

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOUGHBUILT INDUSTRIES, INC.,
Petitioner

v.

MERIDIAN INTERNATIONAL CO., LTD.,
Patent Owner

Case IPR2025-01462
U.S. Patent No. 11,192,689

PETITIONER'S REPLY

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PETITIONER’S UPDATED EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 11,192,689 B2 to Cai, issued December 7, 2021 (“the ’689 patent”)
1002	File History of U.S. Patent No. 11,192,689 (“Prosecution History”)
1003	Declaration of Dr. J. Michael McCarthy in Support of Petition for <i>Inter Partes</i> Review of U.S. Patent No. 11,192,689
1004	<i>Curriculum Vitae</i> of Dr. J. Michael McCarthy
1005	EP 3492226 A1 to Brocket (“Brocket”)
1006	U.S. Publication No. 2007/0215015 to Heinrichs et al. (“Heinrichs”)
1007	U.S. Publication No. 2007/0012694 to Duvigneau (“Duvigneau”)
1008	U.S. Publication No. 2015/0151661 to Morel et al. (“Morel”)
1009	U.S. Patent No. 6,238,031 B1 to Weng, issued May 29, 2001 (“Weng”)
1010	U.S. Publication No. 2019/0002004 to Brunner et al. (“Brunner”)
1011	U.S. Patent No. 4,576,307 to Frydenberg (“Frydenberg”)
1012	U.S. Patent No. 4974740 to Niles et al. (“Niles”)
1013	Plaintiff Meridian Int’l Co. Ltd.’s Infringement Contentions
1014	EP Search report EP20170368.3 (Oct. 30, 2020)
1015	Meridian EP Amendment and Response in EP20170368.3 (Oct. 5, 2021)
1016	U.S. Publication No. 2015/0274362 to Christopher et al. (“Christopher”)

Exhibit No.	Description
1017	U.S. Publication No. 5,461,731 to Shida (“Shida”)
1018	U.S. Publication No. 2020/0298392 to Baruch et al. (“Baruch”)
1019	U.S. Publication No. 2003/0094392 to Meier et al. (“Meier”)
1020	Chinese Utility Model No. 206841966 U to Wang (“Wang”)
1021	U.S. Publication No. 2008/0000899 to Baker et al. (“Baker”)
1022	U.S. Patent No. 5,934,466 to Loeffler (“Loeffler”)
1023	U.S. Publication No. 2019/0291922 to Gonitiner et al., (“Gonitiner922”)
1024	U.S. Patent No. 9,725,209 B1 to Ben-Gigi (“Ben-Gigi”)
1025	U.S. Publication No. 2019/0315515 to Gonitiner et al. (“Gonitiner515”)
1026	U.S. Patent No. 9,962,826 to Surridge (“Surridge”)
1027	U.S. Publication No. 2008/0121547 to Dur et al. (“Dur”)
1028	U.S. Patent No. 6,592,000 to Owens et al. (“Owens”)
1029	Non-Infringement and Invalidity Report of J. Michael McCarthy, Ph.D., <i>Meridian Int’l Co., Ltd. v. ToughBuilt Industries, Inc.</i> , Civil Action No. 8:24-cv-01840 (C.D. Cal.)
1030	Defendant’s Notice of <i>Inter Partes</i> Reviews and Stipulation Regarding Invalidity Contentions as to U.S. Patent Nos. 11,986,946 and 11,192,689 [116], <i>Meridian Int’l Co., Ltd. v. ToughBuilt Industries, Inc.</i> , Civil Action No. 8:24-cv-01840 (C.D. Cal.) with Notice of Electronic Filing Dated Sept, 5, 2025
1031	<i>Intentionally Left Blank</i>
1032	Order on Motion to Stay Case Pending <i>Inter Partes</i> Reviews, <i>Meridian Int’l Co., Ltd. v. ToughBuilt Industries, Inc.</i> , Case No. 8:24-cv-01840-JWH-JDE (C.D. Cal. September 25, 2025).

Exhibit No.	Description
1033	Memorandum of Points and Authorities in Support of Plaintiff's Motion for Preliminary Injunction, <i>Meridian Int'l Co., Ltd. v. ToughBuilt Industries, Inc.</i> , Civil Action No. 8:24-cv-01840 (C.D. Cal. August 26, 2024)
1034	Complaint for Patent Infringement, <i>Meridian Int'l Co., Ltd. v. ToughBuilt Industries, Inc.</i> , Civil Action No. 8:24-cv-01840 (C.D. Cal. August 21, 2024)
1035	Declaration of Dr. J. Michael McCarthy in Support of Petitioner's Opposition to Patent Owner's Contingent Motion to Amend.
1036	U.S. Patent Publication No. 2011/0000916 to Dane et al. ("Dane")
1037	U.S. Patent Publication No. 2016/0236592 to Peniche et al. ("Peniche")
1038	Deposition Transcript of Dr. Glenn Vallee (July 14, 2026)
1039	U.S. Patent Publication No. 2006/0273084 to Baker et al. ("Baker084")
1040	U.S. Patent Publication No. 2017/0250501 A1 to Endo et al. ("Endo")
1041	U.S. Patent No. 9,097,038 B1 to Cohen ("Cohen")
1042	Meridian Response Letter to Toughbuilt Request (July 21, 2026)
1043	Declaration of William H. Milliken in Support of Admission <i>Pro Hac Vice</i>
1044	Declaration of Dr. J. Michael McCarthy in Support of Petitioner's Reply
1045	Deposition Transcript of Dr. Glenn Vallee from IPR2025-01461 (July 16, 2026)

Exhibit No.	Description
1046	Excerpts from J. Michael McCarthy & Gim Song Soh, <i>Geometric Design of Linkages</i> , 2nd Edition (Springer 2010) (“Geometric Design”)

I. INTRODUCTION

All claims of the '689 patent are unpatentable. They are directed to nothing more than a sliding latch mechanism with well-known components for connecting two storage containers. Meridian's rebuttal arguments do not engage with the analysis and evidence presented in the Petition, require impermissibly narrow and incorrect claim constructions, do not comport with obviousness law, and are supported by expert testimony that is conclusory. The Board should reject Meridian's arguments and find all claims of the '689 patent unpatentable.

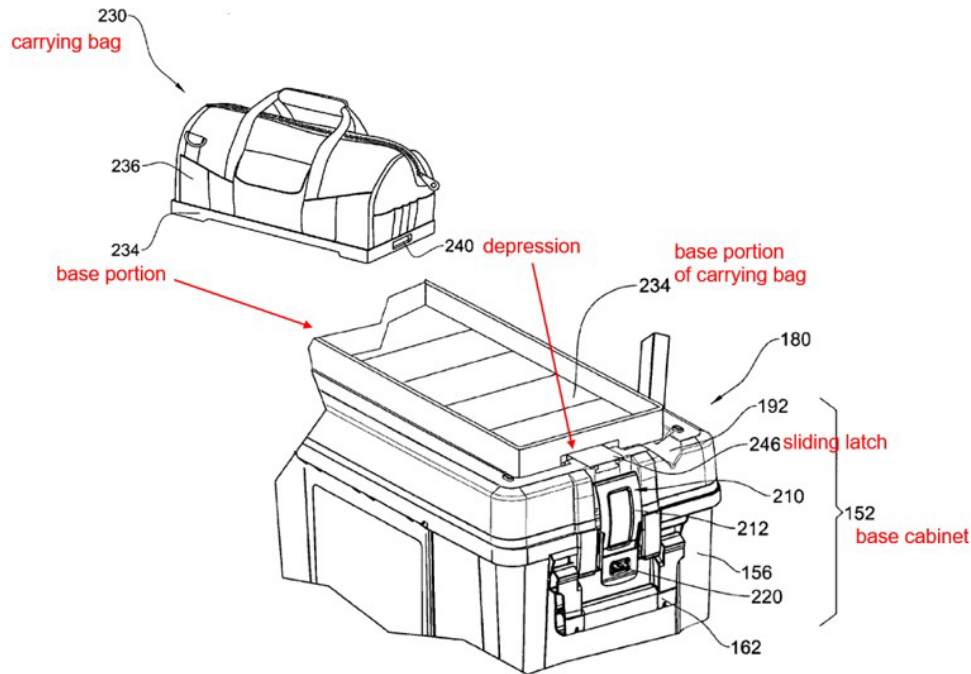
II. ARGUMENTS

A. Duvigneau anticipates claims 1-4, 14-15 (Ground 1A).

Duvigneau anticipates claims 1-4 and 14-15. Pet., 24-38; EX1044, ¶3. Meridian's arguments fail because they do not address the Petition's analysis and hinge on implicit (and incorrect) claim constructions. POR, 3.

1. Claims 1, 14: "*the second container comprises a sliding mechanism*"

Duvigneau discloses "*the second container comprises a sliding mechanism*" of claims 1 and 14. Pet., 27-28. Base cabinet 152, including cover 180, is a second storage container and a sliding latch 246 is fitted on the cover. Pet., 25 n.1, 28.



EX1007, FIG. 6 (cropped/annotated).

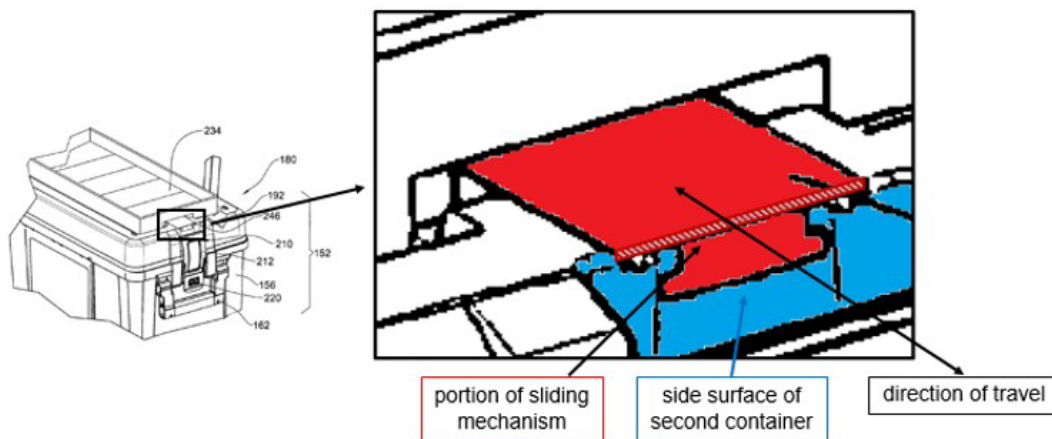
Meridian contends Duvigneau does not disclose this limitation because sliding latch 246 resides on cover 180, which Meridian alleges is a distinct component from the cabinet assembly. POR, 20. That argument rests on a narrow, implied claim construction of “container” that excludes a lid. Meridian’s narrow construction does not comport with plain and ordinary meaning and is not commensurate with the claims/disclosure of the ’689 patent and expert testimony. The ’689 patent itself discloses that a lid is part of the second storage container and claims the same arrangement as Duvigneau: a sliding mechanism located in the second container cover. *See, e.g.*, EX1001, 2:18-19, FIG. 8; *see also id.*, claims 13, 20. Dr. Vallee confirmed, “the container has the four sides, the bottom, and the lid.” EX1038, 178:8-11; *see also* EX1045, 124:13-16.

Duvigneau discloses a second container comprising a sliding mechanism.

EX1044, ¶¶4-6.

2. **Claims 1, 14: “*sliding mechanism is coplanar with the side surface.*”**

Duvigneau discloses “*the sliding mechanism is coplanar with the side surface of the second container*” of claims 1 and 14. Pet., 30-31.



EX1007, FIG. 6 (cropped/annotated).

Meridian concedes that Duvigneau’s sliding mechanism is coplanar with *a* surface of the container, POR, 27, but argues that “a side surface of the second storage container” must be one of the four side walls of the container. POR, 21-24. Again, Meridian relies on an improperly narrow construction that is not supported by the claim or specification. The ’689 patent itself illustrates, in Figure 4, that the side wall/body of the container is not a single plane, but has ridges/recesses, and the sliding mechanism is coplanar with a raised portion on the lid.

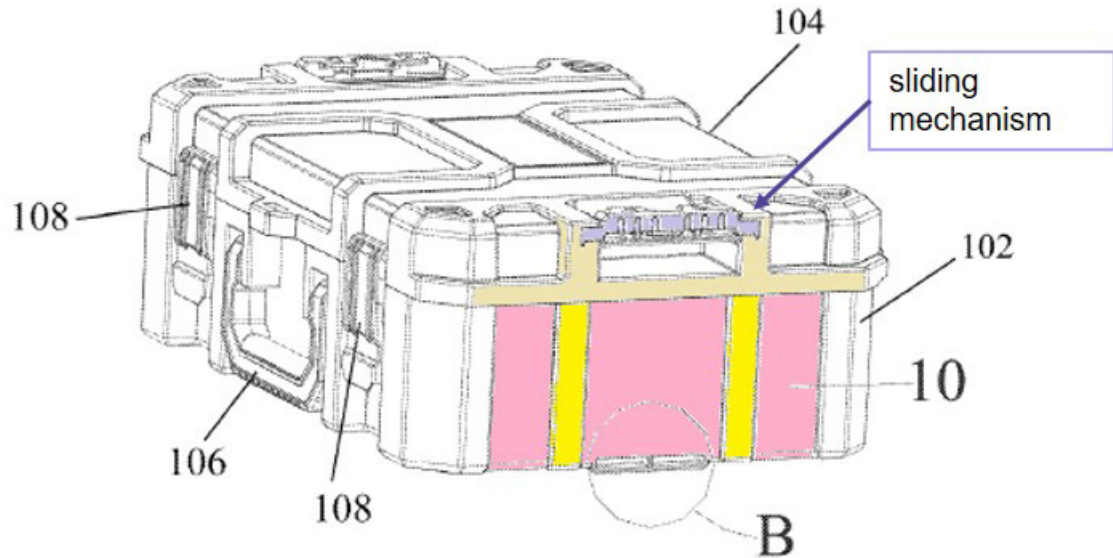


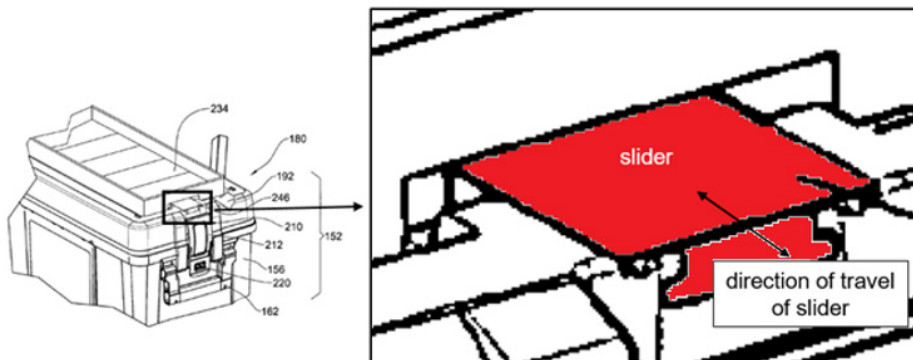
FIG. 4

EX1001, FIG. 4 (annotated).

Under the plain and ordinary meaning, Duvigneau discloses a sliding mechanism coplanar with a side surface as claimed. Pet., 30-31; EX1044, ¶¶7-9.

3. Claim 2

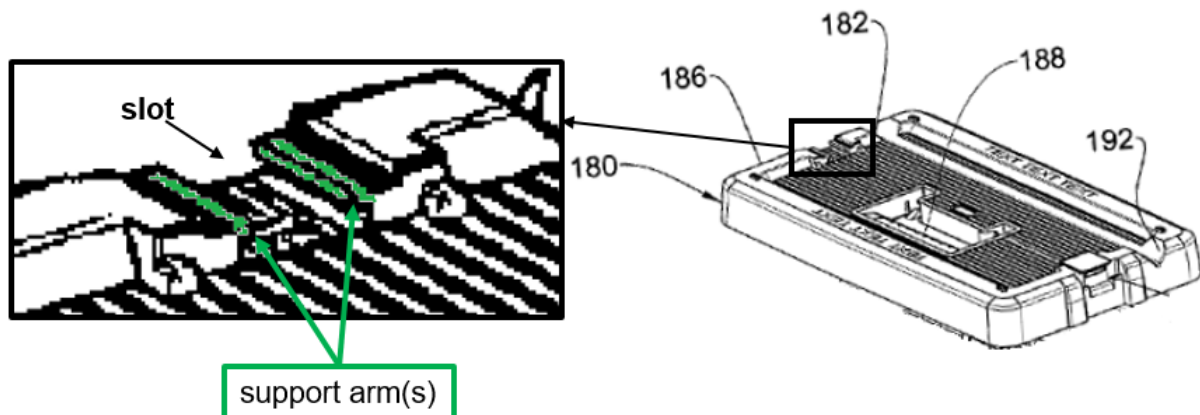
The slider component of Duvigneau's sliding latch 246 discloses the "*slider*" limitation of claim 2. Pet., 31-32; EX1044, ¶10.



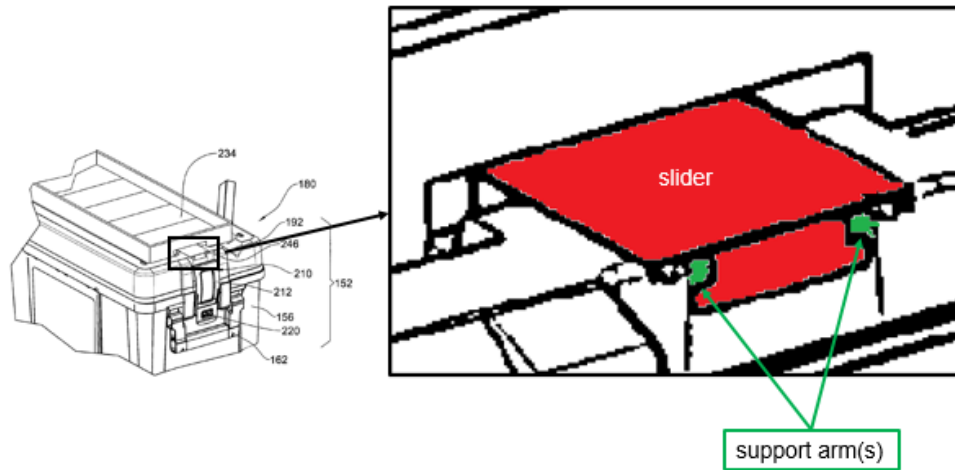
EX1007, FIG. 6 (cropped/annotated).

Meridian alleges the identified “slider” is the entire sliding latch 246 and, on that basis, contends the Petition fails to identify a “slider” different from the sliding mechanism. POR, 26. Meridian’s argument fails because it does not address the Petition’s mapping and relies on an implied and improperly narrow construction of “sliding mechanism.”

The Petition addressed that claim 2 further defines the structure of “sliding mechanism” and identifies only the “slider” component of sliding latch 246 for the claimed slider. Pet., 31-32. Dr. McCarthy explained, “a POSA would have understood from Duvigneau’s description and figures, and from the design of sliding latch mechanisms, that sliding latch 246 *includes components other [than] the slider illustrated in Figure 6.*” EX1003, ¶162 (emphasis added). For example, Figure 5 of Duvigneau shows additional components of the sliding latch mechanism, including support arm(s) and a slot. *See* Pet., 34-36.



EX1007, FIG. 5 (cropped/annotated).



EX1007, FIG. 6 (cropped/annotated).

This is consistent with the '689 patent and its claims, which broadly disclose the sliding mechanism as a multi-component structure, which includes elements such as a support arm, slot, and locking grooves. *See, e.g.*, EX1001, FIG. 2 (shown below).

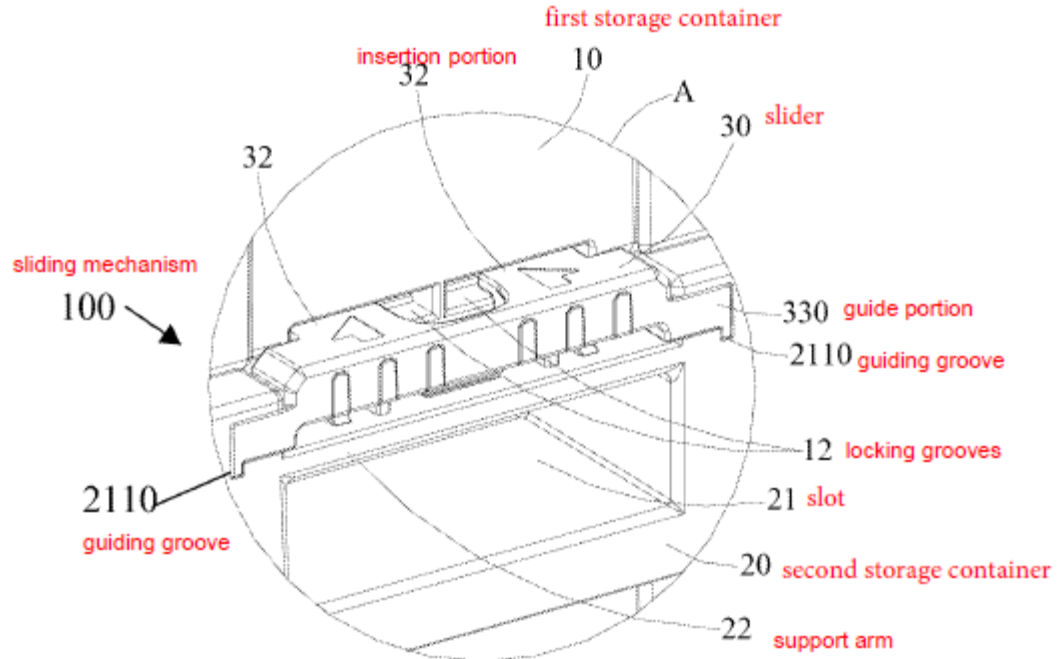


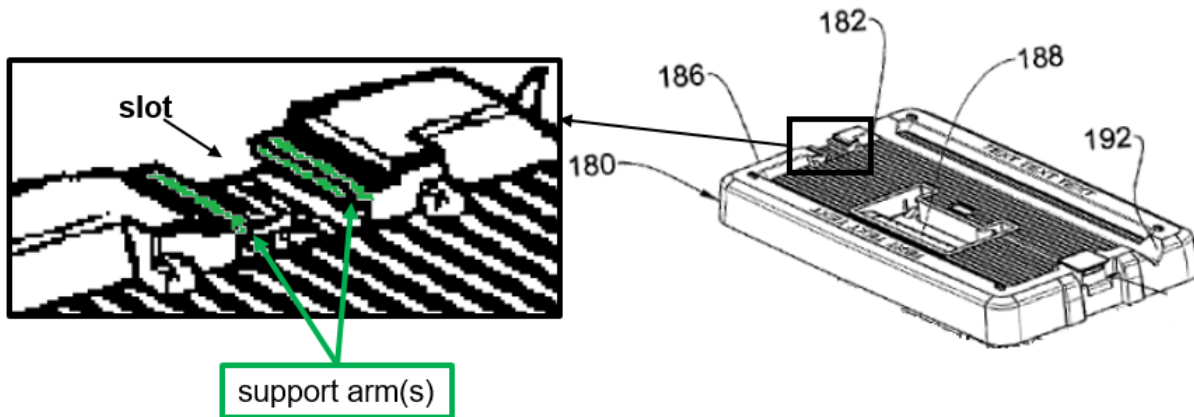
FIG. 2

EX1001, FIG. 2 (annotated).

Duvigneau, in combination with other references, teaches additional components of the sliding mechanism, such as a “guiding rib” on the support arm. *See, e.g.*, Pet., 39, 52-53, 63. Thus, the Petition consistently treats the sliding mechanism as comprising multiple components, including the “slider” shown in Duvigneau’s Figure 6. EX1044, ¶¶11-16.

4. Claim 4: “a support arm extending across the slot”

Duvigneau discloses the limitations of claim 4, including “a slot in the side surface of the container with a support arm extending across the slot.” Pet., 34-38.



EX1007, FIG. 5 (cropped/annotated).

Meridian argues Duvigneau does not disclose the support arm because a POSA would allegedly understand the claim to require a support arm extending across the width of the slot in a direction perpendicular to the slider's travel. POR, 28-29. Again, Meridian relies on an improperly narrow claim construction unsupported by the plain language or specification. Tellingly, neither Meridian nor Dr. Vallee cite any support for the conclusory assertion that the claim must be read this way. *See* POR, 28; EX2012, ¶¶87-88.

Instead, Meridian mischaracterizes Dr. McCarthy's testimony, alleging that he "conceded" ToughBuilt's interpretation of "across" is inconsistent with the plain and ordinary meaning. POR, 28-29. Dr. McCarthy said no such thing. He testified that the plain/ordinary meaning of across is that it "goes from one side to the other" and explained that Duvigneau's support arm runs "from the front side to the backside of the slot," which is "across the slot." EX2014, 62:9-22.

Meridian's improper claim construction should be rejected. Under the plain and ordinary meaning, Duvigneau discloses a support arm that extends across the slot (from the front side to the back side). Pet., 35-36; EX1044, ¶¶17-20.

5. Claims 3, 15

Duvigneau discloses the limitations of claims 3 and 15. Pet., 32-33, 38. Meridian's arguments merely repeat the same flawed contentions made for claims 1, 3-4. POR, 26-28, 30. These arguments fail for the reasons discussed above. *See* Sections II.C.2, II.C.3, II.C.4; EX1044, ¶21.

B. Duvigneau renders obvious claims 1-4, 14-15 (Ground 1B).

In addition to anticipation, the Petition presents obviousness analysis based on Duvigneau that addresses many of the elements Meridian purports are not taught. Pet., 38-46. Meridian does not engage with ToughBuilt's arguments and evidence, instead presenting only boilerplate obviousness arguments in rebuttal.

Meridian's contention that Duvigneau fails to teach all elements of the claims of the '689 patent merely relies on its anticipation arguments, which fail for the reasons discussed above. POR, 32-33; *see* Section II.C; EX1044, ¶22.

Meridian also alleges that the Petition provides no reasoning for why the claims would have been obvious and that Dr. McCarthy's testimony is conclusory. POR, 33. Not true. The Petition and Dr. McCarthy explain why a POSA would have found the claim limitations obvious, cite supporting evidence, and provide

specific reasons why a POSA would have made the proposed modifications. Pet., 38-46; EX1003, ¶¶97-107. Meridian does not address, much less rebut, this analysis.

Meridian further argues that, because Dr. McCarthy testified there is nothing wrong with Duvigneau's product, a POSA would have lacked motivation to modify it. POR, 34. This argument is legally flawed. A deficiency in the prior art is not needed to demonstrate obviousness. *See Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380-81 (Fed. Cir. 2023) (explaining that there is no need to show any "improvement" to establish a motivation to combine). Rather, "there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

The Petition, and Dr. McCarthy, explain why a POSA would have been motivated to modify Duvigneau to make the proposed modifications. *See, e.g.*, Pet., 41-46 (explaining why a POSA would have been motivated to have a portion of a sliding mechanism coplanar with a side surface of the second container and why a POSA would have included support arm(s) to retain the slider in place). Meridian fails to address the detailed analysis and evidence provided. EX1044, ¶23.

C. Claims 5-7, 16 were obvious over Duvigneau-Niles (Ground 1C) and Duvigneau-Morel (Ground 1D).

Duvigneau-Niles and Duvigneau-Morel render obvious claims 5-7 and 16.

Pet., 46-60; EX1044, ¶24.

Niles and Morel are both analogous art because they are in the same field of endeavor as the '689 patent and also reasonably pertinent to the problems of the '689 patent. Pet., 8; *see In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011).

Both references are in the same field because they disclose container latching mechanisms, consistent with the technology claimed and described in the '689 patent. Pet., 8; EX1044, ¶25. Niles discloses a latch assembly 12 with a flexible slide 46 used to latch together separable container portions. EX1012, 4:31-35, FIGS. 1-2. Morel discloses a locking device used to hold a sliding partition of a storage container in place. EX1008, ¶¶49, 52; FIG. 1B. Niles and Morel are also both reasonably pertinent to the problem of securing a latching mechanism in locked and unlocked positions. *See* Pet., 47, 54. Dr. Vallee admits that all latches share a common purpose to limit “relative motion of two bodies in particular degrees of freedom” and that latches used in other applications, including water bottles and nailers, are relevant to the '689 patent. EX1038, 58:12-21, 77:17-78:5, 99:16-100:12, 108:9-109:1. He also admits that one problem of the '689 patent was to provide an attachment/detachment method with “positive stops when engaged and disengaged.” EX1038, 142:10-15, 143:14-17. Niles and Morel both disclose

such a mechanism. *See* Pet., 47-50, 54-55; EX1044, ¶¶26-27.

Meridian's contrary arguments fail. *Contra* POR, 5-10. Meridian relies on an improperly narrow field of endeavor. POR, 5-8. "[T]he field-of-endeavor test does not look to the problem that the patent purports to address." *Netflix, Inc. v. DivX, LLC*, 80 F.4th 1352, 1359 (Fed. Cir. 2023). Nor is the field "limited to the specific point of novelty, the narrowest possible conception of the field, or the particular focus within a given field." *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1001 (Fed. Cir. 2016). Moreover, contrary to Meridian's assertions, the claimed invention does not require the latch to be designed for heavy storage cases that must resist larger stresses. Dr. Vallee confirmed the claims do not recite how much weight the containers must carry. EX1038, 172:17-21. And Meridian's argument that Morel's locking mechanism is not a latch is not credible because Morel's mechanism falls squarely within Dr. Vallee's own definition of a latch as a mechanism that "constrain[s] the positioning of two different bodies." *See* EX1038, 57:7-11; Pet., 54; EX1044, ¶¶28-30.

1. Duvigneau-Niles

Duvigneau-Niles teaches the engaging grooves for holding the slider in the unlocked/locked positions, recited in claim 5. Pet., 47. Because Duvigneau does not expressly disclose how its sliding mechanism remains locked in place, a POSA would have been motivated to look for a suitable solution. Pet., 48. Niles suggests

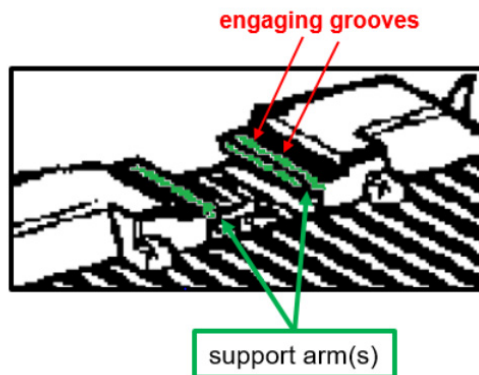
a solution through its simple mechanism that uses engaging grooves to hold the slider in locked/unlocked positions. Pet., 48. The proposed modification is not a bodily incorporation of the Niles mechanism, but rather the use of engaging grooves (taught by Niles) on Duvigneau's support arm. Pet., 48-49. The Petition further explains why a POSA would have been motivated to make the proposed modification. Pet., 48-50; EX1044, ¶31.

Meridian argues that neither Duvigneau nor Niles discloses a support arm with engaging grooves, that a POSA would lack reason to look to Niles, and that the Petition fails to explain how Niles' device could be implemented in Duvigneau. POR, 45-47. These arguments fail because Meridian does not address the proposed combination.

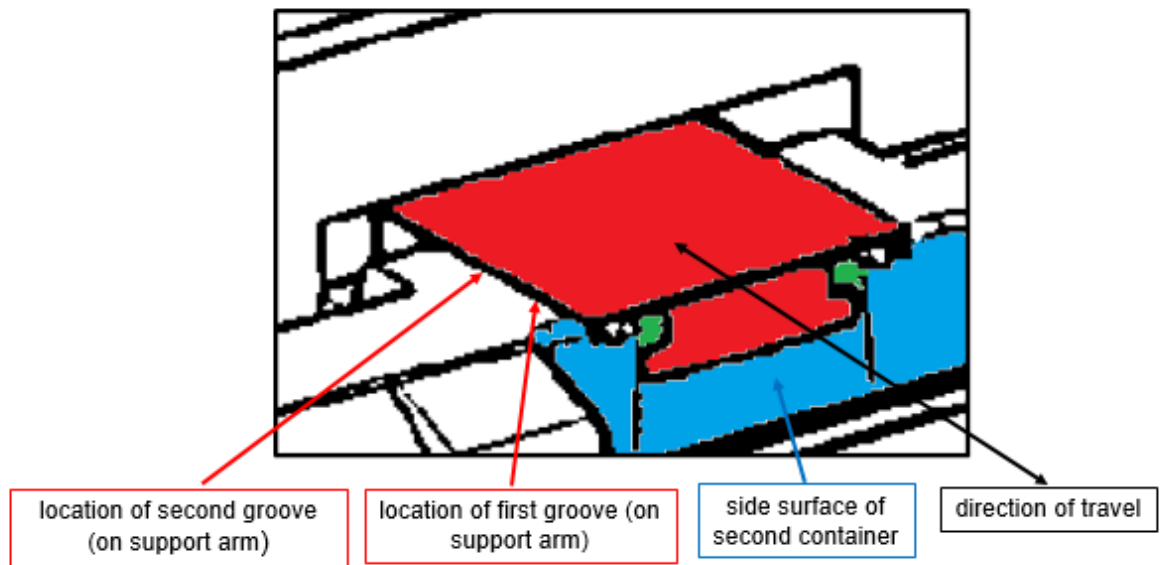
Meridian's allegation that Niles cannot be implemented in Duvigneau because a user needs access to the latch bar is premised on an improper bodily incorporation analysis. "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425 (C.C.P.A. 1981).

The proposed modification does not bodily incorporate Niles' latch bar 88. Rather, Duvigneau is modified to include engaging grooves on its support arm, and

then further modified, for claim 7, to incorporate an elastic arm with an engaging protrusion on an underside of the slider to engage the grooves. Pet., 49, 51-53. As Dr. McCarthy explains, the elastic arm permits selective engagement and a POSA would have been readily able to incorporate Niles's teachings of engaging grooves and protrusion. EX1003, ¶¶201-211. As shown, the slider is accessible to the user to depress/disengage the protrusion. Thus, the Petition and Dr. McCarthy provide articulated reasoning to support the conclusion of obviousness, which Meridian does not address. EX1044, ¶32.



EX1007, FIG. 5 (cropped/annotated).



EX1007, FIG. 6 (cropped and annotated).

Meridian does not present separate arguments for claims 6-7. These claims are obvious for the reasons explained in the Petition. Pet., 50-53.

2. Duvigneau-Morel

Duvigneau-Morel teaches engaging grooves for holding the slider in the unlocked/locked positions and provides reason why a POSA would have modified Duvigneau to incorporate engaging grooves as taught by Morel. Pet., 53-57. The Petition explains—and Meridian does not dispute—that implementing the two engaging grooves (as taught by Morel) on Duvigneau's support arm were routine design considerations well within the skills of a POSA. Pet., 56-57.

Meridian argues that neither reference discloses a support arm with engaging grooves and that the design of Morel requires many locking notches and

projections for stability. POR, 48-49. These arguments fail because they do not address the proposed combination. One cannot show nonobviousness by attacking references individually where the challenge is based on combinations of references. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). The proposed combination is to implement two engaging grooves (as taught by Morel) on Duvigneau's support arm to hold the slider in locked/unlocked positions, not to bodily incorporate Morel's locking mechanism into Duvigneau. Pet., 54-56. Indeed, Meridian admits Morel teaches locking notches used to hold a sliding element in place. POR, 48. The Petition also provides reasons why a POSA would have made the modification, which Meridian does not address. Pet., 55-57.

Meridian also wrongly alleges that Dr. McCarthy concedes a POSA would have lacked motivation to make the combination. POR, 48-49. Dr. McCarthy testified that the known elements of Duvigneau and Morel satisfy all elements of claim 5. EX2014, 76:9-14. He also explained the unpatentability analysis he performed to demonstrate the known features and benefits of a mechanism to retain a latch. *See* EX2014, 101:10-17. He did not testify that there was no reason for the combination, nor did he undermine the detailed motivation to combine analysis in his original declaration. *See id.*; EX1003, ¶¶214-218. Meridian fails to address the reasoning provided by Dr. McCarthy and the Petition. EX1044, ¶¶33-35.

Meridian does not present separate arguments for claims 6-7. These claims are obvious for the reasons explained in the Petition. Pet., 57-60.

D. Claims 8, 17 were obvious over Duvigneau-Morel-Weng (Ground 1E).

Duvigneau-Morel-Weng renders obvious claims 8 and 17. Pet., 60-65; EX1044, ¶36. Meridian argues: (1) Weng is non-analogous art; (2) Duvigneau-Morel-Weng does not teach the claimed support arm; and (3) no motivation to combine. POR, 10-13, 53-54. These arguments all fail.

First, Weng is at least reasonably pertinent to the problems of the '689 patent to prevent its slider from detaching from the storage container. Pet., 8, 62-63. EX1044, ¶37. “Weng’s arrangement used to stop a sliding mechanism (a drawer) from being inadvertently removed is reasonably pertinent to the problem faced in the Duvigneau-Morel combination to prevent its slider from detaching from cover 180 of the storage device.” Pet., 62. Dr. Vallee acknowledges that preventing the slider from detaching was a problem addressed by the '689 patent. EX1038, 147:7-11. A POSA “would have looked to teachings related to other sliding components that are protected from inadvertent removal from a supporting structure.” Pet., 62-63; EX1003, ¶233. Indeed, even where “there are significant differences” between a patent and a reference from a different field of endeavor (not the case here), a POSA might consult such a reference. *Donner Tech., LLC v. Pro Stage Gear, LLC*, 979 F.3d 1353, 1361 (Fed. Cir. 2020).

Meridian ignores this analysis and, instead, alleges that the Petition relies on a general statement to explain why Weng is analogous. POR, 12-13. The Petition does no such thing. It identifies the specific problem addressed by Weng, explains why that problem is pertinent, and articulates why a POSA would have looked to Weng. Pet., 62-63. Meridian’s argument that Weng “teaches away,” POR, 12, conflates distinct legal concepts and falls far short of the required standard. To teach away, a reference must “criticize, discredit, or otherwise discourage” investigation into the claimed solution. *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Both Meridian and Dr. Vallee allege that “Weng states that the intent of the sliding mechanism is to allow easy assembly and separation of a drawer” but fail to cite to any disclosure in Weng to support this conclusory allegation. *See* POR, 12; EX2012, ¶46; *see also Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 12 at 5 (P.T.A.B. (Feb. 10, 2023) (precedential) (declaration testimony that is unsupported and conclusory is entitled to little weight). Weng expressly discloses a mechanism “which can truly stop the drawer when drawn out” (i.e., *prevent* a slider from inadvertently being pulled out). EX1009, 2:1-5. Nothing in Weng criticizes, discredits, or discourages reliance on that teaching in the proposed combination with Duvigneau-Morel. EX1044, ¶38.

Second, Meridian alleges Weng does not disclose a support arm with the claimed limitations and Morel’s V shaped contacts are different from the claimed

stop surface. POR, 53. These arguments fail because they attack the references individually, rather than addressing the proposed combination. The Petition explains why a POSA would have modified Duvigneau-Morel to incorporate Weng's "*block comprising a bevel*" and make the other proposed modifications. Pet., 63-65. Dr. McCarthy explains in detail how a POSA would have implemented the modifications. EX1003, ¶¶234-239; EX2014, 81:2-82:2; EX1044, ¶39.

Third, Meridian argues the proposed combination is hindsight-driven, and alleges Dr. McCarthy concedes the only reason for the combination is to identify claim elements. POR, 53-54. Both arguments lack merit. Meridian relies on the erroneous premise that the prior art must suggest the reason for the proposed combination. POR, 51. The Supreme Court rejected that rigid approach. *See KSR*, 550 U.S. at 415-419.

Meridian also misinterprets Dr. McCarthy's testimony. POR, 54. Dr. McCarthy explained the invalidity analysis he performed to show the limitations of the claims were known in the prior art. *See* EX2014, 79:20-81:1. He did not "concede" that identifying claim elements was the sole reason for the proposed combination, nor did he undermine his detailed motivation to combine analysis. *See id.*; EX1003, ¶¶231-239. Rather, he explained that Weng solves a problem not addressed by Duvigneau to prevent the slider from being removed. EX2014, 97:3-13. All agree that Duvigneau does not describe how its slider is retained and that

this lack of detail does not mean there is something wrong with Duvigneau.

EX1038, 198:14-199:17. Meridian also mischaracterizes Dr. McCarthy's recross testimony, which concerned the Duvigneau-Morel combination and did *not* address the Duvigneau-Morel-Weng combination. *See* EX2014, 100:13-101:3. EX1044, ¶¶40-41.

The Petition and Dr. McCarthy provide detailed, evidence-based reasons why a POSA would have modified Duvigneau-Morel to incorporate Weng's teachings. Pet., 60-65; EX1003, ¶¶231-239. Meridian does not address the rationales provided.

E. Claims 9-11 were obvious over Duvigneau-Frydenberg (Ground 1F).

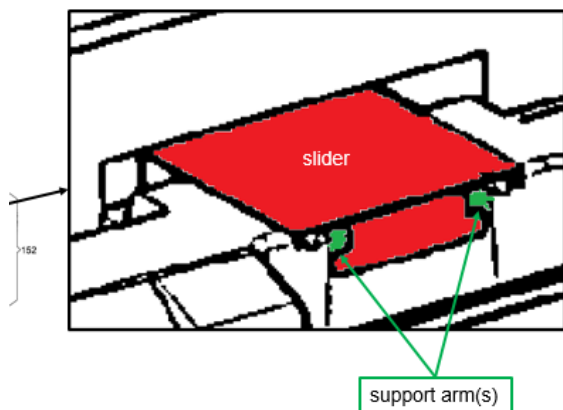
Claims 9-11 were obvious over Duvigneau-Frydenberg. Pet., 65-69.

Meridian alleges that the Petition fails to explain how lateral movement of the slider is constrained, and that a POSA would have lacked motivation to incorporate Frydenberg's teachings because Duvigneau's slider is already capable of preventing such displacement. POR, 55-58. These arguments lack merit.

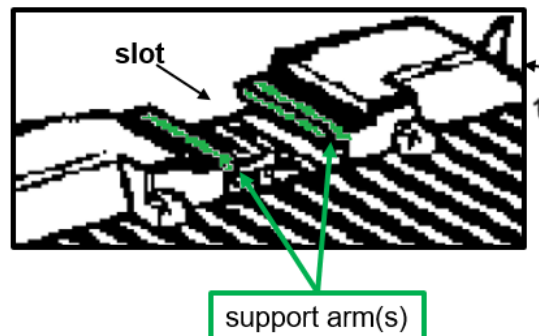
A POSA would have found obvious that Duvigneau's slider and support arm have components to constrain lateral movement and ensure the slider performs its intended function. Pet., 65-66. Without such components, the slider may become laterally displaced, which would inhibit engagement with the locking groove. Pet., 65-66. Dr. McCarthy explains Frydenberg's well-known rail/cavity arrangement,

which Frydenberg discloses can be attached to “most any kind of structure,” would constrain lateral movement and ensure Duvigneau’s intended movement of the slider along the support arm. EX1003, ¶¶247-250; EX1011, 7:28-313. He also explains that Frydenberg’s arrangement is like Dur, which specifically describes its components as lateral guidance. EX1003 ¶248. Dr. Vallee admitted that Frydenberg’s structure “could provide some resistance to lateral motion.” EX1038, 204:1-3; EX1044, ¶¶42-44.

Dr. Vallee’s testimony that Duvigneau’s slider is not capable of lateral displacement “given the constraint within the slot in which it slides” is unsupported and should be given no weight. EX2012, ¶166. As shown in the Petition’s annotated figures, Duvigneau does not disclose any structure that constrains lateral movement, or illustrate that the slider is constrained within the underlying slot.



EX1007, FIG. 6 (cropped/annotated).



EX1007, FIG. 5 (cropped/annotated).

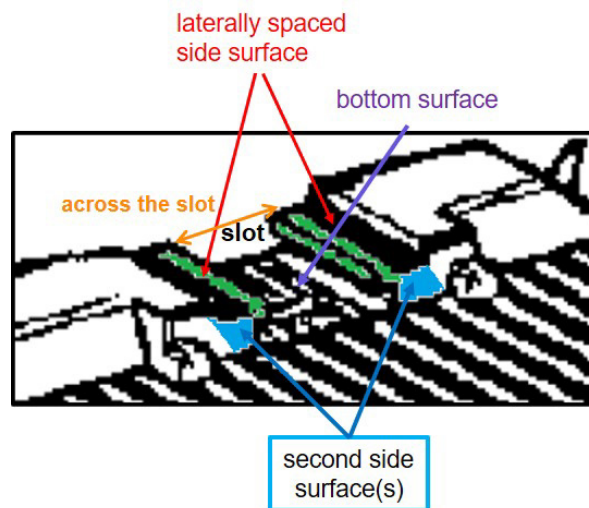
Meridian also mischaracterizes Dr. McCarthy's testimony as admitting speculation whether Duvigneau's slider is susceptible to lateral displacement. POR, 57. He simply testified he didn't know if Duvigneau's container system "has an issue" with lateral displacement, which is consistent with the Petition that Duvigneau does not describe any mechanism to prevent lateral displacement. EX2014, 83:4-7; EX1003, ¶245; Pet., 65-66. The point is not whether Duvigneau suffers from such a problem, but rather because Duvigneau does not disclose how lateral movement is constrained, a POSA would have found obvious to incorporate Frydenberg's well-known guiding-rib and slot arrangement to ensure the slider performs its function. EX1003, ¶¶245-248; EX1044, ¶¶45-47.

Meridian's argument that the motivation to combine is influenced by hindsight bias is yet again premised on an incorrect legal standard and misinterprets Dr. McCarthy's testimony. Dr. McCarthy merely explained the goal of his unpatentability analysis is to show the references have the features of the '689 patent. *See* EX2014, 103:4-12. He did not concede that was the motivation for the combination. To the contrary, both the Petition and Dr. McCarthy provide detailed, evidence-based reasons why a POSA would have modified Duvigneau to add a guiding rib and groove, as taught by Frydenberg. Pet., 65-69; EX1003, ¶¶245-254. Meridian does not address, or rebut, the analysis. EX1044, ¶48.

F. Claims 12-13, 19-20 were obvious over Duvigneau-Brunner.

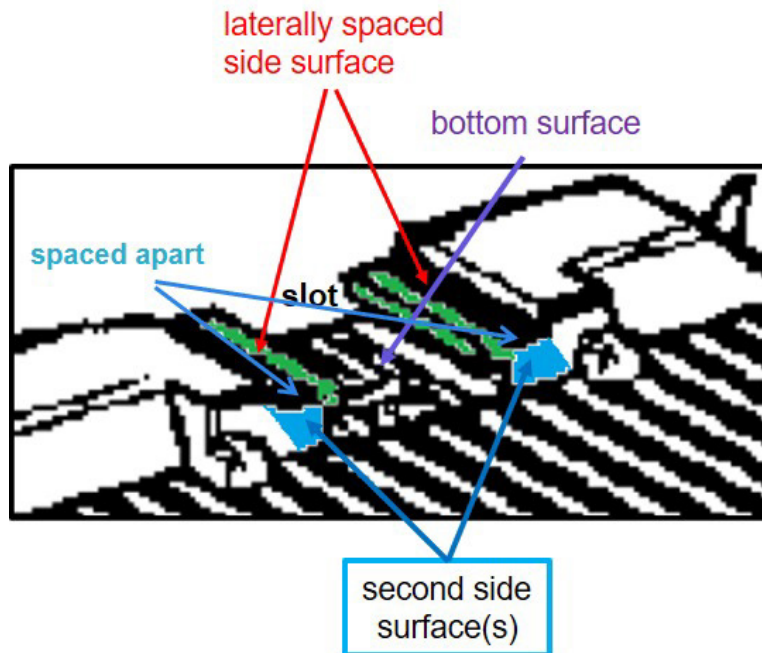
Duvigneau-Brunner renders obvious claims 12-13 and 19-20. Pet., 70-75; EX1044, ¶49.

Meridian argues claims 12 and 19 require the support arm to extend “across the width of the slot, spanning the distance between the two laterally spaced apart side surfaces.” POR, 60. Again, Meridian sets forth an implied and impermissibly narrow construction that is unsupported. Claims 12 and 19 only require that the support arm “*is located across*” the slot. Duvigneau’s support arm(s) teaches this limitation. Pet., 71; EX1007, FIG. 5; EX1044, ¶50.



EX1007, FIG. 5 (cropped and annotated).

Meridian’s argument that Duvigneau does not suggest a support arm that is spaced apart from a second side surface, POR, 61, also fails. Duvigneau’s support arm(s) are spaced apart from the identified second side surface and do not abut the second side surface. Pet., 71; EX1044, ¶51.



EX1007, FIG. 5 (annotated).

Meridian's contention that claims 12 and 19 require the space between the support arm and the second side surface be used for gripping the container also fails. The claims lack any such requirement. Rather, to the extent "*for gripping and carrying*" is entitled to patentable weight, the claims recite the location of the support arm, and that arrangement provides for gripping and carrying the container. Figure 9 of the '689 patent is consistent with that interpretation.

EX1044, ¶¶52-54.

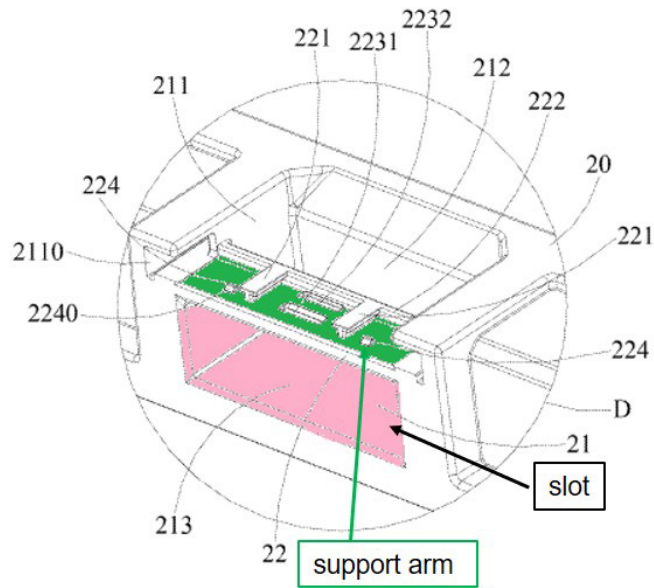
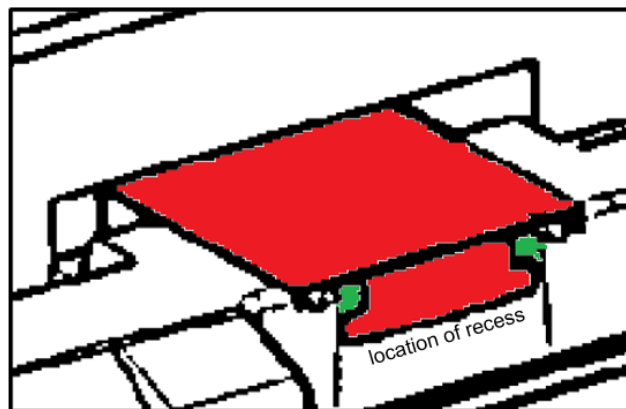


FIG. 9

EX1001, FIG. 9 (annotated).

Duvigneau-Brunner renders obvious the support arm “*for gripping and carrying the second storage container.*” Pet., 72-75. Incorporating a recess for a handle (as taught by Brunner) into Duvigneau would allow a user to grip the support arm(s) and carry the second storage container. Pet., 74; EX1007, FIG. 6.



EX1007, FIG. 6 (cropped/annotated).

Meridian does not present separate arguments for claim 13, which is obvious. Pet., 75.

Meridian arguments for claim 20 also fail. Meridian relies on its arguments for claim 15, which fail for the reasons discussed above. POR, 63-64. Meridian argues the Petition fails to describe Brunner's role. POR, 63. But Meridian does not address the Petition's mapping, which relies on Duvigneau to teach "*the slot is in a lid of the second storage container.*" Pet., 75.

G. Claim 18 was obvious over Duvigneau-Morel-Weng-Frydenberg.

Duvigneau-Morel-Weng renders obvious claim 18. Pet., 75-76.

Meridian's arguments rely on the same flawed arguments made for claims 8-11 and fail for the same reasons. POR, 64-66.

Meridian also alleges that a POSA would have lacked motivation to make the proposed combination and the Petition fails to explain how the combination could be implemented. POR, 65-66. Both contentions are baseless. Meridian does not address the detailed reasons provided for why a POSA would have made the modifications and how the modifications would be implemented. *See* Pet., 75-76. Moreover, contrary to Meridian's allegation, Dr. McCarthy's explanation about how he conducted his invalidity analysis in no way undermines his detailed reasoning on why a POSA would have been motivated to make the proposed modifications. *See* EX1003, ¶¶270-273; EX1044, ¶¶55-56.

H. Claims 1-4, 14-15 were obvious over Brocket-Heinrichs (Ground 2A).

Brocket-Heinrichs renders obvious claims 1-4 and 14-15. Pet., 76-88.

Heinrichs is analogous art because it is both in the same field of endeavor and reasonably pertinent to the problems of the '689 patent. Pet., 8. Heinrichs discloses a stackable storage container system with a sliding latching mechanism for selectively engaging a locking groove to connect a container to a pallet. Pet., 77-79. It is in the same field because it discloses a latching mechanism for containers. It is also reasonably pertinent to a '689 patent problem to—in Dr. Vallee’s words—“have a robust, straightforward, linear attachment/detachment method.” EX1038, 142:12-14.

Meridian’s contrary arguments fail. Its allegation that Heinrichs is not in the same field, POR, 13-14, rests on an improperly narrow definition. Meridian’s argument that the Heinrichs mechanism is more complex, POR, 14-15, is irrelevant to the analogous art inquiry. In any event, Heinrichs discloses, in combination with Brocket, all limitations of claims 1-4 and 14-15. See Pet., 76-88; EX1044, ¶¶57-60.

1. Motivation to Combine (Ground 2A)

The Petition provides multiple reasons why a POSA would have modified Brocket to replace its locking mechanism with the mechanism taught by Heinrichs. Pet., 80-81. These reasons include: (1) design choice; (2) simple substitution to achieve predictable results; and (3) Heinrichs’ more compact design and ability to

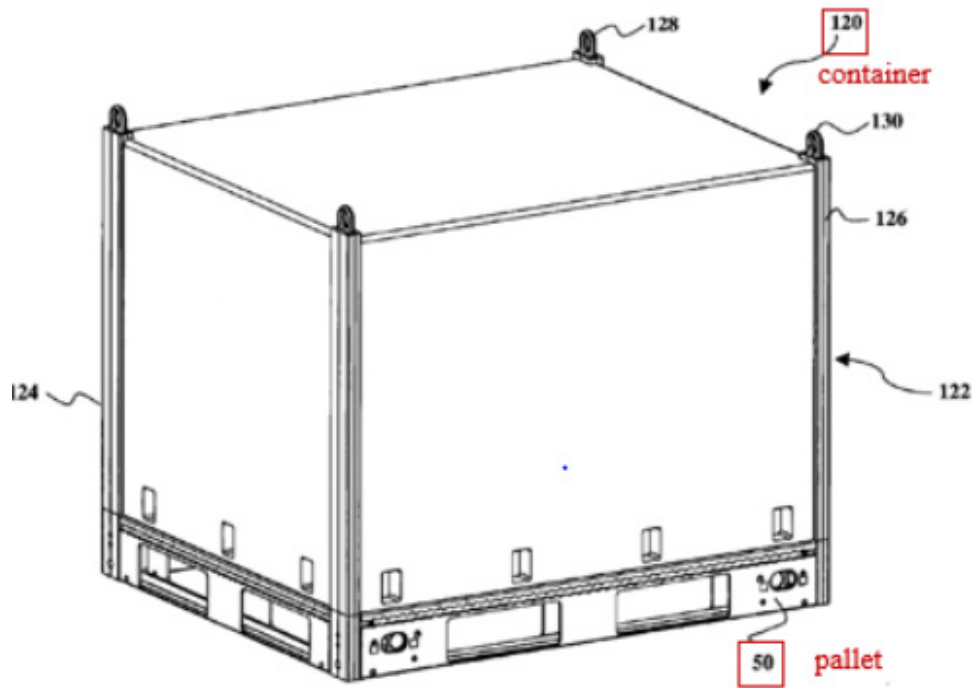
lock its mechanism in place. *Id.*; EX1044, ¶61.

Meridian fails to address—much less rebut—any of these rationales. Instead, it falsely asserts that Dr. McCarthy provides no reason for the modification, other than it has the same characteristics of the '689 patent. POR, 35-36. Meridian's characterization misstates Dr. McCarthy's testimony. He explained that the “familiar elements to persons of ordinary skill in the art ... can be constructed in at least one way using Brocket and Heinrichs.” EX2014, 88:6-11. He did not testify this was the sole reason for the combination or undermine the detailed reasons for the combination in his original declaration. *See id.*; EX1003, ¶¶281-283.

Meridian also errs in arguing that a POSA would have lacked motivation to modify Brocket simply because Dr. McCarthy testified that there was nothing wrong with Brocket. POR, 38. The proper inquiry is whether there is articulated reasoning to support the conclusion of obviousness. *KSR*, 550 U.S. 418; *Intel*, 61 F.4th 1380-81. Nor must be an express teaching or suggestion in the prior art to make the modification. POR, 38; *see KSR*, 550 U.S. at 415-419. Under the correct inquiry, the Petition and Dr. McCarthy provide articulated reasoning to support the proposed modification. Pet., 80-81; EX1003, ¶¶281-283; EX1044, ¶62.

Meridian's contention that the combination would render Heinrichs inoperable fares no better. POR, 36-37. Dr. Vallee cites no evidence for his conclusory opinion that there is no feasible way the sliding catch mechanism of

Heinrichs could be implemented on Brocket's container in a manner that would be operable. EX2012, ¶100. As shown in Figure 6 below, Heinrichs' locking mechanism is used to secure a container to a pallet. *See* Pet., 22-23; EX1006, ¶56, FIG. 6. A POSA would have understood that the same locking mechanism would and could readily be used to connect the containers disclosed by Brocket. Pet., 79-80; EX1003, ¶¶281-282; EX1044, ¶¶63-64.



EX1006, FIG. 6 (annotated).

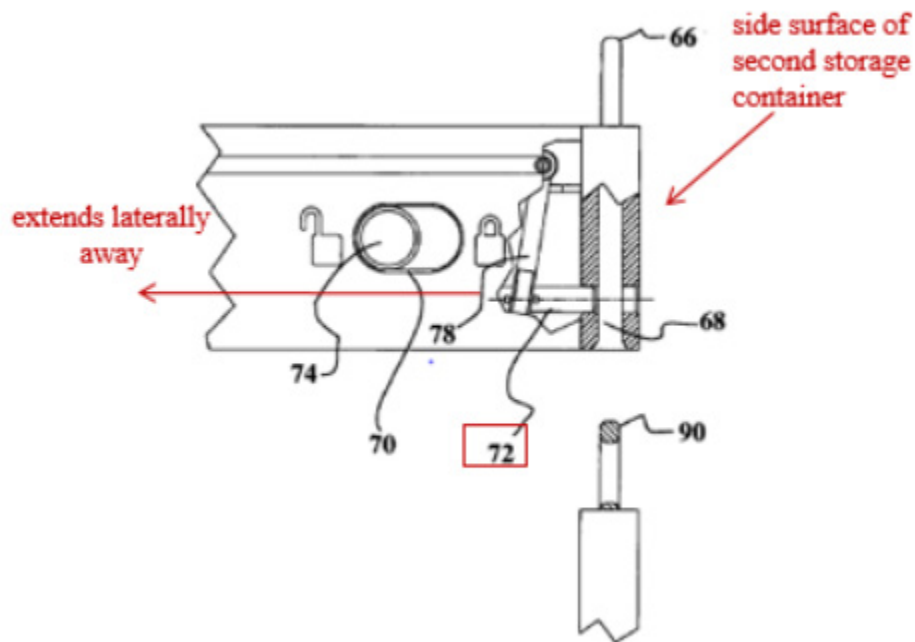
2. Claims 1, 14: “locking groove”

Heinrichs' interface fitting 90 teaches the claimed locking groove. Pet., 78-79. Meridian's wrongly asserts the Petition maps keyhole 74 to the locking groove. POR, 37. The argument rests on a mischaracterization of the Petition and ignores

its express identification of interface fitting 90, not keyhole 74, as the locking groove. EX1044, ¶65.

3. Claims 1, 14: “*sliding mechanism extends laterally away*”

Heinrichs teaches locking bolt 72 (“*a portion of the sliding mechanism*”) *extends laterally away from a side surface of the second container* when disengaged. Pet., 81. Figure 3 illustrates this arrangement.



EX1006, FIG. 3 (annotated).

Meridian’s contrary argument again relies on a narrow, and improper, construction. POR, 38. The claim does not require the sliding mechanism to extend away from the midline of the storage box and ToughBuilt is not required to satisfy unsupported “implicit” limitations. EX1044, ¶¶66-67.

4. Claim 2

Brocket-Heinrichs renders obvious claim 2. Pet., 83-84. Heinrichs lock slider 70 and locking bolt 72 teach the claimed “*sliding mechanism*” and locking bolt 72 teaches the “*slider*” of claim 2. Pet., 79, 84. Meridian’s argument rests on the false premise that the Petition relies only on locking bolt 72 for the “*sliding mechanism*.” See POR, 40. Meridian ignores the Petition’s actual mapping, which explains the *sliding mechanism* includes both the slider 70 and bolt 72. Pet., 79; EX1044, ¶¶68. As discussed, this is consistent with the broad description in the ’689 patent of its sliding mechanism. See Section II.A.3.

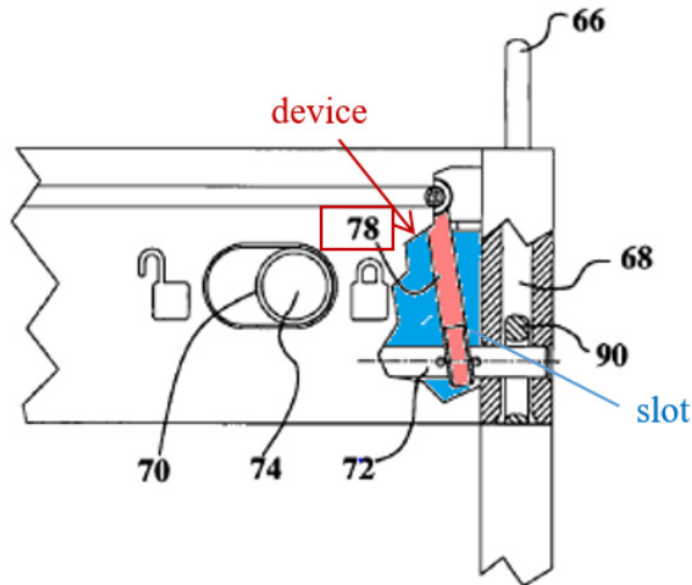
5. Claim 4

Brocket-Heinrichs renders obvious claim 4. Pet., 85-88. Heinrichs device 78 teaches the claimed support arm that extends across a slot. Pet., 87; EX1005, FIG. 4.

Meridian contends that device 78 is not a support arm because it is movable and because device 78 purportedly does not extend across a slot. POR, 42-43. Again, Meridian implicitly advances a narrow, and unsupported, claim construction. Claim 4 does not require the support arm to be stationary. It only requires that the slider engage the support arm as it moves between locked/unlocked positions, as Heinrichs teaches. Pet., 85-88; EX1044, ¶¶69-70.

Meridian’s remaining arguments fail. Meridian admits that device 78 is

disposed within a cavity, POR, 42, yet does not explain why that cavity is not a slot. It is. As shown in Figure 4, device 78 plainly extends across the slot from locking bolt 72 to the opposite side. EX1044, ¶71.



EX1006, FIG. 4.

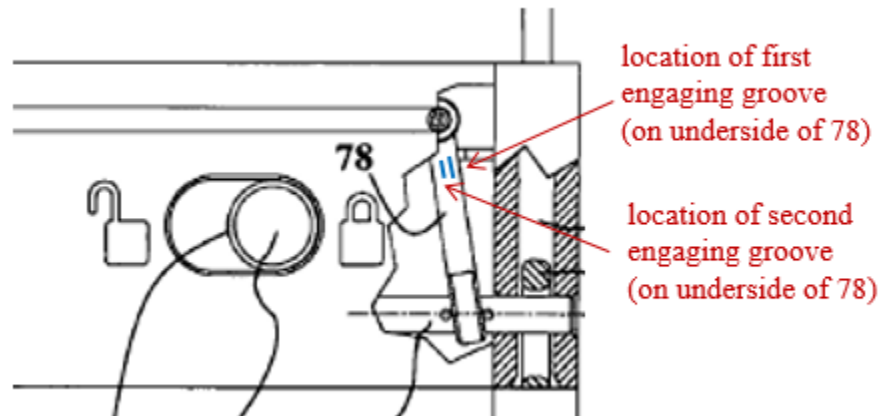
6. Claims 3, 15

Brocket-Heinrichs teaches the limitations in claims 3 and 15. Pet., 84-85, 88. Meridian merely repeats the same flawed contentions made for claims 2, 3-4, which fail for the same reasons. POR, 41-44.

I. Claims 5-6 were obvious over Brocket-Heinrichs-Morel (Ground 2B).

Brocket-Heinrichs-Morel renders obvious claims 5 and 6. Pet., 88-92. Meridian's arguments fail because they do not address the proposed combination. Meridian admits Morel teaches locking notches to hold a sliding element in

place, yet argues Morel does not disclose a sliding element held in locked/unlocked positions. POR, 51. This argument attacks Morel individually, rather than addressing the proposed combination. The proposed modification is to modify Brocket-Heinrichs to add engaging grooves, as taught by Morel, on support arm (device 78) to hold slider (locking bolt 72) in locked/unlocked positions. Pet, 88-91; EX1044, ¶¶72-73.



EX1006, FIG. 4 (cropped/annotated).

Meridian's motivation to combine arguments again apply the wrong legal standard. POR, 51. Under the proper inquiry, the Petition and Dr. McCarthy provide articulated reasons for why a POSA would have been motivated to incorporate engaging grooves (as taught by Morel) into Brocket-Heinrichs. Pet., 88-92; EX1003, ¶¶307-314. Meridian fails to address these reasons. EX1044, ¶74.

J. Dr. McCarthy far exceeds a POSA.

The Board should reject Meridian's attack on Dr. McCarthy as not a POSA.

Meridian reads requirements into the agreed POSA definition that are not there, such as experience developing commercial products. *Contra* POR, 2 n.1.

Both parties agree that a POSA would have had a bachelor/undergraduate degree in mechanical engineering and two years of industry or academic experience with connecting technologies or similar mechanisms. Pet., 6; POR, 2. Dr. McCarthy plainly satisfies that definition. EX1003, ¶¶4-14. He holds a B.S., M.S., and a Ph.D. in mechanical engineering. He also has well over two years of academic experience with connecting technologies. EX1004, 13. Dr. Vallee conceded that Dr. McCarthy’s “academic record is impeccable” and that he possesses “theoretical experience in designing connecting technologies.” EX2012, ¶31; EX1044, ¶¶75-80.

Dr. McCarthy qualifies as (and exceeds) a POSA. To extent expert testimony is needed for the Petition’s straightforward analysis, he is more than “qualified to offer expert testimony on issues from the vantage point of an ordinarily skilled artisan in a patent case.” *Kyocera Senco Indus. Tools Inc. v. Int’l Trade Comm’n*, 22 F.4th 1369, 1377 (Fed. Cir. 2022).

III. CONCLUSION

The Board should determine all claims are unpatentable.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Richard M. Bemben/

Richard M. Bemben
Registration No. 68,658
Lead Attorney for Petitioner

Date: August 6, 2026

1101 K Street, NW
10th Floor
Washington, DC 20005
(202) 371-2600

CERTIFICATE OF WORD COUNT (37 C.F.R. § 42.24(d))

1. This Petitioner's Reply complies with the type-volume limitation of 5,600 words, comprising 5,578 words, excluding the parts exempted by 37 C.F.R. § 42.24(c).

2. This Petitioner's Reply complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared using Microsoft® Word in 14-point Times New Roman font.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Richard M. Bemben/

Richard M. Bemben
Registration No. 68,658
Lead Attorney for Petitioner

Date: August 6, 2025

1101 K Street, NW
10th Floor
Washington, DC 20005
(202) 371-2600

CERTIFICATE OF SERVICE (37 C.F.R. §§ 42.6(e), 42.105(a))

I certify that the above-captioned **PETITIONER’S REPLY** and associated Exhibits 1044-1046 were served in their entirety upon the Patent Owner on August 6, 2026, via electronic mail:

Anna C. Halsey (Lead Counsel)
Ann G. Fort (Back-up Counsel)
Lindsay M. Kriz (Back-up Counsel)
Jeremy D. Spier (Back-up Counsel)
EVERSHEDS SUTHERLAND (US) LLP
AnnaHalsey@eversheds-sutherland.us
AnnFort@eversheds-sutherland.us
LindsayKriz@eversheds-sutherland.us
JeremySpier@eversheds-sutherland.us

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Richard M. Bemben/

Richard M. Bemben
Registration No. 68,658
Lead Attorney for Petitioner

Date: August 6, 2025

1101 K Street, NW
10th Floor
Washington, DC 20005
(202) 371-2600