at 12; Ex. 1007 at 7 (annotated and cropped); Dr. Viz Decl. ¶47.

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

together with the remaining elements and limitations in any one of the challenged claims. *See* Dr. Viz Decl. ¶48.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶45-49.

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

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

F. Ground 1b Should Not be Instituted

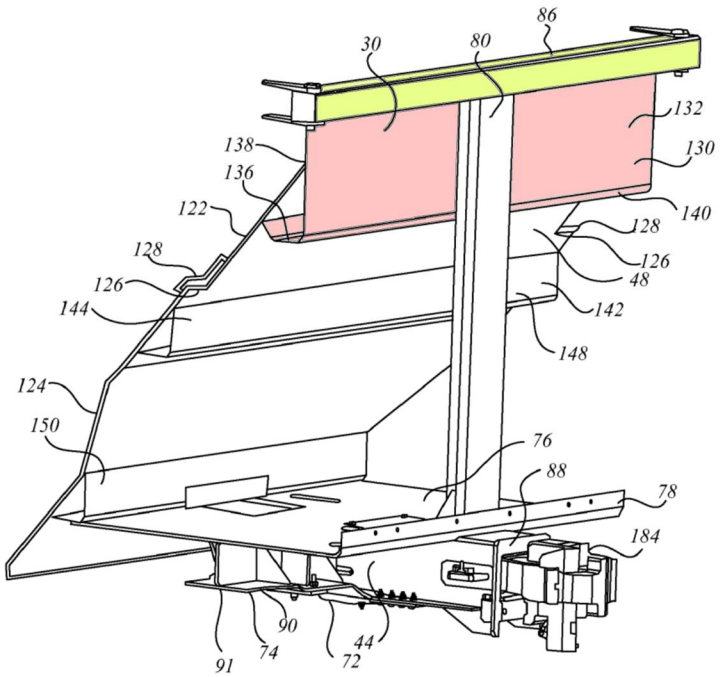
Petitioner asserts as Ground 1b that claims 2-8 and 10-14 would have been obvious over the NSC Ore Cars of the 1946 Cyclopedia in view of Lindström (Ex. 1005) and optionally Wong (Ex. 1006). Petition at 34. As set forth below, however, the Petition fails to establish a reasonable likelihood that the asserted art would have rendered obvious independent claim 2, much less any of the dependent claims 3-8 or 10-14.

Accordingly, the Petition does not establish a reasonable likelihood of prevailing on Ground 1b and institution on this ground should be denied.

i. Claim Limitation 2i

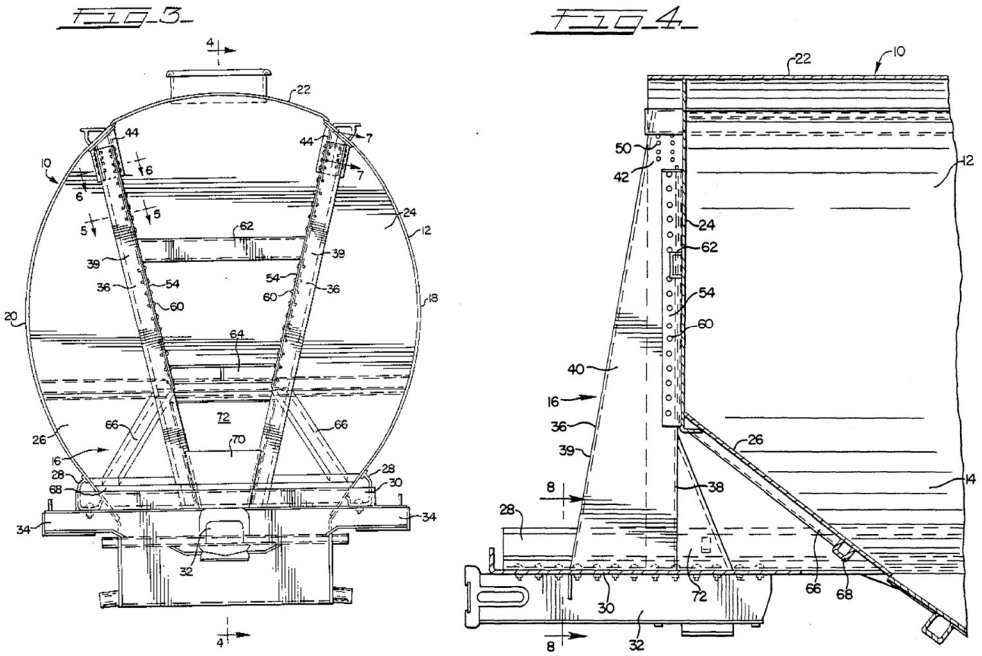
Claim limitation 2i requires "said upper, longitudinally outboard end of said first end slope sheet being reinforced by a first cross-wise extending beam." Petition at 50. As the Petition admits, the NSC Ore Cars teaches only that there may be "a crosswise beam with a V-shaped cross-section." *See* Petition at 50-51. The Petition provides no reason why the alleged "first crosswise beam" it identifies in the NSC Ore Cars, without more, can also be the claimed "end top chord." *See* Dr. Viz Decl. ¶51.

A POSITA would not have equated the two structures because their purposes are different. Dr. Viz Decl. ¶52. The '892 Patent clearly delineates between the "first crosswise beam" and the "end top chord":



Id. and '892 Patent at Fig. 3a (annotated to show top chord 86 in green and the structure that comprises the "first crosswise beam" in red.); '892 Patent at 16:29-48. The "end top chord" and the "first crosswise beam" are different structures with different purposes and are not shown in the NSC Ore Cars. Dr. Viz Decl. ¶52. To cure this deficiency, the Petition states that a POSITA would combine the NSC Ore Cars with Wong to add a first cross-wise extending beam. *See* Petition at 52; *see also* Dr. Viz Decl. ¶53. However, the Petition fails to properly consider what Wong teaches. *See* Dr. Viz Decl. ¶¶53-54.

Wong teaches an aluminum rail car with a steel end structure. Ex. 1006, Wong at 1:6-1:8; *see also* Dr. Viz Decl. ¶¶53-54. Wong's rail car end section is very different from that of the '892 Patent:



See Ex. 1006, Wong at Figs. 3, 4. Wong relates to combining steel and aluminum structures 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. Dr. Viz Decl. ¶54. The concern in Wong is not with lateral reinforcing beams. *Id*. The L-bracket detail shown in Wong is not similar to the claimed "first crosswise beam" in '892 Patent because it is the joint where the slope sheet is connected to the end vertical sheet. *Id*. ¶55. Wong does not provide reinforcement, but simply shows two sheets being connected for lading containment and load transfer. *Id*. The claimed "first crosswise beam" in the '892 Patent provides reinforcement to the slope sheet; a POSITA in the relevant time frame would understand and appreciate this difference. *Id*. The Petition fails to articulate a reason why a POSITA would have been motivated to combine the NSC Ore Cars and Wong, or that the proposed combination would have been successful. *See* Dr. Viz Decl. ¶¶54-56.

The proposed combination is the result of improper hindsight using the '892 Patent as a road map to attempt to invalidate the claims. The Petition picks and chooses a single beam in Wong to meet a claim limitation, failing to consider that a POSITA would not have had any reason to look to Wong in the first place.

The Petition also fails to articulate *how* the cross-wise beam from Wong would be incorporated into the NSC Ore Cars.

In addition, the proposed combination is unsatisfactory for its intended purpose. Dr. Viz Decl. ¶57. It is not clear how the addition of Wong's cross-wise beam in the NSC Ore Cars would transfer load directly down to the undercarriage of the car. *Id*. The NSC Ore Cars already have structure for holding up the end slope sheet; and adding a redundant beam would require substantial time investments for the redesign and requisite analyses. Dr. Viz Decl. ¶57.

The combination of asserted art that Petitioner proposes for claim 2—*i.e.,* the 1946 Cyclopedia in view of Lindström and optionally Wong—does not teach, suggest, or render obvious at least claim limitation 2i. *See* Dr. Viz Decl. ¶¶57-58.

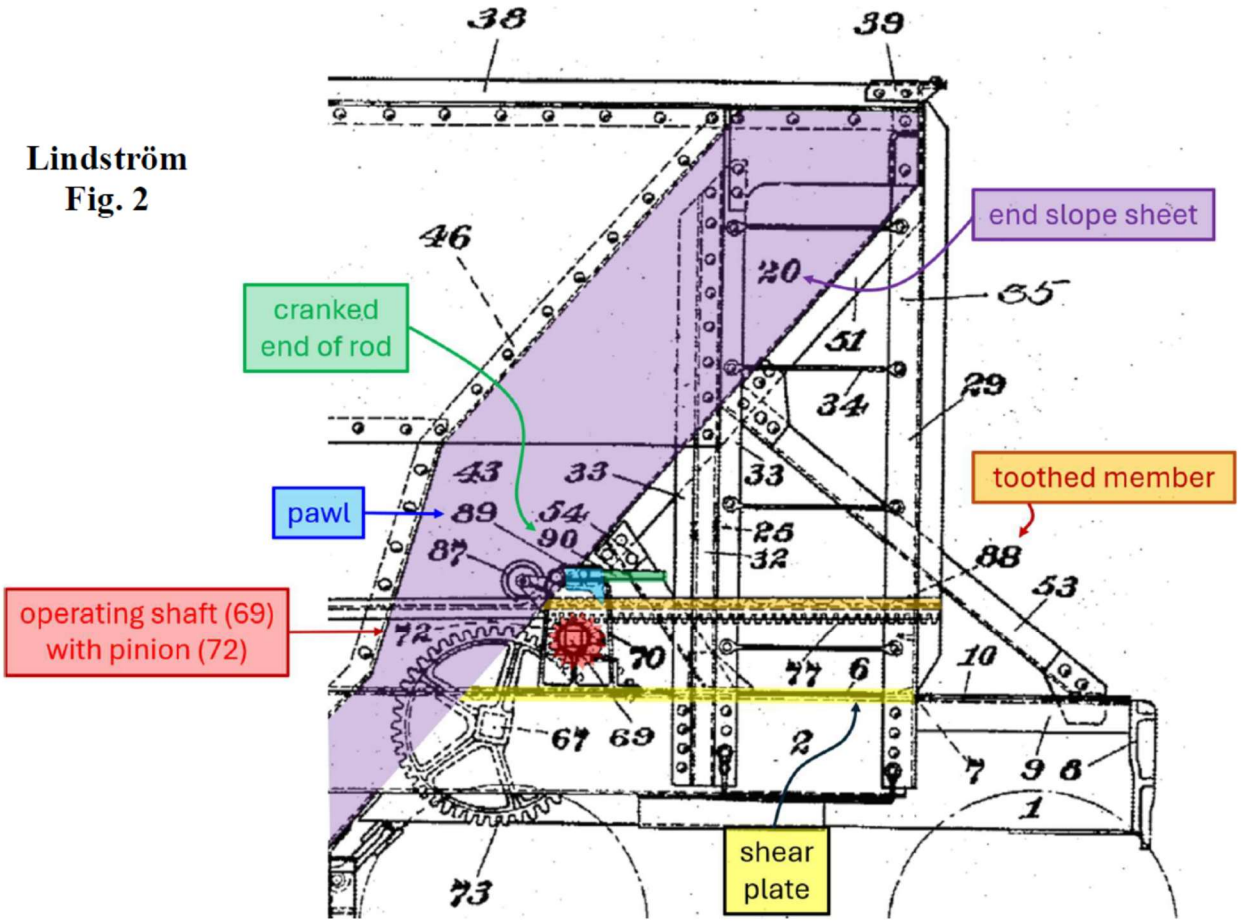
Petitioner has not met its burden to show a reasonable likelihood that claim 2 is invalid, or any of the dependent claims 3-8 or 10-14, each of which includes all of the subject matter of claim 2, including claim limitation 2i. *See* Dr. Viz Decl. ¶¶51-58.

ii. Claim Limitation 2l

The Petition admits that the NSC Ore Cars do not teach a "door actuator mounted above said shear plate, said door actuator being at least partially overhung by said first end slope sheet; said door actuator being connected to said door by a mechanical transmission." *See* Petition at 56. As such, it attempts to meet claim limitation 2l by relying on a proposed combination with Lindström but provides no

motivation to combine Lindström with the NSC Ore Cars. *See* Petition at 56-59; Dr. Viz Decl. ¶¶59-63.

The Petition alleges that Lindström teaches "a door actuator comprising an operating shaft 69 with a pinion 72, a toothed member 88, a pawl 89 and a rod 90":



Petition at 56; Dr. Viz Decl. ¶60. However, the Petition fails to provide any motivation to combine the NSC Ore Cars with Lindström.

Indeed, it is unclear that Lindström's door-opening mechanism could be added to the NSC Ore Cars, or that a POSITA would seek to combine Lindström's door

actuator with the NSC Ore Cars. The Petition fails to address whether Lindström's door mechanism would fit into the design of the NSC Ore Cars. Dr. Viz Decl. ¶62. Instead, the Petition merely concludes that such a modification would be possible because "the NSC Ore Cars has a configuration similar to that of Lindström's car." *See* Petition at 58. Dr. Ahmadian provides no support for the proposition that door mechanisms are interchangeable, or that a POSITA in 2009 would seek to modify a rail car from 1946 to include a door mechanism from 1915. *See* Dr. Viz Decl. ¶62. A more detailed engineering study and analysis would need to be performed that would require more quantitative technical information than what these simple renderings in Lindström show. *Id*. Thus, there would have been no expectation of success in the proposed combination of the asserted art.

In addition, despite relying on the photograph of an alleged NSC Ore Cars in the 1946 Cyclopedia in other sections, the Petition and Dr. Ahmadian ignore the door opening mechanism shown in that photograph. Ex. 1004 at 28.

The Petition does not provide any discussion regarding how a POSITA would have gone about modifying the NSC Ore Cars in view of Lindström, other than to "add a door-opening mechanism like Lindström's, including door actuator." *See* Petition at 58. Nor does the Petition provide any discussion regarding the end structure in the NSC Ore Cars and how a POSITA would go about adding Lindström's operating shaft 69 and rod 90 in the end section of the NSC Ore Cars.

Thus, the Petition fails to meet its burden of showing the combinability of the NSC Ore Cars and Lindström teachings, or any likelihood of success of the proposed combination in an operational rail car.

Petitioner has not met its burden to show a reasonable likelihood that claim 2 is invalid, or any of the dependent claims 3-8 or 10-14, each of which includes all of the subject matter of claim 2, including claim limitation 2l. *See* Dr. Viz Decl. ¶¶59-63.

iii. Claim Limitation 2u

The Petition fails to establish that the NSC Ore Cars includes the claimed "sidewall stiffener having web continuity between said first and second portions thereof," (*see* Petition at 64) or that this claim limitation is taught by the 1946 Cyclopedia. *See* Section VI.E.ii, *supra; see also* Dr. Viz Decl. ¶64.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught, suggested, or rendered obvious by the asserted art. *See* Dr. Viz Decl. ¶64.

Since the Petition does not establish a reasonable likelihood that any of claim limitations 2i, 2l, or 2u are taught or rendered obvious by the proposed combination of the asserted art (namely the 1946 Cyclopedia in view of Lindström and optionally Wong), much less claim 2 as a whole, the Petition has not met its burden to show a reasonable likelihood that claim 2 is invalid. And, since each of claims 3-8 and 10-

14 depends from claim 2, either directly or through an intervening claim, the Petition has not met its burden a show a reasonable likelihood that any of these claims are invalid. For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 1b and institution on this ground should be denied.

iv. Claim 4

Claim 4 adds the limitation "said stiffener having vertical web continuity." *See* '892 Patent at 25:3-4. The Petition fails to establish that the NSC Ore Cars include the claimed "vertical web continuity through the transition portion," or that it is taught by the 1946 Cyclopedia. *See* Section VI.E.ii, *supra; see also* Dr. Viz Decl. ¶65.

The Petition also fails to show that this further claim limitation would have been rendered obvious by the asserted art. Dr. Viz Decl. ¶65.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* i*d*.

v. Claim Limitation 6b

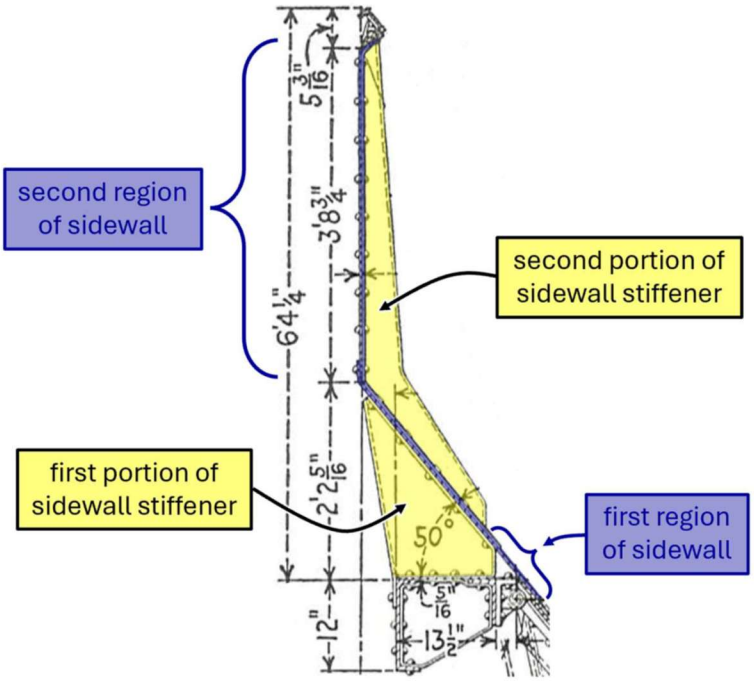
Claim limitation 6b adds the limitation: "said hopper includes first and second sloped side sheets; and said first sloped side sheet meets said first sidewall at said transition portion." *See* '892 Patent at 25:16-19; Petition at 68. The Petition fails to

show that this further claim limitation would have been rendered obvious by the asserted art, or that it would have been obvious to include this claimed feature in the NSC Ore Cars. *See* Dr. Viz Decl. ¶76.

As an initial note, Petitioner proposes a construction for the term "sloped side sheet" that was argued for by Patent Owner in the co-pending litigation between the parties. Dr. Viz Decl. ¶66. Petitioner claims it uses "this construction for the purposes of this *ground*" but appears to use it only for the purposes of this claim limitation. *See* Petition at 68 (emphasis added); Dr. Viz Decl. ¶66. Notably, Petitioner and Dr. Ahmadian use a different construction of "sloped side sheet" in their discussion of this claim limitation in Ground 2b. *See* Petition at 118-20; Dr. Ahmadian Decl. ¶84; Dr. Viz Decl. ¶66. Regardless, Petitioner fails to establish that the claim construction it seeks is proper. *See* Dr. Viz Decl. ¶66.

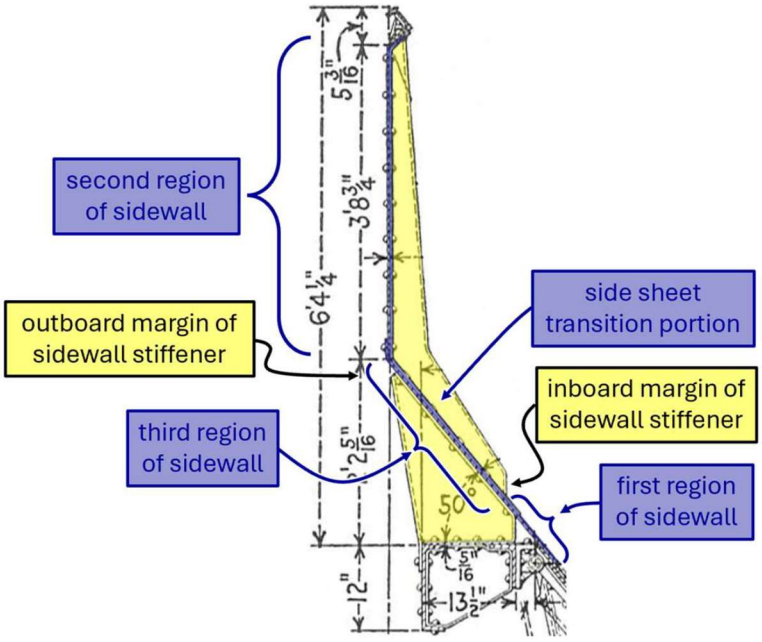
This claim limitation requires "first and second sloped side sheets," yet Petitioner only identifies a single alleged sloped side sheet. Dr. Viz Decl. ¶67.

Petitioner initially identifies the following annotated structures in the NSC Ore Cars as providing the claimed "first portion" and "second portion" of the "sidewall stiffener" and "first region" and "second region" of the "sidewall" (Petition at 29, 63):



Dr. Viz Decl. ¶68.

Petitioner also identifies the following annotated structures in the NSC Ore Cars as providing the claimed "third region" and "side sheet transition portion" (Petition at 66):



Dr. Viz Decl. ¶69.

Petitioner relies on Lindström in an attempt to show that which is missing from the NSC Ore Cars. Dr. Viz Decl. ¶71. At a minimum, Lindström does not teach or suggest the claimed "sloped side sheet." *Id*.

The Petitioner and Dr. Ahmadian pick and choose pieces from each of the references to argue that a POSITA would seek to make the NSC Ore Cars's side wall "wrap around" its "lower stiffener." Dr. Viz Decl. ¶72. However, such a modification would be redundant and unnecessary. *Id*.

Petitioner argues that a POSITA would, based on Lindström, (1) wrap the sidewall of the NSC Ore Cars around the lower portion of the alleged sidewall stiffener and (2) add back a sloped side sheet that was removed to wrap the side wall around the alleged sidewall stiffener. Dr. Viz Decl. ¶73. Petitioner fails to provide any reasonable basis or rationale for its proposed modifications. Instead, the Petitioner merely uses the disclosure and teachings of the '892 Patent as a roadmap to improperly modify the asserted art in an attempt to arrive at the claimed subject matter. *Id.* ¶74.

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

of the lading to the hopper doors." Petition at 70. However, this is the exact teaching of the '892 Patent. Dr. Viz Decl. ¶75 (citing '892 Patent at 15:46-50).

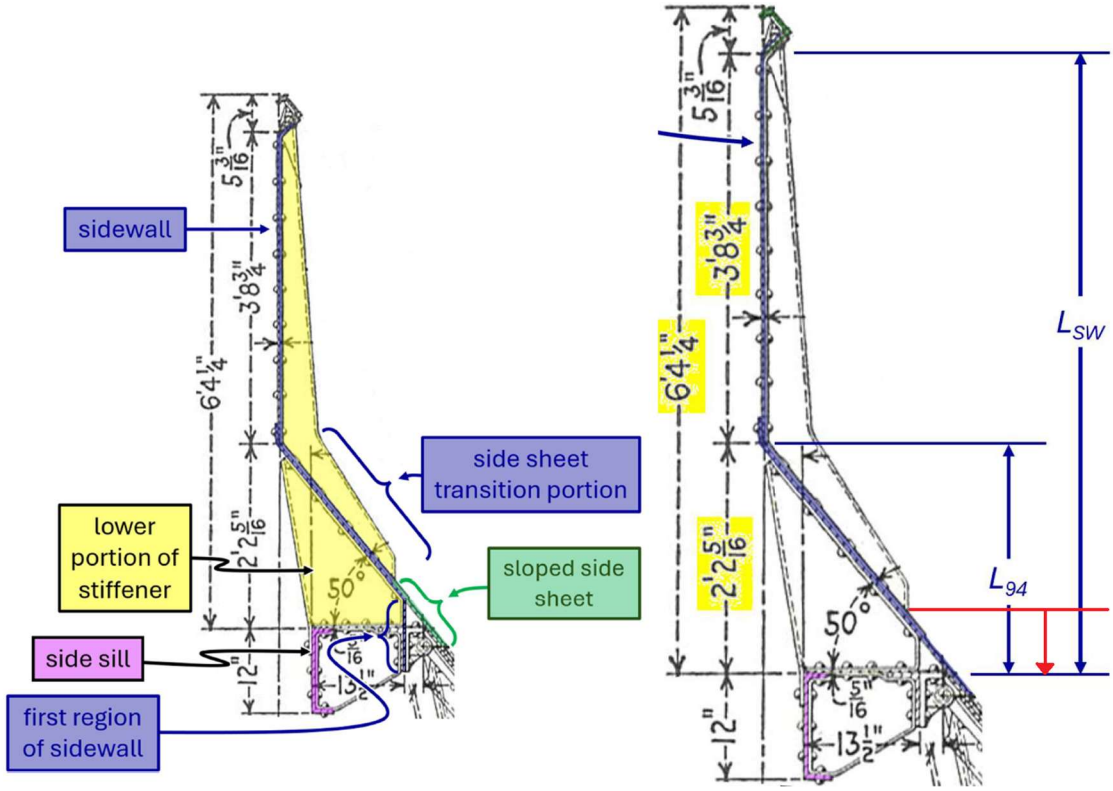
Petitioner has not met its burden to show a reasonable likelihood that claim 6 is invalid. See Dr. Viz Decl. ¶¶66-76

vi. Claim 7

Claim 7 requires that "said first sidewall has an overall height from said first side sill to said first top chord, L, and said first sloped side sheet meets said transition portion at an height that is in the range of ¼ to ⅔ L above said first side sill." Petition at 71. The Petition relies on its discussion of claim 5 for this limitation and provides no further analysis. *See* Petition at 71; Dr. Viz Decl. ¶77. However, the Petition ignores that claim 7 requires that the "... said first sloped side sheet meets said transition portion at an height that is in the range of ¼ to ⅔ L above said first side sill...," while claim 5 requires "said transition portion is located a distance above said first side sill that is in the range of ¼ to ⅔ L." *Compare* '892 Patent at 15:22-24 *with* 15:7-9; *see also* Dr. Viz Decl. ¶¶78-79.

The Petition's analysis of claim 5 does not properly consider where the "sloped side sheet meets" the "transition portion" because the "sloped side sheet" is not recited in claim 5 or any of the claims on which claim 7 depends — "sloped side sheet" is first introduced in claim 6. Dr. Viz Decl. ¶79. Regardless, according to the Petition, the structure the Petition identifies as the "sloped side sheet" meets the

structure it identifies as the "transition portion" at a much lower location than where the Petition makes its measurement for claim 5:

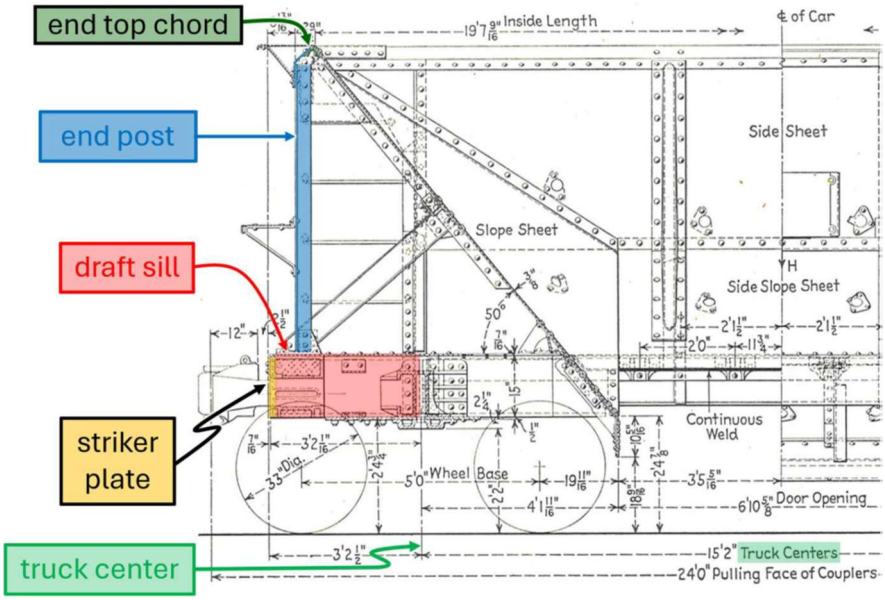


Petition at 70 (showing sloped side sheet), 67 (cropped and annotated with red line and arrow to show height of where the sloped side sheet meets the transition portion). Dr. Viz Decl. ¶79. This location is clearly outside the claimed range of "1/4 to 2/3 L." *Id.*

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶77-80.

vii. Claim 8

The Petition identifies the following structure as meeting the "end top chord" as required by this claim:



Petition at 71-72. The Petition previously identified this same structure (shown above, annotated as "end top cord") as providing the claimed "first cross-wise extending beam." Dr. Viz Decl. ¶81; *see also* Petition at 50-51. The Petition makes no effort to explain why the "end top chord" and "first cross-wise extending beam" would be the same structure when the '892 Patent clearly describes them as separate elements. Dr. Viz Decl. ¶81; s*ee also supra* Section VI.F.i; '892 Patent at 24:8-9 and 26:1-4 (first cross-wise extending beam) and 25:26-32 (end top chord).

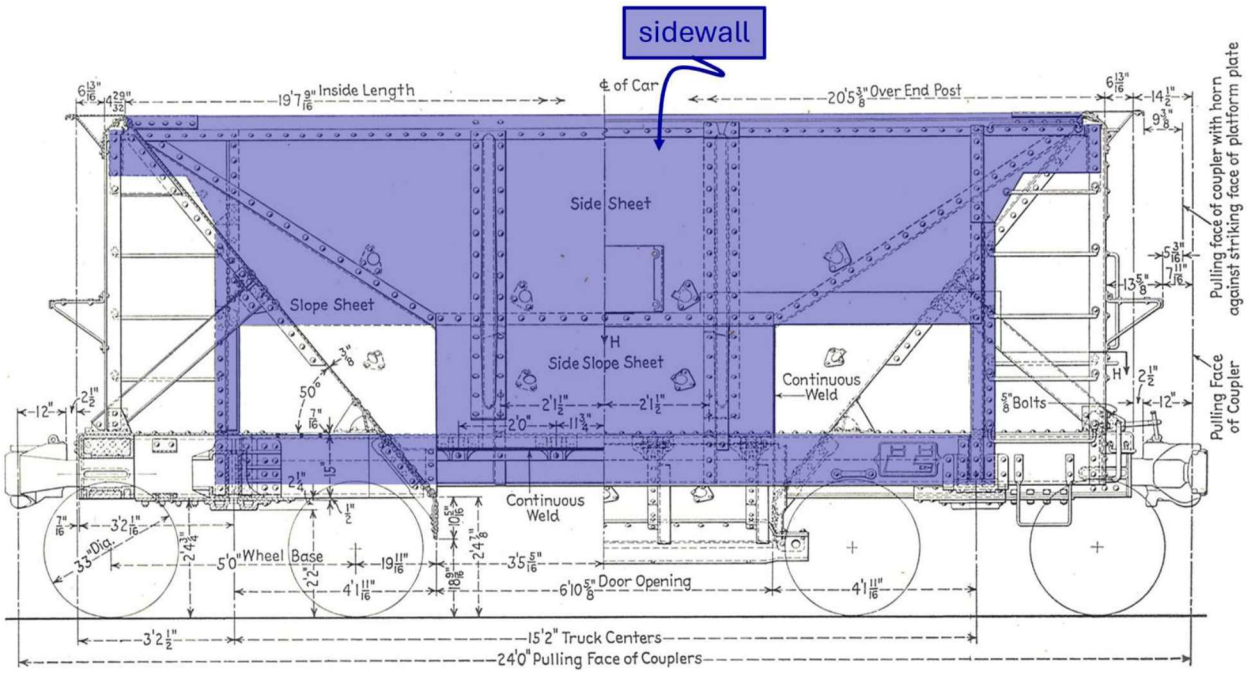
Moreover, the Petition does not explain why, under its alternative theory regarding the "first cross-wise extending beam," a POSITA would have modified the NSC Ore Cars in view of Wong as it proposes, nor whether the NSC Ore Cars's top

chord would be retained. Dr. Viz Decl. ¶82. As explained above, in Section VI.F.i., a POSITA would not look to Wong in order to modify the NSC Ore Cars. *See* Dr. Viz Decl. ¶53.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶81-83.

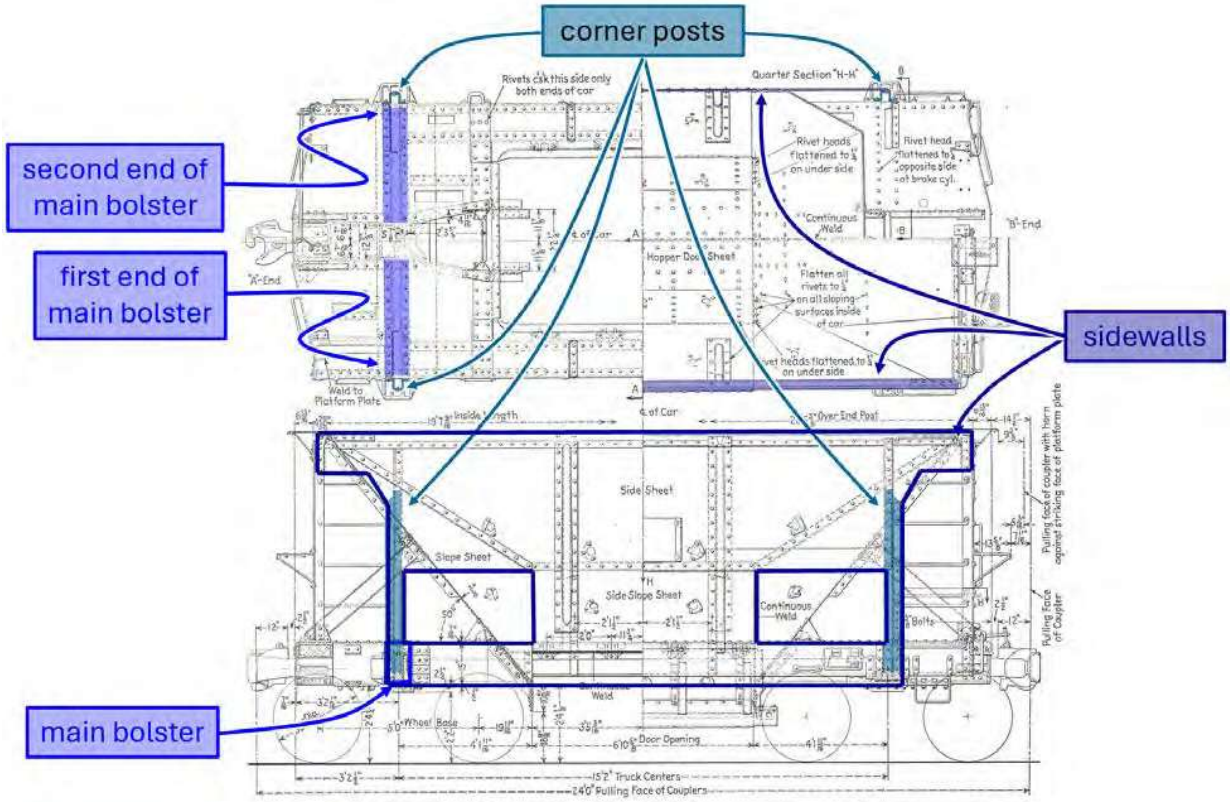
viii. Dependent Claim 11

The Petition, in its discussion of claim limitation 1b, asserts that the structures highlighted in blue in the figure below (reproduced from the Petition at 20) correspond to the claimed "sidewalls."



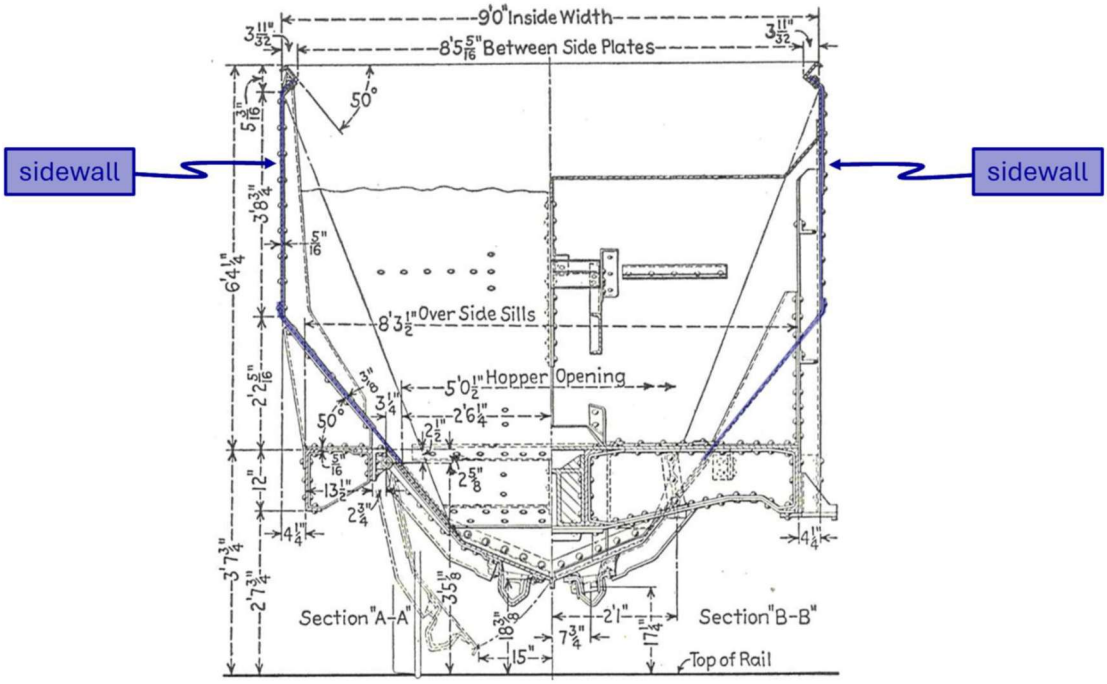
Petition at 20, 36. In direct contradiction with the plain language of claim 11 ("first and second corner ports … mate with said sidewalls") the structures the Petition

identifies as the claimed "sidewall" **include** the two corner posts towards the sides of the rail car, as shown in the above figure and confirmed later in the Petition and Dr. Ahmadian's declaration:

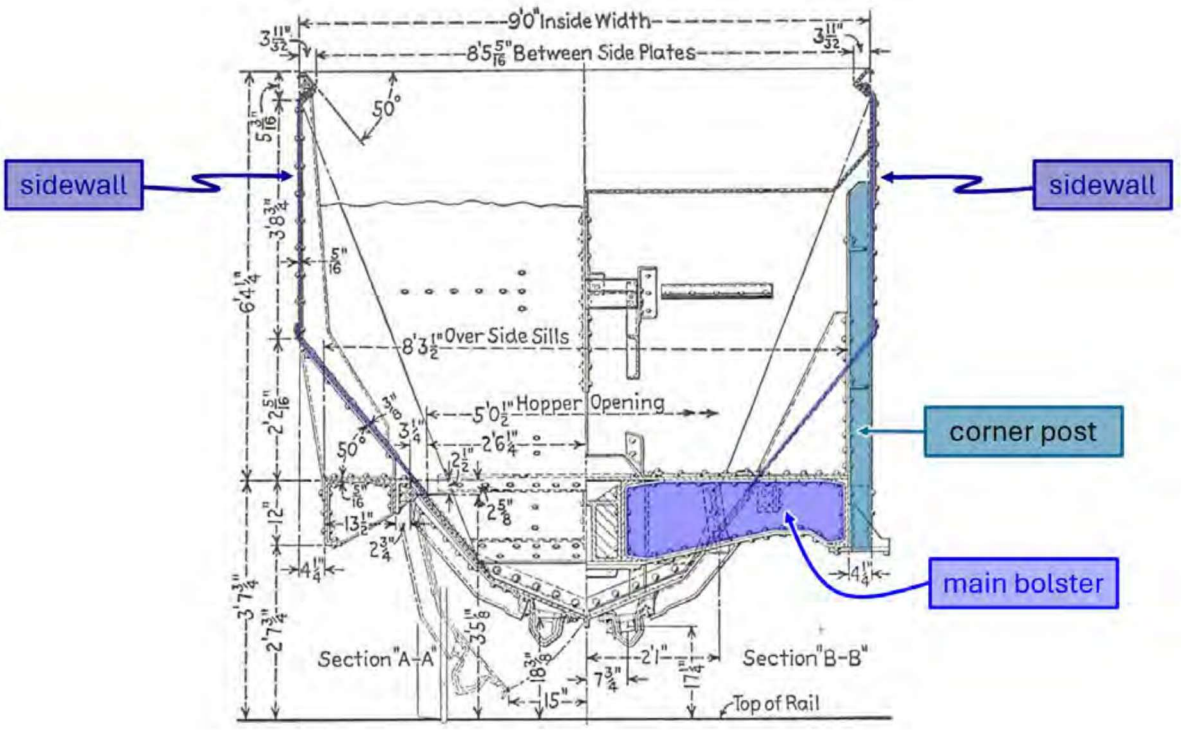


Petition at 73; Dr. Ahmadian Decl. ¶88; Dr. Viz Decl. ¶84. Thus, the structure identified in the Petition as the "sidewall" in the NSC Ore Cars, which includes the two posts, cannot reasonably be construed to satisfy the language of claim 11 – *i.e.*, "first and second corner ports … mate with said sidewalls." Petition at 20.

The Petition also relies on the following image to show the sidewalls, but does not indicate the posts to be part of the structures it identified as sidewalls, shown outlined in blue:



Petition at 21, 36; Dr. Viz Decl. ¶85. In fact, the posts are shown as being distinct from the sidewalls (outlined in blue) in the Petition and Dr. Ahmadian's Declaration:



Petition at 74; Dr. Ahmadian Decl. ¶50; Dr. Viz Decl. ¶85.

Petitioner is thus unclear regarding what it identifies as the sidewalls in the cited asserted art. Dr. Viz Decl. ¶86. That ambiguity is carried forward to claim 11. *Id*.; Petition at 73, 74. If the Petition's analysis of the asserted art is to be interpreted to have the corner posts be a part of the sidewall, then it is impossible for the corner posts to "extend upwardly from said first and second ends respectively to mate with said sidewalls," as required by claim 11. Dr. Viz Decl. ¶86.

Thus, under the Petitioner's proposed interpretation of the "sidewall" in the NSC Ore Cars, Petition at 20, it is clear that the asserted art does not teach or render obvious claim 11. Moreover, because the Petition has provided conflicting interpretations of the asserted art with respect to the claimed "sidewall," it is unclear how the asserted art might teach or renders obvious the claim. Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶84-87.

ix. Dependent Claim 12

Dependent claim 12 includes the same additional limitations as dependent claim 11 but depends directly on claim 2, rather than through intervening claims 8 and 10, as does claim 11. Dr. Viz Decl. ¶88. Thus, for the reasons discussed above, in Section VI.F.viii, Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *Id*.

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

At least for the reasons discussed above, the Petition does not establish a reasonable likelihood of prevailing on Ground 1b and institution on this ground should be denied.

G. Ground 1c Should Not be Instituted

Petitioner asserts as Ground 1c that claim 9 of the '892 Patent would have been obvious over the 1946 Cyclopedia in view of Lindström and Wong. Petition at 75. The Petition, however, fails to establish a reasonable likelihood that the asserted art would have rendered claims 2 or 8 obvious, much less claim 9 which depends from both claims.

i. Claim Limitation 9a

Claim limitation 9a adds to the inventions of claims 2 and 8 that "said hopper has an end wall extending downward of said top chord." Dr. Viz Decl. ¶90. Petitioner admits that the NSC Ore Cars do not disclose this limitation and relies on Wong in an attempt to supply this missing element. *See* Petition at 76; Dr. Viz Decl. ¶91. However, a POSITA would not have had any reason, nor would POSITA have been motivated, to include an end wall in the NSC Ore Cars based on Wong. Dr. Viz Decl. ¶91.

First, Petitioner contends that the NSC Ore Cars could be modified by increasing the overall height of the hopper. *See* Petition at 77. However, rail cars are based on standardized sizes or profiles, which cannot be exceeded. Dr. Viz. Decl. ¶92. All railcars are designed to "clearance plates" that are established and enforced by the Association of American Railroads ("AAR"). *Id.* A POSITA would understand that increasing the height of any railcar is not simply a matter of deciding to do so; there are design constraints that would have to be consulted and adhered to. *Id.* Rail cars are also designed with particular geometries and load capacities in mind. *Id*. Contrary to the assertions in the Petition, a POSITA would not on a whim and without more simply increase the height of a hopper car like the NSC Ore Cars and, instead presume that the hopper car was already designed to its maximum feasible height. *See id.* Such a change could leave an ore car ineffectual for its intended purpose, for example because it would not be able to carry a full load due to the increased weight of the car caused by making it taller. *Id.* Raising the height on a design like that of the 125-year-old L&Y Hopper Car as Petitioner proposes, which already had end walls, would have been vastly different than adding end walls and raising the height. Petition at 81.

Second, Petitioner suggest reducing the inclination of the slope sheets so that their outboard ends terminate at a lower height (*i.e.*, lower along the end wall). Petition at 77. Again, rail cars are specifically designed with geometries and load

capacities in mind. Dr. Viz Decl. ¶93. Lowering the slope sheet as proposed in the modified image provided in the Petition, at 77, would have changed load distribution in the rail car. *Id.* Moreover, it might have lowered the effectiveness of the rail car when dumping its load because the lower angle may not be sufficient to gravity drop all its contents based on characteristics such as the angle of repose of the intended commodity. *Id.* A POSITA would also have to address the hydrostatic pressure from the commodity "pushing out" on the hopper walls. *Id.*

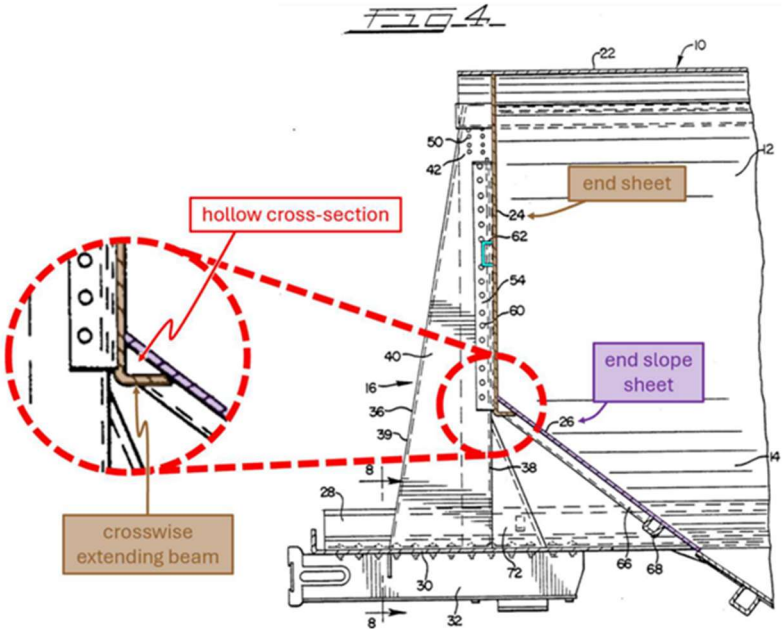
For at least these reasons, the asserted art combination proposed by the Petition would not be one of a "finite number of well-understood options" or a "routine design choice." Dr. Viz Decl. ¶94; Petition at 80-81. Instead, the Petition and Dr. Ahmadian are merely engaging in more improper hindsight and picking and choosing pieces of the asserted art in an attempt to meet the claimed invention. Dr. Viz Decl. ¶94. This is shown by the different rail car designs that Petitioner relies on as allegedly showing other rail cars with end walls. *Id*. Petition at 78-80.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 9 as a whole. *See* Dr. Viz Decl. ¶¶90-95

ii. Claim Limitation 9b

This claim limitation requires, in part: "… said first cross-wise extending beam is located where said downwardly extending end wall meets said first end slope

sheet; and said first cross-wise extending beam is of hollow cross-section." See Petition at 82. As discussed above in Section VI.F.i, the Petitioner and Dr. Ahmadian are using improper hindsight to add a first cross-wise beam from Wong to the NSC Ore Cars without considering the effects of the proposed modification on the NSC Ore Cars, or providing any reasonable basis or rationale for the proposed modification. *See* Dr. Viz Decl. ¶96. Petitioner and Dr. Ahmadian do not state or suggest why, for example, a POSITA would take the beam 62 from Wong and incorporate into the NSC Ore Cars. Petitioner fails to provide any explanation of the motivation a POSITA would have to make this change, i.e., how this would improve the NSC Ore Cars.



Petition at 83 (modified to highlight beam 62); Dr. Viz Decl. ¶97.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶96-98.

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

At least for the reasons discussed above, the Petition does not establish a reasonable likelihood of prevailing on Ground 1c and institution on this ground should be denied.

H. Ground 1d Should Not be Instituted

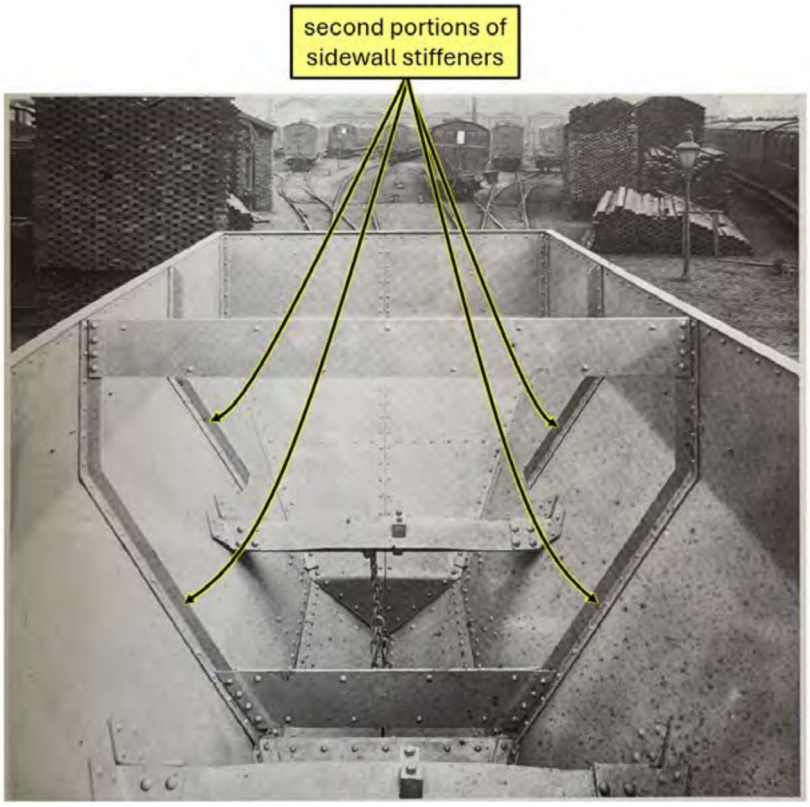
Petitioner asserts as Ground 1d that claim 15 of the '892 Patent would have been obvious over the NSC Ore Cars in view of Lindström, optionally Wong, and Coates. *See* Petition at 84, 85. The Petition, however, fails to establish a reasonable likelihood that the asserted art would have rendered obvious the invention of claim 2, much less the invention of claim 15 which includes all of the subject matter of claim 2.

Notably, for this ground, the Petition does not include any discussion of what features would optionally be added in view of Wong. The Petition states only that "[f]or the reasons discussed in connection with Claim 3, the 1946 Cyclopedia's NSC Ore Cars, as modified by Lindström, discloses all aspects of Claim 15 except the requirement that the side-wall stiffener be made of flat bar." Petition at 84. However, claims 3 and 15 recite different salient features and it is unclear from Petitioner's

discussion in connection with claim 3 how it proposes to combine the asserted art to arrive at the subject matter recited in claim 15.

Petitioner and Dr. Ahmadian do not explain why Coates' discussion of the L&Y Hopper Car teaches "flat bar." Dr. Viz. Decl. ¶101. Instead, they present the conclusion that it is flat bar as mere *ipse dixit*. *Id.* A POSITA in the relevant time frame would not consider the triangular plates to be made from "flat bar" as the gussets are made from either sheet or plate. *Id.* The stiffeners on the inside of the car hopper are likely formed "L" sections, not flat bar somehow manipulated into an "L" section. *Id.* A POSITA would not agree with Petitioner's or Dr. Ahmadian's interpretation of these structural elements. *Id.*

Moreover, that the Petition does not provide any reasonable basis or rationale as to why a POSITA would modify the 1946 Cyclopedia (or NSC Ore Cars) in view of Lindström and optionally Wong with Coates, as proposed by the Petitioner. *Id* at 102.



Petition at 86.

Further, it is not clear, and would not be clear to a POSITA in the relevant time frame, that the photos of the L&Y car show the use of flat bar as the Petitioner and Dr. Ahmadian claim. Dr. Viz Decl. ¶103.

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 1d and institution on this ground should be denied. Dr. Viz Decl. ¶¶101-104.

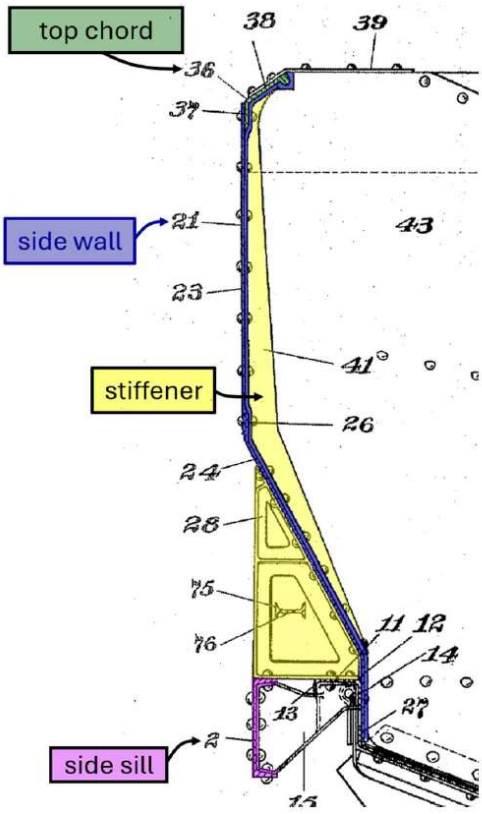
I. Ground 2a Should Not be Instituted

Petitioner asserts as Ground 2a that claim 1 would have been obvious over Lindström and optionally the NSC Ore Cars. Petition at 86. As set forth below,

however, the Petition fails to establish a reasonable likelihood that the asserted art teaches each and every element of, explicitly or inherently, or that it renders obvious as a whole, claim 1.

i. Claim Limitation 1d

The Petition fails to establish that the claimed "first upstanding sidewall extend[s] from said side sill to said top chord" is taught, explicitly or inherently, by Lindström. Dr. Viz Decl. ¶106. Instead, as shown in the figures depicted in and relied on by the Petition, the structure that the Petitioner identifies as a "sidewall" in the asserted art never meets the structure it identifies as a "side sill." As seen in the Petition's annotated illustration of Fig. 5 of Lindström (reproduced below), the structure labeled "sidewall" and highlighted in blue never meets the structure labeled "side sill" and highlighted in pink:



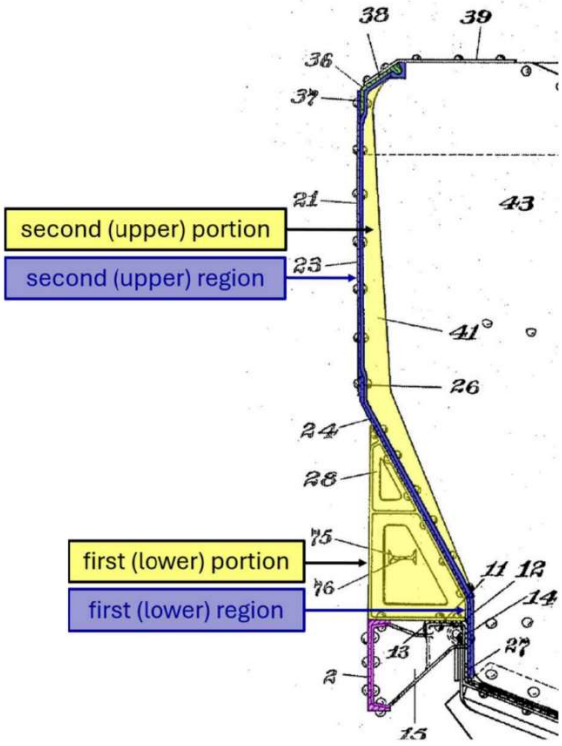
Lindström Fig. 5

Petition at 92; Dr. Viz Decl. ¶106.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 1 as a whole. *See* Dr. Viz Decl. ¶¶106-107.

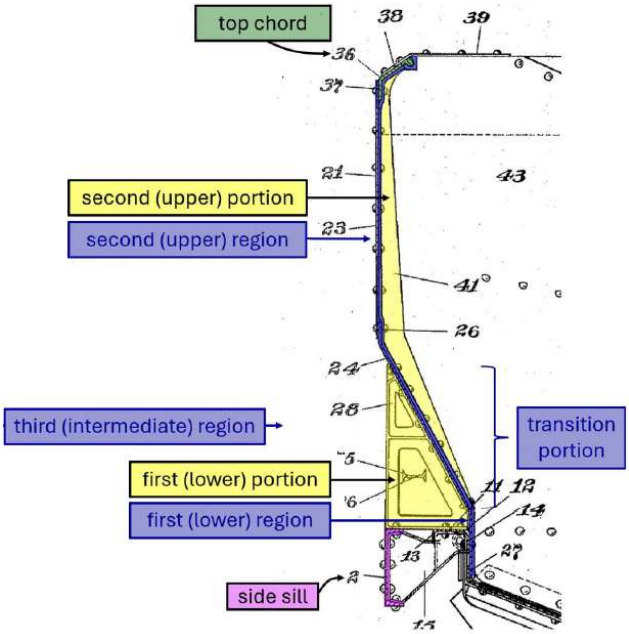
ii. Claim Limitation 1g

Claim limitation 1g requires, in part: "… said first portion being mounted to said first region of said first upstanding sidewall." *See* Petition at 95. Petitioner contends the following annotated image allegedly shows the sidewall stiffener mounted to the first (lower) region:



Lindström
Fig. 5

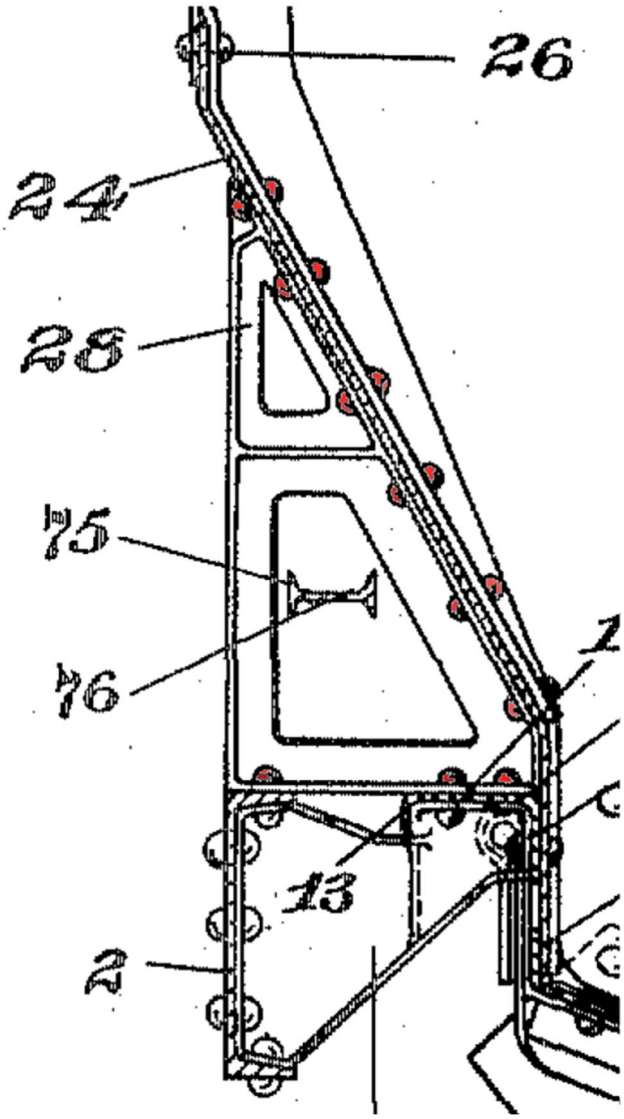
Petition at 95 (modified to make image smaller); Dr. Viz Decl. ¶108. As is made clear by Petitioner's discussion of claim 4, the first (lower) region is the lower vertical portion of the sidewall, and not the diagonal transition portion:



Lindström
Fig. 5

See Petition at 116; Dr. Viz Decl. ¶108.

Lindström's first portion of the sidewall stiffener is bolted or riveted to the inclined transition portion, not the first region of the sidewall, as required by this claim:



Ex. 1005, Lindstrom Fig. 4 (cropped, highlight added); Dr. Viz Decl. ¶109-110. Notably, none of the bolts or rivets mount the first portion to the first region, and neither the Petition nor Dr. Ahmadian's declaration address this issue. Dr. Viz. Decl. ¶110. Thus, the identified first portion of the sidewall stiffener is not mounted to the first region of the sidewall. *Id*.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 1 as a whole. *See* Dr. Viz Decl. ¶¶108-111

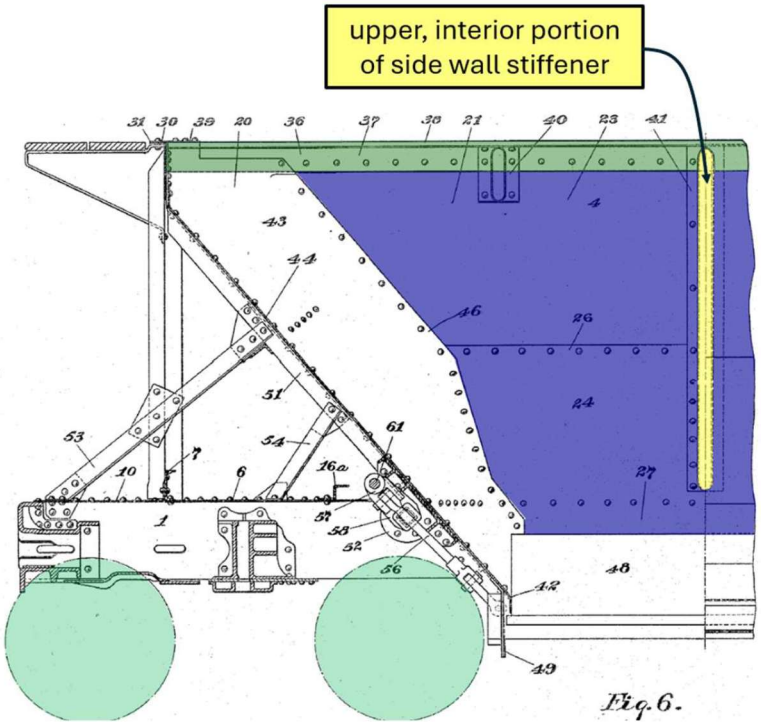
iii. Claim Limitation 1h

This limitation requires:

> said first portion of said first upstanding sidewall stiffener being laterally outboard of said first region of said first upstanding sidewall; said second portion of said sidewall stiffener being laterally inboard of said second region of said first upstanding sidewall.

Petition at 97. Petitioner's argument for this limitation consists of two sentences: "[i]n the preceding illustration, 'inboard' is to the right and 'outboard' is to the left. Accordingly, Lindström discloses this limitation, as shown above." *See* Petition at 97. However, there is no preceding illustration in the discussion of the limitation. *See id*.; Dr. Viz Decl. ¶112.

The preceding illustration on page 96 of the Petition, for limitation 1g shows the following:



Petition at 96. It is unclear how "inboard' is to the right and 'outboard' is to the left" in the above illustration. Dr. Viz Decl. ¶112. Thus, Petitioner has not shown that this claim limitation is met by Lindström, much less the proposed combination of the NSC Ore Cars in view of Lindström. *Id*.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 1 as a whole. *See* Dr. Viz Decl. ¶¶112-113.

iv. Claim Limitation 1j

The Petition fails to establish that the claimed "sidewall stiffener having web continuity between said first and second regions thereof" is taught by Lindström or

the NSC Ore Cars. Dr. Viz Decl. ¶114. Neither Lindström nor the NSC Ore Cars teach "webs."

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 1 as a whole. *See* Dr. Viz Decl. ¶¶114-115.

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

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

J. Ground 2b Should Not be Instituted

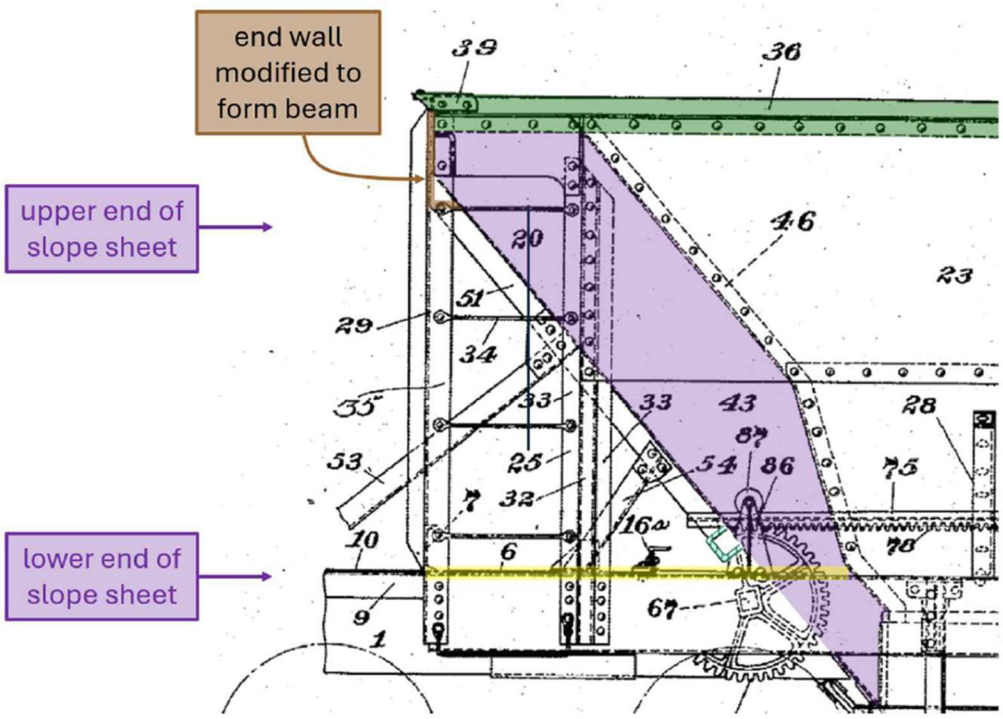
Petitioner asserts as Ground 2b that claims 2-14 would have been obvious over Lindström in view of the NSC Ore Cars and Wong. Petition at 98. The Petition, however, fails to establish a reasonable likelihood that the asserted art would have rendered independent claim 2 obvious, much less any of the dependent claims 3-14, each of which depends, directly or through an intervening claim, on claim 2 and includes further patented features.

i. Claim Limitation 2i

Petitioner cites its discussion for Ground 1b as providing support to combine the asserted art to provide "said upper, longitudinally outboard end of said first end

slope sheet being reinforced by a first cross-wise extending beam." *See* Petition at 106-07; Dr. Ahmadian Decl. at ¶78. The same arguments that refute this combination in Section VI.F.i, above, also apply here. Dr. Viz Decl. ¶117.

In addition, a POSITA would not have "slightly lengthened and bent" Lindström's end wall based on Wong, as proposed by the Petition. Petition at 106-07; Dr. Viz Decl. ¶118 The Petition does provide any explanation, it is not clear from the asserted art, how this would have been accomplished given that outwardly extending stiffening flanges 51 appear to be directly in the way of the proposed modification:



Petition at 107, Dr. Viz Decl. ¶118.

Moreover, simply bending the end of the end wall is not enough to meet the claim limitation. *Id*. A POSITA would need to have a way to fasten this new detail to the slope sheet. *Id*. Putting a C-channel or similar bend detail into the bottom of the end wall could make it challenging or even impossible to properly fasten it to the slope sheet. *Id*. Petitioner and Dr. Ahmadian need to consider more than just whether a member such as the end wall can be shaped differently at one edge. *Id*.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 2 as a whole. *See* Dr. Viz Decl. ¶¶117-119.

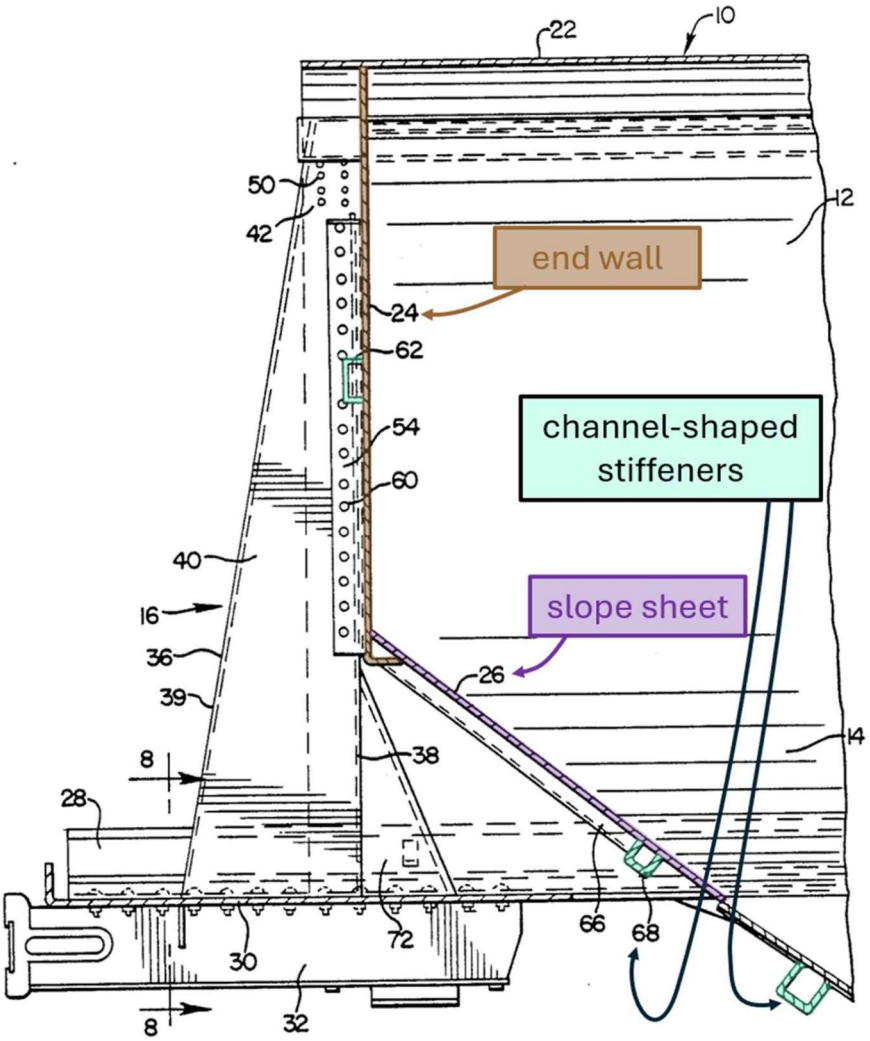
ii. Claim Limitation 2j

Petitioner cites its discussion for Ground 1b as providing support to combine the asserted art to provide "said lower, longitudinally inboard end of said first end slope sheet being reinforced by a second cross-wise extending beam." Petition at 108. However, the Petition does not make an argument in Ground 1b regarding adding a lower, longitudinally inboard end of said first end slope sheet being reinforced by a second cross-wise extending beam from Wong. Dr. Viz Decl. ¶120; Petition at 54-55.

To the extent Petitioner is incorporating its arguments as to why it is adding any beam from Wong to Lindström or the NSC Ore Cars, this only further highlights the improper hindsight basis for Petitioner's arguments. Dr. Viz Decl. ¶121. For the

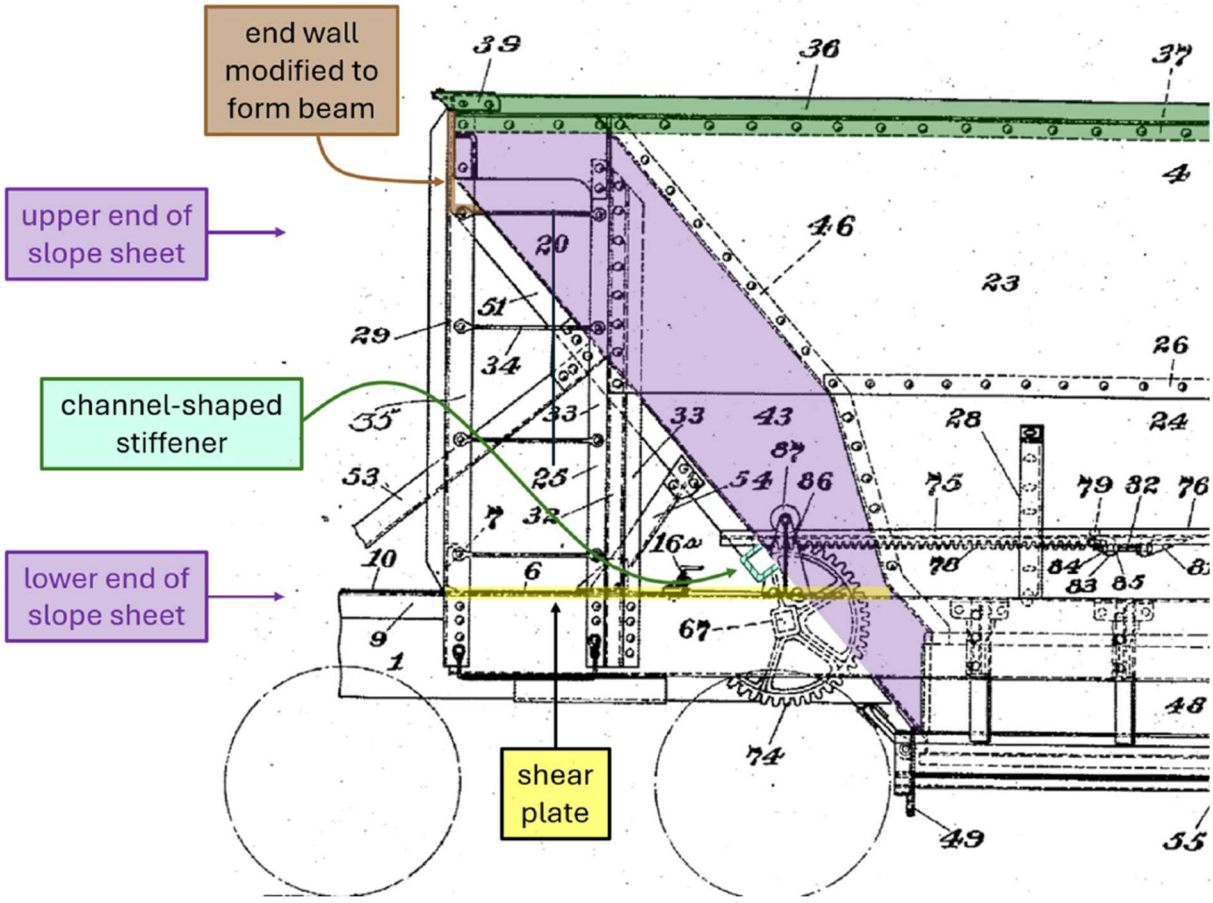
same reasons why a POSITA would not have added a first cross-wise extending beam at the upper, longitudinally outboard end of said first end slope sheet in the NSC Ore Cars or Lindström, a POSITA would not have added the second cross-wise extending beam proposed by the Petition. *Id*. Moreover, the Petition does not provide any reasonable basis or rationale regarding interference that might result from the addition, nor how such interference introduced by addition of this proposed second cross-wise extending beam might be addressed by a POSITA. *Id.*

For example, Petitioner appears to suggest that the channel-shaped stiffener 62, channel-shaped stiffener 68, or the unlabeled channel shaped stiffener on the door of the hopper car may be added to Lindström:



Petition at 108; Dr. Viz Decl. ¶122. However, only one of these channel-shaped stiffeners, with reference number 68, is on "said lower, longitudinally inboard end of said first end slope sheet" as required by the claim. *See id*. Petitioner is improperly cherry-picking features from the asserted art using the claims as a road map to try to invalidate the claims, without taking into consideration whether the proposed combination would have been obvious to a POSITA, or whether a POSITA would have been motivated in the first place to attempt to modify the asserted art as proposed in the Petition.

For instance, the Petition fails to consider the impact that adding a beam in the location it chose on Lindstrom might have on other structures in the rail car, or the car as a whole:



Petition at 109; Dr. Viz Decl. ¶123. . As seen above, the proposed addition would be entirely in the location of outwardly extending stiffening flanges 51 and would likely destroy the structural integrity of Lindström's slope sheet. Dr. Viz Decl. ¶123. Moreover, is the addition would hover in the air and, thus, would not have provided any benefit to the rail car or its operation. *Id.*

Thus, not only does the Petition use improper hindsight based on the '892 Patent, but the modification to the asserted art proposed in the Petition would have rendered the resultant rail car unsatisfactory for its intended purpose. *Id*. at ¶124.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 2 as a whole. *See* Dr. Viz Decl. ¶¶120-125.

iii. Claim Limitation 2n

Claim limitation 2n requires "said hopper having respective first and second top chords running longitudinally therealong . . . ." *See* Petition at 111. For the reasons discussed above in Section VI.I.i, the asserted art does not teach or render obvious the claimed "top chords." Dr. Viz Decl. ¶126.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 2 as a whole. *See* Dr. Viz Decl. ¶¶126-127.

iv. Claim Limitation 2r

Claim limitation 2r requires "said sidewall stiffener having a first portion, said first portion being a lower portion thereof, said first portion being mounted to said first region of said first upstanding sidewall; said sidewall stiffener having a second portion, said second portion being an upper portion thereof, said second portion

being mounted to said second region of said first upstanding sidewall." *See* Petition at 114. Petitioner relies on its discussion of limitation 1g for this claim limitation, and adds no further analysis. Dr. Viz Decl. ¶128. For the reasons discussed above in Section VI.I.ii, the asserted art does not teach or render obvious these claimed features. *Id*.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 2 as a whole. *See* Dr. Viz Decl. ¶¶128-129.

v. Claim Limitation 2s

Claim limitation 2s requires "said first portion of said first upstanding sidewall stiffener being laterally outboard of said first region of said first upstanding sidewall; said second portion of said sidewall stiffener being laterally inboard of said second region of said first upstanding sidewall." *See* Petition at 114. Petitioner relies on its discussion of limitation 1h for this claim limitation, and adds no further analysis. Dr. Viz Decl. ¶ 130. For the reasons discussed above in Section VI.I.iii, the asserted art does not teach or render obvious these claimed features. *Id*.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 2 as a whole. *See* Dr. Viz Decl. ¶¶130-131.

vi. Claim Limitation 2u

Claim limitation 2u requires "said sidewall stiffener having web continuity between said first and second portions thereof." *See* Petition at 114. Petitioner relies on its discussion of limitation 1j for this claim limitation, and adds no further analysis. Dr. Viz Decl. ¶132. For the reasons discussed above in Section VI.I.iv, the asserted art does not teach or render obvious these claimed features. *Id*.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 2 as a whole. *See* Dr. Viz Decl. ¶¶132-133.

vii. Claim 5

Claim 5 requires "said first sidewall has an overall height from said first side sill to said first top chord, L, and said transition portion is located a distance above said first side sill that is in the range of ¼ to ⅔ L." *See* Petition at 117. Petitioner relies on drawings that are not indicated as being to scale from Lindström as allegedly disclosing this limitation. *See id*.; *see also* Dr. Viz Decl. ¶134. Such reliance is misplaced. *See, e.g., Hockerson-Halberstadt, Inc. v. Avia Group Int'l., Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000) ("Under our precedent, however, it is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.") (quoting or citing *In re Wright*, 569 F.2d 1124, 1127 (CCPA

1977) ("Absent any written description in the specification of quantitative values, arguments based on measurement of a drawing are of little value."); *In re Olson*, 212 F.2d 590, 592 (CCPA 1954) (other citations omitted).

Petitioner attempts to bolster its unsupported argument by stating that selecting dimensions consistent with Lindstrom's drawings and with the NSC Ore Cars would be a matter of design choice. Petition at 117. Petitioner and Dr. Ahmadian provide no support for this conclusory statement, nor do they provide any motivation, reasonable basis, or rationale why a POSITA would have attempt to much less combine the NSC Ore Cars and Lindström as proposed in the Petition.. *See id*. Petitioner's *ipse dixit* should be ignored.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶134-137.

viii. Claim Limitation 6b

Claim limitation 6b requires: "said hopper includes first and second sloped side sheets; and said first sloped side sheet meets said first sidewall at said transition portion." *See* Petition at 118.

As an initial matter, Petitioner is applying a different claim construction for this claim limitation in this ground than it did for Ground 1b. *See* Petition at 68, 119; *see also* Dr. Viz Decl. ¶138. Petitioner does not address which of these two constructions, if any, should be the plain and ordinary meaning that a POSITA would

understand. Dr. Viz Decl. ¶138. As discussed above with respect to this claim limitation in Ground 1b, a POSITA would understand that a sloped side sheet would be a separate feature from the claimed side wall. *See supra* Section VI.F.v. However, under the interpretation proffered by Petitioner and Dr. Ahmadian, the structure in the asserted art that they identify as the claimed "sloped side sheet" is the same structure that they identify as the claimed "transition portion." Dr. Viz Decl. ¶138. This interpretation would not be understood by a POSITA because the claimed "first sloped side sheet" cannot "meet" the "first sidewall at said transition portion" – because they are one and the same. *Id*.

Thus, under the plain and ordinary meaning of the language of this claim limitation, Lindström does not disclose the claimed sloped side sheet.

Petitioner has not met its burden to show a reasonable likelihood that this claim limitation is taught or rendered obvious by the asserted art, much less claim 6 as a whole. *See* Dr. Viz Decl. ¶¶138-139.

ix. Claim 7

Claim 7 requires "wherein said first sidewall has an overall height from said first side sill to said first top chord, L, and said first sloped side sheet meets said transition portion at an height that is in the range of ¼ to ⅔ L above said first side sill." *See* Petition at 121. Petitioner argues that Lindström discloses this limitation for the same reasons that it posits for Claim 5. *Id*. However, as discussed above, the

Petition uses the wrong definition of "sloped side sheet" in claim 6. Dr. Viz Decl. ¶140. Under Petitioner's proposed construction the claimed "sloped side sheet" and the "transition portion" would have to be same structure, which would be nonsensical in view of the plain language in claim 7—the same structure cannot "meet" itself. *Id.*

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶140-141.

x. Claim Limitation 8b

This claim limitation requires "an end post [that] extends from said draft sill to said end top chord, said end post being mounted above said draft sill between said truck center and said striker." *See* Petition at 122. The proposed combination of asserted art does not teach or render obvious this limitation.

Lindström does not have an end post, as the Petition admits. Dr. Viz Decl. ¶143. The Petitioner contends that modifying Lindström with the NSC Ore Cars cures this deficiency. *See* Petition at 123. However, the Petition fails to provide any reasonable basis or rationale to explain why a POSITA would have been motivated in the first place to make the proposed modification, or any likelihood of success of the proposed modification—this is just another instance of the Petitioner improperly using the claims as a roadmap to attempt to invalidate the claims. Dr. Viz Decl. ¶143.

Aside improper hindsight based on the '892 Patent, Petitioner and Dr. Ahmadian have not provided any reasonable basis or rationale why a POSITA would have selected discrete pieces from different asserted art references to arrive at the subject matter of the claims. *See* Dr. Viz Decl. ¶144.

Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶142-145.

xi. Claim Limitation 9b

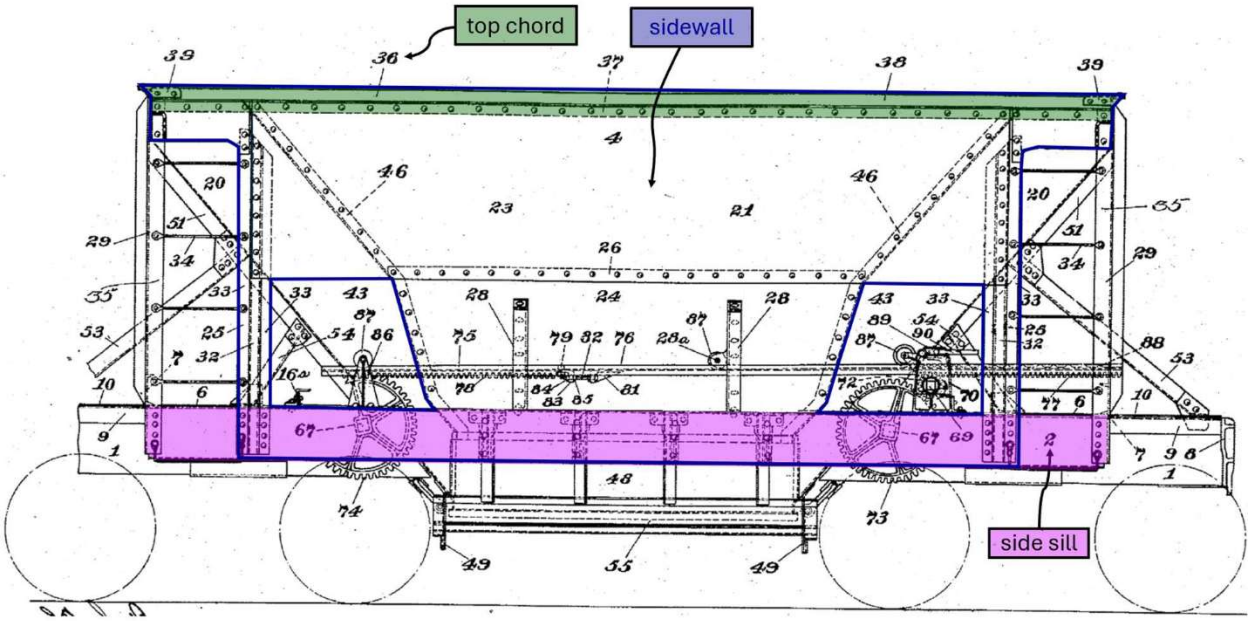
Claim limitation 9b requires "upper, longitudinally outboard end of said first end slope sheet meets said downwardly extending end wall; and said first cross-wise extending beam is located where said downwardly extending end wall meets said first end slope sheet; and said first cross-wise extending beam is of hollow cross-section." *See* Petition at 125.

For the reasons explained above, in Sections VI.G.ii and VI.J.i, a POSITA would not have been motivated to make the combination of asserted art proposed in the Petition. The combination of asserted art proposed by the Petitioner is motivated solely by improper hindsight. Dr. Viz Decl. ¶146.

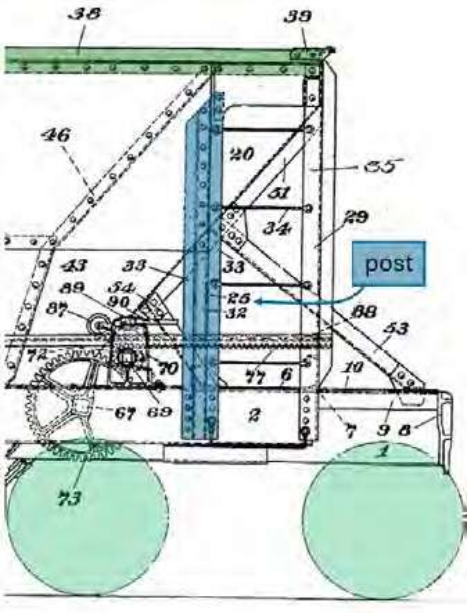
Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. Dr. Viz Decl. ¶¶146-147.

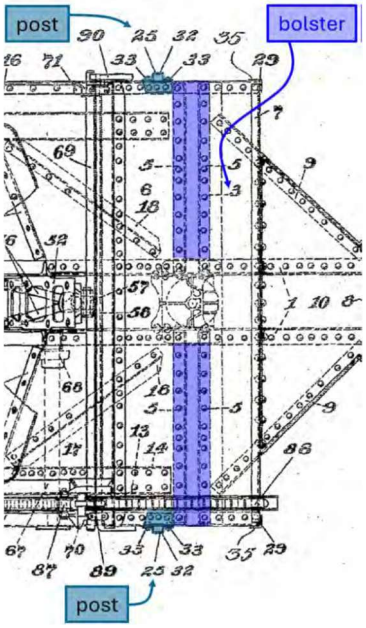
xii. Claim 11

The Petition, in its discussion for Ground 2a, claim limitation 1d, asserts that the claimed "sidewalls" are shown by the annotated structures in the below figure.



See Petition at 90. This annotated structures include the two posts towards the sides of the rail car:





Petition at 128-129; Ex. 1003 at ¶ 88.

If the structures identified by the Petition for the "sidewall" are interpreted to have the corner posts be a part of the "sidewall" in the above illustrations, then the asserted art cannot reasonably be construed to satisfy the language of claim 11 – *i.e.*, "first and second corner ports … mate with said sidewalls." That is, it would be impossible for the corner posts that are part of the "sidewall" to "extend upwardly from said first and second ends respectively to mate with said sidewalls." Dr. Viz Decl. ¶149.

Thus, under the Petitioner's proposed interpretation of the "sidewall" in the annotated figures above, it is clear that the asserted art does not teach or render obvious claim 11. Moreover, because the Petition has provided conflicting interpretations of the asserted art with respect to the claimed "sidewall," it is unclear how, or why, the proposed combination of asserted art would result in the invention of claims 2, 8, or 10 (on which claim 11 depends), much less claim 11, Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. *See* Dr. Viz Decl. ¶¶148-150.

xiii. Claim 12

Dependent claim 12 includes the same limitations as dependent claim 11 but depends directly on claim 2 instead of claim 10, which also depends on claim 2 indirectly through claim 8. Dr. Viz Decl. ¶151. Thus, for the reasons discussed in

Section VI.J.xii. Petitioner has not met its burden to show a reasonable likelihood that this claim is invalid. Dr. Viz Decl. ¶151.

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

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

K. Ground 2c Should Not be Instituted

Petitioner asserts as Ground 2c that claim 15 would have been obvious over Lindström in view of the 1946 Cyclopedia, Wong, and Coates. Petition at 130-131. The Petition fails to establish a reasonable likelihood that the asserted art would have rendered obvious claim 2 as discussed above, much less dependent claim 15 which includes further patented subject matter. For example, each and every limitation of claim 2, and claim 2 as a whole, from which claim 15 depends, is not taught or suggested by the asserted art. *See supra* Section VI.J; *see also* Dr. Viz Decl. ¶152.

For at least these reasons, the Petition does not establish a reasonable likelihood of prevailing on Ground 2c and institution on this ground should be denied. *See* Dr. Viz Decl. ¶¶152-153.

VII. Conclusion

For the foregoing reasons, institution should be denied.

Respectfully Submitted,

Date: September 18, 2025

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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 12,869 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.

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** was served electronically in its entirety on September 17, 2025 via electronic mail to the following attorneys of record:

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