

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHINN FU COMPANY OF AMERICA, INC.
and
SHINN FU CORPORATION,
Petitioner,

v.

THE TIRE HANGER CORPORATION,
Patent Owner.

Case IPR2015-00208
Patent 6,681,897 B2

Before WILLIAM V. SAINDON, BARRY L. GROSSMAN, and
CARL M. DEFRANCO, *Administrative Patent Judges*.

DEFRANCO, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318 and 37 C.F.R. § 42.73

I. INTRODUCTION

The Tire Hanger Corporation (“Tire Hanger”) is the owner of U.S. Patent No. 6,681,897 B2 (“the ’897 patent”). Shinn Fu Company of America, Inc. and Shinn Fu Corporation (collectively, “Shinn Fu”) filed a Petition (Paper 2, “Pet.”) for *inter partes* review of claims 1–5 of the ’897 patent. In a preliminary proceeding, we instituted trial because Shinn Fu demonstrated a reasonable likelihood of proving the challenged claims unpatentable. Following institution, Tire Hanger chose not to file a Patent Owner Response to the Petition, but did file a contingent Motion to Amend (Paper 15, “Mot.”), proposing to substitute claims 6–10 for original claims 1–5. Shinn Fu, in turn, filed an Opposition (Paper 16, “Opp.”) to the proposed amendment, and Tire Hanger followed with a Reply (Paper 17, “Reply”) in support of the amendment. An oral hearing was held at the request of both parties.¹

Pursuant to our jurisdiction under 35 U.S.C. § 6(c), we determine that Shinn Fu has met its burden of proving, by a preponderance of the evidence, that claims 1–5 of the ’897 patent are *unpatentable*. We also determine that Tire Hanger has met its burden of showing that substitute claims 6–10, as proposed in its Motion to Amend, are patentably distinct over the prior art of record, and thus, we *grant* the Motion to Amend.

¹ A transcript of the oral hearing has been entered in the record. Paper 23, “Tr.”

II. BACKGROUND

A. *The '897 Patent*

The '897 patent is drawn to a method of handling a wheel of a motor vehicle while the vehicle is elevated on a hydraulic lift or hoist for repair by a service technician. Ex. 1002, 1:10–25, 3:23–27. As described, a “support arm” is disposed on the hoist or lift “at a height roughly corresponding to the height of a vehicle wheel’s mounting holes when the vehicle is elevated.” *Id.* at 3:23–55, 4:11–14. After removing the wheel from the vehicle, the service technician guides the wheel’s mounting hole over the support arm “without bending significantly at the waist.” *Id.* at 2:28–34, 4:28–36. Once service on the vehicle is complete, the technician grasps the wheel, pulls it clear of the support arm, and reinstalls it on the vehicle. *Id.* at 4:36–38. According to the specification, back strain or injury is avoided because the support arm is positioned “about chest high” so that the technician “does not have to bend over” while holding a heavy wheel. *Id.* at 4:15–27, 4:42–44.

B. *Related Proceeding*

The '897 patent is the subject of a federal district court action, *The Tire Hanger Corporation v. My Car Guy Concierge Services Inc. dba Hoist Hanger*, 5:14-cv-00549 (C.D. Cal.).

C. *Illustrative Claims*

Of the challenged claims, only claim 1 is independent, while claims 2–5 depend directly from claim 1. Claim 1 is illustrative of the claimed invention and recites a method that comprises essentially five steps:

1. A method for temporarily retaining a vehicle wheel, comprising the steps of:

- [1] elevating a vehicle on an automotive hoist so that a support arm disposed on the hoist is at about the same height as a wheel of the vehicle;
- [2] removing the wheel from the vehicle;
- [3] placing the wheel on the support arm;
- [4] removing the wheel from the support arm substantially without bending over; and
- [5] reinstalling the wheel onto the vehicle.

Ex. 1002, 8:9–16 (bracketed numbers added for clarity).

In its Motion to Amend, Tire Hanger proposes substitute claims 6–10, of which claim 6 is independent and a substitute for claim 1, should it be found unpatentable. Claims 7–10 are proposed as substitutes for dependent claims 2–5, respectively.

Proposed substitute claim 6 includes essentially the same five steps as original claim 1, but adds greater detail to several of those steps. Most notably, rather than simply “placing” the wheel on the support arm, the third step provides for (a) *carrying* the wheel *to* the support arm, and (b) *hanging* the wheel *on* the support arm. Specifically, substitute claim 6 reads as follows, with underlining indicating language added to, and strikethrough indicating language removed from, original claim 1:

6. A method for a human to use a support arm to temporarily retaining a vehicle wheel during removal and reinstallation of the wheel with respect to a vehicle, comprising, in the following order, the steps of:

- [1] elevating a the vehicle on an automotive hoist so that a support arm disposed on the hoist is at about the same height as a wheel of the vehicle, and the human can remove the wheel without bending over;
- [2] removing the wheel from the vehicle;

- [3] [a] carrying the wheel to the support arm, wherein the human carries an entire weight of the wheel;
[b] placing hanging the wheel on the support arm, wherein the step of hanging the wheel on the support arm consists essentially of guiding a hole in the wheel over the support arm and releasing the wheel;
[4] removing the wheel from the support arm substantially without the human bending over, wherein the step of removing the wheel from the support arm consists essentially of grasping the wheel and pulling the wheel clear of the support arm; and
[5] reinstalling the wheel onto the vehicle.

Mot. 1–2 (bracketed numbers and letters added for clarity).

D. The Instituted Grounds

In the preliminary proceeding, we instituted trial on the following grounds: (1) whether claims 1 and 4 are unpatentable under 35 U.S.C. § 102 as being anticipated by Heidle²; (2) whether claims 3 and 5 are unpatentable under 35 U.S.C. § 103 as having been obvious over the combination of Heidle, AAPA,³ and OSHA⁴; (3) whether claims 1–4 are unpatentable under 35 U.S.C. § 103 as having been obvious over the combination of Komorita,⁵ AAPA, and OSHA. Dec. Inst. 9.

² U.S. Patent No. 5,813,659, iss. Sept. 29, 1998 (“Heidle”) (Ex. 1003).

³ Applicant Admitted Prior Art (“AAPA”) (Ex. 1002, 1:15–52).

⁴ U.S. DEPT. OF LABOR, *BACK DISORDERS AND INJURIES*, OSHA TECHNICAL MANUAL 5-1 (2nd ed., 1991) (“OSHA”) (Ex. 1005).

⁵ Japanese Patent Pub. No. H4-368261, pub. Dec. 21, 1992 (Ex. 1004) (referenced in the Petition as “Toyota,” but otherwise referred to as “Komorita,” the first named inventor).

E. Expert Testimony

Shinn Fu supported its Petition with the Declaration of Charles E. Naber (Ex. 1007). Tire Hanger did not file an expert declaration with its Motion to Amend, relying instead on express disclosures in the prior art and the challenged patent as evidence of the level of skill in the art.

III. ANALYSIS

A. Claim Construction

We analyze each claim term in light of its broadest reasonable interpretation, as understood by one of ordinary skill in the art and as consistent with the specification of the '897 patent. 37 C.F.R. § 42.100(b). As a result of the Motion to Amend, we must construe terms from both original claims 1–5, as well as several new terms added by proposed substitute claims 6–10.

1. Original Claims 1–5

In the preliminary proceeding, we focused on whether original claims 1–5 impart a specific order, or sequence, for performing the recited steps. Dec. Inst. 4–5. We concluded that neither the claim language nor the specification requires a narrow construction where the wheel must be removed from the vehicle before being placed on the support arm. *Id.* at 5. At trial, neither party disputed that construction, and we maintain it as the correct one for purposes of deciding patentability of claims 1–5.

2. Proposed Substitute Claims 6–10

Tire Hanger's proposed substitute claims introduce new terminology that requires construction beyond what was done at the time of institution. Specifically, substitute claim 6 replaces the term "placing" with the new term "hanging." We see no reason to interpret "hanging" apart from its

plain and ordinary meaning. Thus, consistent with its dictionary definition, we construe “hanging” as “to fasten to some elevated point *without support from below*.” *Merriam-Webster’s Collegiate Dictionary*, 10th ed. (2000) (emphasis added).

The substitute claims also use the transitional phrase “consisting essentially of,” which Shinn Fu argues should be construed presumptively as equivalent to “comprising.” Opp. 3–4 (citing *Manual of Patent Examining Procedure* § 2111.03). Tire Hanger argues for a narrower construction because, in its view, any additional steps would “materially change the basic and novel characteristics of the claimed method,” pointing to column 1, lines 26–59, of the ’897 patent. Reply 3 (citing Ex. 1002). We are not persuaded that a skilled artisan would view adding a simple extra step, such as raising the wheel to trip a safety latch while removing the wheel from the support arm (*see, e.g.*, Ex. 1012, Fig. 2, 2:61–70), as materially changing the basic objective of the claimed invention in terms of being “easily accessible within the work space,” “remain[ing] out of the way,” and “not requir[ing] workers to bend over,” as made clear in the specification. Ex. 1002, 1:54–59. Thus, we determine that the phrase “consisting essentially of” should be construed as equivalent to “comprising,” so long as any additional unlisted steps “do not have a material effect on the basic and novel characteristics” of the claimed method. *PPG Indus., Inc. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1354–55 (Fed. Cir. 1998).

B. State of the Art

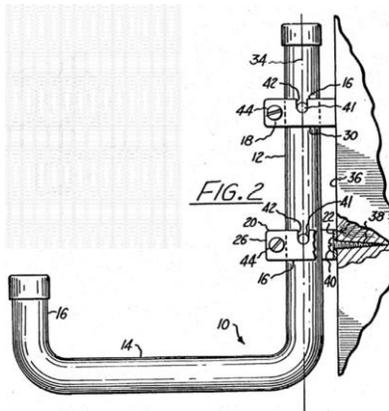
1. Conrad, Marion, Anderson, and Wüthrich

The prior art of record is replete with wall-mounted hangers for storing and/or displaying various tire and wheel assemblies. Tire Hanger

addresses several of these known wheel hangers in its Motion to Amend—Marion,⁶ Wüthrich,⁷ and Anderson,⁸ —and another in its Reply—Conrad.⁹ Mot. 16–20; Reply 5–10. A summary of each is provided below.

a. *Conrad (Ex. 1010)*

Conrad was cited during prosecution of the '897 patent and teaches a “utility hook” and associated “bracket means” for holding and storing heavy articles, “such as boards, tires and bicycles,” against a wall. Ex. 1010, 1:6–35, 1:55–61, 2:6–14. Figure 2 of Conrad, reproduced below, depicts the wall-mounted hook and bracket means.



As described by Conrad, the utility hook includes a vertical section and a horizontal section. *Id.* at 2:6–8. The vertical section is supported by “bracket means [] which extend into the wall of the support structure, on which the apparatus is mounted.” *Id.* at 2:28–30. Conrad further teaches that “the hooked end of the horizontal section may be provided without a full

⁶ U.S. Patent No. 1,515,690, iss. Nov. 18, 1924 (Ex. 1012).

⁷ EP 0486431 B1, iss. Mar. 6, 1996 (Ex. 2006).

⁸ U.S. Patent No. 5,618,228, iss. Apr. 8, 1997 (Ex. 2007).

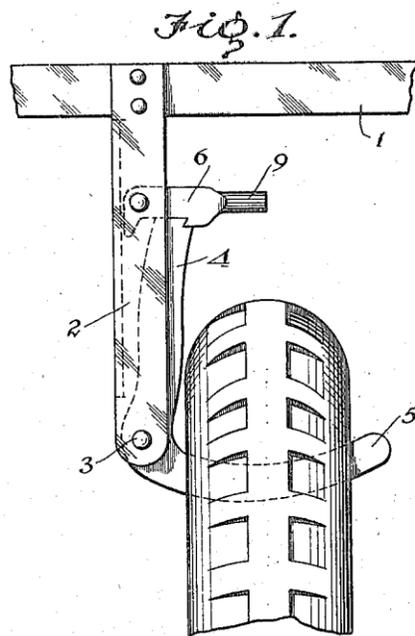
⁹ U.S. Patent No. 4,650,144, iss. Mar. 17, 1987 (Ex. 1010).

90° turn in the arm at the hooked end. This [is] advantageous when the apparatus is used for supporting wheels in order to make it easier to extend the hooked end of the arm through the opening in the center of the wheel, for example the hub receiving opening in a wheel on which a tire is mounted.”

Id. at 2:20–27.

b. Marion (Ex. 1012)

Marion discloses a tire hanger comprising “an L-shaped hook member” mounted to an overhead “rail,” on which a series of tires are stored in a row. Ex. 1012, 1:41–50. Figure 1 of Marion, reproduced below, depicts the rail-mounted tire hanger.



As described by Marion, the hook member supports the tire “in display position” so that it “may be removed and replaced with the least possible trouble.” *Id.* at 1:9–16. Lifting the tire upwardly disengages a “latch” on the hook member, permitting the hook member “to swing downwardly . . . and consequently allowing the tire to be drawn downwardly

without in any manner disturbing adjacent tires.” *Id.* at 2:61–70, Fig. 2. Marion’s tire hanger is similar to Conrad in so far as a support arm passes through a hole in the wheel for hanging the tire.

c. Anderson (Ex. 2007)

Anderson, also cited during prosecution of the ’897 patent, discloses a “holding fixture” for a wheel and tire assembly. Ex. 2007, 1:15–21, Fig. 1. As described, the holding fixture “will releasably lock the wheel and tire assembly in any one of a number of predetermined rotative positions” so that work may be performed on the tire. *Id.* 1:15–21, 1:60–66. At one end of the holding fixture is a mounting bracket that is “affixed to a wall or other appropriate vertical surface in a shop.” *Id.* at 1:66–2:2, 2:34–36. At the other end is a mounting plate having “wheel mounting bolts” that pass through “wheel mounting holes” so that the wheel and tire assembly is “firmly mounted on the wheel mounting plate” for subsequent work on the tire. *Id.* at 4:34–46, Fig. 2; *see also id.* at 5:11–17 (describing the wheel and tire assembly as “firmly affixed to wheel mounting plate 32 by bolts 36 and nuts 37”).

d. Wüthrich (Ex. 2006)

Wüthrich discloses a device that ensures “effective safeguarding against theft” of wheels or tires hanging on the wall of an automotive repair shop, a sales or display room, or a household garage. Ex. 2006, 3, 14 (Fig. 1). As described, the device comprises a support rod provided with a “wall plate” and “safety screws” at one end and a “securing device,” or “lock,” at the other end “to prevent any unauthorized removal of the support rod together with the wheel [] hung thereon.” *Id.* at 4–5.

2. *Komorita, Heidle, and Curran*

In addition to wall-mounted hangers for wheel and tire assemblies, the prior art of record includes automotive hoists, some of which depict devices for holding wheels removed from a vehicle. The pertinent references are summarized as follows.

a. *Komorita (Ex. 1004)*

Komorita discloses a “tire hanger” affixed to a vehicle lift for holding wheels removed from the vehicle. Ex. 1004, Abstract. Figure 29 of Komorita, reproduced below, depicts the vehicle lift and tire hanger.

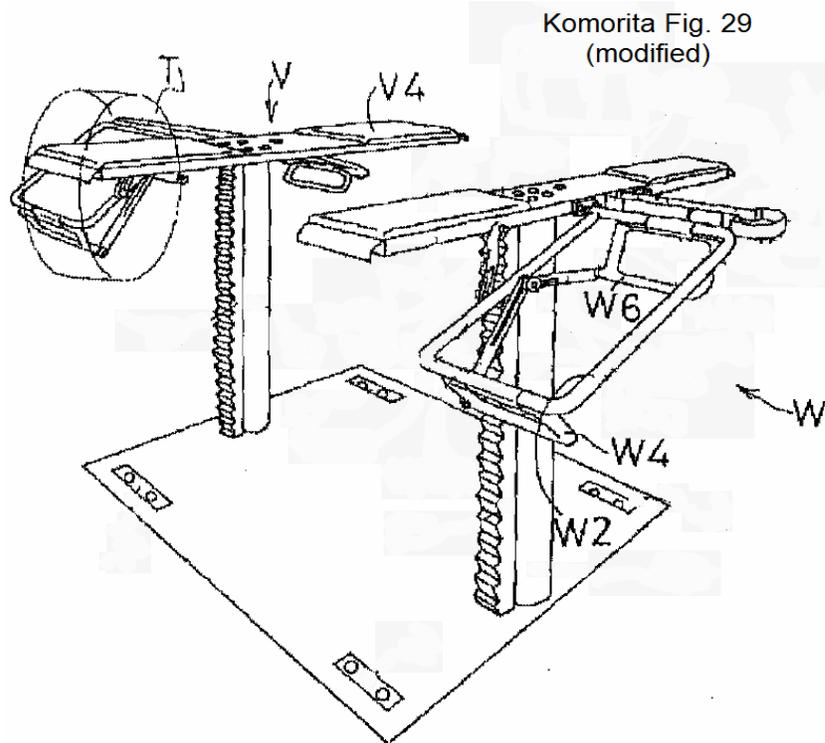


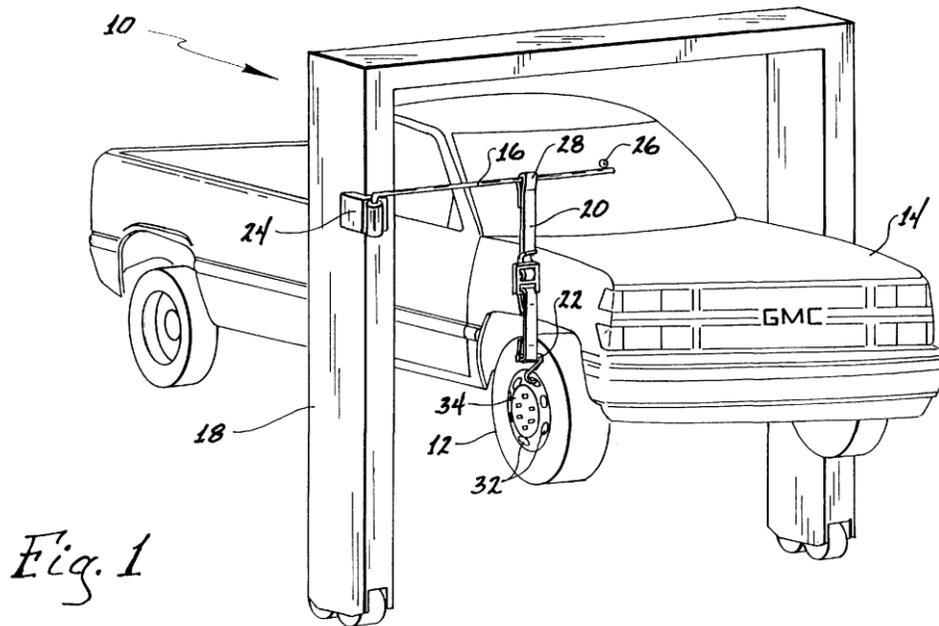
Figure 29 of Komorita depicts tire hanger W extending from the side of lift V.¹⁰ Tire hanger W consists of a “tire receiving main swing arm W2

¹⁰ The figure has been modified to remove inapplicable lead lines and part numbers.

that is formed from a pipe and has essentially a square shape.” Ex. 1004 ¶ 113. On either end of main swing arm W2 are two auxiliary swing arms W4 and W6. *Id.* ¶ 114. When a tire is placed in tire hanger W, the tire “passes through the tire receiving main swing arm W2” and “will contact the tire receiving auxiliary swing arms W4, W6,” so as to hold the tire. *Id.* As depicted in figure 29, tire T (in dotted lines) passes through the square swing arm W2 and is *supported from underneath* by auxiliary swing arms W4, W6. According to Komorita, “the wheel that is removed from the vehicle can easily be held by the tire hanger, and the wheel will not be placed on the floor.” *Id.* ¶ 6.

b. Heidle (Ex. 1003)

Heidle discloses a manual hoist for use by a service technician in removing and installing the wheel of a vehicle elevated on a hydraulic lift. Ex. 1003, Abstract. The hoist consists of an S-hook fastener and strap arrangement, with the S-hook fastener attached to one end of the strap and the opposite end of the strap hung from a cantilever arm mounted on the lift. *Id.* at 2:64–3:1. Figure 2 of Heidle, reproduced below, depicts the hoist in operation.



According to Heidle, the S-hook fastener is “operatively arranged to fasten to the wheel.” *Id.* at 1:50–53; *see also id.* at 3:1–2 (“Fastener 22 is secured to wheel 12 by removing any slack in strap 20.”). Once the lug nuts of the wheel are removed, “wheel 12 is pivoted away from vehicle 14 and suspended by hoist 10.” *Id.* at 3:17–22. As a result, “[t]he mechanic then avoids having to drop or lift the wheel.” *Id.* at 2:27–30 (emphasis added).

c. *Curran (Ex. 1006)*

The parties also make reference to Curran, which is directed to a hydraulic lift for a motor vehicle. Ex. 1006, Abstract, 1:6–8. Curran does not teach anything about servicing a vehicle, except to say that, once the lift is raised, “necessary work can then be carried out on the vehicle.” *Id.* at 9:65–66. Neither Shinn Fu nor Tire Hanger points to anything in Curran about handling a wheel removed from the vehicle.

3. *OSHA (Ex. 1005) and AAPA (Ex. 1002)*

Finally, the prior art of record includes two references discussing back disorders and injuries. For instance, OSHA stands for the well-known concept that bending while lifting a heavy object may lead to back disorders. Ex. 1005 at 5-1, 5-2. As a solution, OSHA recommends that “Platforms . . . should be built above the knee and below shoulder height to minimize awkward postures.” *Id.* at 5-3. Consistent with OSHA, Shinn Fu points to the ’897 patent’s disclosure of an admitted prior art (“AAPA”) method in which an individual would “carry the tire out of the work area to a table or other surface on which the tire can be placed temporarily without requiring the individual to bend over.” Ex. 1002, 1:34–40.

C. Original Claims 1–5

In our Decision to Institute, we found persuasive Shinn Fu’s analysis of how the elements of claims 1 and 4 are taught by the disclosure of Heidle, how the elements of claims 3 and 5 are taught by Heidle in combination with the secondary references of AAPA and OSHA, and how the elements of claims 1–4 are taught by Komorita in combination with AAPA and OSHA. Dec. 5–8. Tire Hanger does not rebut this analysis, electing not to file a Patent Owner Response and, thereby, waiving any arguments in defense of patentability of challenged claims 1–5. *See* 37 C.F.R. § 42.23(a) (“Oppositions . . . must include a statement identifying material facts in dispute” and “[a]ny material fact not specifically denied may be considered admitted”); *see also* Paper 14, “Scheduling Order” (cautioning that “any arguments for patentability not raised and fully briefed in the [Patent Owner] response will be deemed waived”).

Indeed, at oral argument, Tire Hanger acknowledged that the original claims “are not patentable,” and that it had “made a decision not to proceed with those claims” and wished to “rest [its] hat on the amended claims.” Tr. 21; *see also* Tr. 24 (agreeing that the original claims are no longer at issue). Thus, there appears to be no dispute that the individual steps of the originally challenged claims were known in the art. *See, e.g.*, Tr. 25, 29. There also appears to be no dispute that a skilled artisan would have had sufficient reason to combine the asserted prior art. On this basis, we reconfirm our findings from the Decision to Institute, and again find that the prior art recognized temporarily placing the wheel of vehicle on a support arm affixed to an automotive hoist at about the same height as the elevated vehicle. Ex. 1011, 107; Ex. 1012, 90, Fig. 5.

In sum, we find that Heidle anticipates each of the steps of method claims 1 and 4. We also find that a skilled artisan would have had reason to combine the teachings of Heidle, OSHA, and AAPA to arrive at the steps of method claims 3 and 5, and to combine the teachings of Komorita, OSHA, and AAPA to arrive at the steps of claims 1–4. Accordingly, Shinn Fu has demonstrated, by a preponderance of the evidence, that originally challenged claims 1 and 4 of the ’897 patent are unpatentable under 35 U.S.C. § 102 based on Heidle, that claims 3 and 5 are unpatentable under 35 U.S.C. § 103 based on Heidle, OSHA, and AAPA, and that claims 1–4 are unpatentable under 35 U.S.C. § 103 based on Komorita, OSHA, and AAPA.

D. Proposed Substitute Claims 6–10

In regards to Tire Hanger’s Motion to Amend, claim 6 is proposed as a substitute for original claim 1 and incorporates the same five steps as original claim 1, while adding several new limitations not found in the

original claims. Mot. 2. Of particular pertinence, the newly added limitations require:

- “in the following order,” which now requires that the steps be performed in the recited sequence;
- “carrying the wheel to the support arm, wherein the human carries *an entire weight of the wheel*,” which now excludes a method in which the weight of the wheel is partially supported by something other than the service technician; and
- “*hanging*” the wheel on the support arm, “wherein the step of hanging the wheel on the support arm *consists essentially of guiding a hole in the wheel over the support arm and releasing the wheel*,” which narrows the “placing” step of original claim 1.

Mot. 2–3.

In an *inter partes* review, amended claims are not added to the patent as of right, but rather must be proposed as a part of a motion to amend. 35 U.S.C. § 316(d). As moving party, the patent owner bears the burden of proof to establish that it is entitled to the relief requested, namely, addition of the proposed claims to the patent. 37 C.F.R. § 42.20(c). A patent owner must meet the requirements of 37 C.F.R. § 42.121, and demonstrate the patentability of the proposed substitute claims.

1. *Compliance with 37 C.F.R. § 42.121*

Before addressing the issue of patentability of the substitute claims, we deal first with Shinn Fu’s argument that Tire Hanger’s Motion to Amend fails to comply with the requirements of 37 C.F.R. § 42.121. Specifically, Shinn Fu disputes the proposed amendment, first, as impermissibly enlarging the scope of the claims, and second, as lacking adequate written

description support in the specification. Opp. 20–23. We address each in turn.¹¹

a. Claim Scope

Pursuant to 35 U.S.C. § 316(d), a proposed amendment “may not enlarge the scope of the claims of the patent or introduce new matter.” Shinn Fu argues that claim 9, which Tire Hanger proposes as a substitute for original claim 4, impermissibly enlarges claim scope by deleting the requirement that the individual “does not have to bend significantly at the waist to guide the wheel over the hanger.” That omission, in Shinn Fu’s view, makes claim 9 broader, not narrower, because it infers that an individual may indeed be bending over while handling the wheel on the support arm. *Id.* at 21–22. We disagree.

Claim 9 depends from substitute claim 6, which recites that, when the vehicle is elevated, “the human can remove the wheel without bending over,” and when the wheel is on the support arm, the wheel can be removed “without the human bending over.” Thus, as a matter of dependency, claim 9 incorporates the limitations from claim 6 that entail handling the wheel on the support arm “without the human bending over.” That an amendment simply removes a limitation from a dependent claim and adds it

¹¹ Shinn Fu also argues that the Motion to Amend should be denied because Tire Hanger failed to comply with its obligation of first “conferring with the Board” before filing the Motion, as required by 37 C.F.R. § 42.121(a). Opp. 2. We are not inclined to deny the Motion to Amend on this procedural ground. Before filing the Motion, Tire Hanger’s legal representative contacted the Board to seek clarification on whether a conference call was necessary and was advised it was not. Ex. 2008 ¶¶ 1–4. As such, we are satisfied that Tire Hanger fulfilled its obligation of conferring with the Board.

to the claim from which it depends does not mean that the amendment has broadened the scope of the dependent claim from which the limitation has been removed. As such, we are not persuaded by Shinn Fu's argument. Rather, we find that Tire Hanger's amendment does not violate the prohibition on enlarging claim scope.

b. Written Description Support

Shinn Fu argues that Tire Hanger fails to provide written description support for its use of the term "human" in the proposed substitute claims. Opp. 23. According to Shinn Fu, the specification only refers to a "worker" performing the steps of removing and replacing the vehicle's wheel, not a "human." *Id.* In Shinn Fu's view, by using the term "human," rather than "worker," in the substitute claims, Tire Hanger has broadened the claims to include "such embodiments or species as newborns, toddlers, children, disabled people, and decrepit people," for which the specification purportedly lacks written description support. *Id.*

We construe claims based on a reasonable interpretation in light of the specification and prosecution history. Shinn Fu's proposed construction is unreasonable. The specification of the '897 patent speaks expressly in terms of "*individuals* in handling tire/wheel assemblies when mounting and removing them from vehicles." Ex. 1002, 1:41–43 (emphasis added). Likewise, the original claims refer to "a person" and "an individual" in describing removal of the wheel from the vehicle. *Id.* at 8:24–30. Those disclosures provide clear support for use of the term "human" in the substitute claims. Thus, we are not persuaded that Tire Hanger's proposed amendment of the claims lacks written description support.

2. *Burden of Proof—Patentability over Prior Art of Record and Prior Art Otherwise Known to Patent Owner*

We turn now to the merits of whether Tire Hanger has met its burden of establishing patentability of the proposed substitute claims over the prior art. *See Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1307–08 (Fed. Cir. 2015) (affirming the Board’s interpretation of 37 C.F.R. § 42.20(c) as imposing the burden of proving patentability of a proposed substitute claim on the patent owner). In assessing a motion to amend, we must consider “the full record developed on the motion,” including “the combination of [patent owner’s] motion and its reply brief supporting the motion.” *Prolitec, Inc. v. ScentAir Techs., Inc.*, 807 F.3d 1353, 1364–65 (Fed. Cir. 2015). Although not required to prove that the claims are patentable over every piece of prior art known to a skilled artisan, a patent owner is required to explain why the claims are patentable over the prior art of record. *Microsoft*, 789 F.3d at 1307–08 (“[r]equiring the patentee to establish that its substitute claims are patentable over the prior art of record does not run afoul of § 42.121(a)(2)(i)”).

In addition, Tire Hanger’s “duty of candor and good faith to the Office,” per 37 C.F.R. § 42.11, requires that it address not only prior art of record but also any relevant prior art known to it. *Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1350–51 (Fed. Cir. 2016). There is, however, no requirement that a patent owner analyze expressly every individual reference cited during prosecution of the challenged patent, particularly where, as here, there are many different permutations of the cited prior art. A patent owner meets its duty of candor and good faith by grouping prior art references together according to their particular teachings without having to

make a presentation on each and every reference giving rise to that same teaching.

With that in mind, we address first Shinn Fu’s opposition to the Motion to Amend for allegedly failing to address the relevant prior art known to Tire Hanger. Opp. 10–12. In particular, Shinn Fu faults Tire Hanger for failing to discuss Conrad, either alone or in combination with Komorita. *Id.* Conrad teaches a wall-mounted utility hook for stowing automobile tires in a garage. Ex. 1010, Fig. 2, 1:11–14. Although the Motion to Amend does not address Conrad *per se*, it does argue patentability over substantially similar prior art, including Marion, Wüthrich, and Anderson, each of which closely resembles Conrad in terms of being a wall-mounted hanger for wheels. Mot. 16–20. Even Shinn Fu recognizes that “Marion and Wuethrich are similar to Conrad.” Opp. 7. Given the duplicative nature of this group of references, we do not fault Tire Hanger for discussing only a representative few in its Motion to Amend. As such, we find that Tire Hanger has complied with its duty of candor in addressing the relevant prior art.¹²

In the end, the focus of the parties’ arguments boils down to three prior art references— Komorita, Heidle, and Conrad. *See* Mot. 9–17; Opp. 11–16; Reply 5–9. At oral argument, Tire Hanger acknowledged that, when viewed individually, the steps recited by substitute claim 6 were known in the art. Tr. 34:4–40:7; *see also id.* at 25:8–17. For instance, Tire Hanger conceded that Komorita teaches all but one of the steps of claim 6, namely,

¹² Tire Hanger did address Conrad specifically in its Reply once Shinn Fu raised it in its Opposition. *See* Reply 5–8.

steps 1, 2, 3a, 4, and 5 (as identified above in annotated claim 6). *Id.* at 34:4–37:12, 38:7–18. As for the missing step, i.e., step 3b, Tire Hanger conceded that other prior art references, such as Conrad, teach hanging a wheel on a support arm by means of a hole in the wheel’s center. *Id.* at 39:4–9, 40:3–7. Nevertheless, the claimed method as a whole is said to be patentable because, according to Tire Hanger, the combination of the recited steps would have run counter to prevailing wisdom at the time of the invention. *Id.* at 38:16–18, 40:19–41:4, 42:1–6.

In particular, Tire Hanger directs our attention to new language added to substitute claim 6, which provides (a) *carrying* the wheel *to* the support arm, and (b) *hanging* the wheel *on* the support arm. Mot. 2–3; Reply 6. Tire Hanger contends that this language distinguishes over the prior art of record, even if the art can be said to suggest holding a wheel on an automotive hoist at about chest height of a person, such as in Komorita. Mot. 13–14; Reply 7. In particular, Tire Hanger contends that a skilled artisan would not have been led to use those known wheel hangers for the purpose of holding a wheel on an automotive hoist because they are all concerned with storing and/or displaying wheels with no mention of where the hanger should be attached.

At the outset, we acknowledge, as does Tire Hanger, the simplicity of the claimed invention—taking a known hanger for a wheel, for example, Conrad, Marion, Anderson, or Wüthrich, and affixing it to an automotive hoist or lift. *See* Tr. 26:14, 42:23–43:2. Relevant to our analysis, however, is the purpose of the claimed method, which entails the removal and replacement of a wheel on an elevated vehicle without requiring the person handling the wheel to bend over. Here, none of the tire/wheel hangers of

either Conrad, Marion, Anderson, or Wüthrich recognize the desire to reduce bending over while handling a heavy object, as required by the claimed method. Instead, they pertain, generally, to hanging a wheel *somewhere* on a wall or rail, but are silent as to where that somewhere might be, let alone a location conducive to avoiding back injury from lifting the wheel. This is not a matter of simply slapping a known wheel hanger on an automotive lift; rather, it is a matter of taking a known structure and utilizing it in a specific manner on a specific structure for a specific purpose. Thus, we are not persuaded that it would have been obvious to a skilled artisan to affix any one of the known wheel hangers of Conrad, Marion, Anderson, or Wüthrich, to an automotive lift in the specific manner (“so that a support arm disposed on the hoist is at about the same height as a wheel of the vehicle”) and for the specific purpose (“remov[ing] the wheel without bending over”), as required by substitute claim 6.

Komorita, on the other hand, presents a different picture because it clearly discloses what is called a “tire hanger” on an automotive lift. Ex. 1004, Abstract, Fig. 29. Even so, Tire Hanger asserts that the claimed method is patentable over Komorita because Komorita “merely teaches *placing* a wheel *in* a cradle” for holding the wheel from below, not “*hanging* the wheel *on* the support arm” or “guiding a hole in the wheel over the support arm,” as required by substitute claim 6. Mot. 13–14; Reply 9; Tr. 30–31. Thus, the question arises as to whether “hanging” a wheel on “a support arm,” per claim 6, is patentably distinct from supporting the wheel from below in a cradle, per Komorita. We conclude it is.

To begin, we previously construed the term “hanging” to mean “to attach or place something so that it is held up *without support from below*.”

See section III.A.2 above. Notwithstanding that Komorita is labeled as a “tire hanger,” it is clear from Komorita that the *structure actually disclosed* is not a hanger but a cradle that supports the wheel *from below*. Ex. 1004 ¶¶ 113, 114, Fig. 29. Thus, given our claim construction, Komorita does not appear to meet the “hanging” limitation of substitute claim 6.

Moreover, the ’897 patent expressly distinguishes the claimed invention from cradle-like structures, such as that of Komorita. Notably, the ’897 patent describes various embodiments of hangers, each of which is “adapted to fit *inside the rim* of the tire/wheel assembly.” Ex. 1002, 6:17–21 (emphasis added). Figure 6 of the ’897 patent depicts one such embodiment with the hanger inside of the tire/wheel assembly. The ’897 patent goes on to state that “other structures may be used” to support a tire/wheel assembly, such as “an arcuate cradle” configured “to receive a tire *therein* . . . to rest the tire *in the cradle*.” *Id.* at 6:22–24 (emphases added). Further, another embodiment of a cradle is described that includes “a plurality of arms . . . adapted to receive and hold a tire *therein*,” and where the tire “rests *in the cradle*.” *Id.* at 6:35–37 (emphases added). A plain reading of the ’897 patent reveals that the hanger structures (*id.* at 6:15–21) are a separate embodiment from the cradle structures (*id.* at 6:22–42) because they are disclosed as “other structures” and because their modes of retaining the tire/wheel assembly are different. The hanger structure allows the tire/wheel assembly to hang *thereon*, and includes a specific structure adapted to fit *inside a hole* in the tire rim. *Id.* at 6:15–21. In contrast, the cradle structure receives a tire *therein*, and comprises a structure adapted to fit *around and below the outside* of the tire. *Id.* at 6:22–42. As such, we find that there is a structural distinction between hangers and cradles.

Although the '897 patent discloses both hangers and cradles, proposed substitute claim 6 is limited explicitly to “*hanging* the wheel *on* the support arm” and “guiding a hole in the wheel over the support arm.” Mot. 1. A skilled artisan would understand, then, that claim 6 does not read on cradles. The structure by which the tire is supported in Komorita is adapted to receive and hold a tire resting therein. As shown in Figure 29, and explained in the accompanying text, the tire in Komorita passes through the rectangular-shaped frame W2 and rests on the support arms W4, W6. Ex. 1004 ¶¶ 113, 114, Fig. 29. This is analogous to the structure described in the '897 patent as a “cradle.” See Ex. 1002, 6:22–42. Accordingly, we are persuaded by Tire Hanger’s argument that, at most, Komorita teaches *cradling* a wheel *in* a frame, not *hanging* a wheel *on* an arm, as required by substitute claim 6. See Mot. 10–11.

Finally, we are not persuaded that a skilled artisan would have been led to modify Komorita with a known tire hanger, such as that of Conrad, Marion, Anderson, or Wüthrich. As shown above (*see* section III.B.2.a.), Komorita comprises a complex frame of tubular pipes configured to accomplish two important functions: (1) open and close upon raising and lowering of the lift, and (2) hold multiple wheels removed from the vehicle, together with associated components such as hub caps, hub nuts, and ornamental pieces. Ex. 1004 ¶¶ 115, 116, Figs. 29, 30. The ability of Komorita’s tire holder to retain multiple vehicle parts and to self-collapse flat with the floor would be lost if the cradle-like structure was replaced with a simple tire hanger. Thus, absent evidence to the contrary, we are not persuaded that a skilled artisan would have contemplated gutting Komorita’s cradle structure in favor of a simpler hanger structure where doing so would

have led to the loss of the very benefits on which Komorita is premised. As such, we are not persuaded that a skilled artisan would have had reason to modify Komorita's tire cradle with the tire hangers of either Conrad, Marion, Wüthrich, or Anderson.

Aside from Komorita, the parties also address whether substitute claims 6–10 are patentable over Heidle in combination with Conrad or other prior art of record. Mot. 9–13; Opp. 5, 8–12, 18; Reply 5, 9. According to Tire Hanger, Heidle teaches neither the sequential “order” of steps recited by claim 6, nor the step of “carrying the wheel *to* the support arm, wherein the human carries the entire weight of the wheel.” Mot 9–10. We agree.

Heidle is focused on ensuring that the technician avoids carrying any weight of the wheel. It does this by utilizing an S-hook and strap configuration that a technician attaches to the wheel and makes taut *before* removing the wheel from the vehicle. Ex. 1003, 2:64–3:2. Once removed, the wheel is “suspended from the hoist” so that the technician “avoids having to drop *or lift the wheel.*” *Id.* at 2:27–30. At oral argument, Shinn Fu acknowledged that, in Heidle, the technician secures the hook to the wheel, as opposed to carrying the wheel to the hook. Tr. 12:9–12. As such, we find that Heidle lacks the claimed “order” of steps, as well as the claimed “carrying” step, of substitute claim 6. And, from an obviousness perspective, we further find that it would not have been obvious to a skilled artisan to modify Heidle in the manner of substitute claim 6 because doing so would have obviated the very benefit of Heidle—avoiding the need to carry the weight of the wheel. Thus, we conclude that substitute claims 6–10 are patentably distinct over any ground based on Heidle.

In sum, we decline to engage in a patchwork effort to arrive at the combination of steps called for by substitute claims 6–10. After considering the parties’ evidence and arguments, we find that the claimed method of taking a known hanger for a tire/wheel assembly and utilizing it on a specific structure (an automotive hoist) in a specific manner (in proximity to the height of a wheel on an elevated vehicle) for a specific purpose (without requiring that a worker bend over) rises to the level of a novel and non-obvious method that distinguishes the substitute claims over the prior art of record. The record before us does not establish persuasively that a skilled artisan would have had reason to diminish the express benefits of the tire holders in Komorita or Heidle by adding one of the known tire hangers of Conrad, Marion, Anderson, or Wüthrich. Absent any justification for modifying Komorita or Heidle, we are persuaded that Tire Hanger has carried its burden of demonstrating the patentability of substitute claim 6.

Proposed substitute claims 7–10 correspond essentially to original claims 2–5, but are rewritten to depend directly from substitute claim 6. Because we conclude above that claim 6 is patentable over the prior art of record, we reach the same conclusion with respect to its dependent claims.

Although the claimed invention is seemingly simple, simplicity is not inimical to patentability. *In re Oetiker*, 977 F. 2d 1443, 1447 (Fed. Cir. 1992); *see also Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1572 (Fed. Cir. 1987) (the patent system is not foreclosed to those who make simple inventions), *cert. denied*, 481 U.S. 1052 (1987). Comparing the prior art of record to the proposed substitute claims, and applying the pertinent legal standards, we are persuaded that claims 6–10, as proposed in the Motion to Amend, are patentable over the prior art of record.

IV. CONCLUSION

We conclude that Shinn Fu has demonstrated, by a preponderance of the evidence, that claims 1–5 of the '897 patent are unpatentable under 35 U.S.C. §§ 102 and/or 103 as follows: the steps of method claims 1 and 4 are anticipated by Heidle; the steps of claims 3 and 5 would have been obvious over Heidle, AAPA, and OSHA; and the steps of claims 1–4 would have been obvious over Komorita, AAPA, and OSHA.

In addition, we conclude that Tire Hanger has demonstrated, by a preponderance of the evidence, that proposed substitute claims 6–10 are patentable over the prior art of record, and, thus, is entitled to entry of the substitute claims. We, therefore, *grant* Tire Hanger's Motion to Amend.

V. ORDER

Accordingly, it is

ORDERED that claims 1–5 of U.S. Patent No. 6,681,897 B2 are held *unpatentable*;

FURTHER ORDERED that Patent Owner's Motion to Amend, proposing to substitute claims 6–10 for original claims 1–5 of U.S. Patent No. 6,681,897 B2, is *granted*;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 318(b), upon expiration of the time for appeal of this decision, or the termination of any such appeal, a certificate shall issue canceling claims 1–5 and incorporating claims 6–10 in U.S. Patent No. 6,681,897 B2; and

FURTHER ORDERED that, because this is a final decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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