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Paper 33
Date: September 8, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTUITIVE SURGICAL, INC.,
Petitioner,

v.

P TECH, LLC,
Patent Owner.

IPR2020-00650
Patent 9,149,281 B2

Before SHERIDAN K. SNEDDEN, MICHELLE N. WORMMEESTER, and CYNTHIA M. HARDMAN, *Administrative Patent Judges.*

SNEDDEN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)
Denying Patent Owner's Motion to Exclude
37 C.F.R. § 42.64

I. INTRODUCTION

We have jurisdiction under 35 U.S.C. § 6. We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. Based on the record before us, we conclude that Intuitive Surgical, Inc. ("Petitioner") has demonstrated, by a preponderance of the evidence, that claims 1–20 of U.S. Patent No. 9,149,281 B2 ("the '281 patent," Ex. 1001) are unpatentable. We also deny P Tech, LLC's ("Patent Owner") motion to exclude evidence.

A. Background

Petitioner filed a Petition requesting an *inter partes* review of claims 1–20 of the '281 patent. Paper 2 ("Pet."). Patent Owner filed a Preliminary Response to the Petition. Paper 6. We determined, based on the information presented in the Petition and Preliminary Response, that there was a reasonable likelihood that Petitioner would prevail in showing that at least one of the challenged claims was unpatentable over the cited art. Pursuant to 35 U.S.C. § 314, the Board instituted trial on September 11, 2020. Paper 8 ("Institution Decision" or "Inst. Dec.").

Patent Owner filed a Corrected Response to the Petition (Paper 16, "PO Resp."), Petitioner filed a Reply to Patent Owner's Response (Paper 15, "Reply"), and Patent Owner filed a Sur-reply (Paper 24, "Sur-reply").

Patent Owner filed a Motion to Exclude (Paper 25), Petitioner filed an Opposition to Patent Owner's Motion to Exclude (Paper 26), and Patent Owner filed a Reply to Petitioner's Opposition (Paper 28).

On June 11, 2021, the parties presented arguments at an oral hearing. The transcript of the hearing has been entered into the record. Paper 32 ("Tr.").

B. Real Parties in Interest

Petitioner and Patent Owner each asserts it alone is the real party in interest. Pet. 2; Paper 4, 2.

C. Related Matters

Petitioner has filed a petition for *inter partes* review in IPR2020-00649 for U.S. Patent No. 9,192,395, which is related to the '281 patent. The parties indicate the '281 patent and U.S. Patent No. 9,192,395 have been asserted against Petitioner in Civil Action No. 1:19-cv-525-RGA in the District of Delaware. Pet. 2; Paper 4, 2.

D. The '281 Patent (Ex. 1001)

The '281 patent discloses "[a]n improved apparatus and method of securing body tissue may be performed with a robotic mechanism." Ex. 1001, Abstract. The body tissue may be secured with a fastener such as a suture, staple, or screw. *Id.* at 1:36–37.

Figure 1, reproduced below, shows an "apparatus **30** for use in securing tissue in a patient's body." *Id.* at 4:56–57.

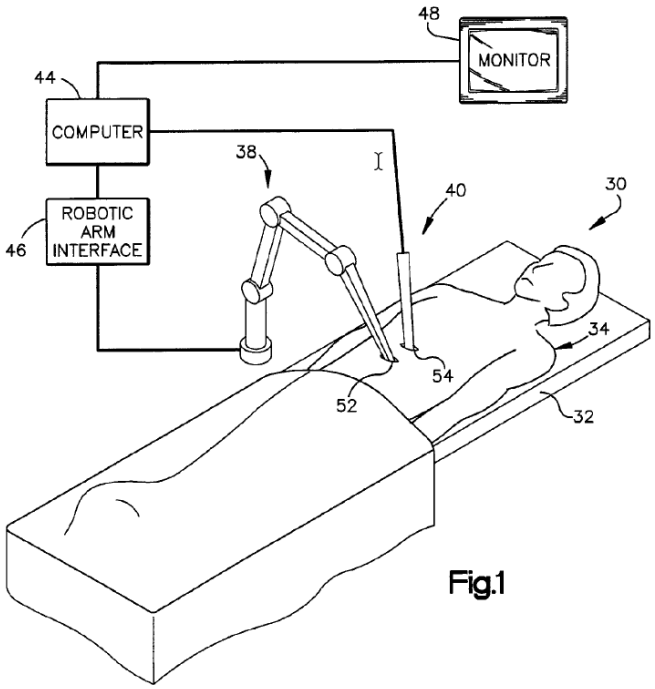


Fig.1

Figure 1 "is a schematic illustration depicting the manner in which a robotic mechanism and an imaging device are positioned relative to a patient's body." *Id.* at 2:39–41. The apparatus includes an operating table **32**, robotic mechanism **38** "to position a tissue securing device, fastener, or other apparatus at a desired location within the patient during performance of a surgical procedure," and imaging device **40**. *Id.* at 5:4–5:7. The robotic mechanism "is guided by automatic controls which include the computer **44** and robotic arm interface **46**," and "may have manually operable controls which provide for interaction between the surgeon and the robotic mechanism." *Id.* at 5:18–28.

Figure 22 of the '281 patent is reproduced below.

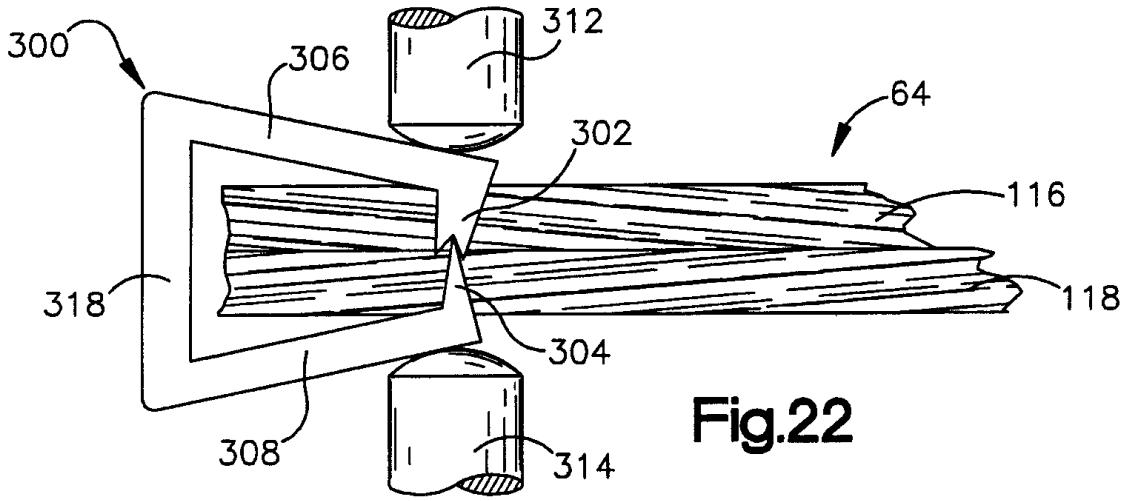


Fig.22

Figure 22 is a schematic illustration depicting the manner in which legs of a staple **306**, **308** are bent and "end portions of the staple are bonded together by the robotic mechanism" of Figure 1. *Id.* at 3:56–59. Specifically, the '281 patent describes the elements of Figure 22 as follows:

> When the staple **300** is utilized to secure the body tissue, end portions **302** and **304** of legs **306** of the staple are moved into engagement (FIG. 22) and bonded together. By bonding the end portions **302** and **304** of the legs **306** and **308** of the staple **300** together, the staple is locked into the tissue **64**. Any tendency for the resilient legs **306** and **308** to spring back to their original positions . . . is prevented by the interconnected the end portions **302** and **304** of the legs.

Id. at 26:65–27:5.

Figure 26 of the ’281 patent is reproduced below.

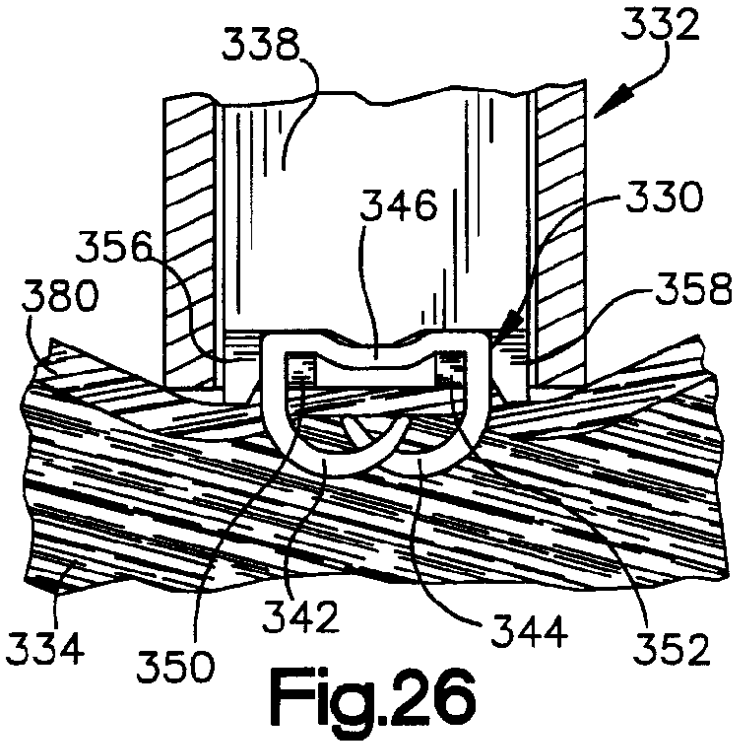


Fig.26

Figure 26 “is a schematic illustration depicting the manner in which [staple **346** is inserted into body tissue and] is bent and legs of the staple are bonded together by operation of the robotic mechanism of FIG. 1.” *Id.* at 4:5–8.

The ’281 patent describes the elements of Figure 26 as follows:

> Continued downward movement of the pusher plate **338** causes force transmitting members or lands **356** and **358** connected to the pusher plate **338** to press against the connector or bight portion **346** of the staple **330** . . . . As the pusher plate **338** continues to be advanced or lowered to the position shown in FIG. 26, the lands or force transmitting members **356** and **358** deflect or bend the legs **342** and **344** to the gripping position illustrated in FIG. 26, to dispose a portion of the body tissue **334** between the legs **342** and **344** and the connector or bight portion **346** of the staple **330** (FIG. 26). . . .

> Once the staple **330** has been bent or deformed to grip the body tissue **334** in the manner illustrated schematically in FIG. 26, the legs **342** and **344** of the staple are bonded together. . . .
>
> Once the legs **342** and **344** of the staple have been bonded together, the staple is released or disengaged from the anvils **350** and **352** by an injector spring **362** having legs **364** and **366** (FIG. 23) which are pressed against the staple **330**. This force separates the staple from the anvils **350** and **352**.

Id. at 29:60–30:46.

In one embodiment, the robotic mechanism **38** is used to secure body tissue with a threaded fastener **440**. *See id.* at Fig. 34. Figure 34 of the '281 patent is reproduced below:

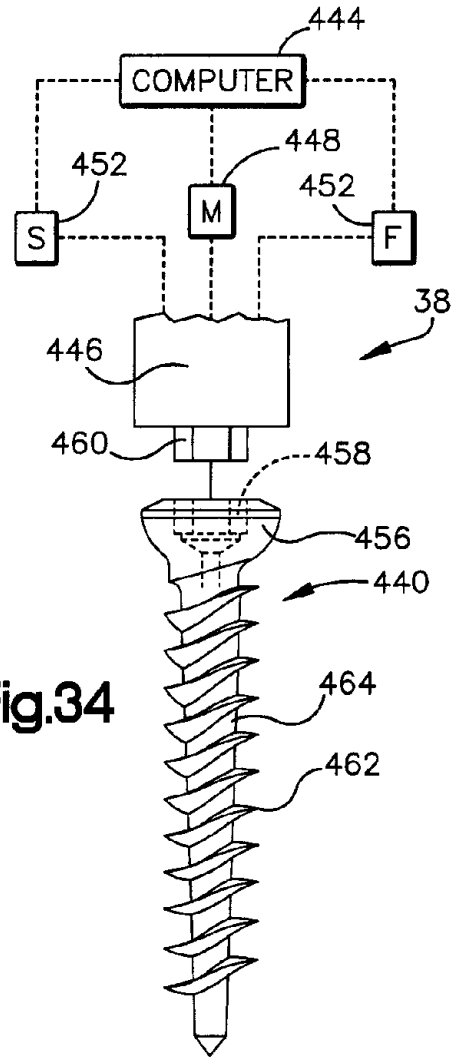


Fig.34

Figure 34 "is a schematic illustration depicting the manner in which the robotic mechanism of FIG. 1 is utilized to position a threaded fastener in body tissue." *Id.* at 4:33–35. The '281 patent discloses position sensor **452** in the context of the embodiment shown in Figure 34. The '281 patent provides the following description of Figure 34:

> The robotic mechanism **38** includes a programmable computer **444** (FIG. 34) which is connected with a fastener drive member **446** by a motor **448**. In addition to the motor **448**, a force measurement assembly **450** is connected with fastener drive member **446** and computer **444**. The force measurement assembly **450** has an output to the computer **444** indicating the

> magnitude of resistance encountered by the fastener drive member **446** to rotation of the fastener **440**. A position sensor **452** is connected with fastener drive member **446** and the computer **444**. The position sensor **452** has an output which is indicative of the position of the fastener drive member **446**. The output from the position sensor **452** indicates the depth or distance to which the threaded fastener is moved into body tissue by operation of the motor **448** to rotate the fastener drive member **446**.
>
> . . .
>
> By utilizing the robotic mechanism **38** to manipulate the fastener **440**, the fastener can be accurately positioned relative to body tissue. The output from the force measurement assembly **450** to a computer **444** enables the force, that is resistance to rotation on the threaded fastener **440**, to be controlled during rotation of the fastener. This prevents the application of excessive force to the body tissue. In addition, the position sensor **452** enables the distance to which the fastener **440** is moved into the body tissue to be accurately controlled.

Id. at 36:38–37:13.

E. Illustrative Claims

Independent claims 1, 10 and 18, reproduced below, are illustrative of the claimed subject matter of the '281 patent.

> 1. A robotic system for engaging a fastener with a body tissue, the system comprising:
>
> a robotic mechanism including an adaptive arm, the robotic mechanism configured to position a fastener relative to the body tissue, the robotic mechanism having first and second force transmitting portions configured to apply *at least one of an axial force and a transverse force relative to the fastener*;
>
> a computer configured to control the robotic mechanism; and
>
> an adaptive arm interface coupled to the adaptive arm and the computer, the adaptive arm interface configured to operate the computer, *wherein a magnitude of the*

at least one axial force and transverse force applied to the fastener is limited by the computer.

10. A robotic system for engaging a fastener with a body tissue, the system comprising:

a robotic mechanism including an adaptive arm, the robotic mechanism configured to position the fastener having first and second legs, the robotic mechanism having first and second force transmitting portions configured to apply *at least one of an axial force and a transverse force to move the first and second legs toward each other*;

a computer configured to control the robotic mechanism and limit a magnitude of the at least one axial force and transverse force; and

an adaptive arm interface coupled to the adaptive arm and the computer, the adaptive arm interface configured to operate the computer,

wherein the first and second legs are configured to engage the fastener with the body tissue.

18. A robotic system for engaging a fastener with first and second body tissue sections, the system comprising:

a robotic mechanism including an adaptive arm, the robotic mechanism configured to position the fastener relative to first and second body tissue sections, the robotic mechanism having first and second force transmitting portions configured to apply *at least one of an axial force and a transverse force to urge the first and second body tissue sections together*;

a computer configured to control the robotic mechanism and limit a magnitude of the at least one axial force and transverse force; and

> an adaptive arm interface coupled to the adaptive arm and the computer, the adaptive arm interface configured to operate the computer.

Ex. 1001, 44:44–46:32 (emphases added).

Claims 2–9 depend from independent claim 1. *Id.* Claims 11–17 depend from independent claim 10. *Id.* Claims 19 and 20 depend from independent claim 18. *Id.*

F. Evidence

Petitioner relies upon information that includes the following.

Ex. 1004, Tierney et al., US 6,331,181 B1, issued Dec. 18, 2001 ("Tierney").

Ex. 1005, McGarry et al., US 5,289,963, issued Mar. 1, 1994 ("McGarry").

Ex. 1007, Hooven, US 5,518,163, issued May 21, 1996 ("Hooven").

Ex. 1009, Madhani et al., US 5,792,135, issued Aug. 11, 1998 ("Madhani").

Ex. 1010, Cooper et al., WO 98/25666, published June 18, 1998 ("Cooper").

Ex. 1020, Gardiner et al., US 6,149,658, issued Nov. 21, 2000 ("Gardiner").

Petitioner relies on two declarations from Dr. Gregory Fischer. Ex. 1003 ("Fischer Decl."); Ex. 1025 ("Fisher Supp. Decl."). Patent Owner relies on two declarations from Dr. Cameron Riviere. Ex. 2001 ("Riviere Decl."); Ex. 2006 ("Riviere Second Decl.").

G. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–20 would have been unpatentable on the following grounds:

Ground	Claim(s) Challenged	35 U.S.C. §[1]	Reference(s)/Basis
1	1–3, 8–12, 16–20	103(a)	Tierney, McGarry
2	4–8, 13–15	103(a)	Tierney, McGarry, Hooven
3	1–20	103(a)	Tierney, Hooven
4	1–20	103(a)	Tierney, McGarry, Gardiner
5	1–20	103(a)	Tierney, Hooven, Gardiner

II. ANALYSIS

A. Legal Principles

A patent may not be obtained "if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains." 35 U.S.C. § 103(a) (2012). An obviousness analysis involves underlying factual inquiries including (1) the scope and content of the prior art; (2) differences between the claimed invention and the prior art; (3) the level of ordinary skill in the art; and (4) where in evidence, objective indicia of nonobviousness, such as commercial success, long-felt but

[1] The parties use a 2002 priority date for the challenged claims. Pet. 4; Paper 12, 26. The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), included revisions to 35 U.S.C. § 103 that became effective after this date. Therefore, we apply the pre-AIA version of 35 U.S.C. § 103.

unsolved needs, and failure of others.[2] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18, 35–36 (1966). An obviousness determination requires finding "a motivation to combine accompanied by a reasonable expectation of achieving what is claimed in the patent-at-issue." *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016).

B. Level of Ordinary Skill in the Art

Factors pertinent to determining the level of ordinary skill in the art include the type of problems encountered in the art and prior art solutions to those problems. *See Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696–97 (Fed. Cir. 1983). The prior art itself may reflect an appropriate skill level. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Patent Owner proposes that a person of ordinary skill in the art:

> would have had the equivalent of a Bachelor's degree or higher in mechanical engineering, electrical engineering, biomedical engineering, or a related field directed towards medical electro-mechanical systems and at least 3 years of experience working with robotic surgical instruments. Experience with robotic surgical instruments could take the place of formal training, as relevant skills may be learned on the job or through practical experience. Alternatively, a higher level of education might make up for less experience.

PO Resp. 20; Riviere Decl. ¶ 18. Petitioner does not dispute this or provide an alternate proposal.

[2] On this record, neither party has pointed us to any evidence of objective indicia.

Based on our review of the '281 patent and the types of problems and solutions described in the '281 patent and cited prior art, we adopt Patent Owner's proposal.

C. Claim Construction

We interpret a claim "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b) (2019). Under this standard, we construe the claim "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." *Id.*

Petitioner contends that two claim terms require construction: "at least one of an axial force and a transverse force" and "first and second force transmitting portions." Pet. 12–15. Patent Owner opposes Petitioner's proposed claim construction for "first and second force transmitting portions." PO Resp. 20–23. For the purposes of this decision, we find it useful to address the parties' proposed constructions for both "at least one of an axial force and a transverse force" and "first and second force transmitting portions." *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co*., 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc*., 200 F.3d 795, 803 (Fed. Cir. 1999))). To the extent further discussion of the meaning of any claim term is necessary to our decision, we provide that discussion below in our analysis of the asserted grounds of unpatentability.

1. "at least one of an axial force and a transverse force"(claims 1, 10 and 18)

Claim 1 recites "at least one of an axial force and a transverse force relative to the fastener." Claim 10 recites "at least one of an axial force and a transverse force to move the first and second legs toward each other." Claim 18 recites "at least one of an axial force and a transverse force to urge the first and second body tissue sections together."

Petitioner contends that "at least one of an axial force and a transverse force" means the conjunctive phrase "at least one of an axial force and at least one of a transverse force." Pet. 12 (citing *SuperGuide Corp. v. DirecTV Enters., Inc*., 358 F.3d 870 (Fed. Cir. 2004)).

In our Decision to Institute, we construed the claims to require that a first and second force transmitting portions must be, in combination, configured to apply an axial force and a transverse force to their target. Inst. Dec. 12–13. We maintain that construction. We note also that the Specification discloses the application of various combinations of forces. For example, Figures 23–26 of the Specification illustrate one embodiment showing force transmitting portions 356, 358 that initially exert an axial force, and then a transverse force once the bight portion 346 of the staple 330 comes into contact with anvils 350 and 352. *See* Section I.D. Figure 22 of the Specification shows another embodiment where it appears force transmitting portions 312, 314 exert a transverse force relative to the stapler, but not an axial force. *Id.* Accordingly, we determine that the phrase "at least one of an axial force and a transverse force" recited in each of claims 1, 10 and 18 means "at least one of an axial force and at least one of a transverse force" and encompasses the embodiments disclosed in the

Specification, in particular, the embodiments depicted in Figure 22 and Figures 23–26. Ex. 1001, 27:30–31:33.

2. "first and second force transmitting portions" (claims 1, 10 and 18)

Under 35 U.S.C. § 112 ¶ 6, "[a]n element in a claim for a combination may be expressed as a means . . . for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." Using the term "means" in a "means for" context creates a rebuttable presumption that 35 U.S.C. § 112 ¶ 6 applies. *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348–1349 (Fed. Cir. 2015) (en banc) ("use of the word 'means' creates a presumption that § 112, ¶ 6 applies"). However, "merely because an element does not include the word 'means' does not automatically prevent that element from being construed as a means-plus-function element." *Id*. at 1348 (quoting *Cole v. Kimberly–Clark Corp*., 102 F.3d 524, 531 (Fed. Cir. 1996)). "The standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." *Id*. at 1349 (quoting *Greenberg v. Ethicon Endo–Surgery, Inc*., 91 F.3d 1580, 1583 (Fed. Cir. 1996)). That determination must be made under the traditional claim construction principles, on an element-by-element basis, and in light of evidence intrinsic and extrinsic to the asserted patents. *See, e.g.*, *Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 702–04 (Fed. Cir. 1998) (stating that "[w]hether certain claim language invokes 35 U.S.C. § 112, ¶ 6 is an exercise in claim construction" and that the presumption that § 112, ¶ 6 does not apply "can be rebutted if the evidence intrinsic to the

patent and any relevant extrinsic evidence so warrant"); *Cole v. Kimberly–Clark Corp*., 102 F.3d 524, 531 (Fed. Cir. 1996) (noting that whether § 112, ¶ 6 is invoked involves an analysis of the "patent and its prosecution history," and consulting a dictionary definition of "perforation" to understand if one of ordinary skill in the art would understand the term to connote structure). "When a claim term lacks the word 'means,' the presumption can be overcome and § 112, para. 6 will apply if the challenger demonstrates that the claim term fails to 'recite sufficiently definite structure' or else recites 'function without reciting sufficient structure for performing that function.'" *Williamson*, 792 F.3d at 1349 (quoting *Watts v. XL Sys., Inc*., 232 F.3d 877, 880 (Fed. Cir. 2000)).

In this case, Petitioner asserts that the phrase "first and second force transmitting portions" invokes pre-AIA 35 U.S.C. § 112, ¶ 6 "because [each term claims] a function without also reciting sufficient structure for performing that function." Pet. 13–14 (citing Fischer Decl. ¶¶ 47–51). In particular, Petitioner contends,

> The term "portion" is a nonce word. [Fischer Decl. ¶¶ 47–51]. The prefix "force transmitting" does not impart any structure; it merely confirms that the structure transmits force. *Id.* The phrase "configured to" is analogous to "for" in a traditional means-plus-function limitation. *E.g*., MPEP, § 2181. And the specification does not provide a structural definition for the claimed "force transmitting portions." *Id*.

Pet. 13.

Patent Owner contends, "A [person of ordinary skill in the art] would recognize that the 'first and second force transmitting portions' of the robotic system of the Challenged Claims of the '281 patent are the structural

portions of the system that apply a force to move the legs of the staple toward each other." PO Resp. 23 (citing Ex. 2008 ¶ 51).

> For example, the '281 patent discloses other force transmitting portions (80, 82) that are "pressed against opposite sides of the suture retainer with sufficient force" to plastically deform a suture retainer. Ex. 1001 at 7:6–15. And the embodiment depicted in FIGs. 21 and 22 includes "force transmitting members 312 and 314" that are moved by the robotic mechanism to deflect the staple legs toward each other. Ex. 1001 at 27:30–438.

Id. at 22. Additionally, in its Sur-reply, Patent Owner contends,

> Had the claim language simply required an "anvil" and a "staple pusher," there would be no question that such terms are not means-plus-function terms. The "first and second force transmitting portions . . ." at issue here are no more or less functional and provide no more or less information about the structure covered by the claims than an "anvil" and a "staple pusher." Indeed, at deposition, Petitioner's expert was unable to explain anything about the structure of an "anvil" or "staple pusher" in a "stapler" without knowing the context and seeing the particular embodiment of the stapler. Ex. 2010 at 54:20 to 55:24.

Sur-reply 2.

Having considered the parties' positions and evidence of record, summarized above, we agree with Patent Owner that, as used in the challenged claims, the term "portion" is not a nonce word that operates as a substitute for "means." More specifically, the term "portion" does not recite function and may be "understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." *See Williamson*, 792 F.3d at 1348. In making that determination, we first note that "the mere fact that the disputed limitations incorporate functional language does not automatically convert the words into means for

performing such functions." *Zeroclick, LLC v. Apple Inc*., 891 F.3d 1003, 1008 (Fed. Cir. 2018). Second, we find that a person of ordinary skill in the art could reasonably discern from the claim language that the term "portion" is not used as an abstraction, but rather as a specific reference to the structural elements of the claimed system that applies a force to move the legs of the fastener toward each other. In other words, the term "portion" is broad, but identifiable as the term used to describe the various structural elements disclosed in the Specification that perform the function of closing the fastener (e.g., anvil and staple pusher).

D. Summary of Cited Prior Art

1. Summary of Tierney (Ex. 1004), Madhani (Ex. 1009), and Cooper (Ex. 1010)

Petitioner's obviousness challenges rely on Tierney, which incorporates by reference Madhani and Cooper. Pet. 4; Ex. 1004, 1:60–66, 8:4–7.

Tierney relates to "surgical tools having improved mechanical and/or data interface capabilities to enhance the safety, accuracy, and speed of minimally invasive and other robotically enhanced surgical procedures." Ex. 1004, 1:12–15. Tierney describes that

> [r]obotic surgery will generally involve the use of multiple robotic arms. One or more of the robotic arms will often support a surgical tool which may be articulated (such as jaws, scissors, graspers, needle holders, microdissectors, staple appliers, tackers, suction/irrigation tools, clip appliers, or the like) or non-articulated (such as cutting blades, cautery probes, irrigators, catheters, suction orifices, or the like).

Id. at 6:20–28. Tierney's

> robotic surgical system **10** generally includes master controller **150** and a robotic arm slave cart **50**. Master controller **150**

> generally includes master controllers (not shown) which are grasped by the surgeon and manipulated in space while the surgeon views the procedure views [sic] a stereo display. The master controllers are manual input devices which preferably move with six degrees of freedom, and which often further have an actuatable handle for actuating tools (for example, for closing grasping saws, applying an electrical potential to an electrode, or the like).

Id. at 6:61–7:4. Figure 2 of Tierney is reproduced below.

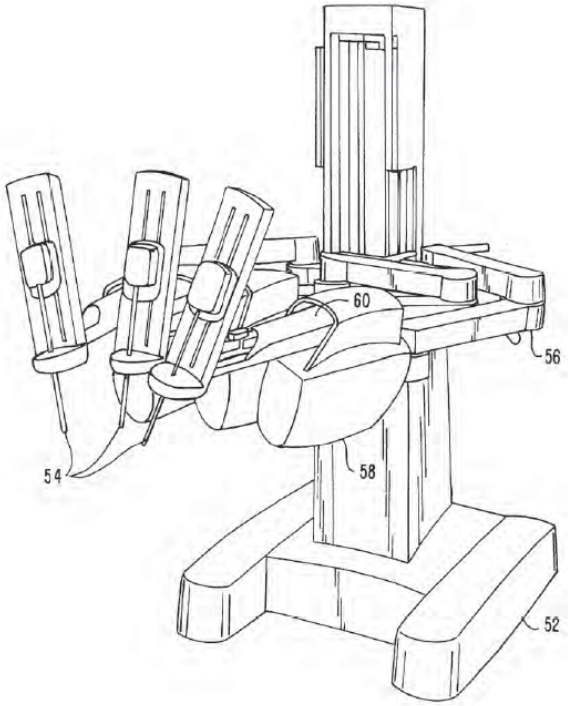


Figure 2 "is a perspective view of a robotic surgical arm cart system [**50**] in which a series of passive set-up joints support robotically actuated manipulators." *Id.* at 5:29–31. The cart "includes a base **52** from which three surgical tools **54** are supported. More specifically, tools **54** are each supported by a series of manually articulatable linkages, generally referred to as set-up joints **56**, and a robotic manipulator **58**." *Id.* at 7:16–21. In the cart, "robotic manipulators **58** preferably include a linkage **62** that constrains movement of tool **54**," and "linkage **62** includes rigid links coupled together

by rotational joints in a parallelogram arrangement so that tool **54** rotates around a point in space **64**." *Id.* at 7:41–48. Manipulator **58** may include a cannula **72**. *Id.* at 8:9–10.

Figure 2A of Tierney is reproduced below:

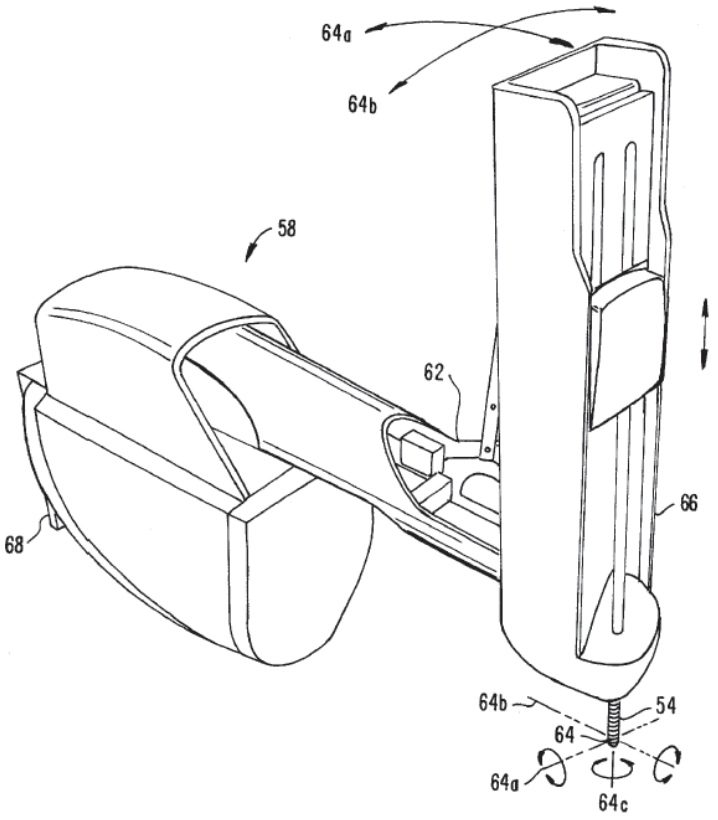


FIG. 2A.

Figure 2A is a perspective view of a robotic surgical manipulator **58** for use in the cart system of Figure 2. Tierney discloses that:

> Linkage **62** of manipulator **58** is driven by a series of motors **70**. These motors actively move linkage **62** in response to commands from a processor. Motors **70** are further coupled to tool **54** so as to rotate the tool about axis **66**, and often to articulate a wrist at the distal end of the tool about at least one, and often two, degrees of freedom. Additionally, motors **70** can be used to actuate an articulatable end effector of the tool for grasping tissues in the jaws of a forceps or the like. Motors **70** may be coupled to at least some of the joints of tool **54** using cables, *as more fully*

> *described in [Madhani], the full disclosure of which is also incorporated herein by reference*. As described in that reference, the manipulator will often include flexible members for transferring motion from the drive components to the surgical tool. For endoscopic procedures, manipulator **58** will often include a cannula **72**. Cannula **72** supports tool **54**, allowing the tool to rotate and move axially through the central bore of the cannula.

Id. at 7:63–8:13 (emphasis added).

Turning to Madhani, Madhani discloses a telesurgery system for laparoscopic surgery that "allows a surgeon at one location to perform surgery on a patient at another location." Ex. 1009, 5:8–10. The system includes an "articulated surgical instrument for minimally invasive surgery which provides a high degree of dexterity, low friction, low inertia and good force reflection." *Id.* at 1:15–19. The instrument is provided with a "unique cable and pulley drive system [that] operates to reduce friction and enhance force reflection" and a "unique wrist mechanism [that] operates to enhance surgical dexterity compared to standard laparoscopic instruments." *Id.* at Abstract. According to Madhani, "laparoscopic surgical instruments generally include a laparoscope for viewing the surgical field, and working tools such as clamps, graspers, scissors, staplers, and needle holders." *Id.* at 1:51–55.

Figure 3 of Madhani is reproduced below.

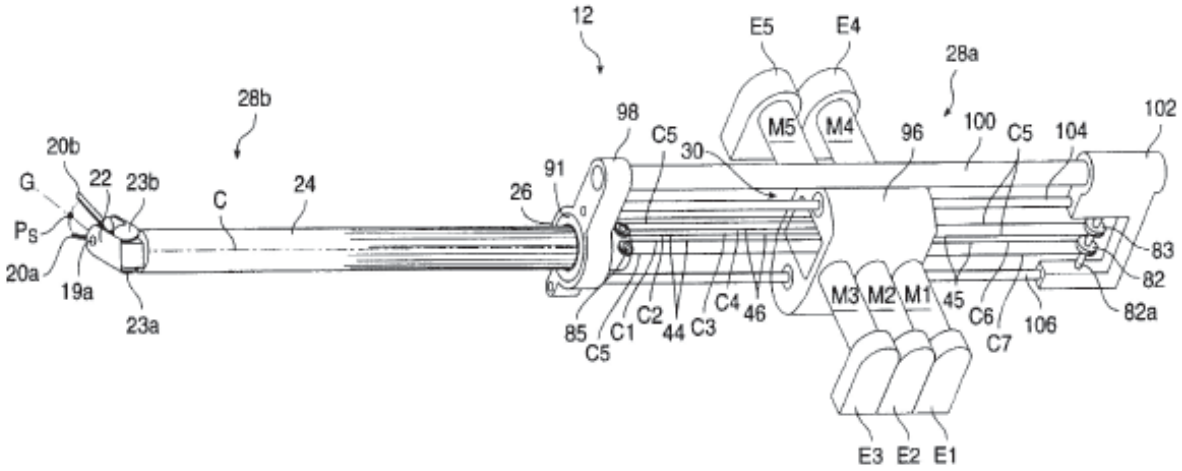


FIG. 3

Figure 3 is a perspective view of a force-reflecting surgical instrument **12** disclosed in Madhani. *Id.* at 48–49. Instrument **12** is controlled by a computer and a master device that is manipulated by a surgeon at a remote location. *Id.* at 5:13–16. Madhani's system "has two opposed pivoting jaws and a pivoting wrist member [**22**]," and "is adapted to be coupled via a servomechanism to a master control operated by a surgeon." *Id.* at 3:26–32. Instrument **12** is driven by drive motors M1, M2, M3, M4, M5, M6 and M7 (Figs. 3, 4, 6 and 7a-b) in conjunction with a series of cables and pulleys. *Id.* at 5:16–19.

Madhani discloses that

> Once instrument **12** is in the proper position, . . . the surgeon can perform the necessary surgical procedures on the patient with instrument **12**. Forces experienced by instrument **12** are reflected back to the surgeon by master device **150** [not shown]. The reflected forces may be scaled up in order to allow the surgeon to better "feel" the surgical procedures. As a result, the surgeon can feel instrument **12** engaging types of tissue that do not provide much resistance. In addition, movements of master device **150** [not shown] relative to instrument **12** may be scaled

> down so that the precision and dexterity of instrument 12 can be increased.

Id. at 7:20–32.

Madhani discloses that

> Drive motors **M1**, **M2**, **M3**, **M4** and **M5** are mounted to sliding bracket **96** and drive respective cables **C1**[,] **C2**, **C3**[,] **C4** and **C5**. Sliding bracket **96** supports each of the drive motors. During operation sliding bracket **96** is connected to positioning mechanism **14** by mounting bracket **36**. When instrument **12** is mounted on positioning mechanism **14**, the drive motors operate to move distal portion **28*b*** relative to sliding bracket **96**. Sliding bracket **96** thus forms the support bracket of the surgical instrument. Each drive motor **M1**, **M2**, **M3**, **M4** and **M5** includes a respective encoder **E1**, **E2**, **E3**, **E4** and **E5** for providing computer **11** with the rotational position of their respective drive shafts.

Id. at 8:28–39.

Tierney incorporates Cooper, citing Cooper's disclosure of a Multicomponent Telepresence System and methods that improve the safety and speed with which robotic surgical tools can be removed and replaced during a surgical procedure. Ex. 1004, 1:60–2:11. Specifically, Cooper "relates to robotically-assisted surgical manipulators and more particularly to systems and methods for performing telerobotic surgical procedures on a patient while providing the surgeon with the sensation of physical presence at the surgical site." Ex. 1010, 1:17–21. Cooper describes design goals for its invention to include "easy sterilization so that they can be reused after the components have been contaminated during an operation," and "to minimize instrument exchange time during the surgical procedure." *Id.* at 3:4–8.

2. Summary of McGarry (Ex. 1005)

McGarry "relates to a staple applier particularly adapted for attaching surgical mesh to body tissue to reinforce a surgical repair of the body tissue, as in hernia repair" (Ex. 1005, 1:10–13), and is "particularly adapted for endoscopic application of surgical staples to attach surgical mesh to body tissue during hernia repair" (*id.* at 8:47–50). Figure 21 is reproduced below, in an annotated version supplied by Petitioner. Pet. 22.

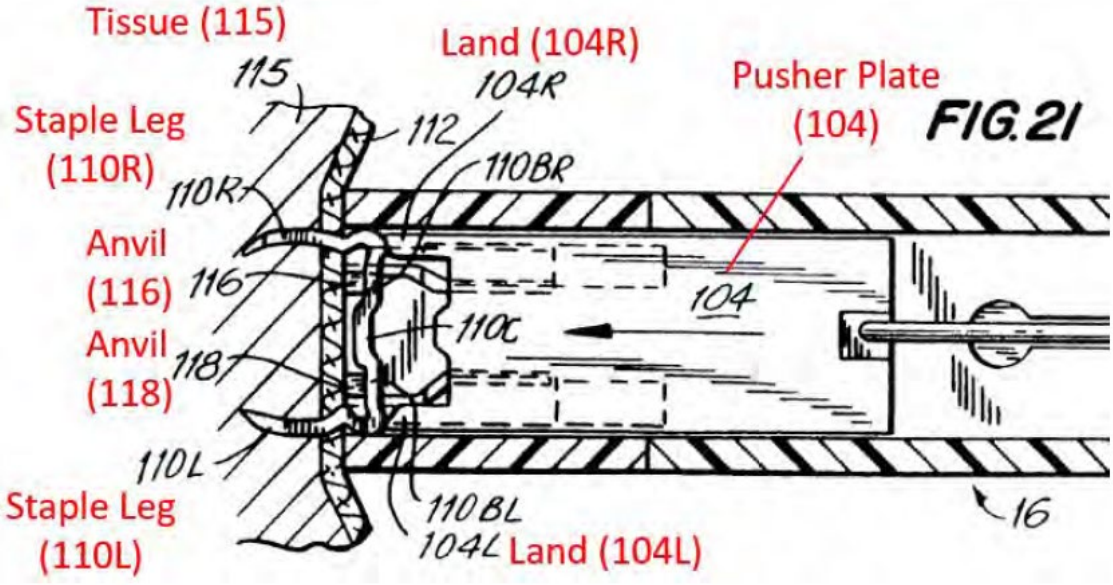


Figure 21 illustrates a view of a staple advancing and closing system, where "the pusher plate 104 has now advanced distally sufficient to cause the staple to penetrate the surgical mesh 112 and the body tissue 115," and "anvil members 116 and 118 are positioned for engagement by the straight sections of bridge portions 110BR and 110BL of the back rib of the staple 110L, such that engagement of the staple by pusher plate 104 with the arcuate end corner portions of the staple as shown will cause the staple to deform." Ex. 1005, 17:28–60.

3. Summary of Hooven (Ex. 1007)

Hooven discloses an endoscopic stapling and cutting instrument, interconnected with a controller and a video display monitor. Ex. 1007, 4:6–8. Hooven's device "will place down plural parallel rows of staples with the staples offset in the rows. The instrument will also operate a knife to pass between two adjacent parallel rows of staples. Such an instrument staples tissue together and cuts that tissue between the stapled portions." *Id.* at 4:34–40. Figures 1 and 3, annotated by Petitioner and reproduced below, illustrate several components of Hooven's system.

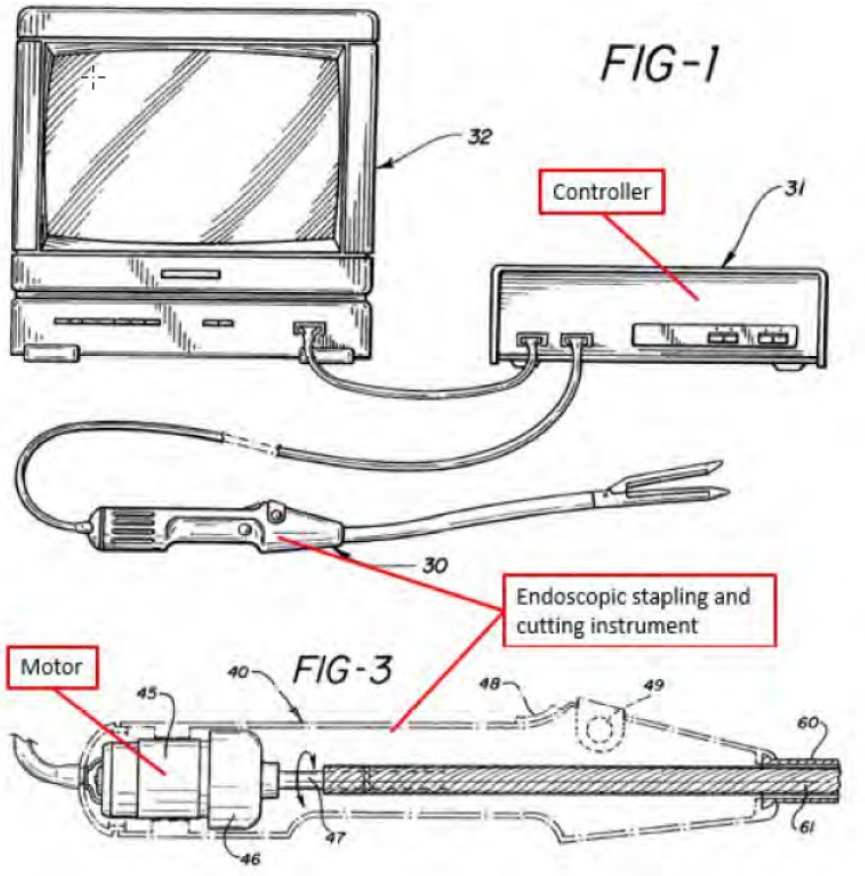


Figure 1 "is a schematic view of an endoscopic surgical system of the present invention interconnected with a microprocessor/controller and a video display screen." *Id.* at 3:14–16. Figure 3 "is a longitudinal cross-

sectional view of the handle portion of one embodiment of an endoscopic stapling and cutting system of the present invention." *Id.* at 3:30–31.

4. Summary of Gardiner (Ex. 1020)

Gardiner relates to "arterial replacement or bypass grafting by minimally invasive (or endoscopic) peripheral vascular and cardiovascular surgery." Ex. 1020, 1:23–26. Gardiner introduces "a sutured staple surgical fastener for fastening together an artery and a graft, and methods and apparatus for applying the fastener," which "may be applied by a remotely controlled robotic mechanism." *Id.* at 5:54–66. Figure 4A, reproduced below, illustrates an embodiment of the Gardiner invention.

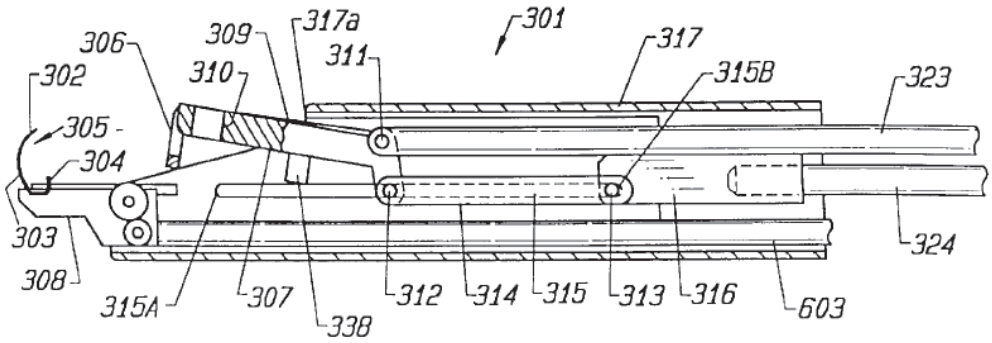


Figure 4A shows staple 305, needle removal member 307, needle holder 308, and staple forming member 309. *Id.* at 13:37–46.

E. Petitioner's Asserted Grounds of Unpatentability

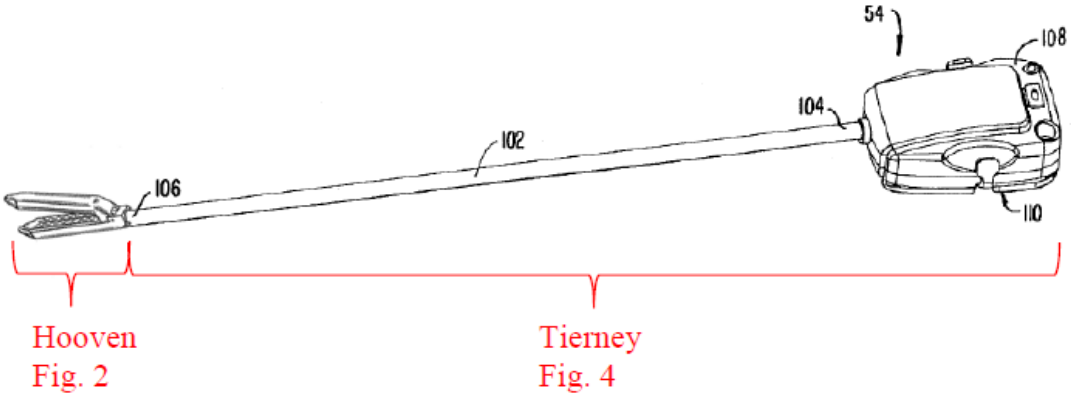
1. Obviousness of Claims 1–20 over the Combination of Tierney and Hooven

a. Petitioner's Contentions

Petitioner contends claims 1–20 would have been obvious over the combination of Tierney and Hooven. Pet. 49–62. In support of its contention, Petitioner provides a detailed discussion explaining how each claim limitation is disclosed in the combination of Tierney and Hooven. *Id.*

For example, Petitioner contends that it would have been obvious to modify Hooven's stapler for use with Tierney's robotic system in order to achieve a robotic mechanism having first and second force transmitting portions configured to apply at least one of an axial force and a transverse force relative to the fastener as required by claim 1. *Id.* at 61–65 (citing Fischer Decl. ¶¶ 155–161).

To support its contentions, Petitioner directs us to the figure below, which is a composite image of Tierney, Figure 4 and Hooven, Figure 2.



Pet. 63. With reference to the above figure, Petitioner contends:

> In this tool, the forces required to operate Hooven's end effector are either provided by Hooven's motor 45, which would be incorporated into the proximal housing 108 of Tierney's tool 54, or by the driven discs 118 of Tierney's robotic system, which are driven by Tierney's motors 70. In either case, the forces used to operate the tool would be controlled by Tierney's processor 152.

Id. (citing Fischer Decl. ¶¶ 155-158).

Petitioner further contends:

> A [person of ordinary skill in the art] would have been . . . motivated to combine Tierney and Hooven because, like Tierney, one of Hooven's objectives is "allowing for a high degree of control in the manipulation of the active part or business head of an endoscopic instrument." Hooven, 2:24-27. Given those overlapping concerns, a POSITA would have been motivated to

> implement the computer-control features of Hooven's stapler into Tierney's robotic system to obtain a high degree of control over the resulting robotic surgical stapler. Fischer, ¶158. A POSITA would have also seen the clear safety benefits (*e.g.,* preventing the stapler from firing when no staple cartridge is present or too much tissue is clamped between the jaws) of such a routine and common-sense modification. Fischer, ¶158; *KSR*, 550 U.S. at 424.
>
> Moreover, a [person of ordinary skill in the art] would have reasonably expected the combination of Tierney and Hooven to be successful. Fischer, ¶¶159-161. Indeed, it would have been merely the application of a known technique (use of a surgical stapler end effector) with a known system (Tierney's surgical robot) in a common field of endeavor (the development of surgical instruments). *Id*.; *KSR*, 550 U.S. at 417. As shown in Anderson and Tovey, the adaptation of a handheld instrument, like Hooven's stapler, for use with a robotic system, like Tierney's, (*e.g*., by incorporating the components inside Hooven's tool into Tierney's proximal housing 108 and shaft 102 and, if desired, replacing Hooven's motor 45 with one or more of Tierney's rotary driven discs) was well within the level of skill in the art. *Id*.; Anderson ([Ex. 1019]), 1:52-2:55, 3:44-61, 7:6-25, and Tovey ([Ex. 1018]), 3:37-48. And, in the Tierney/Hooven robotic system, Tierney's robot and Hooven's stapler end effector both continue to work as they always have. Fischer, ¶¶159-161. Thus, each element merely performs the same predictable function as it does separately, without significantly altering or hindering the functions performed by Hooven's stapler (stapling) or Tierney's robotic system (positioning the tool, providing mechanical controls to the tool, and receiving feedback signals from the tool). Fischer, ¶161.

b. Patent Owner's Contentions

Patent Owner responds to Petitioner's challenge with two arguments addressing the elements of independent claims 1 and 10. PO Resp. 49–62; Sur-reply 16–20. First, Patent Owner contends that a person of ordinary skill in the art would not have been motivated to combine Tierney and

Hooven to achieve Petitioner's proposed "Tierney/Hooven Robotic System" because the combination would render Tierney's device inoperable. PO Resp. 49–59. Second, specific to dependent claims 8 and 16, Patent Owner argues that Hooven fails to disclose a position sensor configured to indicate a distance moved by the staple. *Id.* at 59–62 (citing Ex. 1001 at 45:6–8; 46:6–8). Patent Owner contends that Hooven's contact 87 is not a "position sensor" that indicates that staples have moved the distance from a first unfired position to a second fired position. *Id.* Patent Owner contends also that "the Petition fails to provide a persuasive motivation for why a POSITA would have sought to replace contact 87 with an encoder to sense staple position when Hooven's staples all move the same distance." *Id.* at 61.

We address Patent Owner's arguments in more detail herein below.

c. Analysis

(1) Independent claims 1, 10, and 18

The parties dispute whether a person of ordinary skill in the art would have combined Tierney with Hooven in order to achieve a robotic stapler covered by any of claims 1–20 of the '281 patent. Pet. 61–75; PO Resp. 49–62; Reply 19–24; Sur-reply 16–20. More specifically, the dispute between the parties concerns whether a person of ordinary skill in the art would have reasonably expected the Tierney/Hooven combination to be successful. Pet. 61–75; PO Resp. 49–62; Reply 19–24; Sur-reply 16–20.

Having considered the parties' positions and evidence of record, we find Petitioner's rationales regarding why a person of ordinary skill in the art would have been motivated to combine Tierney's and Hooven's teachings with a reasonable expectation of success to be reasonable and supported by the cited evidence and expert testimony. In particular, we determine that

adapting a surgical instrument like Hooven's stapler for use with a robotic system like Tierney's was well within the level of ordinary skill in the art, and merely the application of a known technique (e.g., adapting manually controlled components for use with a robotic system) with known devices (Hooven's stapler and Tierney's surgical robot), where each device in the combined system performs the same predictable function as it does separately. Fischer Decl. ¶¶ 97, 140 (discussing prior art examples of converting handheld tools for robotic surgical systems); *see also* Pet. 40–41, 61–62; *KSR*, 500 U.S. at 417 ("[A] court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions."). To that point, we credit Dr. Fischer's testimony that a person of ordinary skill in the art would have known how to make mechanical linkages between Tierney's driven elements and Hooven's moveable components, e.g., by using gears. Fischer Decl. ¶¶ 97, 99, 140–42; *see also* Pet. 40–41, 61–62. Nevertheless, Patent Owner raises several arguments regarding a lack of motivation to combine and reasonable expectation of success. We address each argument below.

Patent Owner recognizes that Petitioner provides two options for combining Tierney and Hooven, which it designates as Options (1) and (2). These options vary with respect to the motor used to provide the forces to operate the end effector. Fischer Decl. ¶ 156; PO Resp. 49–59. In Option (1), Hooven's motor is incorporated into Tierney's housing and shaft. Fischer Decl. ¶ 159; PO Resp. 49; Pet. 62; Riviere Second Decl. ¶ 198. In

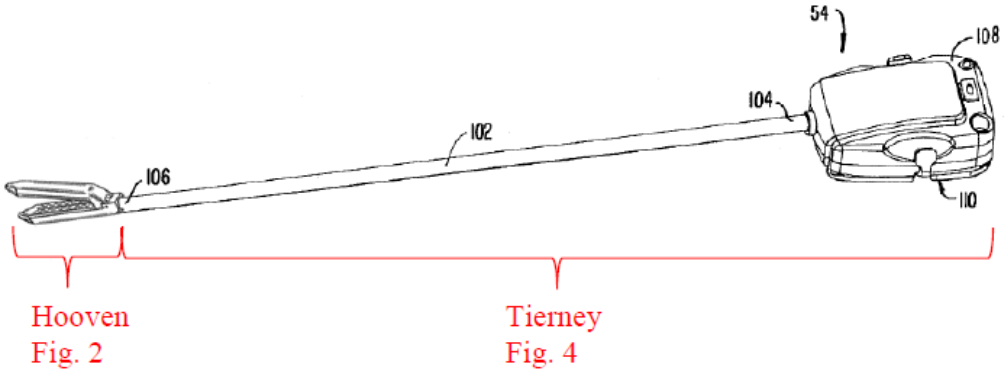
Option (2), Tierney's motor is used.[3] Fischer Decl. ¶¶ 137, 140, 141; PO Resp. 49, 52–53; Pet. 62; Riviere Second Decl. ¶ 199.

Patent Owner argues that "Option (1) fails" because it moves Hooven's motor into Tierney's housing, but a person of ordinary skill in the art "would have known to avoid incorporating a motor into the housing of Tierney's sterilizable tool because sterilization occurs at high temperatures that would render the motor inoperable for re-use of the tool." PO Resp. 51 (citing Ex. 1004, 10:25–32); Riviere Second Decl. ¶ 224. We find this argument unavailing. Tierney indicates that surgical tools "will *generally* be sterile structures," and do not require sterilization using high temperatures. Ex. 1004, 10:25–32 (emphasis added). Indeed, the record indicates that surgical tools can be disposable, and that motors can be sterilized using means other than high temperatures. *See* Fischer Supp. Decl. ¶¶ 92–94; Ex. 1033, 1:12–28 (describing sterilization of articles using gaseous plasmas); Ex. 1007, 2:32–34 (indicating that components may be disposable).

Patent Owner also argues a lack of motivation to combine Tierney and Hooven because the combination would change the "basic principles under which Tierney was designed to operate." PO Resp. 54. First, Patent Owner argues that the tools in Tierney's system "have a rigid shaft," but Hooven's hand-held stapler has an "axially flexible shaft," which could cause unexpected and unsafe stapler movement. *Id.* at 54 (citing Riviere Second Decl. ¶¶ 146, 209–212). This argument is unavailing, because as shown in

[3] Because we find that Petitioner establishes unpatentability by a preponderance of the evidence based on "Option (1)," we need not and do not reach the parties' arguments regarding "Option (2)."

Petitioner's composite figure reproduced below, the proposed combination uses Tierney's shaft:



Pet. 63. Petitioner's composite figure above shows Hooven's stapler attached to Tierney's rigid shaft 102. Pet. 63; Ex. 1004, 9:8–10 (describing rigid shaft 102); *see also* Fischer Decl. ¶ 155 (presenting same composite figure); Reply 20–21 (confirming that the proposed combination uses Tierney's rigid shaft); Fischer Supp. Decl. ¶¶ 95–97 (explaining same); Riviere Second Decl. ¶ 211 (acknowledging that under Petitioner's arguments, use of Tierney's rigid shaft is possible, and thus acknowledging that the proposed combination does not require use of Hooven's flexible shaft).

Patent Owner also argues that ordinarily skilled artisans would not have combined Tierney and Hooven because "wrist articulation, which is important for the safe operation of a robotic stapler, is completely missing" in the combination. PO Resp. 55; *see also* Sur-reply 15.[4] Patent Owner

[4] In Sur-reply, Patent Owner raises a new argument that neither of Petitioner's designs (Options 1 or 2) "provide[s] for rotation of the linear stapler." *See* Sur-reply 15–17. This argument comes too late. Petitioner presented the combination of Tierney and Hooven in the Petition, and thus Patent Owner could have, and should have, raised this argument in its Patent Owner Response. 37 C.F.R. § 42.23(b).

argues that "[r]emoving the hand-held feature of Hooven's stapler and Tierney/Madhani's cables and pulleys eliminates both Hooven's desired high degree of control in manipulating the linear stapler by hand and Tierney's dexterity resulting from wrist articulation while increasing friction, inertia, complexity, weight and size contrary to the express teachings of Tierney/Madhani." PO Resp. 55 (citing, e.g., Riviere Second Decl. ¶¶ 213–217). Patent Owner contends that an ordinarily skilled artisan "would not have had a reasonable expectation of success knowing that a surgeon would be unable to properly position the linear stapler in many applications without Hooven's hand-held feature or Tierney/Madhani's wrist articulation." *Id.* at 55–56.

Patent Owner's argument is unavailing. First, although Tierney contemplates use of staplers with its system, we see nothing in Tierney that requires use of a wrist with a stapler. *See, e.g.*, Ex. 1004, 7:65–8:1 (teaching that the system "often" "articulate[s] a wrist"); dependent claims 5, 8, 16, 25, 28 (specifying, in contrast to the broader independent claims from which they depend, that the end effector is coupled to the probe with a wrist). Second, the prior art shows that a wrist is not required for a robotic stapler. *See, e.g.*, Ex. 1018, Figs. 3–8; Fischer Supp. Decl. ¶ 98 (noting that although a wrist may provide benefits, the prior art shows that it is not required for a robotic stapler).[5] Indeed, consistent with the prior art teaching robotic staplers without a wrist, challenged claims 1 and 4 do not recite a wrist. Finally, although Dr. Riviere testifies that "the surgeon would be unable to

[5] We need not and do not address either Petitioner's alternative argument that an ordinarily skilled artisan could have used Hooven's flexible shaft as "an alternative to a wrist," or Patent Owner's responses to this argument. Reply 21; PO Resp. 64–65.

properly position the linear stapler in many applications" without wrist articulation, he is not a surgeon (*see* Riviere Decl. ¶ 2), and does not cite any evidence to corroborate this opinion. *See In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.").

Patent Owner also argues that there is "no disclosure in Tierney/Madhani that would have motivated a [person of ordinary skill in the art] to use any drive system other than a cable and pulley drive system," which is advantageous for rigid robotic tools. PO Resp. 57 (citing Riviere Second Decl. ¶¶ 219–220); *see also id.* (arguing that "[r]emoving the cables and pulleys . . . would have been inconsistent with the objects of the invention and the principles of operation of Tierney/Madhani"). This argument is unavailing because it mischaracterizes Tierney. Tierney is not limited to use of Madhani's cable system, but instead expressly discloses that mechanical linkages can be made via "cabling arrangements, drive chains or belts, hydraulic drive systems, gear trains, or the like."[6] Ex. 1005, 9:31–45; Fischer Supp. Decl. ¶ 104.

Additionally, Patent Owner has not established that the proposed combination would have resulted in a loss of control of Hooven's stapler. Sur-reply 21–22. For example, Dr. Fischer explains that the robotic arm

[6] Patent Owner and Dr. Riviere appear to suggest that Tierney only discloses cable and pulley drive systems because Tierney's Fig. 4B, which Tierney identifies as an "alternative drive system" (Ex. 1004, 9:44–45), also uses cables and pulleys. *See, e.g.*, PO Resp. 47; Riviere Second Decl. ¶ 213 (citing Ex. 1004, 9:30–45). This argument is unavailing. Tierney unambiguously discloses "gear trains" among a number of "alternative drive systems." Ex. 1004, 9:30–33.

would hold the instrument steadier than a surgeon's hand, and the use of the motors in the robotic system to actuate the stapler reduces the forces required for the surgeon to apply to the instrument. Fischer Supp. Decl. ¶¶ 100, 102. Moreover, even if Petitioner's proposed combination did result in some loss of a desired "dexterity and other advantages built into the Tierney/Madhani [cable and pulley] drive system" (PO Resp. 57), "a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate a motivation to combine." *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006). Here, Petitioner adequately establishes that incorporating Hooven's handheld tool into Tierney's robotic system would have resulted in benefits including increased accuracy compared to manually operated instruments, and would have allowed the surgeon to use Tierney's robotic system throughout surgery, rather than having to switch to Hooven's handheld tool. *See* Pet. 37–38 (addressing benefits of surgical robots), 60–62; Reply 21–22; Fischer Supp. Decl. ¶ 102. Patent Owner has not shown that any purported loss of dexterity would have outweighed the anticipated benefits of the combined system sufficient to undermine Petitioner's showing.

Finally, Patent Owner argues "there is not enough space for the proposed additional components from Hooven's shaft in the shaft 102 of Tierney." PO Resp. 66 (citing Riviere Decl. ¶¶ 219–221). This argument is unavailing because Patent Owner has not established a basis for arguing that the diameter of Tierney's shaft is too small to accommodate the additional components from Hooven. Patent figures are not drawn to scale unless otherwise stated. *Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 956 (Fed. Cir. 2000). It is undisputed that Tierney does not provide

dimensions for its drawings or otherwise disclose the dimension of its shaft. Reply 6; Fischer Supp. Decl. ¶ 44; Ex. 1024, 45:6–8. Moreover, Dr. Fischer establishes that different sized shafts were available, and a person of ordinary skill in the art would have understood how to appropriately size the shaft to fit the necessary components. Fischer Supp. Decl. ¶¶ 44, 48, 49, 105; *see also KSR*, 550 U.S. at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton.").

(2) Dependent Claims 8 and 16

With respect to the limitation "a position sensor configured to indicate a distance moved by the fastener" recited in claims 8 and 16, Petitioner establishes that Hooven discloses such a position sensor.[7] Pet. 69–70, 74. Specifically, Hooven discloses a position sensor (contact 87) which can indicate the distance Hooven's staple 81 moves from its initial position inside the cartridge to its driven position. *Id.* at 69 (citing Fischer Decl. ¶¶ 144, 172; Ex. 1007, 6:16–19, Fig. 7). Contact 87 is engaged when the firing nut has moved to its most forward position after driving and forming the staples. Ex. 1007, 6:16–19. Thus, when contact 87 is activated at the end of the firing stroke, it will indicate the position of the firing nut 86 and driving wedge 83, thereby indicating that staple 81 has been moved the distance between its initial position inside the cartridge and its driven

[7] Petitioner also argues that Tierney (via its incorporation by reference of Madhani) discloses the claimed position sensor, i.e., by disclosing motor encoders configured to indicate a distance moved by the fastener. Pet. 66–69. Because we find that Hooven adequately discloses the claimed position sensor, and find that a person of ordinary skill in the art would have been motivated to combine this aspect of Hooven with the Tierney system, we need not and do not reach Petitioner's other argument based on Tierney/Madhani.

position. Fischer Decl. ¶ 144. Hooven also teaches sensing the movement of the firing nut as it travels along the threaded rod (*id.*; Ex. 1007, 6:33–47), which would similarly track the position of the staple.

Patent Owner argues that Hooven's contact 87 is not a position sensor because (i) "it is not active during formation of any staples;" (ii) "its output is not a position" but rather a binary (yes/no) indication of whether the firing nut has moved to its most forward position; and (iii) it "does not sense the distance moved by any staple," but rather senses the distance moved by the firing nut. PO Resp. 60–69 (quoting Riviere Second Decl. ¶ 254; citing *id.* ¶¶ 255–256 and Ex. 1007, 6:16–22).

Patent Owner's arguments are unavailing. Regarding (i), we see nothing in the language of claims 8 and 16, nor have the parties pointed us to anything in the Specification, that requires the claimed position sensor to be "active during formation of any staples." Fischer Supp. Decl. ¶ 109. Regarding (ii) and (iii), we similarly see nothing in the language of claims 8 and 16, nor have the parties pointed us to anything in the Specification, that excludes determining the position of the staple by proxy. Indeed, Hooven's disclosure relating to contact 87 is consistent with the description of the position sensor in the '281 patent, which indicates that sensor 452 "has an output which is indicative of the position of the fastener drive member 446," rather than of the position of the fastener itself. Ex. 1001, 36:49–59, Fig. 34; Fischer Decl. ¶ 144; Fischer Supp. Decl. ¶¶ 108, 110.

(3) Dependent Claims 2–7, 9, 11–15, 17, 19, and 20

Petitioner contends claims 2–7, 9, 11–15, 17, 19, and 20 would have been obvious over the combination of Tierney and Hooven. Pet. 49–62. In support of its contention, Petitioner provides a detailed discussion explaining

how each claim limitation is disclosed in the combination of Tierney and Hooven. *Id.* We have reviewed Petitioner's obviousness contentions as to claims 2–7, 9, 11–15, 17, 19, and 20 in this ground of unpatentability (Pet. 36–54) and adopt them as our own.

Apart from its arguments already discussed above with respect to claims 1, 8, 10, 16, and 18, Patent Owner does not provide additional arguments specific to claims 2–7, 9, 11–15, 17, and 19–20. *See generally* PO Resp.

Having considered the parties' positions and evidence of record, summarized above, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 2–7, 9, 11–15, 17, 19, and 20 are unpatentable under 35 U.S.C. § 103(a) as obvious.

F. Remaining Grounds

In view of our determination that claims 1–20 would have been obvious as discussed above, we need not and do not address Petitioner's additional grounds of unpatentability. *See, e.g.*, *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding a petitioner "is entitled to a final written decision addressing all of the claims it has challenged"); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, Nos. 2019-1594, -1604, -1605, 2020 WL 2071962, at *4 (Fed. Cir. Apr. 30, 2020) (non-precedential) (recognizing that the "Board need not address issues that are not necessary to the resolution of the proceeding" and, thus, agreeing that the Board has "discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims").

III. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner moves to exclude (i) Exhibits 1026 through 1037; and (ii) paragraphs 23–26, 28–30, 36, 49, 54–57, 60, 61, 63, 64, 76, 92, and 99 of Dr. Fischer's Supplemental Declaration (Exhibit 1025), as well as any reference to or reliance on these paragraphs in the Reply.[8] Paper 25, 1. Patent Owner argues that this evidence supports Petitioner's prima facie case of obviousness, and thus comes too late because it was not cited in the Petition, but rather first cited in the Reply. *Id.* at 2. Petitioner responds that the Reply does not seek to fill alleged gaps in the Petition, but rather responds to arguments raised in the Patent Owner Response. Paper 24, 1.

Patent Owner, as the moving party, bears the burden of establishing that it is entitled to the requested relief. 37 C.F.R. §§ 42.20(c), 42.62(a). We determine that Patent Owner has not met its burden. As an initial matter, the Board has advised that a motion to exclude should not be used to "address arguments or evidence that a party believes exceeds the proper scope of reply." *See* Patent Trial and Appeal Board Consolidated Trial Practice Guide (November 2019) ("TPG"[9]) 79; *see also* Paper 26, 2. However, even if we consider Patent Owner's arguments on the merits, we find them unavailing. For the reasons advanced by Petitioner, which we adopt, we find that the subject evidence is not used to present a prima facie showing of obviousness, fill any alleged gaps in Petitioner's obviousness grounds, or support a new motivation to combine, but rather is properly

[8] Patent Owner also requested that the Board preclude Petitioner from using all evidence and arguments that are the subject of its Motion at any hearing. Mot. 1. We dismiss this request as moot.

[9] Available at https://www.uspto.gov/TrialPracticeGuideConsolidated.

presented to rebut arguments Patent Owner advanced in its Response. *See* Paper 26, 6–15.

Patent Owner also contends that the timing of Petitioner's introduction of these exhibits and the related testimony prevented Patent Owner "from mounting a complete and fair defense." Paper 25, 8; *see also id.* at 7–9. However, we agree with Petitioner that there is nothing inherently improper with submitting evidence after the patent owner response, and in fact, such submission is expressly contemplated by the TPG. *See* TPG 73 (stating that a party "may submit rebuttal evidence in support of its reply"); Paper 26, 5. Patent Owner had an opportunity to depose Petitioner's expert and to submit a sur-reply addressing the evidence it seeks to exclude, and also had the opportunity to request leave to submit a supplemental declaration from its own expert. *See, e.g.*, IPR2020-00051, Paper 33 at 5 (authorizing patent owner to file a supplemental declaration after the petitioner's reply).

For the above reasons, we deny Patent Owner's motion to exclude.

IV. CONCLUSION[10]

[10] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

Based on the information presented, we conclude that Petitioner has shown by a preponderance of the evidence that claims 1–20 are unpatentable under 35 U.S.C. § 103(a) as obvious over Tierney and Hooven.

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–3, 8–12, 16–20	103(a)	Tierney, McGarry[11]		
4–8, 13–15	103(a)	Tierney, McGarry, Hooven[12]		
1–20	103(a)	Tierney, Hooven	1–20	
1–20	103(a)	Tierney, McGarry, Gardiner[13]		
1–20	103(a)	Tierney, Hooven, Gardiner[14]		
Overall Outcome			1–20	

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–20 of U.S. Patent 9,149,281 B2 have been shown by a preponderance of the evidence to be unpatentable;

[11] We do not address Petitioner's grounds based on Tierney and McGarry.

[12] We do not address Petitioner's grounds based on Tierney, McGarry, and Hooven.

[13] We do not address Petitioner's grounds based on Tierney, McGarry, and Gardiner.

[14] We do not address Petitioner's grounds based on Tierney, Hooven, and Gardiner.

FURTHER ORDERED that Patent Owner's Motion to Exclude is *denied*; and

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

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