

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

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**LITTELFUSE, INC.,**  
*Plaintiff-Appellant*

v.

**MERSEN USA EP CORP.,**  
*Defendant-Appellee*

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2021-2013

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Appeal from the United States District Court for the District of Massachusetts in No. 1:17-cv-12375-IT, Judge Indira Talwani.

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Decided: April 4, 2022

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THOMAS J. MELORO, Willkie Farr & Gallagher LLP, New York, NY, argued for plaintiff-appellant. Also represented by STEPHEN MARSHALL, Washington, DC.

THOMAS E. BEJIN, Bejin Bieneman PLC, Southfield, MI, argued for defendant-appellee. Also represented by WILLIAM K. BROMAN; MARTIN F. GAYNOR, Hunton Andrews Kurth LLP, Boston, MA.

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Before PROST, BRYSON, and STOLL, *Circuit Judges*.

BRYSON, *Circuit Judge*.

Appellant Littelfuse, Inc., brought a patent infringement action against appellee Mersen USA EP Corp. After the district court construed the patent claims, the parties stipulated to a judgment of non-infringement. Littelfuse now appeals the district court's claim constructions. We vacate and remand.

## I

### A

Littelfuse alleges that Mersen infringes U.S. Patent No. 9,564,281 (“the ’281 patent”). The ’281 patent is directed to a “fuse end cap for providing an electrical connection between a fuse and an electrical conductor.” ’281 patent, Abstract. Each of the embodiments of a fuse end cap disclosed in the specification comprises a “mounting cuff” that receives the body of a fuse and a “terminal” that receives an electrical conductor. The specification first describes a generic embodiment of the fuse end cap. *Id.* at col. 2, line 61, through col. 4, line 67. The specification then describes three embodiments: a “machined end cap,” *id.* at col. 5, ll. 1–26; a “stamped end cap,” *id.* at col. 5, ll. 27–52; and an “assembled end cap,” *id.* at col. 5, line 53, through col. 6, line 21.

According to the specification, the machined end cap may be manufactured from a “single piece of any suitable, electrically conductive material” and may be created by “machining, cold heading, or otherwise forming” the features of the fuse end cap through use of a machining tool. *Id.* at col. 5, ll. 16–26. The stamped end cap may also be formed from a “single piece of any suitable, electrically conductive material” and may be created by stamping a single piece of conductive material. *Id.* at col. 5, ll. 42–48. That is, the stamped end cap may be created by “bending, folding, and pressing a sheet of conductive material.” *Id.* at col. 5, ll. 49–52.

The third embodiment, the assembled end cap, is formed “from two separate pieces of any suitable, electrically conductive material.” *Id.* at col. 6, ll. 4–6. In that embodiment, the terminal and the mounting cuff are formed from separate pieces of material. *Id.* at col. 6, ll. 8–14. The terminal and mounting cuff are then “joined together, such as by press-fitting [a] fastening stem of the mounting cuff into the cavity of the terminal” or by using “a variety of other fastening means, including . . . various adhesives, various mechanical fasteners, or welding.” *Id.* at col. 6, ll. 13–21 (reference numerals omitted).

Independent claim 1 of the ’281 patent recites:

1. A fuse end cap comprising:
  - a mounting cuff defining a first cavity that receives an end of a fuse body, the end of the fuse body being electrically insulating;
  - a terminal defining a second cavity that receives a conductor, wherein the terminal is crimped about the conductor to retain the conductor within the second cavity; and
  - a fastening stem that extends from the mounting cuff and into the second cavity of the terminal that receives the conductor.

Dependent claims 8 and 9 also play a significant role in this dispute. They recite:

8. The fuse end cap of claim 1, wherein the mounting cuff and the terminal are machined from a single, contiguous piece of conductive material.
9. The fuse end cap of claim 1, wherein the mounting cuff and the terminal are stamped from a single, contiguous piece of conductive material.

Independent claim 10 and dependent claims 19 and 20 largely parallel claims 1, 8, and 9. Claim 10 recites, in pertinent part:

10. A fuse assembly comprising:
  - a first fuse end cap having a mounting cuff defining a first cavity and a terminal defining a second cavity;
  - a fastening stem that extends from the mounting cuff of the first fuse end cap and into the second cavity of the terminal;
  - a second fuse end cap having a mounting cuff defining a first cavity and a terminal defining a second cavity, and a fastening stem that extends from the mounting cuff of the second fuse end cap and into the second cavity of the terminal . . . .

Claims 19 and 20, which depend from claim 10, recite as follows:

19. The fuse end cap of claim 10, wherein each fuse end cap is machined from a single, contiguous piece of conductive material.
20. The fuse end cap of claim 10, wherein each fuse end cap is stamped from a single, contiguous piece of conductive material.

## B

A brief discussion of the prosecution of the '281 patent provides context for the present dispute. During prosecution of the '281 patent, the examiner issued a restriction requirement, noting that each of the three embodiments disclosed in the specification represented a distinct species. J.A. 493. Littelfuse responded by electing to prosecute the species corresponding to the "assembled end cap" embodiment. J.A. 487. The examiner then withdrew dependent

claims 8–9 and 19–20, as they were directed to the “machined end cap” and “stamped end cap” embodiments. Under Patent Office practice, those dependent claims were subject to reinstatement if a generic claim was found to be allowable. *See* Manual of Patent Examining Procedure (MPEP) § 821.04 (9th ed., rev. June 2020).

In the initial application filed by Littelfuse, claim 1 recited only the “mounting cuff” and “terminal” limitations. J.A. 197. Similarly, claim 10 initially recited limitations pertaining to the mounting cuff and terminal, but did not include a limitation directed to a fastening stem. J.A. 198. After an initial rejection by the examiner under 35 U.S.C. § 102, Littelfuse amended claims 1 and 10 to add the “fastening stem” limitations. J.A. 236, 241. The examiner then allowed amended claims 1 and 10. After concluding that dependent claims 8, 9, 19, and 20 “require all the limitations of the . . . allowable claims,” the examiner rejoined those dependent claims. J.A. 322–23. In other words, the examiner found that the end caps recited in those four dependent claims, which require the end cap to be formed from a single piece of material, were compatible with the end cap recited in claims 1 and 10, which require that the end cap include a fastening stem.

### C

In the course of the litigation, the district court construed the term “fastening stem” to mean a “stem that attaches or joins other components.” *Littelfuse, Inc. v. Mersen USA Newburyport-MA, LLC (Claim Construction Order)*, No. 1:17-CV-12375, 2020 WL 9071704, at \*9 (D. Mass. Mar. 6, 2020). The court construed the phrase “a fastening stem that extends from the mounting cuff and into the second cavity of the terminal that receives the conductor” to mean “a stem that extends from the mounting cuff and into the second cavity of the terminal that receives the conductor, and attaches the mounting cuff to the terminal.” *Id.* In further clarifying its constructions, and in

particular the portion of the construction requiring that the fastening stem “attaches the mounting cuff to the terminal,” the court made clear that claims 1 and 10 do not cover a single-piece apparatus (i.e., an end cap formed from a single piece of material). *See id.* at \*7 (rejecting the argument that “claims 1 and 10 cover both unitary and multi-piece embodiments”). The court made that point expressly in its order denying reconsideration of its claim constructions, where the court accepted Mersen’s argument that “the fuse end cap described in claim 1 is of multi-piece construction.” *Littelfuse, Inc. v. Mersen USA Newburyport-MA, LLC*, No. 1:17-CV-12375, 2021 WL 1210323, at \*1 (D. Mass. Mar. 31, 2021).

Although not expressly stated in the parties’ stipulation of non-infringement, the parties have made clear on appeal that their decision to stipulate to non-infringement was based on an understanding that under the district courts’ constructions claims 1 and 10 covered only a multi-piece apparatus. *See* Oral Argument at 19:03–20:09, 40:00–40:23. That understanding is consistent with our reading of the district court’s orders.

## II

We review the district court’s claim construction and interpretations of intrinsic evidence de novo and any subsidiary factual findings for clear error. *Apple Inc. v. Wi-LAN Inc.*, 25 F.4th 960, 967 (Fed. Cir. 2022).

## A

To begin with, we disagree with the district court’s conclusion that claims 1 and 10 cover only a multi-piece apparatus. A claim term is generally given the “meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). How the term is used in the claims and the specification of the

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patent is strong evidence of how a person of ordinary skill would understand the term. *See id.*

The structure of the claims is enlightening. Independent claims 1 and 10 recite a fuse end cap comprising three elements: a mounting cuff, a terminal, and a fastening stem. '281 patent, claim 1. Dependent claims 8, 9, 19, and 20 further limit claims 1 and 10 by requiring that the end cap be formed “from a single, contiguous piece of conductive material.” '281 patent, claims 8–9, 19–20.

By definition, an independent claim is broader than a claim that depends from it, so if a dependent claim reads on a particular embodiment of the claimed invention, the corresponding independent claim must cover that embodiment as well. *See Baxalta Inc. v. Genentech, Inc.*, 972 F.3d 1341, 1346 (Fed. Cir. 2020) (“The district court’s construction [of the independent claim] which excludes these explicitly claimed embodiments [in the dependent claims] is inconsistent with the plain language of the claims.”). Otherwise, the dependent claims would have no scope and thus be meaningless. A claim construction that leads to that result is generally disfavored. *See Intellectual Ventures I LLC v. T-Mobile USA, Inc.*, 902 F.3d 1372, 1378 (Fed. Cir. 2018); *Trs. of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1370 (Fed. Cir. 2016); *Wright Med. Tech., Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1445 (Fed. Cir. 1997) (“[W]e must not interpret an independent claim in a way that is inconsistent with a claim which depends from it.”). Accordingly, the recitation of a single-piece apparatus in claims 8, 9, 19, and 20 is persuasive evidence that claims 1 and 10 also cover a single-piece apparatus.

We note that the presumption of differentiation in claim scope is “not a hard and fast rule.” *Seachange Int’l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1369 (Fed. Cir. 2005). Indeed, “any presumption created by the doctrine of claim differentiation ‘will be overcome by a contrary construction dictated by the written description or prosecution history.’”

*Retractable Techs., Inc. v. Becton, Dickinson, and Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011) (citation omitted). Mersen relies on cases such as the plurality opinion in *Marine Polymer Technologies, Inc. v. HemCon, Inc.*, 672 F.3d 1350, 1359 (Fed. Cir. 2012) (en banc) (opinion of Lourie, J.), that stand for the proposition that, notwithstanding the doctrine of claim differentiation, a construction that renders certain claims superfluous need not be rejected if that construction is consistent with the teachings of the specification. But in this case, as discussed below, Littelfuse's construction is supported by the specification. Furthermore, Mersen's construction would not merely render the dependent claims superfluous, but would mean that those claims would have no scope at all, a result that should be avoided when possible. See *Ortho-McNeil Pharm. v. Mylan Lab'ys, Inc.*, 520 F.3d 1358, 1362 (Fed. Cir. 2008) (“[T]his court strives to reach a claim construction that does not render claim language in dependent claims meaningless.”).

The district court recognized the inconsistency between its conclusion that claims 1 and 10 cover only a multi-piece apparatus and the recitation of a single-piece apparatus in claims 8, 9, 19 and 20. The court resolved that inconsistency by inferring that the examiner's re-joinder of those dependent claims was based “on a misunderstanding of those claims.” *Claim Construction Order* at \*7.

The record in this case, however, does not support the conclusion that the examiner made a mistake in re-joining claims 8, 9, 19, and 20. In re-joining those claims, the examiner observed that those dependent claims “require all the limitations of the . . . allowable claims.” J.A. 322–23. That observation was logical, as the independent claims are not limited to a multi-piece construction and the dependent claims form a coherent invention in that they each



recite a fuse end cap that comprises a mounting cuff, a terminal, and a fastening stem.<sup>1</sup>

Turning to the specification, it is true that the detailed description refers to a “fastening stem” only with respect to the “assembled end cap” embodiment, which is a multi-piece apparatus. ’281 patent, col. 6, ll. 1–21. But as we have cautioned, courts ordinarily should not limit “the claimed invention to preferred embodiments or specific examples in the specification.” *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1328 (Fed. Cir. 2002) (quoting *Comark Commc’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998)). Nothing in the specification states that a fastening stem cannot be present in a single-piece apparatus. The specification describes the fastening stem as “projecting from a side of the mounting cuff 460 opposite the cavity 425.” ’281 patent, col. 6, ll. 1–3. One can envision a stem that projects from the side of the mounting cuff even in an embodiment in which the fuse end cap is formed from a single piece of material.<sup>2</sup>

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<sup>1</sup> The district court also observed that “Littelfuse never resubmitted [claims 8, 9, 19, and 20] as dependent on the amended Claim 1.” *Claim Construction Order* at \*7. However, an applicant is not required to resubmit the previously withdrawn claims after a restriction requirement is lifted. See MPEP § 821.04(a) (providing that, once a restriction requirement is lifted, “[c]laims that require all the limitations of an allowable claim *will be rejoined*” (emphasis added)).

<sup>2</sup> Mersen argues that Littelfuse waived any contention that claim 1, as amended, was a generic claim and that Littelfuse conceded that single-piece end caps were dedicated to the public. Neither is true. Littelfuse consistently argued that claims 1 and 10 covered both single-piece and multi-piece end caps. J.A. 278–84, 668–71, 677, 739, 743,

We conclude that the claim construction of the “fastening stem” limitation that is most consistent with the claims, specification, and prosecution history does not confine claims 1 and 10 to embodiments in which the fuse end cap is formed from multiple pieces of material. We therefore do not agree with the district court that claims 1 and 10 do not cover single-piece embodiments (and thus that dependent claims 8, 9, 19, and 20 also do not cover single-piece embodiments, even though the language of those claims is expressly directed to such embodiments). For that reason, we must vacate the court’s judgment of non-infringement and remand the case for the district court to adopt a new construction of the “fastening stem” limitations that allows for the independent claims to cover both single-piece and multi-piece embodiments.

## B

With that said, it is important to note that the district court was correct in seeking to give meaning to the term “fastening stem” by looking to the meaning of the words “fastening” and “stem” as used in the patent. The district court construed the term “fastening stem” to mean a “stem that attaches or joins other components.” *Claim Construction Order* at \*9. On its face, that construction could plausibly cover a fastening stem that is present in a single-piece apparatus. As previously noted, one can envision a protrusion from the mounting cuff into the terminal cavity, even in a single-piece embodiment. To fall within the scope of the claims, however, that feature must constitute a “stem” and must perform a “fastening” function of some sort. The district court reasonably found that the plain language of

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927. And what Littelfuse’s counsel acknowledged to be dedicated to the public was a single-piece embodiment without a fastening stem. *See* J.A. 763; Appellant’s Br. 44–45.

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the claims suggests that the “fastening stem” is a stem that “attaches or joins.”

The same is true of the district court’s construction of the phrase “a fastening stem that extends from the mounting cuff and into the second cavity of the terminal that receives the conductor.” Because claims 1 and 10 are not limited to a multi-piece apparatus, the fastening stem is not required to attach the mounting cuff to the terminal, and to that extent the district court’s construction was incorrect. However, the remainder of the court’s construction is consistent with the language of both the claims and the written description of the invention.

In summary, we vacate the judgment and the district court’s constructions of “fastening stem” and “a fastening stem that extends from the mounting cuff and into the second cavity of the terminal that receives the conductor.” The district court should adjust the construction of those claim terms so as to allow for the independent claims to cover both single-piece and multi-piece embodiments, but the court’s constructions should continue to give meaning to the terms “fastening” and “stem” in the context of the invention and the ordinary meaning of those terms.

No costs.

**VACATED AND REMANDED**