

NOTE: This disposition is nonprecedential.

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

ETHICON LLC, CILAG GMBH INTERNATIONAL
Appellants

v.

INTUITIVE SURGICAL, INC.,
Cross-Appellant

2020-1528, 2020-1546

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2018-01703.

Decided: August 23, 2021

BRIAN E. FERGUSON, Weil, Gotshal & Manges LLP, Washington, DC, argued for appellant Ethicon LLC. Appellants Ethicon LLC and Cilag GmbH International also represented by CHRISTOPHER MARANDO, PRIYATA PATEL, CHRISTOPHER PEPE, AUDRA SAWYER; ANISH R. DESAI, ELIZABETH WEISWASSER, New York, NY.

STEVEN KATZ, Fish & Richardson, P.C., Boston, MA, argued for cross-appellant. Also represented by RYAN PATRICK O'CONNOR, JOHN C. PHILLIPS, San Diego, CA.

Before O'MALLEY, CLEVINGER, and STOLL, *Circuit Judges*.
STOLL, *Circuit Judge*.

This is an appeal and cross-appeal from the final written decision of the Patent Trial and Appeal Board in an *inter partes* review of U.S. Patent No. 8,616,431, where the Board held certain claims anticipated, and other claims obvious. Ethicon LLC, the patent owner, asks this court to consider two claim construction disputes. Petitioner Intuitive Surgical, Inc. cross-appeals, seeking review of a factual issue regarding motivation to combine. We adopt the Board's construction of the disputed terms "robotic system" and "tool mounting portion" and thus affirm the Board's anticipation findings. We also determine that the Board's finding of no motivation to combine is not supported by substantial evidence, and reverse the Board's decision as to obviousness.

BACKGROUND

I

The '431 patent relates to a tool mounting device for coupling a surgical tool to a robotic system. One disclosed tool is a surgical stapler, such as an endocutter, which includes two jaw members to deploy staples into soft tissue and a cutting member to cut the tissue as it is stapled. The specification discloses that the robotic system may include a controller and a robotic arm (also referred to as a "manipulator"). The robotic system controls the surgical tool by operably coupling the surgical tool to the robotic arm. Specifically, the "surgical tool 1200 is operably coupled to the manipulator by a tool mounting portion [1300]." '431 patent col. 28 ll. 11–13. Figure 38 illustrates tool mounting portion 1300:

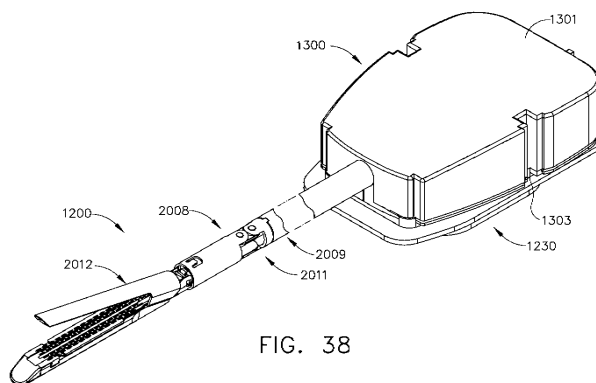


FIG. 38

Id. Fig. 38. Figure 38 also shows “interface 1230[,]” which “mechanically and electrically couples the tool mounting portion 1300 to the manipulator.” *Id.* at col. 28 ll. 13–16.

The '431 patent specification also discloses a “unique and novel transmission arrangement” that enables the surgical tool “to be operably coupled to a . . . robotic system that only has four rotary output bodies, yet obtain[s] the rotary output motions” to control five motions. *Id.* at col. 88 ll. 22–35. The five control motions contemplated include: (1) articulating the end effector about a first articulation axis; (2) articulating the end effector about a second articulation axis; (3) rotating the end effector; (4) closing the anvil; and (5) firing the cutting instrument. In this embodiment, a single rotary output body drives the two different articulation movements (1) and (2).

Independent claim 1 is illustrative and includes the two disputed claim terms at issue in this appeal:

1. A tool mounting device for coupling a surgical end effector configured to selectively perform at least two actions in response to control motions applied thereto to a tool drive assembly of a *robotic system* that is operatively coupled to a control unit

of the *robotic system*, said tool mounting device comprising:

a *tool mounting portion* configured for operable attachment to the tool drive assembly of the robotic system;

an elongated shaft assembly having a proximal end portion operably supported on said *tool mounting portion* and a distal end portion operably interfacing with said surgical end effector to apply said control motions thereto; and

a transmission arrangement operably supported on said *tool mounting portion* such that when said *tool mounting portion* is attached to the tool drive assembly, said transmission arrangement is configured to operably interface with a rotatable driven element of the tool drive assembly to receive a rotary output motion therefrom, said transmission arrangement communicating with the control unit of the robotic system and being responsive to actuation motions therefrom to move between first and second positions such that when said transmission arrangement is in said first position, an application of said rotary output motion thereto by said rotatable driven element of the tool drive assembly causes a first one of said control motions to be applied to a portion of said surgical end effector through said elongated shaft assembly and when said transmission arrangement is in said second position, said application of said rotary output motion thereto by said rotatable driven element of the tool drive assembly causes a second one of said control motions to be applied to another portion of said surgical end effector through said elongated shaft assembly.

Id. at col. 91 ll. 2–35 (emphases added to disputed limitations).

II

Tierney¹ is the primary prior art reference in the IPR. Like the challenged patent, Tierney is directed to a robotic surgical system where a number of different tool types can be coupled to a robotic manipulator. As illustrated by Figure 6 below, however, Tierney comprises four rotary drive elements 118 that control only four motions of an end effector:

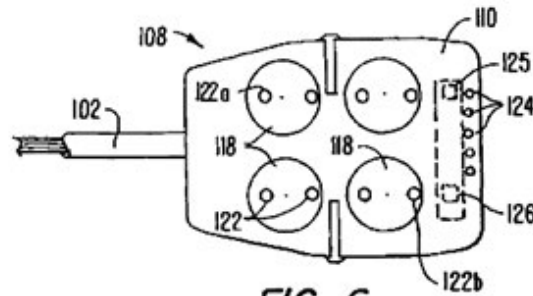


FIG. 6.

Tierney Fig. 6. Particularly, Tierney discloses control of the following movements: (1) articulation about a first axis; (2) articulation about a second axis; (3) actuation of the two-element end effector; and (4) rotation about an axis. *Id.* at col. 9 ll. 24–32.

Whitman² and Timm³ are secondary prior art references asserted in the IPR. Whitman discloses a powered surgical stapler with drivers to drive the movement of the surgical device, but adds a “function selector module,” or a shifter, that is actuatable “between four different

¹ U.S. Patent No. 7,542,320.

² U.S. Pat. App. Pub. No. 2009/0101692.

³ U.S. Pat. App. Pub. No. 2008/0308601.

functional positions.” Whitman ¶ 76. In other words, Whitman discloses a shifter that allows a single rotary output body to control more than one motion. Whitman discloses using this shifter to help control the following motions with just two driving bodies: (1) rotation about an axis; (2) articulation about a single axis; (3) opening and closing of the jaws of the device; and (4) cutting and stapling. *Id.* ¶¶ 79–82.

Timm discloses a surgical stapling and cutting instrument with at least the following motion controls: (1) articulation about a first axis; (2) articulation about a second axis; (3) rotation about an axis, *id.*; (4) clamping; and (5) stapling. Timm ¶¶ 135–37. Timm, however, does not disclose a robotic surgical system.

III

Intuitive filed an IPR petition challenging claims 1–7, 10–14, 16–20, and 23–26 of the ’431 patent on four grounds. *Intuitive Surgical, Inc. v. Ethicon LLC*, No. IPR2018-01703, Paper 2, at 9 (P.T.A.B. Sept. 11, 2018) (*Petition*). Ground 1 asserted that claims 1–6 and 10–13 would have been obvious over Tierney in view of Whitman. Ground 2 asserted that claims 7, 14, 16–20, and 23–26 would have been obvious over Tierney in view of Whitman and further in view of Zemlok.⁴ Ground 3 asserted that claims 1, 2, 6, and 10–13 are anticipated by Whitman. Ground 4 asserted that claim 11 would have been obvious over Tierney in view of Whitman and further in view of Timm. The Board instituted review on all grounds. *Intuitive Surgical, Inc. v. Ethicon LLC*, No. IPR2018-01703, 2019 WL 764067, at *1 (Feb. 19, 2019) (*Institution Decision*).

The Board ultimately determined that Intuitive had proven by a preponderance of the evidence that claims 1, 2, 6, and 10–13 of the ’431 patent were anticipated by

⁴ U.S. Pat. App. Pub. No. 2008/0251568.

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Whitman (ground 3), but that Intuitive had failed to prove that the remainder of the claims would have been obvious over any of the proposed combinations. *Intuitive Surgical, Inc. v. Ethicon LLC*, No. IPR2018-01703, 2020 WL 813856, at *1 (Feb. 18, 2020) (*Final Decision*).

Ethicon appeals and Intuitive cross-appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

I

On appeal, Ethicon asserts that the Board erred in finding that Whitman anticipates claims 1, 2, 6, and 10–13 because it erred in its construction of either of two claim terms: (1) “tool mounting portion”; and (2) “robotic system.” We address each argument in turn below.

Claim construction is ultimately a question of law that this court reviews de novo. *Knowles Elecs. LLC v. Cirrus Logic, Inc.*, 883 F.3d 1358, 1361–62 (Fed. Cir. 2018). While we review constructions based on the claim language, the specification, and the prosecution history de novo, we review the Board’s subsidiary factual findings regarding extrinsic evidence for substantial evidence. *Personalized Media Commc’ns, LLC v. Apple Inc.*, 952 F.3d 1336, 1339–40 (Fed. Cir. 2020). The Board applied the broadest reasonable interpretation standard, under which a claim construction “must be reasonable in light of the specification, prosecution history, and the understanding of one skilled in the art.” *Personalized Media*, 952 F.3d at 1340 (citing *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015), *overruled on other grounds by Aqua Prods., Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017) (en banc)).

A

We begin with the Board’s construction of “tool mounting portion.” The Board construed this term to mean a

“structure for operable attachment to the tool drive assembly of a robotic system, and that operably supports an elongated shaft assembly and a transmission arrangement.” *Final Decision*, 2020 WL 813856, at *7. Ethicon asserts that the Board erred in its construction by failing to give any meaning to the term “mounting.” According to Ethicon, the tool mounting portion is the “portion of the tool mounting device that mounts to the robotic system.” Appellant’s Br. 36. Because Ethicon’s proposed construction lacks support in the intrinsic evidence, we decline its request to change the Board’s claim construction.

Looking to the claim term itself, the logical reading of the term “tool mounting portion” requires a mounting portion for a tool. The term “tool” modifies “mounting portion.” The full claim phrase—“a tool mounting portion configured for operable attachment to the tool drive assembly of the robotic system,” ’431 patent col. 91 ll. 8–9—supports this reading. Indeed, the claimed “configured for” language is directed only to supporting the tool drive assembly; it says nothing about mounting to the robotic system. Other limitations in the claim further support this construction. First, claim 1 recites “an elongated shaft assembly having a proximal end portion operably supported on said tool mounting portion” *Id.* at col. 91 ll. 10–11. Next, claim 1 recites “a transmission arrangement operably supported on said tool mounting portion” *Id.* at col. 91 ll. 14–15. Both limitations describe a tool that is supported on the tool mounting portion.

Turning to the specification, Ethicon asserts that it “consistently describes that the tool mounting portion is the portion of the surgical tool that mounts to the robotic system” Appellant’s Br. 39. For example, Ethicon points to the disclosure in the specification that states that “[t]he surgical tool 1200 is operably coupled to the manipulator by a tool mounting portion” ’431 patent col. 28 ll. 11–13; *see also* Oral Arg. at 4:38–5:10, <http://oralarguments.cafc.uscourts.gov/default.aspx?fl=20->

1528_03032021.mp3. We disagree. We discern no clear disclaimer or lexicography in the specification that would limit the “tool mounting portion” to require mounting to the robotic system. The portion of the specification identified by Ethicon is no different than the claim language where the “tool mounting portion” is “configured for operable attachment to the tool drive assembly of the robotic system.” In neither instance is the tool mounting portion described as mounted to the robotic system.

Referring to Figures 35 and 37–48, Ethicon asserts that every embodiment in the specification shows that the tool mounting portion is mounted to and supported by the manipulator of the robotic system. As we have repeatedly held, however, the fact that embodiments (or even every embodiment) in the specification depict a particular arrangement or structure does not require reading that arrangement or structure into the claims. *See Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1330 (Fed. Cir. 2012) (“[I]t is . . . not enough that the only embodiments, or all of the embodiments, contain a particular limitation’ to limit a claim term beyond its ordinary meaning.” (second alteration in original) (quoting *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002))); *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1117 (Fed. Cir. 2004) (“[P]articu- lar embodiments appearing in the written description will not be used to limit claim language that has broader effect.” (first citing *Electro Sci. Indus., Inc. v. Dynamic Details, Inc.*, 307 F.3d 1343, 1349 (Fed. Cir. 2002); and then citing *Laitram Corp. v. NEC Corp.*, 163 F.3d 1342, 1347–48 (Fed. Cir. 1998))); *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (“[T]his court has expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.” (collecting cases)).

Our review of the claim language and specification reveals no support for limiting the “tool mounting portion” claim language to require mounting to the robotic system. Accordingly, we adopt the Board’s construction of “tool mounting portion.”

B

We next turn to the Board’s construction of “robotic system.” The Board construed the term to mean “a system that comprises, *inter alia*, a tool drive assembly and a control unit, and that [] is a self-powered, computer-controlled device that can be programmed to aid in the positioning and manipulation of surgical instruments, enabling the surgeon to carry out more complex tasks.” *Final Decision*, 2020 WL 813856, at *6. Ethicon challenges this construction, asserting that the Board should have construed this term to mean a “system comprising a master controller and a robotic arm slave cart (*i.e.*, a telesurgical system).” Appellant’s Br. 51. Relying on both the plain claim language and extrinsic evidence cited by both parties, we again agree with the Board’s construction.

We turn first to the claim language, which recites “a tool drive assembly of a robotic system that is operably coupled to a control unit of the robotic system” ’431 patent col. 91 ll. 4–6. The Board properly found that the claim language makes clear that the robotic system includes at least a tool drive assembly and a control unit, but does not require a “master controller” or a “robotic slave arm cart.” Thus, the added language in Ethicon’s proposed construction finds no support in the claims themselves.

The specification also supports the Board’s broader construction. While Ethicon is correct that the specification discloses numerous embodiments in which the robotic system includes a master controller and a robotic slave arm cart, the specification also indicates that the robotic system is not limited to such systems. As the Board aptly noted, the specification teaches that other robotic systems may be

used in connection with the invention. For example, the specification states that “a variety of different forms of the tool systems disclosed and claimed herein [may be] effectively employed in connection with other types and forms of robotic systems that supply programmed rotary or other output motions.” *Id.* at col. 35 ll. 1–5. Similarly, the specification states that “[t]hose of ordinary skill in the art will appreciate that various embodiments of the present invention may incorporate a wide variety of alternative robotic structures” *Id.* at col. 27 ll. 49–52.

Finally, the extrinsic evidence presented in this case supports the Board’s construction. We review the Board’s subsidiary factual findings regarding extrinsic evidence for substantial evidence. *Personalized Media*, 952 F.3d at 1339 (citation omitted). The Board relied on an article by Bishoy Morris titled “Robotic Surgery: Applications, Limitations, and Impact on Surgical Education” in construing this term. Ethicon asserts that the Board “erred by relying on extrinsic evidence to impermissibly broaden the scope of the claims.” Appellant’s Br. 59. We disagree. The Board was entitled to look to extrinsic evidence “to assist in the proper understanding of the disputed limitation[.]” *Bell Atl. Network Servs., Inc. v. Covad Commc’ns Grp., Inc.*, 262 F.3d 1258, 1269 (Fed. Cir. 2001) (citation omitted), particularly where both parties presented the Morris article to construe the “robotic system” term.

Moreover, substantial evidence supports the Board’s reading of the Morris article to supply a definition of robotic systems broader than that sought by Ethicon. The Board pointed to the following description of robotic surgical systems in the Morris article:

A surgical robot is a self-powered, computer-controlled device that can be programmed to aid in the positioning and manipulation of surgical instruments, enabling the surgeon to carry out more complex surgical tasks. Systems currently in use are

not intended to act independently from human surgeons or to replace them.

Final Decision, 2020 WL 813856, at *6 (quoting J.A. 1900). Though the Morris article does mention that components of a robotic system may include a master console and a robotic manipulator, it does so only with regard to two specific robotic surgical systems. We see no error in the Board's finding that the broader definition recited above more accurately characterizes the definition of a robotic system as understood by the Morris article. We therefore adopt the Board's construction of "robotic system."

C

Ethicon does not challenge the Board's anticipation findings under the Board's constructions. Because we adopt the Board's constructions for both terms, we affirm the Board's anticipation findings.

II

Turning to Intuitive's cross-appeal, Intuitive challenges the Board's holding that Intuitive failed to demonstrate that claims 1–7, 10–14, 16–20, and 23–26 would have been obvious under 35 U.S.C. § 103. It is undisputed that the combination of Whitman and Tierney teach all the limitations of claim 1 of the '431 patent. Further, Ethicon has not challenged—either before the Board or on appeal—Intuitive's assertion that the prior art teaches each and every limitation of all of the challenged claims. Ethicon's sole argument before the Board was that a person of ordinary skill in the art would not have been motivated to combine the prior art references to arrive at the claimed invention. The Board agreed with Ethicon. On appeal, Intuitive asserts that substantial evidence does not support the Board's finding that one of ordinary skill would not have been motivated to combine Whitman and Tierney in a way that would have satisfied all of the limitations of claim 1.

A claim is invalid for obviousness “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103(a) (2006). Obviousness is a question of law based on underlying factual determinations, including “whether a [person of ordinary skill in the art] would have been motivated to combine the prior art to achieve the claimed invention and whether there would have been a reasonable expectation of success in doing so.” *TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1357 (Fed. Cir. 2019) (alteration in original) (quoting *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016)). We review the Board’s obviousness determination de novo and its underlying factual findings for substantial evidence. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (citing *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013)).

The substantial evidence standard asks “whether a reasonable fact finder could have arrived at the agency’s decision,” and “involves examination of the record as a whole, taking into account evidence that both justifies and detracts from an agency’s decision.” *In re Gartside*, 203 F.3d 1305, 1312 (Fed. Cir. 2000) (first citing *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938); and then citing *Universal Camera Corp. v. NLRB*, 340 U.S. 474, 487–88 (1951)). We determine that a reasonable fact finder could not have arrived at the Board’s decision in light of the prior art and expert testimony in the record.

The Board first found that a person of ordinary skill would not have been motivated to combine Whitman and Tierney to increase the total number of functions that can be performed on the end effector. Although the Board recognized that the combination of Whitman and Tierney would be able to perform more than the four functions disclosed in Tierney, the Board explained that it was unpersuaded that one of ordinary skill would have been

motivated to combine the references because Intuitive failed to identify a surgical instrument known in the art at the time of the invention that performed more than four functions, and thus there would be no need “to obtain a functionality for which there was no use.” *Final Decision*, 2020 WL 813856, at *10 (citation omitted).

As an initial matter, the Board’s finding that Intuitive failed to identify a surgical instrument that performs more than four functions is not supported by substantial evidence. Indeed, the Board’s finding is contrary to prior art of record, Timm, which was presented by Intuitive in its petition and discloses at least five different functions. Specifically, Timm discloses a surgical device that (1) articulates about a Y-axis; (2) articulates about a Z-axis; (3) rotates; (4) clamps; and (5) staples. J.A. 2024 ¶¶ 135–36. Although Intuitive did not directly assert before the Board that Timm discloses these five functions, Intuitive’s explanation of Timm’s two-axis articulation—both in its petition and in Dr. Knodel’s declaration—at least suggested that Timm disclosed a surgical device with five functions. For example, Dr. Knodel explained that Timm discloses the same two-axis articulation joint as the ’431 patent, indicative of two functions—articulating the end effector about a first and second articulation axis. J.A. 1456 ¶ 203. Dr. Knodel continued by explaining that this two-axis joint was preferred because it was desirable for surgical tools to employ a roll-pitch-yaw mechanism, indicative of a third function—rotation. *Id.* ¶ 204. Finally, Dr. Knodel explained that Timm and Whitman are both in the same field of surgical stapling systems, that Timm discloses an end effector, and that Timm discloses a surgical instrument that supports a staple cartridge, suggesting the fourth and fifth functions—clamping and stapling.

Regardless, even without Timm, Intuitive presented evidence that the combination of Tierney and Whitman discloses more than four functions, showing in and of itself that a surgical device with more than four functions is at

least possible. The Board went too far by requiring Intuitive to specifically identify a preexisting surgical device with more than four functions. Indeed, the Board itself recognized—and Intuitive asserted in its petition—that one factor of a successful minimally invasive robotic system is increasing surgical dexterity, a factor that would be aided by increased end effector functionality.

We also determine that substantial evidence does not support the Board's finding that even though Intuitive identified at least six functions disclosed between Whitman and Tierney, it did not provide "evidence that one of ordinary skill in the art would have interpreted the references in the same manner (e.g., that one of ordinary skill in the art would have considered cutting and stapling performed in the same instrument to be two separate functions as opposed to a single 'firing' function)" *Final Decision*, 2020 WL 813856, at *10. As Intuitive explained to the Board, Whitman and Tierney do not disclose the same four functions, and thus there are more than four total functions between the two references regardless of whether cutting and stapling are interpreted as one or two functions. *See Intuitive Surgical, Inc. v. Ethicon LLC*, No. IPR2018-01703, Paper 14, at 10 (P.T.A.B. Jul. 9, 2019) (*Petitioner's Reply*). In particular, Intuitive pointed to using Tierney's disclosure of a dual-axis articulation in place of Whitman's single-axis articulation, resulting at least in the following functions: "roll; clamp; horizontal articulation; vertical articulation; cut; and staple." *Id.* at 12. Thus, even if a skilled artisan were to read cut and staple as a single function, Intuitive still identified five functions to the Board.

Additionally, the Board failed to address other undisputed evidence regarding purported motivations for combining Whitman's shifter with Tierney. Of particular relevance here, Intuitive presented expert evidence to the Board that a skilled artisan would have been motivated to include Whitman's shifter in Tierney's device even if fewer functions were in play. Dr. Knodel explained that it "may

be advantageous to provide a shifter to switch between articulation and stapling” in that using a shifter would prevent one from accidentally changing the articulation during stapling because the articulation function would not be selected during stapling. J.A. 1378 ¶ 54. In other words, “you might still want a shifter because you may want to isolate the functions” and “make sure [that] you cannot fire at the same time you’re articulating . . .” *Intuitive Surgical, Inc. v. Ethicon LLC*, No. IPR2018-01703, Paper 21, at 18–19 (P.T.A.B. Nov. 12, 2019) (*Oral Hearing*). As there was no evidence disputing this expert testimony, the Board erred by not addressing it.

We thus agree with Intuitive that the Board erred in finding that a person of ordinary skill would not have been motivated to use Whitman’s shifter in Tierney because it was unnecessary. Because substantial evidence does not support the Board’s finding that there was no motivation to combine, and because there is no dispute that the combined prior art discloses all of the claim limitations, we reverse the Board’s finding that claims 1–7, 10–14, 16–20, and 23–26 are not unpatentable under 35 U.S.C. § 103.

CONCLUSION

We have considered the parties’ remaining arguments, but we do not find them persuasive. For the foregoing reasons, we affirm the Board’s anticipation findings and reverse the Board’s determination of non-obviousness.

AFFIRMED-IN-PART AND REVERSED-IN-PART

COSTS

No costs.