

NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

LITTLE GIANT LADDER SYSTEMS, LLC,
Plaintiff-Appellant

v.

TRICAM INDUSTRIES, INC.,
Defendant-Appellee

2024-2115

Appeal from the United States District Court for the District of Minnesota in No. 0:20-cv-02497-KMM-ECW, Judge Katherine Marie Menendez.

Decided: February 5, 2026

MARK A. MILLER, Dorsey & Whitney LLP, Salt Lake City, UT, argued for plaintiff-appellant. Also represented by BRETT L. FOSTER, ELLIOT HALES; SHANNON L. BJORKLUND, Minneapolis, MN.

ERIC HUGH CHADWICK, DeWitt LLP, Minneapolis, MN, argued for defendant-appellee. Also represented by ZACHARY PAUL ARMSTRONG.

Before REYNA and CHEN, *Circuit Judges*, and FREEMAN,
District Judge.¹

CHEN, *Circuit Judge*.

Little Giant Ladder Systems, LLC (Little Giant) appeals a decision of the United States District Court for the District of Minnesota granting summary judgment of non-infringement of U.S. Patent No. 10,767,416 ('416 patent) in favor of Tricam Industries, Inc. (Tricam). *See Little Giant Ladder Sys., LLC v. Tricam Indus., Inc.*, No. 20-CV-2497 (KMM/ECW), 2024 WL 1332027 (D. Minn. Mar. 28, 2024), *vacated in part* (Apr. 12, 2024), *modified and superseded by* No. 20-CV-2497 (KMM/ECW), 2024 WL 3014862 (D. Minn. June 14, 2024) (D. Minn. June 14, 2024) (*Summary Judgment Order*).² The district court determined that “the accused products do not literally infringe the ‘cavity’ limitation and prosecution history estoppel bars Little Giant from relying on the doctrine of equivalents.” *Id.* at *1. For the reasons below, we *affirm*.

BACKGROUND

Little Giant and Tricam are competitors in the ladder industry. *Summary Judgment Order*, 2024 WL 1332027, at *1. Little Giant alleged that Tricam’s ladders use a locking mechanism (called Speed Lock) that infringes the '416 patent. *Id.* at *2–3.

The '416 patent discloses a multi-position ladder with two sets of rails and a locking mechanism. '416 patent, Abstract. The inventors recognized that operating a prior art ladder “can result in the pinching of one[’]s fingers or

¹ Honorable Beth Labson Freeman, District Judge, United States District Court for the Northern District of California, sitting by designation.

² The June 14, 2024 Order did not modify issues presented in this opinion.

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hands" and "can be awkward and difficult for some people to perform." *Id.*, col. 1 ll. 59–60; *id.*, col. 2 ll. 5–6. Accordingly, the '416 patent is directed to improved ladders with "enhanced ease of use, stability[,] and safety." *Id.*, col. 2 ll. 17–21. The '416 patent has one independent claim, which recites:

1. A ladder comprising:

a first assembly having a first pair of rails including a first rail and a second rail, and a second pair of rails including a third rail and a fourth rail, the first pair of rails being slidably coupled with the second pair rails; and

a first locking mechanism comprising:

a first bracket coupled with the first rail,

a first component rotatable about a defined axis,

a first engagement pin coupled with the first component, wherein the first locking mechanism is configured so that the first component is rotatable from a first rotational position to a second rotational position;

wherein, when the first component is in the first rotational position, *a substantial amount of the first bracket is disposed within a cavity defined by the first component* and the first engagement pin extends through a pair of aligned openings including a first opening formed in

the first rail and a second opening formed in third rail, and

wherein, when the first component is in the second rotational position, the first engagement pin is withdrawn from at least one of the first opening and the second opening,

at least one retaining mechanism configured to maintain the first component in the first rotational position until application of a first force is applied to the first component to displace it towards the second rotational position, and

wherein the at least one retaining mechanism is further configured to maintain the first component in the second rotational position until application of a second force is applied to the first component.

Id. at claim 1 (emphasis added).³

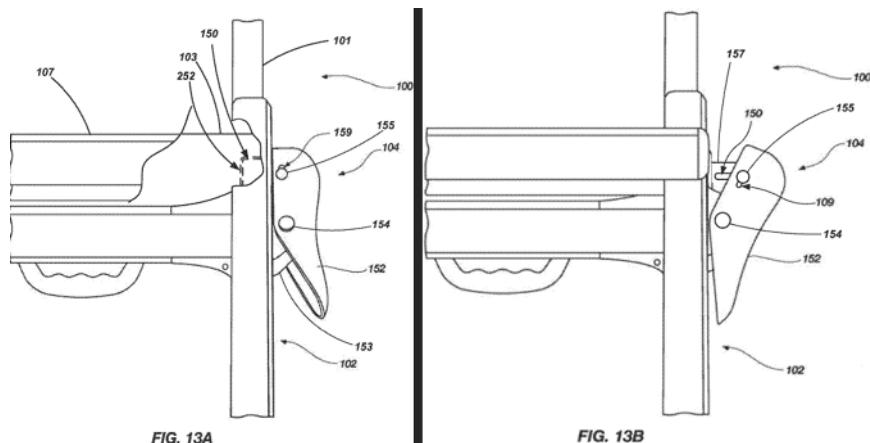
The disputed claim term “cavity” is recited in the context of a locking mechanism. The locking mechanism enables height adjustment of the ladder by engaging or releasing the inner rails from the outer rails of the ladder. *Id.*, col. 4 ll. 47–67 (descriptions of a ladder). The locking mechanism includes a bracket (“first bracket”) such as bracket 153 and a lever (“first component”) such as lever 152. *See id.*, col. 2 ll. 31–32, 46–49; *see also id.*, FIG. 14. The lever is configured to pivot between two states: a locked state (“first rotational position”) shown in Figure

³ The emphasized limitation is referred to as the cavity limitation.

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13A and an unlocked state (“second rotational position”) shown in Figure 13B.



See '416 patent, col. 7 ll. 26–31; *id.*, FIGs. 13A–B.

The district court construed “cavity” to mean “a hollowed-out space (not passing all the way through).” *Little Giant Ladder Sys., LLC v. Tricam Indus., Inc.*, No. 20-CV-2497 (KMM/ECW), 2022 WL 2287048, at *8–10 (D. Minn. June 24, 2022) (*Claim Construction Order*). The court noted that the parties “essentially agreed[]” upon the meaning of cavity and “both parties suggest inclusion of [not passing all the way through].” *Id.* at *9. The court explained that unlike a tunnel that passes all the way through, the “cavity” does not pass all the way through the “first component” (e.g., lever 152 from Figure 13A because the cavity is bounded at one end by the rounded, upper portion of the lever 152). *Id.* The court also construed “substantial amount” of the first bracket to mean “more than a majority” of the first bracket and “disposed within” to mean “placed inside of.” *Id.* at *4–8. Taken together, the cavity limitation was construed as “more than a majority of the first bracket is placed inside of a hollowed-out space (not passing all the way through) defined by the first component.” *Id.* at *10.

After claim construction, the parties exchanged their expert reports and filed cross-motions for summary

judgment. *Summary Judgment Order*, 2024 WL 1332027, at *1. Before addressing the summary judgment motions, the court granted Tricam's motion to exclude the testimony of Little Giant's expert, Mr. Smith, concerning infringement of the cavity limitation for failing to apply the court's construction. *Id.* at *22. The court rejected Mr. Smith's incorrect understanding that hollowed-out spaces unbounded on both ends (e.g., a tunnel or a taco shell) can be the claimed cavity. *Id.* at *14–16.

The district court then granted Tricam's motion for summary judgment of noninfringement. *Id.* at *22. It did so as to literal infringement because Little Giant's sole basis for literal infringement of the "cavity" limitation rested on Mr. Smith's excluded opinion. *Id.* at *17. The court explained that the space in Tricam's Speed Lock handle that Little Giant asserted as the cavity cannot satisfy the claimed cavity as properly construed, because that space is akin to a tunnel that passes all the way through. *Id.* at *16–17. As to infringement under the doctrine of equivalents, the court applied amendment-based estoppel, finding that Little Giant surrendered claim scope that encompasses non-cavity structures concealing the majority of the bracket. *Id.* at *20.

Little Giant timely appealed. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

DISCUSSION

Little Giant appeals (1) the district court's claim construction of "cavity,"⁴ (2) its exclusion of Mr. Smith's infringement opinion, and (3) its summary judgment of

⁴ Little Giant is not appealing construction of any other terms. *See generally* Appellant Br.; *see also* Appellant Reply Br. 23 n.9.

noninfringement. *See* Appellant Br. 31–33. We address each in turn.

I. Claim Construction

We review a district court’s claim construction de novo and its underlying factual determinations for clear error. *See NexStep, Inc. v. Comcast Cable Commc’ns, LLC*, 119 F.4th 1355, 1364 (Fed. Cir. 2024).

Little Giant urges us to construe the claimed “cavity” to add a highly particularized meaning to the “does not pass all the way through” portion of the district court’s construction: “a hollowed-out space that doesn’t pass all the way through in such a way that (i.e., in enough directions) more than a majority of the bracket can be hidden or concealed inside of that space.” Appellant Br. 33 (emphasis omitted). Little Giant argues that the district court’s construction “contradicts the plain meaning of ‘cavity’ and stands in direct conflict with the intrinsic record.” *Id.* at 35. Alternatively, in its reply brief, Little Giant suggests “cavity” should simply be “a hollowed-out space.” Appellant Reply Br. 12.

We first address the inclusion of the adjectival phrase “not passing all the way through.” Little Giant proposes to remove this adjectival phrase, arguing that the plain and ordinary meaning of “cavity” is broad. Appellant Reply Br. 2. We reject Little Giant’s invitation to rewrite the construction, because the district court adopted the parties’ “essentially agreed-upon” construction of the claimed “cavity” as a “hollowed-out space (not passing all the way through).”⁵ *Claim Construction Order*, 2022 WL 2287048,

⁵ As part of its proposed construction of a larger phrase, Little Giant argued that “cavity” should mean “a hollowed out space (not passing all the way through).” *Claim Construction Order*, 2022 WL 2287048, at *4.

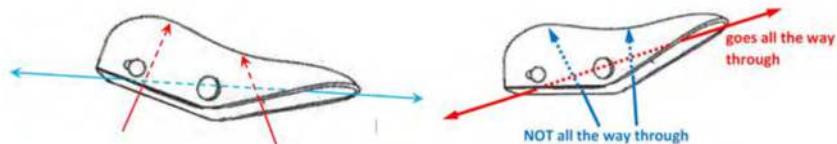
at *8–10. Little Giant never argued below or in its opening brief against the inclusion of the phrase “not passing all the way through.” Instead, the opposite is true; it had consistently maintained the inclusion of that phrase. J.A. 270, 1418–19, 2757; Appellant Br. 51–52. For this reason, we find Little Giant’s reply brief position forfeited. *See Wash World Inc. v. Belanger Inc.*, 131 F.4th 1360, 1368–69 (Fed. Cir. 2025); *see TVIIM, LLC v. McAfee, Inc.*, 851 F.3d 1356, 1363 (Fed. Cir. 2017) (“[A] party may not introduce new claim construction arguments on appeal or alter the scope of the claim construction positions it took below.”) (citation omitted). Accordingly, Little Giant is bound by the language “not passing all the way through.”

Next, we address how to best read this adjectival phrase.⁶ The origin of this phrase plainly comes from the Notice of Allowance, where the patent examiner used this exact phrase to articulate his conception of the claimed cavity. J.A. 338. We understand that although Little Giant argued for this phrase to be part of the construction of “cavity,” it also below, as a gloss to that construction, explained its particularized understanding of that phrase, which it now asks this Court to formally incorporate into the claim construction. *See* J.A. 268–70, 1417–19, 2741–42. Little Giant explains that there was a disagreement about what this language means. *See* Oral Arg. at 06:52 – 07:15; *see also* J.A. 4988. In essence, Little Giant argues that this

Tricam’s proposed construction for “cavity” was essentially the same: “a hollowed-out space *in a mass* that does not pass all the way through.” *Id.* (emphasis added). Tricam admits that inclusion or exclusion of “in a mass” does not make a material difference. *See* Appellee Br. 14–15.

⁶ During oral argument, Little Giant agreed that this is a fair characterization of the issue. Oral Arg. at 02:36 – 03:05 (available at https://www.cafc.uscourts.gov/oral-arguments/24-2115_01082026.mp3).

adjectival phrase needs a directional elaboration (“in enough directions”) and a concept of “hid[ing] or conceal[ing]” the bracket. *See* Appellant Br. 40, 49. To explain its position, Little Giant provides its diagrammatic depictions (shown below) of lever 152 from Figures 13A and 13B and also points to the examiner’s statement in the Notice of Allowance. *Id.* at 50 (citing J.A. 338).



Appellant Br. 27 (Little Giant’s diagrammatic depictions).

We disagree that the Notice of Allowance supports Little Giant’s proposed understanding of “not passing all the way through.” There, the examiner interpreted the claimed “cavity” as “a hollowed out space in a mass such as a cavity in a tooth, where the hollowed space *doesn’t pass all the way through* [as shown by the drawings in the instant invention] such that the first component would hide or cover more than a majority of the first bracket.” J.A. 338 (alteration in original) (emphasis added). As the examiner noted, Figures 13A–B are instructive as to what he meant by “not passing all the way through.”

Like the examiner, the district court relied on the instruction of Figures 13A–B. The district court noted that when the handle/lever 152 is in the claimed “first rotational position” as shown in Figure 13A, “the hollowed-out space defined by the handle” is “*bounded* on one end by the rounded, upper portion of the handle, open on the other end of the handle, and blocked off on the underside by the plane of the rail.” *Summary Judgment Order*, 2024 WL 1332027, at *11 (emphasis added). Meaning, because one end of the handle is closed off against the rail, “in that configuration, the hollowed-out space does not pass all the way through [the handle] in any direction.” *Id.* Little Giant’s

diagrammatic depictions improperly divorce the handle from the rest of the locking mechanism portrayed in the figures and fails to account for what claim 1 requires, namely the existence of the rail in relation to the bracket and the handle.⁷ *See* Appellant Br. 27. Therefore, we reject Little Giant’s argument that “not passing all the way through” needs a directional elaboration.

We also find Little Giant’s argument for “hidden or concealed” unpersuasive. Little Giant previously advocated for this construction under its proposed construction of the term “disposed within,” *see* J.A. 267, and it is not appealing the district court’s construction of that term, *see* Appellant Reply Br. 23 n.9. In any event, neither the examiner’s statement, the claims, nor the specification support Little Giant’s assertion. *See Summary Judgment Order*, 2024 WL 1332027, at *4; *see also Claim Construction Order*, 2022 WL 2287048, at *9. Accordingly, we affirm the district court’s claim construction.

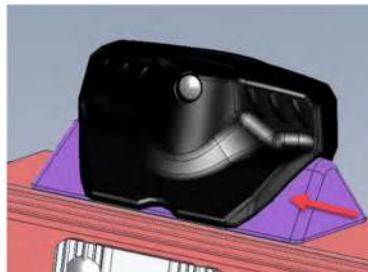
II. Exclusion of Mr. Smith’s Infringement Opinion

We review a district court’s exclusion of expert testimony under the law of the regional circuit, here the Eighth Circuit. *Sport Dimension, Inc. v. Coleman Co.*, 820 F.3d 1316, 1323 (Fed. Cir. 2016). The Eighth Circuit reviews the exclusion of an expert’s testimony “under the

⁷ We reject Little Giant’s argument that the district court imported limitations from Figures 13A–B. *See* Appellant Br. 45–51. The district court referred to those figures to explain why it rejected Little Giant’s partial depiction of the figures’ locking mechanism. *See Summary Judgment Order*, 2024 WL 1332027, at *11. In any event, the district court’s reference to the figures was entirely consistent with the examiner’s reliance on those figures to illustrate his meaning of “doesn’t pass all the way through.” J.A. 338.

deferential abuse of discretion standard and will not reverse unless the district court's ruling is 'manifestly erroneous.' *Bliv, Inc. v. Charter Oak Fire Ins. Co.*, 159 F.4th 539, 542 (8th Cir. 2025) (citation omitted).

The district court excluded the testimony of Little Giant's expert, Mr. Smith, concerning his opinion that Tricam's handle on its Speed Lock (shown below) literally meets the cavity limitation. *Summary Judgment Order*, 2024 WL 1332027, at *16; J.A. 4544 ¶ 29. According to Mr. Smith, as shown below, the area under the black handle occupied by the purple bracket constitutes a "cavity" because that area is a hollowed-out space passing all the way through in at least one direction but not in every other direction. *Id.*



See id. (Tricam's Speed Lock, annotated).

Little Giant argues that the exclusion of Mr. Smith's infringement opinion was erroneous because the district court erred in construing the claimed "cavity." *See* Appellant Br. 52, 54. Little Giant's argument fails because we find no error in the district court's construction.

We also see no error in the district court's finding that Mr. Smith contradicted the court's construction by "essentially reconstru[ing] the cavity limitation to mean any hollowed-out space that does not pass through in *every direction*." *Summary Judgment Order*, 2024 WL 1332027, at *15 (emphasis added). Although the claim construction explicitly stated that "the claimed cavity does not include hollowed-out spaces that are unbounded on both ends" such as a "tunnel" or a "taco shell," Mr. Smith opined that

a hollowed-out space that passes all the way through two unbounded ends would literally have the claimed cavity. *Id.*; *see also* J.A. 4388, 4989–90. Accordingly, the district court did not abuse its discretion by excluding Mr. Smith’s infringement opinion “based on a claim construction that is materially different from the construction adopted by the parties and the court.” *Treehouse Avatar LLC v. Valve Corp.*, 54 F.4th 709, 715 (Fed. Cir. 2022).

III. Summary Judgment

We review a district court’s grant of summary judgment under the law of the regional circuit, here the Eighth Circuit. *Niazi Licensing Corp. v. St. Jude Med. S.C., Inc.*, 30 F.4th 1339, 1350 (Fed. Cir. 2022). The Eighth Circuit reviews a grant of summary judgment de novo. *Id.* (citing *Wilson v. Spain*, 209 F.3d 713, 716 (8th Cir. 2000)). Summary judgment is appropriate “if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” FED. R. CIV. P. 56(a).

The district court granted summary judgment of non-infringement, determining that (1) no reasonable jury could conclude that Tricam’s Speed Lock literally infringes the cavity limitation and (2) amendment-based estoppel precludes Little Giant from relying on the doctrine of equivalents. *Summary Judgment Order*, 2024 WL 1332027, at *22.

Little Giant offers two arguments: (1) because the claim construction of “cavity” was erroneous, the summary judgment should be vacated, and (2) even if the claim construction was correct, the district court erroneously applied amendment-based estoppel. *See* Appellant Br. 55–64. We find both unpersuasive.

A. No Literal Infringement

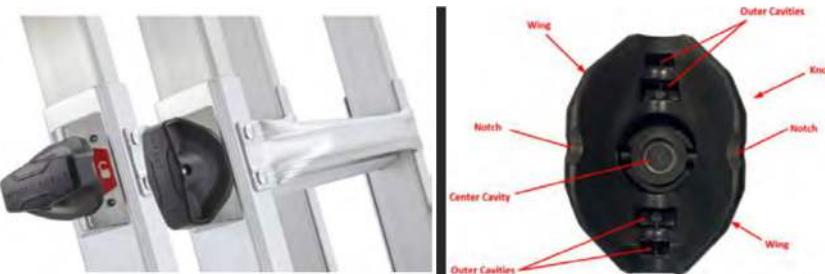
We begin with the district court’s summary judgment of no literal infringement. Little Giant’s sole argument

requires prevailing on the “cavity” claim construction. *See* Appellant Br. 57 (arguing that “Mr. Smith’s expert opinions raise a genuine dispute of fact regarding the presence of the ‘cavity’ limitation in the accused [product]” “under the proper construction of ‘cavity,’ as set forth in Mr. Smith’s reports”). Because we affirm the district court’s construction of the claimed “cavity,” the summary judgment of no literal infringement stands.

In any event, the district court did not err in its literal infringement analysis. The cavity limitation requires that “*more than a majority* of the first bracket is placed inside of” a cavity. *Claim Construction Order*, 2022 WL 2287048, at *10 (emphasis added). As depicted below, the Speed Lock undisputedly has five hollowed-out spaces within its handle that do not pass all the way through, each space corresponding to the claimed cavity.⁸ *See Summary Judgment Order*, 2024 WL 1332027, at *2–3. However, it is also undisputed that only 20% of the volume of the bracket is placed inside of these five cavities; therefore, the cavity limitation was not met. *See id.* at *16. Little Giant asserted that the Speed Lock handle’s wing space is also the claimed cavity, thereby satisfying the claim limitation “*more than a majority of the first bracket*.” *Id.* at *16; *see also* J.A. 2744. The district court properly rejected Little Giant’s assertion because it relied on Mr. Smith’s excluded opinion that a tunnel or taco-shaped structure, which passes all the way through, satisfies the cavity limitation. *Id.* at *17 (further noting that “Little Giant identifies no other evidence” to support literal infringement).

⁸ Tricam conceded that Speed Lock has center and outer cavities as depicted in the right figure. J.A. 48. The parties, however, disputed whether the wing space meets the claimed “cavity.” J.A. 51, 2744 (defining the wing space).

Accordingly, we see no error in the district court’s summary judgment of no literal infringement.



*See Summary Judgment Order, 2024 WL 1332027, at *2–3 (Tricam’s Speed Lock, alongside a labeled image of its underside); see also J.A. 2744.*

B. Preclusion under the Doctrine of Equivalents

“Prosecution history estoppel applies as part of an infringement analysis to prevent a patentee from using the doctrine of equivalents to recapture subject matter surrendered from the literal scope of a claim during prosecution.” *Pharma Tech Sols., Inc. v. LifeScan, Inc.*, 942 F.3d 1372, 1380 (Fed. Cir. 2019) (citation omitted). The Supreme Court explained that a patentee’s “decision to narrow his claims through amendment may be presumed to be a general disclaimer of the territory between the original claim and the amended claim.” *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 740 (2002). One of the ways the presumption may be overcome is if the patentee shows that “the rationale underlying the amendment may bear no more than a tangential relation to the equivalent in question” (tangential relation exception). *Id.* The tangential relation exception “focuses on the patentee’s objectively apparent reason for the narrowing amendment,” which “should be discernible from the prosecution history record.” *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359, 1369 (Fed. Cir. 2003).

Little Giant challenges the district court’s rejection of its theory under the doctrine of equivalents that “the wing space in the Speed Lock handle ‘performs the same

function as the claimed cavity by encompassing more than a majority of the bracket when in the first rotational position.” *Summary Judgment Order*, 2024 WL 1332027, at *17. It argues that the district court erred in two regards: (1) the *Festo* presumption does not apply because the Speed Lock does not fall within the surrendered territory, and (2) even if the Speed Lock falls within the surrendered territory, the tangential relation exception rebuts that presumption. *See* Appellant Br. 59–60.

We reject both arguments. First, the district court did not err in its findings on the scope of the territory surrendered. During the ’416 patent prosecution, the examiner rejected the claim language of “a substantial portion of the first bracket is concealed between the first rail and the first component” over a prior art reference U.S. Patent No. 2006/0169539 (Grebinski). J.A. 2931–33. In response, the applicant amended claim 1 to recite “the first bracket is disposed within a cavity defined by the first component,” which appears in the issued claim. J.A. 2943. In view of this narrowing amendment, we agree with the district court that the surrendered territory is between “designs where the bracket is concealed between the handle and the rails” and “where it is disposed within a cavity of the handle.” *See Summary Judgment Order*, 2024 WL 1332027, at *20. And the Speed Lock handle’s wing space does fall within this surrendered territory because there “the majority of the bracket is concealed between the handle and the rail simply because that concealment occurs by placing substantial portions of the bracket inside a space that is *not* a cavity.” *Id.*

Second, the district court also did not err in determining that the tangential relation exception does not apply. Little Giant argues that the amendment at issue was to overcome “handles that merely conceal part of the bracket outside the handle.” *See* Appellant Br. 59–60 (emphasis omitted). We disagree. Little Giant’s proposed tangential rationale is not objectively apparent from the prosecution

history. *See generally* J.A. 2908–52. This is because, as the district court found, “the difference between concealment (or something being hidden between the handle and the rail) and being disposed within a cavity, was at the heart of the amendments to avoid Grebinoski.” *Summary Judgment Order*, 2024 WL 1332027, at *21. Accordingly, we hold that Little Giant has not met its burden of proving that the objectively apparent reason for the narrowing amendment was only tangentially related to the equivalent.

CONCLUSION

We find none of Little Giant’s remaining arguments persuasive. For the foregoing reasons, we *affirm*.

AFFIRMED