NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

NEAPCO DRIVELINES LLC,
Appellant

v.

AMERICAN AXLE & MANUFACTURING, INC.,
Appellee

2020-1858

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2018-01761.

Decided: March 10, 2021

DENNIS J. ABDELNOUR, Honigman LLP, Chicago, IL, argued for appellant. Also represented by J. MICHAEL HUGET, SARAH E. WAIDELICH, Ann Arbor, MI.

ROBERT KAPPERS, Steptoe & Johnson LLP, Chicago, IL, argued for appellee. Also represented by JOHN LLOYD ABRAMIC, KATHERINE H. JOHNSON, JAMES RICHARD NUTTALL.

Before DYK, MOORE, and REYNA, *Circuit Judges*.

MOORE, *Circuit Judge*.

Neapco appeals a Patent Trial and Appeal Board final written decision finding claim 11 of U.S. Patent No. 5,772,520 anticipated by Burton[1] and holding claim 12 would have been obvious over Burton in combination with other references. We *affirm*.

BACKGROUND

The '520 patent discloses a "vented slip joint assembly." '520 patent at Abstract. A slip joint is a coupling between two shafts of a vehicle's driveline. *See id.* at 1:12–15. One shaft has external splines, which are gear-like teeth, and the other shaft has an internally "splined bore" that receives the external splines of the first shaft. *Id.*; *see also id.* at Fig. 3. The "mating" of the splines ensures that the shafts rotate together while allowing axial movement, *i.e.*, slip.

To prevent entry of contaminants, a slip joint assembly includes seals at either end of the splined bore. *Id.* at 1:19–20. One issue with sealing the slip joint, however, is that axial movement between the shafts "compresses air within the splined bore" (the first cavity) and "between the splined shaft and the seals" (the second cavity). *Id.* at 1:15–22. Prior art addressed this issue by adding a hole in the cap, which is the seal at the end of the first cavity opposite the splined shaft. *Id.* at 1:23–32. But this hole permits entry of contaminants and vents the first cavity only. *Id.* The objective of the '520 patent is to provide a slip joint assembly that vents the second cavity and does not allow entry of

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[1] U.S. Patent No. 5,655,968.

contaminants. *See id.* at 1:33–46. Claim 11 is representative:[2]

> 11. A method of venting a slip joint assembly comprising[:]
>
> providing a first shaft having a first end with an externally splined portion;
>
> providing a second shaft having a closed first end with an internally splined portion defining a first cavity therein, the second shaft drivably connected to the first end of the first shaft;
>
> providing a seal to sealingly engage the first and second shafts to create a second cavity therebetween defined by the seal and the first and second shafts; and
>
> providing a vent in the first shaft having a first end in fluid communication with the second cavity and a second end in fluid communication outside the first and second cavities.

American Axle petitioned for *inter partes* review of the '520 patent in view of Burton. The Board concluded that Burton anticipates claim 11 and claim 12 would have been obvious over Burton in combination with other prior art. Neapco appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

Neapco raises two issues. First, it argues the preamble of claim 11 limits the claim to slip joints that vent to an

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[2] We treat claim 11 as representative because Neapco does not present any separate arguments concerning claim 12.

external space (outside of the entire slip joint assembly). Second, Neapco argues substantial evidence does not support the Board's finding that Burton discloses the "providing a vent" limitation. We address each issue in turn.

I.

We review de novo the Board's claim construction and any supporting determinations based on intrinsic evidence. *Personalized Media Commc'ns, LLC v. Apple Inc.*, 952 F.3d 1336, 1339 (Fed. Cir. 2020). "Generally, a preamble is not limiting." *Summit 6, LLC v. Samsung Elecs. Co.*, 802 F.3d 1283, 1292 (Fed. Cir. 2015). A preamble is not limiting, for example, if the patentee "defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention." *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). We have, however, identified several exceptions to the general rule that a preamble is not limiting. Relevant here, a preamble is limiting if it recites "additional structure or steps underscored as important by the specification," is "essential to understand limitations or terms in the claim body," or provides necessary structure absent from the claim body. *Id.* at 808–09.

Neapco argues the preamble, "[a] method of venting a slip joint assembly," is limiting because it recites venting the entire slip joint assembly, which is what the specification "from top to bottom is concerned with." Appellant's Br. at 34. Neapco further argues the claim body is structurally incomplete because the "providing a vent" limitation identifies neither the object being vented nor the destination of the venting. For support, Neapco juxtaposes claim 6, which specifically recites the vent destination is "the driveshaft." According to Neapco, the preamble cures this deficiency by clarifying that the vented object is the slip joint assembly and the vent destination is external thereto. Thus, the argument goes, the preamble is essential to understand the "providing a vent" limitation.

American Axle responds that the "providing a vent" limitation is clear as to the object and destination of the venting. American Axle also points out that Neapco never cited the preamble before the Board to support its proposed construction of "vent." And American Axle argues the specification neither stresses the importance of external venting nor conveys an intent to exclude sealed slip joints.

We see no error in the Board's construction. The Board correctly determined that the preamble of claim 11 is not limiting. The claim body defines a structurally complete invention, and the preamble is not essential to understand any claim terms. Contrary to Neapco's argument, the "providing a vent" limitation recites the vented object (*i.e.*, "the second cavity") and the vent destination (*i.e.*, "outside the first and second cavities"). Neapco asserts this is not specific enough, but the preamble phrase "[a] method of venting a slip joint assembly" does not provide additional specificity. Indeed, Neapco did not cite the preamble to support its proposed constructions of "vent" before the Board. J.A. 879–84, 1043–48. That claim 6 requires venting to "the driveshaft" shows Neapco knew how to recite the vent destination more narrowly, which suggests the broader language in claim 11 was intentional. Neapco has, therefore, not shown that the preamble informs the meaning of, or provides necessary structure to, the claim body.

Nor does the preamble recite "additional structure or steps underscored as important by the specification." *Catalina*, 289 F.3d at 808. Neapco is correct that the specification identifies a problem unique to external venting ("ingress of contaminants"), touts a benefit of external venting ("less resistance"), and describes every embodiment as having an external vent. *See, e.g.*, '520 patent at 1:30–32, 2:44–3:10, 3:19–23. Nonetheless, the specification describes external vents merely as part of preferred and alternative embodiments. *See id.* at 2:44–3:10. And although the specification makes clear that venting is required, it does not indicate that the venting must be

external to the slip joint. We therefore agree with the Board that the specification "does not underscore the importance of venting outside the slip joint instead of venting the cavities within the slip joint." J.A. 14. Accordingly, we hold the preamble does not limit claim 11 to externally vented slip joints.

II.

Anticipation is a question of fact that we review for substantial evidence. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1259 (Fed. Cir. 2010). Substantial evidence is "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Id.* (quoting *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938)).

Neapco argues Burton does not disclose claim 11's "providing a vent" limitation because there is no evidence Burton's passage 130 permits "escape of compressed air." The evidence instead shows, according to Neapco, that passage 130 merely facilitates air circulation between Burton's internal cavities and therefore does not relieve pressure. American Axle responds that the Board's construction of "vent" encompasses air circulation between Burton's internal cavities.

Burton discloses a slip joint assembly having a seal (sealing sleeve 108), a first cavity (chamber 102), and a second cavity (space 132):

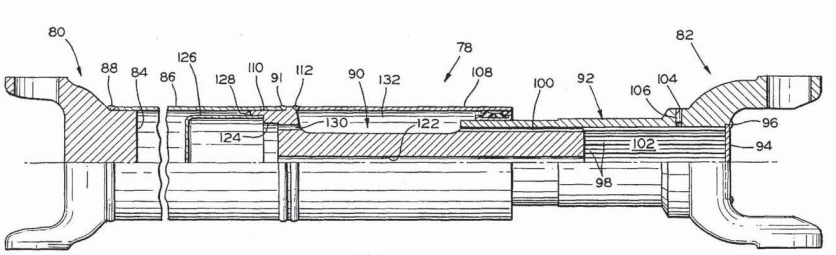

FIG. 3

J.A. 480 at 4:13–21, 4:30–40, Fig. 3. Passage 130 extends through the studyoke (male splined shaft 90), providing

fluid communication between the second cavity and a space outside the first and second cavities (chamber 124). *Id.* Chamber 124 is internal to the slip joint assembly.

Substantial evidence supports the Board's finding that Burton discloses the "providing a vent" limitation. The Board construed "vent" to mean "a passageway that permits the escape of compressed air from a cavity." J.A. 19–20. Applying that construction, the Board found that Burton's passage 130 is a "vent" because it permits compressed air to escape from a cavity (space 132). J.A. 30–31. This finding is supported by substantial evidence. Burton discloses that "[w]hen the yokes 80 and 82 retract toward one another, air moves from the space 132 through the passage[] 130." J.A. 480 at 4:30–46. And Neapco concedes that passage 130 permits airflow from space 132. *See, e.g.*, Appellant's Br. at 50 ("[A]ir and lubricant circulate back and forth between chambers 102, 132, and 124, by way of bores 122 and 130.").

Neapco nevertheless argues that airflow from Burton's space 132 is distinct from "escape of compressed air" because it does not relieve pressure. The Board, however, rejected Neapco's proposal to inject a pressure relief requirement into its construction, and Neapco does not appeal that construction. J.A. 19–20. Moreover, Neapco and its expert admitted that airflow from space 132 does in fact relieve pressure. J.A. 2885 (Neapco's expert testifying that "[w]ithout the passage [130] the change in pressure would be greater in [space] 132 than as opposed to with the passage"); J.A. 3962–63 at 43:17–44:2 (Neapco's counsel agreeing that without venting to chamber 124, "the pressure in [space 132] is going to go up more than it would with having the chamber 124"). Accordingly, substantial evidence supports the Board's finding that Burton's passage 130 meets the "providing a vent" limitation.

CONCLUSION

Because we hold the preamble of claim 11 is not limiting and substantial evidence supports the Board's finding of anticipation, we affirm.

AFFIRMED