

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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INTUITIVE SURGICAL, INC.,  
Petitioner,

v.

ETHICON LLC,  
Patent Owner.

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Case IPR2018-00935  
Patent 8,991,677 B2

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Before JOSIAH C. COCKS, BENJAMIN D. M. WOOD, and  
MATTHEW S. MEYERS, *Administrative Patent Judges*.

COCKS, *Administrative Patent Judge*.

JUDGMENT  
Final Written Decision  
Determining All Challenged Claims Unpatentable  
Granting Patent Owner's Motion to Amend  
*35 U.S.C. § 318(a)*

## I. INTRODUCTION

### A. Summary

Intuitive Surgical, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–18 of U.S. Patent No. 8,991,677 B2 (Ex. 1001, “the ’677 patent”). After the filing of the Petition, Ethicon LLC (“Patent Owner”), filed a statutory disclaimer of claims 11–15 and 18. Ex. 2004; *see* Paper 8, 11. We instituted trial to determine whether: (1) claims 1–10, 16, and 17 were unpatentable under 35 U.S.C. § 103 as follows:

Claims Challenged	35 U.S.C. §	References
1–10, 16, 17	103 <sup>1</sup>	Hooven <sup>2</sup> , Heinrich <sup>3</sup>

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<sup>1</sup> It is not entirely clear what version of § 103 Petitioner argues under. The application for the ’677 patent *proper* was filed on May 21, 2014. Ex. 1001, code (22). The *earliest effective filing date* of the ’677 patent, however, based on various chains of continuation and continuation-in-part applications, is February 14, 2008. Pet. 3–4; Ex. 1001, code (63). If this date is afforded priority, it would make the patent subject to pre-AIA § 103(a). *See* 35 U.S.C. § 100 (note) (2015) (applicability of AIA). While Petitioner “does not concede that the challenged claims . . . are entitled to [the 2008] priority date,” it asserts that its arguments are not affected by this difference, since Hooven, Heinrich, Milliman, and Alesi all predate the earliest effective filing date. *See* Pet. 4–5. Petitioner claims entitlement for relief under “§ 103,” implying reliance on the post-AIA law (and in light of the refusal to concede an earlier priority date), but uses “§ 102(b)” to show that Hooven, Heinrich, Milliman, and Alesi qualify as prior art, which corresponds better to the pre-AIA version of the law (as current § 102(b) deals only with *exceptions* to the novelty requirement). *Id.* Neither Petitioner nor Patent Owner, however, has pursued this point since. Therefore, we use the post-AIA version here.

<sup>2</sup> U.S. Patent No. 5,383,880 issued Jan. 24, 1995 (Ex. 1004, “Hooven”).

<sup>3</sup> U.S. Patent App. Pub. No. US 2005/0131390 A1 published June 16, 2005

Claims Challenged	35 U.S.C. §	References
1–5, 16	103	Hooven, Heinrich, Milliman <sup>4</sup>
1–5, 16	103	Hooven, Heinrich, Alesi <sup>5</sup>

See Paper 9 (Decision on Institution” or “Dec. on Inst.”). <sup>6</sup>

Patent Owner filed a Patent Owner Response. Paper 15 (“PO Resp.”). Patent Owner also filed a “Corrected Contingent Motion to Amend Under 37 C.F.R. § 42.121.” Paper 18 (“Motion to Amend” or “Mot. to Amend”).<sup>7</sup> Petitioner filed a Reply to Patent Owner’s Response. Paper 20 (“Pet. Reply”). Petitioner also filed an Opposition to Patent Owner’s Motion to Amend. Paper 21 (“Pet. Opp.”). Patent Owner filed a Reply in Support of its Contingent Motion to Amend. Paper 25 (“PO Reply”). Patent Owner filed a Sur-reply to Petitioner’s Reply to Patent Owner’s Response. Paper 26 (“PO Sur-reply”). Petitioner filed a Sur-reply to Patent Owner’s Reply in Support of the Contingent Motion to Amend. Paper 30 (“(Pet. Sur-reply”). Oral hearing was conducted on September 5, 2019, and a transcript of the hearing is in the record. Paper 33.

We have jurisdiction under 35 U.S.C. § 6. Petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of

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(Ex. 1005, “Heinrich”).

<sup>4</sup> U.S. Patent No. 5,865,361 issued Feb. 2, 1999 (Ex. 1006, “Milliman”).

<sup>5</sup> U.S. Patent No. 5,779,130 issued July 14, 1998 (Ex. 1010, “Alesi”).

<sup>6</sup> In our Decision on Institution, we treated claims 11-15 and 18 as having never been part of the ’677 patent, and concluded that Petitioner could not seek *inter partes* review of those claims. See Dec. on Inst. 9–10.

<sup>7</sup> A listing of proposed substitute claims 19–24 appears in Appendix A of Paper 18.

persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must prove unpatentability by a preponderance of the evidence. See 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This decision is a Final Written Decision under 35 U.S.C. § 318(a). For the reasons discussed below, we hold that Petitioner has demonstrated by a preponderance of the evidence that claims 1–10, 16, and 17 of the '677 patent are unpatentable under 35 U.S.C. § 103(a). We grant Patent Owner's Contingent Motion to Amend to substitute claims 19–24 for claims 1–5 and 16 in the '677 patent.

### *B. Real Parties-In-Interest*

Petitioner identifies itself as the only real party-in-interest. Pet. 1.

### *C. Related Matters*

The parties indicate that the '677 patent is involved in: *Ethicon LLC et al. v. Intuitive Surgical, Inc. et al.*, No. 1:17-cv-00871 in the United States District Court for the District of Delaware ("the Delaware litigation").<sup>8</sup> Pet. 2; Paper 6, 2. Petitioner is also challenging related patents in the following proceedings before the Board: (1) IPR2018-00933 (the '601 patent); (2) IPR2018-00934 (the '058 patent); (3) IPR2018-01247, IPR2018-01248, and IPR2018-01254 (the '969 patent); (4) IPR2018-00936 (the '658 patent); (5) IPR2018-00938 (the '874 patent); (6) IPR2018-01703 (the '431 patent); and (7) IPR2019-00880 (U.S. Patent No. 7,490,749).

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<sup>8</sup> Patent Owner contends that U.S. Patent Nos. 9,585,658 B2 ("the '658 Patent"), 8,616,431 B2 ("the '431 Patent"), 8,479,969 B2 ("the '969 Patent"), 9,113,874 B2 ("the '874 Patent"), 9,084,601 B2 ("the '601 Patent"), and 8,998,058 B2 ("the '058 Patent") are also asserted in the Delaware litigation. Paper 6, 2.

#### D. The '677 Patent

The '677 patent is titled “Detachable Motor Powered Surgical Instrument,” and generally relates to endoscopic surgical instruments. Ex. 1001, code (54), 1:32–33. The '677 patent summarizes its disclosure as encompassing a surgical instrument including “a housing that includes at least one engagement member for removably attaching the housing to an actuator arrangement.” *Id.* at code (57). The housing supports a motor that “may include a contact arrangement that is configured to permit power to be supplied to the motor only when the housing is operably attached to the actuator arrangement.” *Id.* Figure 1 of the '677 patent is reproduced below:

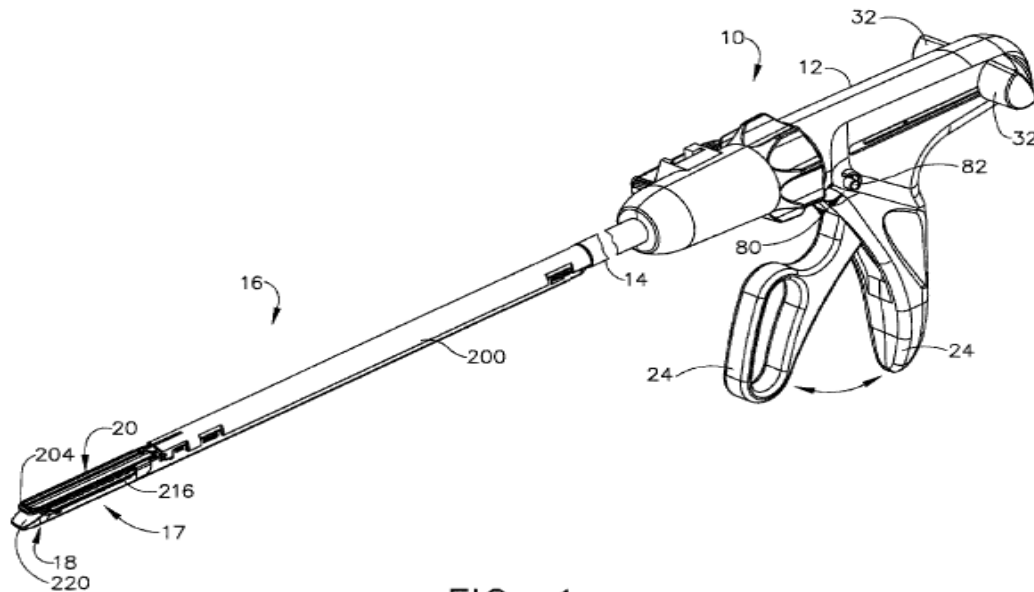


FIG. 1

Figure 1 shows “a perspective view of a disposable loading unit embodiment of the present invention coupled to a conventional surgical cutting and stapling apparatus.” *Id.* at 4:21–23. In particular, disposable loading unit 16 is coupled to surgical stapling apparatus 10. *Id.* at 10:54–58. Disposable loading unit 16 includes housing portion 200 that is configured

to engage elongated body portion 14 of surgical stapling apparatus 10. *Id.* at 11:54–61. Figure 2 of the '677 patent is reproduced below.

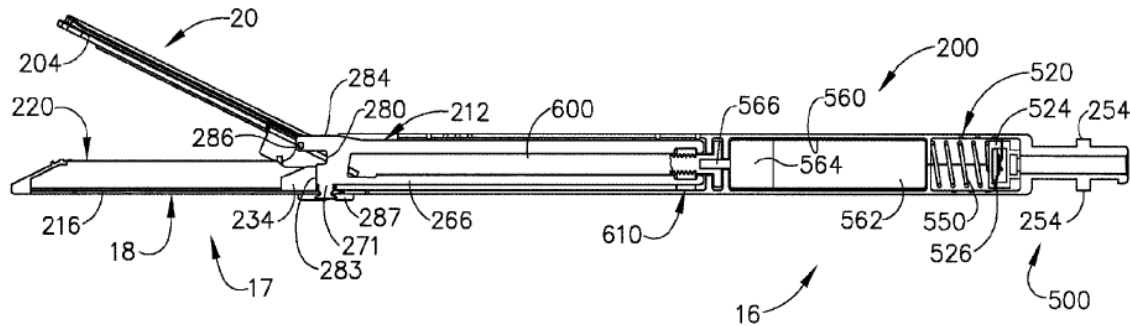


FIG. 2

Figure 2 “is a cross-sectional view of the disposable loading unit of FIG. 1 with several components shown in full view for clarity.” *Id.* at 4:24–26. The '677 patent describes the following:

[T]he disposable loading unit 16 may generally comprise a tool assembly 17 for performing surgical procedures such as cutting tissue and applying staples on each side of the cut. The tool assembly 17 may include a cartridge assembly 18 that includes a staple cartridge 220 that is supported in a carrier 216. An anvil assembly 20 may be pivotally coupled to the carrier 216 in a known manner for selective pivotal travel between open and closed positions. The anvil assembly 20 includes an anvil portion 204 that has a plurality of staple deforming concavities (not shown) formed in the undersurface thereof. The staple cartridge 220 houses a plurality of pushers or drivers (not shown) that each have a staple or staples (not shown) supported thereon. An actuation sled 234 is supported within the tool assembly 17 and is configured to drive the pushers and staples in the staple cartridge 220 in a direction toward the anvil assembly 20 as the actuation sled 234 is driven from the proximal end of the tool assembly 17 to the distal end 220.

*Id.* at 11:11–28.

Figure 3 of the '677 patent is reproduced below.

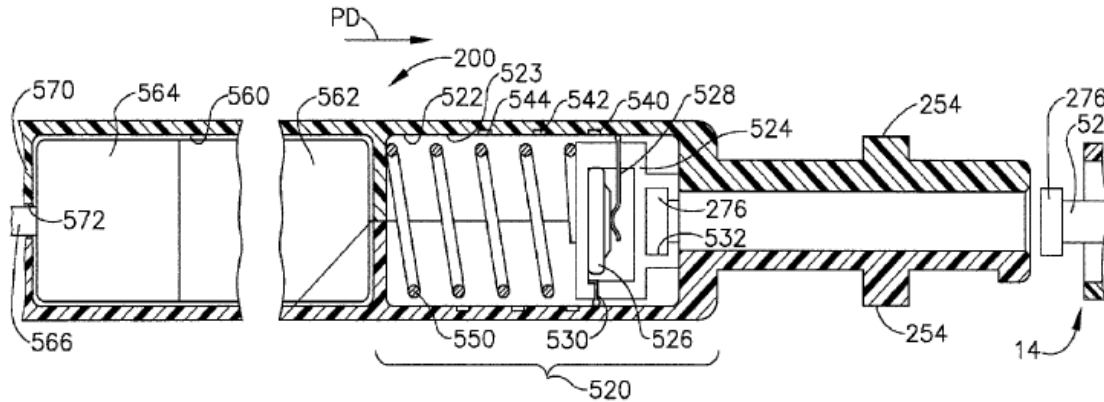


FIG. 3

Figure 3 above illustrates a cross-sectional view of the proximal end of disposable loading unit 16 shown in Figure 1. *Id.* at 4:27–29. Housing portion 200 of the disposable loading unit defines battery cavity 522 that movably supports battery holder 524 that houses battery 526. *Id.* at 11:64–66. First battery contact 528 and second battery contact 530 are supported in electrical contact with battery 526. *Id.* at 11:66–12:7. The '677 patent further describes the following:

As can also be seen in FIG. 3, a biasing member or switch spring 550 is positioned within the battery cavity 522 to bias the battery holder 524 in the proximal direction “PD” such that when the disposable reload 16 is not attached to the elongated body 14, the battery holder 524 is biased to its proximal-most position shown in FIG. 3. When retained in that “pre-use” or “disconnected” position by spring 550, the battery contacts 528 and 530 do not contact any of the contacts 540, 542, 544 within battery cavity 522 to prevent the battery 526 from being drained during non-use.

*Id.* at 12:14–24. Housing 200 also includes motor cavity 560 that houses motor 562 and gear box 564. *Id.* at 11:25–27. Based on the contact arrangement of battery contacts 528 and 530 with contacts 540, 542, and

544, battery 526 either supplies or prevents power to motor 562. *See, e.g., id.* at 12:60–14:2.

### *E. Illustrative Claims*

Challenged claims 1, 6, 16, and 17 are independent. Claims 2–5 ultimately depend from claim 1, and claims 7–10 ultimately depend from claim 6. Claims 1 and 6 are illustrative and are reproduced below.

1. A disposable loading unit configured for operable attachment to a surgical instrument which is configured to selectively generate at least one control motion for the operation of said disposable loading unit, said disposable loading unit comprising:

- a carrier operably supporting a cartridge assembly therein;
- an anvil supported relative to said carrier and being moveable from an open position to closed positions upon application of at least one control motion thereto;

- a housing coupled to said carrier, said housing including means for removably attaching said housing to the surgical instrument;

- a rotary drive at least partially supported within said housing;

- a motor supported within said housing and operably interfacing with said rotary drive to selectively apply a rotary motion thereto, wherein said motor is configured to receive power from a power source such that said motor can only selectively receive power from said power source when said means for removably attaching said housing to the surgical instrument is operably coupled to the surgical instrument; and

- a linear member coupled with said rotary drive which moves axially upon the application of a rotary motion thereto from said motor.

Ex. 1001, 80:40–64.



6. A stapling sub-system configured to be operably engaged with a surgical instrument system, said stapling sub-system comprising:

a staple cartridge carrier;

a staple cartridge assembly supported by said staple cartridge carrier;

an anvil supported relative to said staple cartridge carrier and movable from an open position to a closed position;

a housing wherein said staple cartridge carrier extends from said housing, and wherein said housing comprises a housing connector removably attachable to the surgical instrument system; and

a rotary drive system, comprising

a rotary shaft;

a translatable drive member operably engaged with said rotary shaft, wherein said translatable drive member is selectively translatable through said staple cartridge assembly from a start position to an end position when a rotary motion is applied to said rotary shaft; and

an electric motor operably interfacing with said rotary shaft to selectively apply said rotary motion to said rotary shaft, wherein said electric motor is operably disconnected from a power source when said housing is not attached to the surgical instrument system, and wherein said electric motor is operably connected to the power source when said housing is attached to the surgical instrument system.

*Id.* at 81:12–41.

## II. ANALYSIS

### A. Claim Construction

The claim construction standard to be employed in an *inter partes* review has changed. *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Nov. 13, 2018) (to be codified at 37 C.F.R. pt. 42). That new standard, however, applies only to proceedings in which the

petition is filed on or after November 13, 2018. This Petition was filed on May 22, 2018. Under the standard in effect at that time, “[a] claim in an unexpired patent . . . shall be given its broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(b); *see also* *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016) (upholding the use of the broadest reasonable interpretation standard). Accordingly, we evaluate patentability in this proceeding using the broadest reasonable construction standard. In determining the broadest reasonable construction, we presume that claim terms carry their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). A patentee may define a claim term in a manner that differs from its ordinary meaning; however, any special definitions must be set forth in the specification with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

In our Decision on Institution, we determined that it was only necessary to evaluate the meaning of a single phrase appearing in claim 1: “means for removably attaching said housing to the surgical instrument.” *See* Dec. on Inst. 10–11. In particular, for purposes of deciding whether to institute trial, we observed the following:

According to Petitioner, that phrase in using the word “means” presumptively invokes 35 U.S.C. § 112(f). Pet. 16 Petitioner contends that the claimed function, as recited in the claim, “is removably attaching said housing to the surgical instrument.” *Id.* Petitioner further contends that “[t]he corresponding structures in the ’677 patent that perform this function include engagement nubs 254.” *Id.* at 17 (citing Ex. 1001, 11:23–28; Fig. 2; Ex. 1003 ¶¶62–65). Patent Owner does not dispute the above-noted function and structure identified by Petitioner. For purposes of

this Decision, we accept the parties' representations in that regard.

Dec. on Inst. 11.

The parties do not challenge the above-noted construction, and both parties contend that it is unnecessary to further address it. PO Resp. 15 n.4; Pet. Reply 1. We do not discern a reason to alter or further address that construction.

Patent Owner also discusses construction of the following claim clauses: (1) “[disposable] loading unit comprising: . . . a motor . . . wherein said motor is configured to receive power from a power source such that said motor can only selectively receive power from said power source when said means for removably attaching said housing to the surgical instrument is operably coupled to the surgical instrument” as appears in claims 1 and 16 (PO Resp. 26–35); and (2) “stapling sub-system comprising: . . . an electric motor . . . wherein said electric motor is operably disconnected from a power source when said housing is not attached to the surgical instrument system, and wherein said electric motor is operably connected to the power source when said housing is attached to the surgical instrument system” as appears in claims 6 and 17 (*id.* at 16–26).<sup>9</sup> We consider below the meaning of those clauses.

### *1. The Power Limitation*

According to Patent Owner, the power limitation sets forth “two separate requirements describing two separate connections.” PO Resp. 28.

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<sup>9</sup> As a matter of convenience, we refer to the first clause generally as “the power limitation,” and we refer to the second clause generally as the “operably disconnected/connected limitation.”

More specifically, Patent Owner contends the following:

First, the limitation that the motor is configured to receive power from a power source requires that the motor be connected to an attached power source. Second, the requirement that the motor “only selectively receive[s]” power when the DLU’s housing connector is attached to the surgical instrument system requires the connection between the motor and the attached power source be controlled and that the control mechanism “only” permit[s] power to flow when it detects the DLU is attached to the surgical instrument that operates the tool.

*Id.* (citing Ex. 2006 ¶¶ 73–79).

Patent Owner further distills the requirement of the claims to an assertion that the claims “as a whole” indicate “that the motor must be configured to receive power independent of whether or not the housing is attached to the surgical instrument.” *Id.* at 28–29 (citing Ex. 2006 ¶ 78). Patent Owner generally bases that assertion on disclosure in the ’677 patent: (1) related to Figures 3 and 7 that Patent Owner characterizes as an embodiment of the claimed invention (*id.* at 31–32); and (2) related to Figure 52 that Patent Owner characterizes as another embodiment (*id.* at 32–33).

Petitioner does not agree with Patent Owner’s contentions as to the requirements of the power limitation of claims 1 and 16. Specifically, Petitioner contends that Patent Owner’s proposed constructions are: (1) “Inconsistent with the Plain Meaning” of the claims (Pet. Reply 2–6); (2) “Are Not Supported by the Specification” (*id.* at 6–9); and (3) “Improperly Attempt to Limit the Claims to a Particular Embodiment when the Claims and the Specification are Broader than that Particular Embodiment” (*id.* at 9–12).

We are not persuaded that Patent Owner's assessment of the power limitation is correct. In that regard, it is difficult to reconcile Patent Owner's contention with the actual language of the claims. We observe that the claims do not refer to "separate requirements" or "separate connections." Neither do they use the term "independent" in describing any connection of components of a disposable loading unit (claim 1) or loading unit (claim 16). Claims 1 and 16 recite, in pertinent part, a motor that is configured to receive power from a power source such that the motor "only selectively" receives power from a power source when the means for removably attaching the housing to the surgical instrument is operably coupled to the surgical instrument. Patent Owner's attempt to imbue the claims with a "separate" or "independent" aspect of the motor configuration and that of the housing attachment or connection mechanism simply lacks adequate explanation or assessment of the actual claim language. Furthermore, Patent Owner's recourse to example embodiments appearing in various portions of the Specification does not convey credibly that un-recited requirements should somehow make their way into the claims under the general rubric that the claims "as a whole" require their inclusion.

In effect, Patent Owner is of the view that the power limitation mandates that the claimed motor must always be attached to the power source irrespective of whether the housing connector is attached to the surgical system. The claims, however, are not so limiting. We share the following view expressed by Petitioner:

In support of its argument that the Board should read in a requirement that the claimed motor is "attached" to the power source, Ethicon incorrectly argues that the claim describes "*two separate requirements* describing *two separate connections*." POR, 28. Specifically, Ethicon asserts that the claim language

requires (i) “the motor be connected to an attached power source,” and (ii) “the connection between the motor and the attached power source be controlled and that the control mechanism ‘only’ permit power to flow when it detects that the DLU is attached to the surgical instrument that operates the tool.” *Id.*

Ethicon’s argument, however, ignores the “such that” claim language that links the two allegedly separate limitations, and which makes clear that the latter of the two clauses (“said motor can only selectively receive power”) defines what the former clause (“said motor is configured to receive power”) means. IS1030, ¶13. Thus, the two clauses are not separate limitations but rather a single limitation requiring no more than the motor be set up (*i.e.*, “configured”) to receive power from the power source only when the housing and surgical instrument are “operably coupled.” *Id.*

Pet. Reply 5.

Accordingly, we reject Patent Owner’s inadequately explained construction of the power limitation of claims 1 and 16 that spans pages 20 through 35 of Patent Owner’s Response.

## *2. The Operably Disconnected/Connected Limitation*

Patent Owner argues that the operably disconnected/connected limitation of claims 6 and 17 “requires that the electrical connection of the stapling sub-system’s electric motor to an attached power source is controlled by, but separate from, the attachment between the stapling sub-system housing and the surgical instrument system.” PO Resp. 16–17 (citing Ex. 2006 ¶ 55). More particularly, Patent Owner is of the view that “the stapling sub-system is (a) electrically disconnected (such that it cannot operate from the attached power source when the sub-system housing is detached from the surgical instrument system; and (2) electrically connected to the attached power source when the housing is attached to the surgical

instrument system.” *Id.* at 17.

In making the above-noted argument, Patent Owner focuses on the claim term “operably.” *Id.* at 17–20. In that respect, Patent Owner advances arguments such as: (1) an electric motor that is “operably disconnected” is “not merely ‘disconnected’” (*id.* at 18); (2) “[t]he use of the ‘operably’ modifier indicates that the electrical connection between the stapling sub-system’s electric motor and the power source, but not the physical connection, is dependent upon the physical attachment of the sub-system housing to the surgical instrument system” (*id.* at 19 (citing Ex. 2006 ¶¶ 47–55); and (3) “‘operably disconnected’ refers to an electrical disconnection (*i.e.*, functional or operable disconnection) but not a physical one” (*id.* at 20 (citing Ex. 2006 ¶ 54)). As with the power limitation discussed above, Patent Owner seeks to support its construction of the operably disconnected/connected limitation through reference to embodiments of the ‘677 Patent appearing in Figures 3–7 and 52. *Id.* at 20–25.

Here, too, Petitioner challenges Patent Owner’s construction. Petitioner contends that Patent Owner’s construction is “inconsistent with the plain meaning of the claim[s]”. Pet. Reply 12. Petitioner disputes Patent Owner’s argument that the term “operably,” in conjunction with a connection or disconnection, is “superfluous” in designating a physical connection or disconnection. *Id.* at 14. Petitioner contends that “the term ‘operably’ has meaning because it is clearly possible for a motor and a power source to be physically connected through the connection between the housing of the stapling sub-system and the surgical instrument system in a way that is not operable.” *Id.* (citing Ex. 1030 ¶¶ 21–24; Ex. 1033, 126:13–127:8.). Petitioner also submits that

the term “operable” makes clear that the motor and the power source must be connected, for example, in a way that they perform a designated function (i.e., the claimed function of “selectively apply[ing] said rotary motion to said rotary shaft”) when the housing to the stapling sub-system is attached to the surgical instrument system.

*Id.* at 14–15.

Having considered the conflicting positions of the parties, we are not persuaded on this record by Patent Owner that “operably connected,” for instance, precludes a physical connection between a motor and a power source. Neither Patent Owner, nor its declarant, Dr. William Cimino, meaningfully or adequately explains why the term “operably” sets forth a distinction between an electrical connection and a physical one. Simply put, Patent Owner does not offer a cogent basis for concluding that a physical disconnection between a motor and power source that prevents operation of the motor, nevertheless, does not establish those components as “operably disconnected.” Likewise, Patent Owner does not articulate adequately why a physical connection between a motor and power source, that enables operation of the motor, does not render those components “operably connected.” Accordingly, we decline to view “operably connected” and “operably disconnected” as excluding physical connection and disconnection.

### *3. Remaining Claim Terms*

We determine that it is unnecessary to further discuss any other matters of claim construction for any claim term to resolve the issues in controversy in this proceeding. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (explaining that



claim terms need to be construed “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))).

### *B. Principles of Law*

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter 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 to which such subject matter pertains.” 35 U.S.C. § 103(a). The question of obviousness under 35 U.S.C. § 103 is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).<sup>10</sup> “While the sequence of these questions might be reordered in any particular case, the factors continue to define the inquiry that controls.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007).

### *C. Level of Ordinary Skill in the Art*

Petitioner’s Declarant, Dr. Fischer, testifies the following in connection with the level of ordinary skill in the art:

A person of ordinary skill in the art at the time of the claimed invention (“POSITA”) would have had the equivalent of a Bachelor’s degree or higher in mechanical engineering, electrical engineering, biomedical engineering, or a related field

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<sup>10</sup> At this stage of the proceeding, neither party has submitted or relied on any objective evidence of non-obviousness.

directed towards medical electro-mechanical systems and at least 3 years working experience in research and development for surgical instruments. Experience could take the place of some formal training, as relevant skills may be learned on the job. This description is approximate, and a higher level of education might make up for less experience, and vice versa.

Ex. 1003 ¶ 27.

Patent Owner does not challenge the above-noted testimony or offer any assessment of its own as to the level of ordinary skill in the art. For purposes of this Decision, we adopt the Dr. Fischer’s assessment of the level of ordinary skill in the art. We further find that the cited prior art references reflect the appropriate level of skill at the time of the claimed invention and that the level of appropriate skill reflected in these references is consistent with the definition of a person of ordinary skill in the art proposed by Petitioner. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

#### *D. Scope and Content of the Prior Art*

##### *1. Overview of Hooven*

Hooven is titled “Endoscopic Surgical System with Sensing Means.” Ex. 1004, code (54). Hooven discloses endoscopic stapling and cutting instrument 30 that includes “a sensing means which controls and/or monitors the operation of the instrument while conducting the desired step [, e.g., ligating, stapling, cutting, manipulation of the tissue,] in the procedure and provides feedback information to the surgeon.” *Id.* at 2:54–58, 61–63. Figure 1 of Hooven is reproduced below.

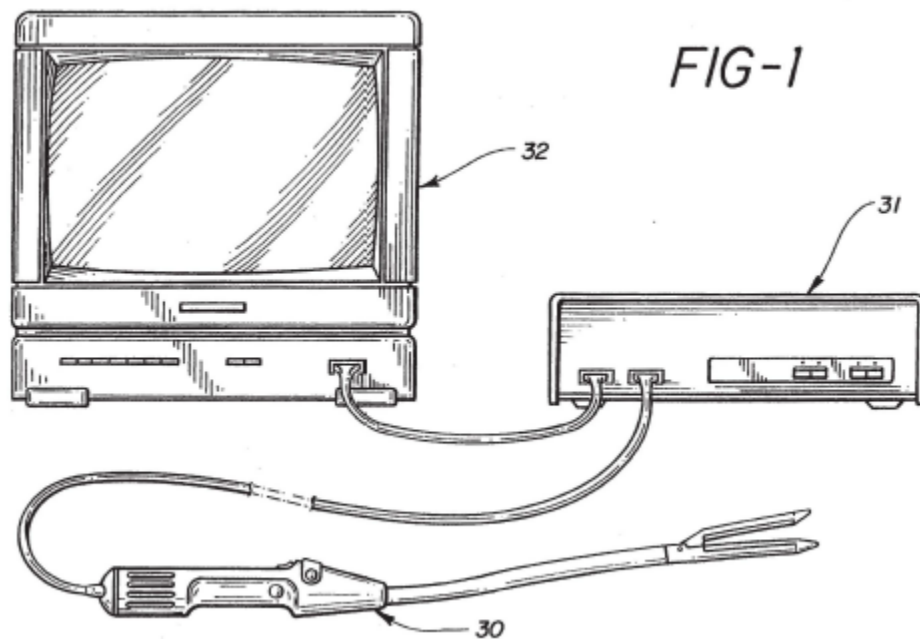


Figure 1 illustrates a schematic view of an endoscopic surgical system of the present invention interconnected with a microprocessor/controller and a video display screen. More particularly, Hooven explains the following:

[E]ndoscopic stapling and cutting instrument 30 is interconnected with a controller 31 and a video display monitor 32. The controller includes a microprocessor, power supply, hardwired logic, sensor interface and motor drive circuits. The instrument is connected to the controller so that the controller can accept, store, manipulate, and present data. The controller may feed appropriate signals back to the instrument in order to operate the instrument.

*Id.* at 4:15–24; *see also id.* at 9:15–17. Hooven discloses that “[a]ll sensors, switches, and motors are connected to the controller via the interface cable 205. This information, fed into the appropriate controller, is stored and manipulated and fed to a central processing communication system.” *Id.* at 9:1–5. Figure 6 of Hooven is reproduced below.

FIG-6

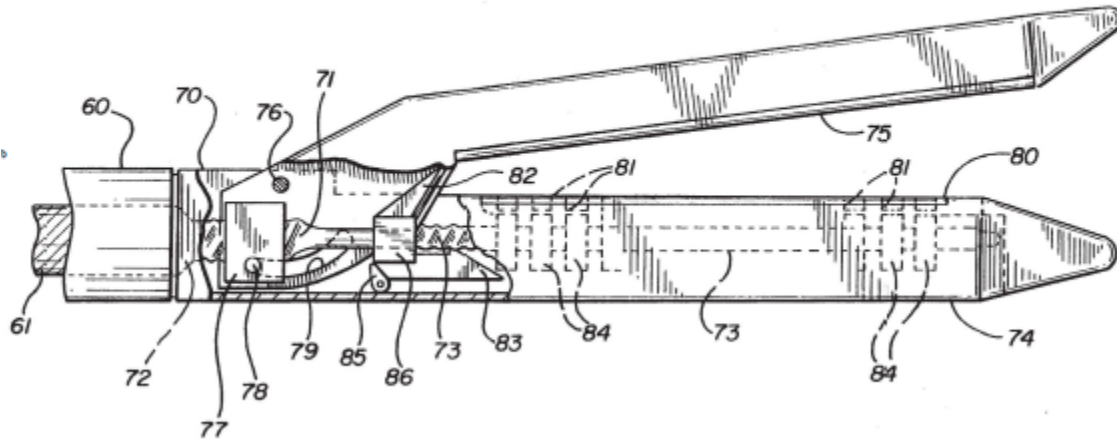


Figure 6 depicts an enlarged longitudinal cross-sectional view of the active or business head of endoscopic stapling and cutting instrument 30. Hooven discloses that its “head includes a staple or staple cartridge portion 74 and an anvil portion 75. The staple portion and the anvil portion are pivotally connected [t]o each other by the anvil pivot pin 76.” *Id.* at 5:38–41. Hooven further discloses a knife member 82 and driving wedge member 83 which are interconnected. *Id.* at 6:9–19.

## 2. Overview of Heinrich

Heinrich is titled “Surgical Instruments Including MEMS devices.” Ex. 1005, code (54). Heinrich’s Abstract reads as follows:

Surgical instruments are disclosed that are couplable to or have an end effector or a disposable loading unit with an end effector, and at least one micro-electromechanical system (MEMS) device operatively connected to the surgical instrument for at least one of sensing a condition, measuring a parameter and controlling the condition and/or parameter.

*Id.* at code (57). Figure 1 of Heinrich is reproduced below.

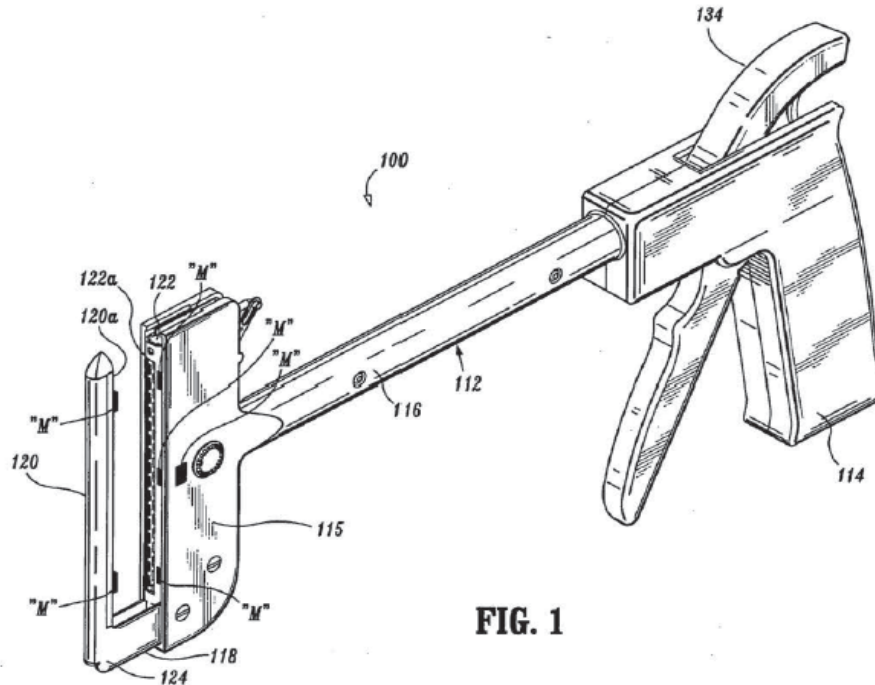
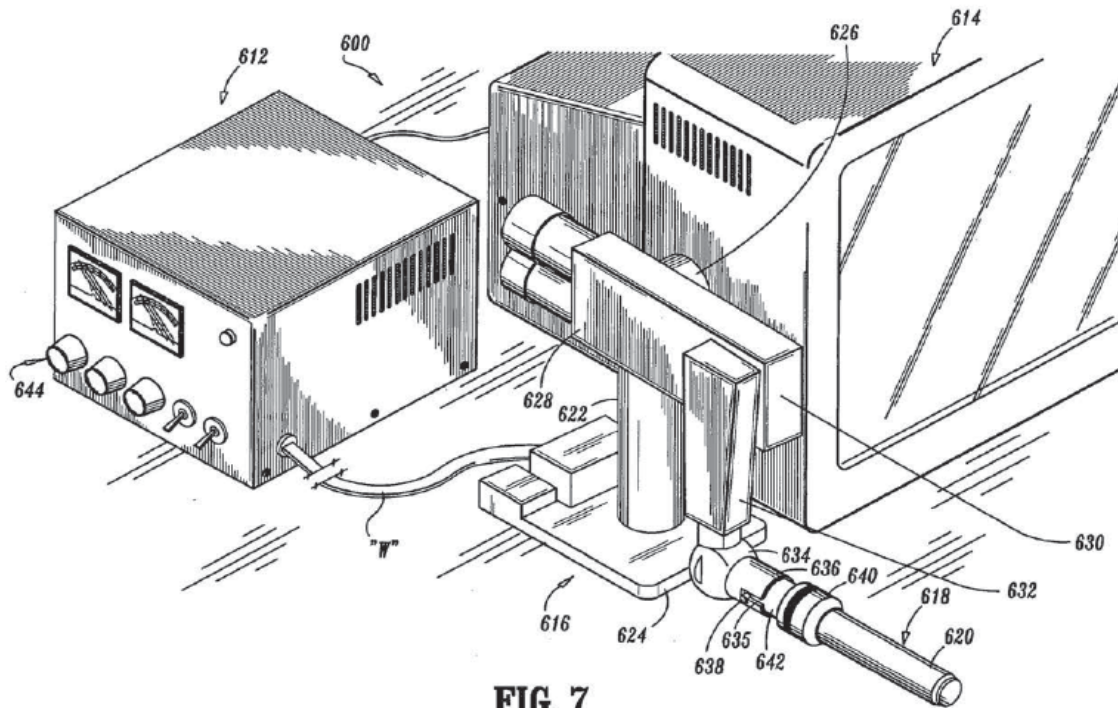
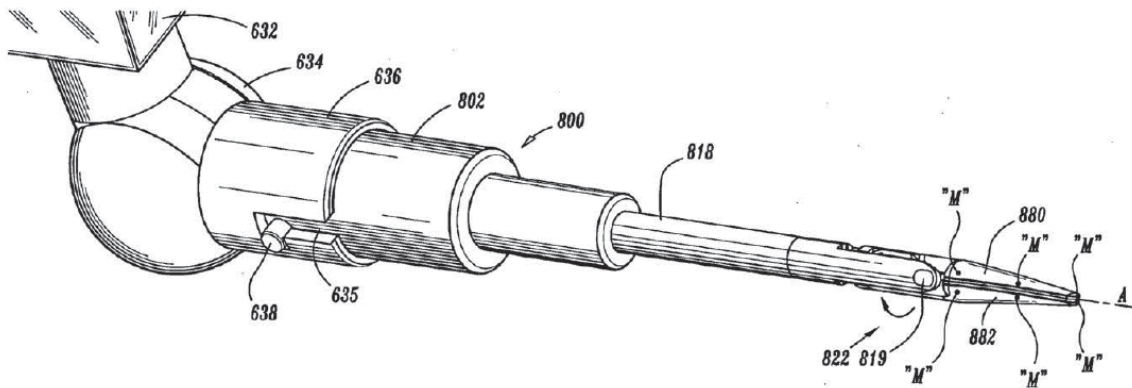
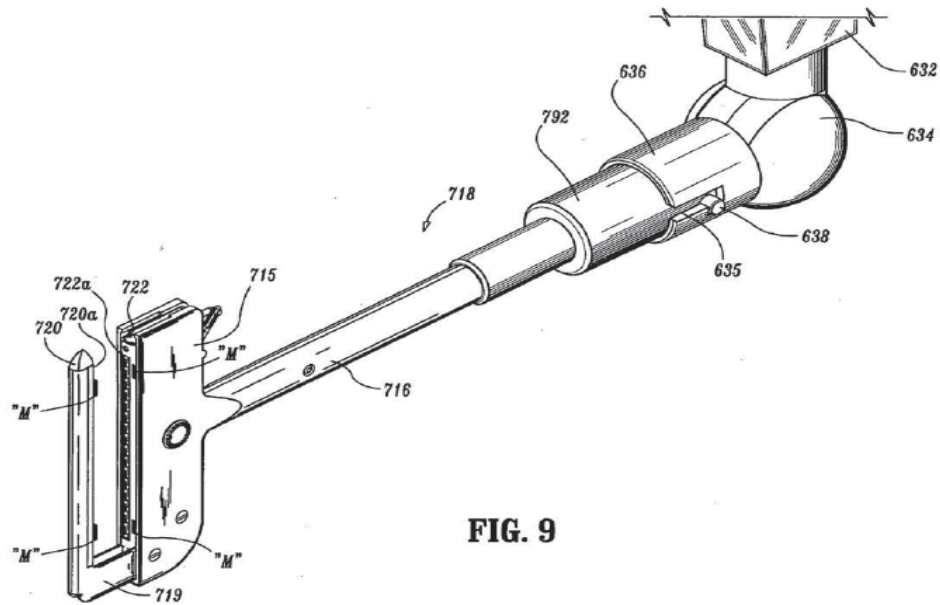


Figure 1 shows a perspective view of a surgical stapling instrument according to Heinrich's disclosure. *Id.* ¶ 53. Surgical stapler 100 includes housing 112 with handle 114 and distally extending body portion 116 operatively connected to housing 112. *Id.* ¶ 82. Surgical stapler 100 also includes anvil 120 fastened to first leg 124 of support frame 118. *Id.* ¶ 83. Figure 7 of Heinrich is reproduced below.



**FIG. 7**

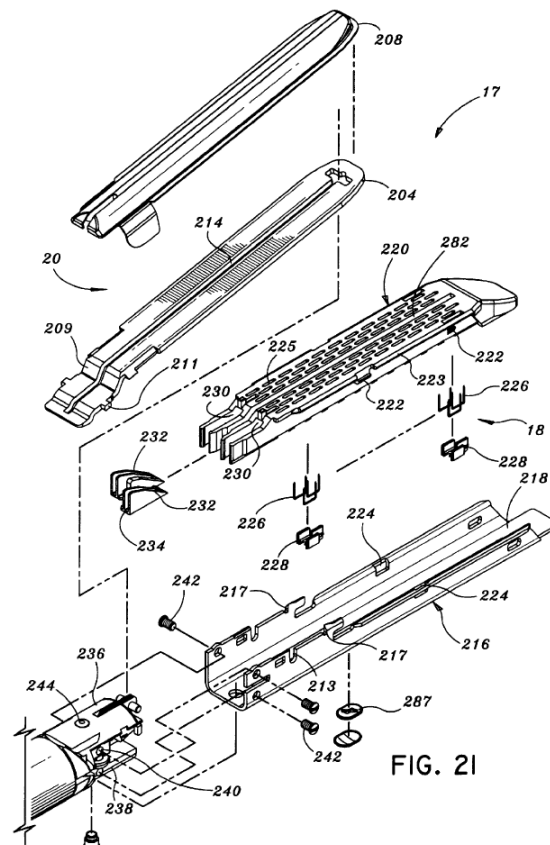
Figure 7 is a perspective view of a “robotic system” according to Heinrich’s disclosure. *Id.* ¶ 62. Robotic system 600 includes actuation assembly 612 and disposable loading unit 618 having at least one surgical instrument 620 attached to robot 616. *Id.* ¶ 132. Heinrich explains that disposable loading unit 618 is “releasably attach[ed]” to robot 616 via mounting flange 636. *Id.* ¶ 134. Figures 9 and 10 of Heinrich is reproduced below.



Figures 9 and 10 show perspective views of a robotic system coupled to various disposable loading units. *Id.* ¶¶ 64, 65. More particularly, Figures 9 and 10 illustrate disposable loading unit 718 and disposable loading unit 800, respectively, “removably coupled” to robot 616 (not shown) via mounting flange 636. *Id.* ¶¶ 139–143.

### 3. Overview of Milliman

Milliman discusses a surgical stapling and cutting apparatus. Ex. 1006, 1:6–10. Like Heinrich’s surgical stapler 300, Milliman’s stapler comprises a disposable loading unit that includes a tool assembly having a staple cartridge assembly secured to an anvil. *Id.* at 6:29–32. Figure 21 of Milliman, reproduced below, provides a more detailed view of the tool assembly.



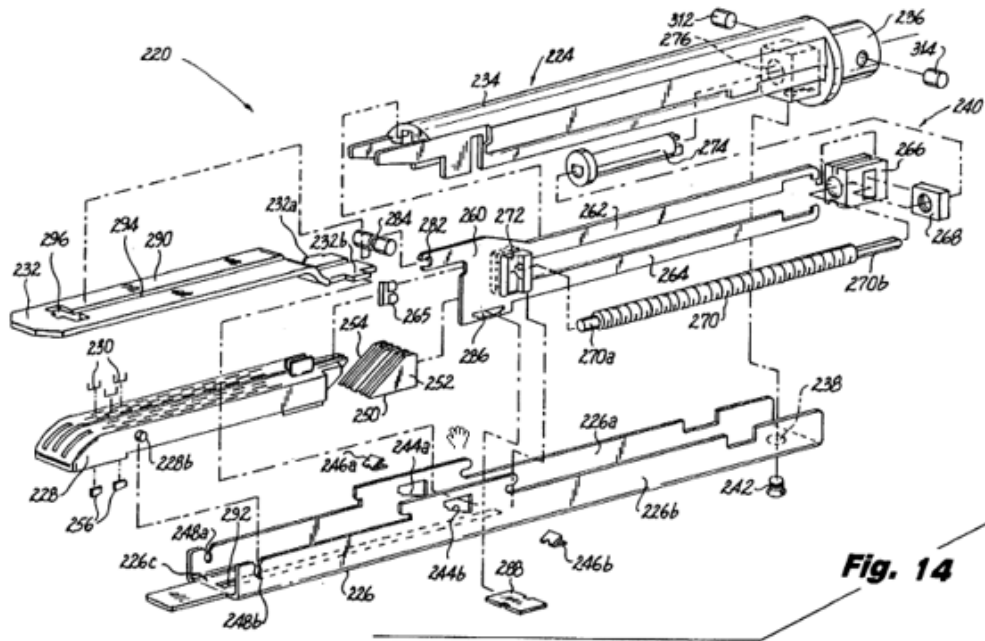
As shown in Figure 21, reproduced above, tool assembly 17 includes anvil assembly 20 and cartridge assembly 18. *Id.* at 11:24–25. Camming surface 209 formed on anvil portion 204 engages axial drive assembly 212 (Figure 27) to close the anvil and cartridge assembly together to clamp tissue. *Id.* at 11:35–38. Actuation sled 234 then translates through



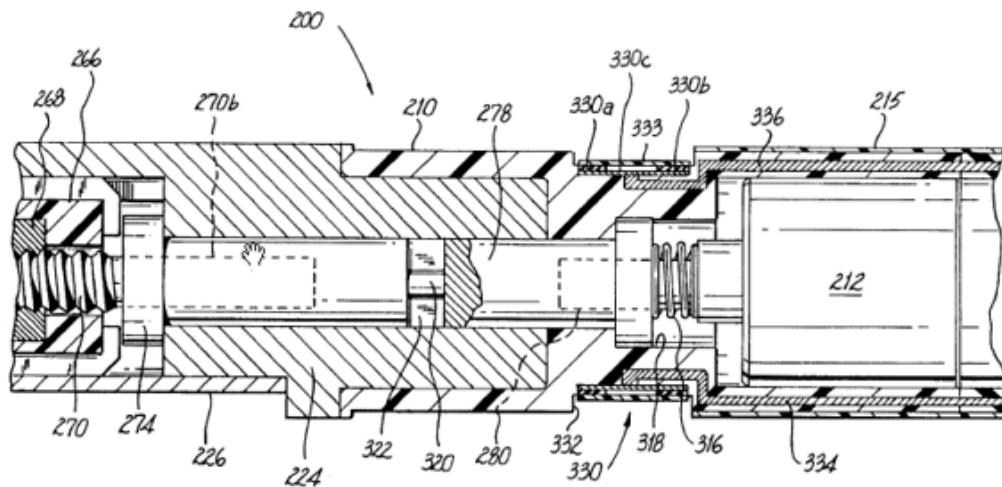
longitudinal slots 230 of staple cartridge 220 to advance cam wedges 232 to move pushers 228 vertically within slots 224 to urge fasteners 226 into staple deforming cavities 206 to staple the clamped tissue. *Id.* at 11:61–67. Knife blade 280 translates slightly behind actuation sled 234 through central longitudinal slot 282 (Figure 30) to form an incision between rows of stapled body tissue. *Id.* at 12:59–62.

#### *4. Overview of Alesi*

Alesi discloses a self-contained powered surgical stapling and cutting apparatus. Ex. 1010, 1:13–16. In one embodiment, Alesi's apparatus comprises a disposable cartridge assembly connected to the distal end of an elongate instrument body. *Id.* at 9:31–35, Fig. 13. Figures 14 and 15 of Alesi are reproduced below:



**Fig. 14**



**Fig. 15**

Figure 14, reproduced above, is an exploded view of cartridge assembly 220, and Figure 15, also reproduced above, illustrates how cartridge assembly 220 is coupled to motor assembly 212 housed in instrument body 210. *Id.* at 4:18–24. Cartridge assembly 220 comprises anvil 232 pivotably mounted to housing channel 226, and actuation assembly 240 that is driven by motor assembly 212 to move anvil 232. *Id.* at 9:50–59. Motor assembly 212 causes drive screw 270 to rotate, which in turn causes longitudinal

translation of actuation beam 260 via drive nut 268 and follower housing 266. The longitudinal translation of actuation beam 260: (1) causes anvil to move from an open position to a closed position; (2) ejects surgical fasteners 230; and (3) cuts tissue with knife blade 265. *Id.* at 9:54–59, 10:23–41.

*E. Petitioner's Contentions*

Petitioner contends that claims 1–10, 16, and 17 of the '677 patent would have been obvious in view of the combined teachings of Hooven and Heinrich. Petitioner provides detailed assessment of the content of the prior art in advocating that all the features of claims 1–10, 16, and 17 are shown therein. *See* Pet. 27–69. Petitioner also supports that assessment with citation to the Declaration testimony of Dr. Fischer (Ex. 1003).

For instance, with respect to claim 6, Petitioner explains how Hooven discloses a “stapling sub-system.” Pet. 28 (citing Ex. 1004, 4:15–17, 2:58–63, 4:45–53, Figs. 1–9; Ex. 1003 ¶¶ 296, 205–212). Petitioner also explains that Hooven discloses a system that is “configured to be operably engaged with a surgical instrument system.” *Id.* at 29–32. We observe that Petitioner contends that Hooven discloses a “surgical instrument system” composed of the combination of controller 31 and video display monitor 32. *Id.* at 28 (citing Ex. 1003 ¶¶ 207, 269; Ex. 1004, 4:13–17). We accept Petitioner's contention in that regard.

Petitioner also explains how Hooven and Heinrich account for each of: (1) “a staple cartridge carrier” (*id.* at 32–33); (2) “a staple cartridge assembly supported by said staple cartridge carrier” (*id.* at 33–34); (3) “an anvil supported relative to said staple cartridge carrier and movable from an open position to a closed position” (*id.* at 34–36); (4) “a housing, wherein said staple cartridge carrier extends from said housing, and wherein said

housing comprises a housing connector removably attachable to the surgical instrument system” (*id.* at 36–40); (5) “a rotary shaft” (*id.* at 40); (6) “a translatable drive member operably engaged with said rotary shaft wherein said translatable drive member is selectively translatable through said staple cartridge assembly from a start position to an end position when a rotary motion is applied to said rotary shaft” (*id.* at 41–43); and, finally, (7) “an electric motor operably interfacing with said rotary shaft to selectively apply said rotary motion to said rotary shaft, wherein said electric motor is configured to receive power from a power source such that said electrical motor can only selectively receive power from said power source when said housing connector is attached to the surgical instrument system” (*id.* at 43–46).

In further respect, in connection with the requirement noted above of a “housing connector removably attachable to the surgical instrument system,” Petitioner directs our attention to Heinrich’s teachings concerning mounting flange 636 (and its associated components). *Id.* at 38–40. As discussed above, Heinrich describes that connection of a disposable loading unit to a robot via a mounting flange is one that provides for “releasably attaching” those components. Ex. 1005 ¶ 134. Petitioner reasons that a person of ordinary skill in the art would have appreciated that Hooven’s stapling system may incorporate the type of connection mechanism disclosed in Heinrich to harness the releasable attachment capability. Pet. 38. Petitioner also reasons that modification of Hooven’s system based on Heinrich’s teachings “would have been merely the application of a known technique (e.g., using a robotic arm) to a known system (e.g., Hooven’s disposable loading unit) in the same field of endeavor (i.e., remote controlled surgical

staplers)” that “would have yielded predictable results without significantly altering or hindering the functions performed by Hooven’s device.” *Id.* at 31.

Petitioner provides similar detailed analysis, supported by the testimony of Dr. Fischer, for each of claims 1–5, 7–10, 16, and 17. *See* Pet. 47–69. With respect to the ground including the teachings of Milliman and applied to claims 1–5 and 16, Petitioner offers that ground as an alternative if Heinrich is not regarded as incorporating by reference Milliman. *Id.* at 69–70. In conjunction with the ground including the teachings of Alesi and applied to claims 1–5 and 16, Petitioner offers that ground “[i]f Hooven is deemed not to disclose the “linear member coupled with said rotary drive which moves axially upon the application of a rotary motion thereto from said motor” as recited in claim 1. *Id.* at 70–71.

#### *F. Patent Owner’s Contentions*

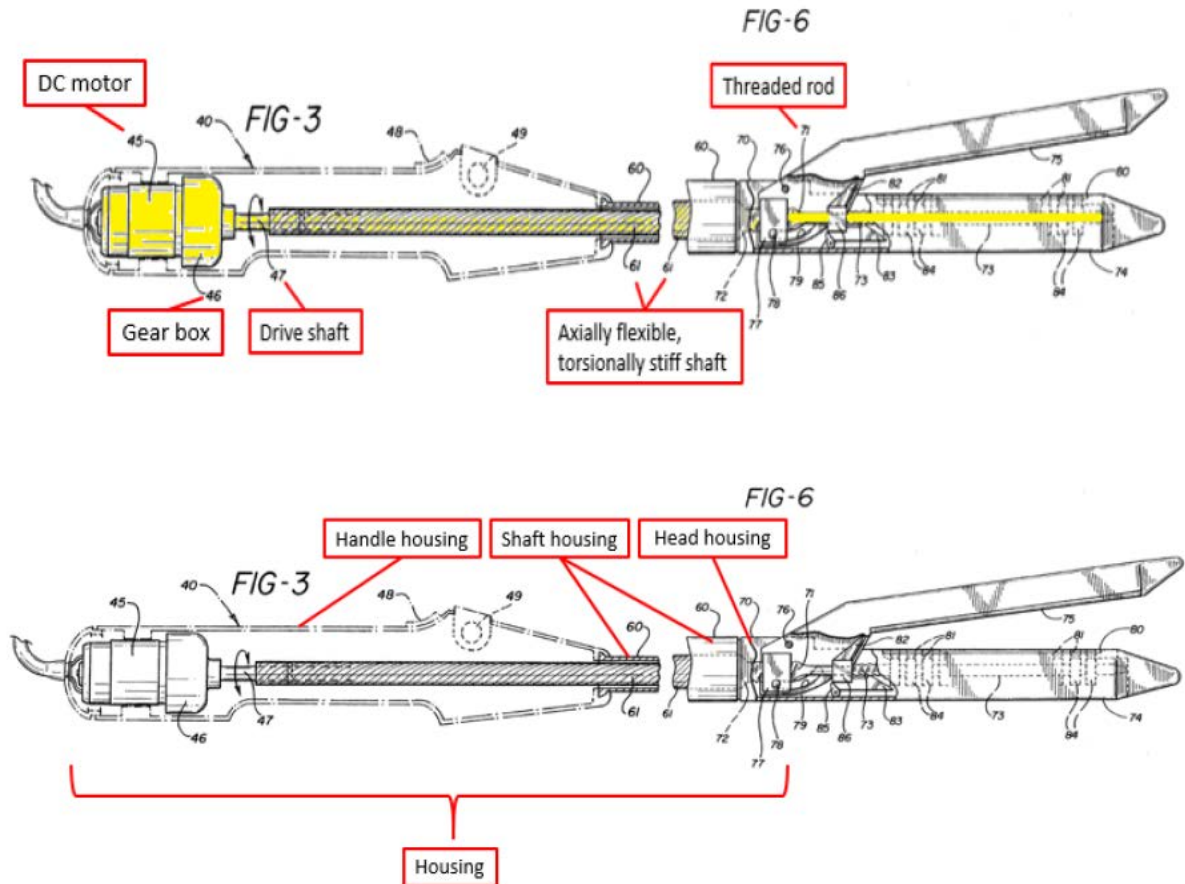
Patent Owner contends that Petitioner’s grounds of unpatentability based on Hooven and Heinrich is deficient. In particular, Patent Owner focuses its contention on two features required by the claims: (1) the requirement of claims 1 and 16 pertaining to a motor that is configured to only selectively receive power from an attached power source (PO Resp. 56–62); and (2) the requirement of claims 6 and 17 concerning a motor that is “operably connected” and “operably disconnected from an attached power source (*id.* at 49–56). Patent Owner also contends that “Petitioner has failed to identify a legally cognizable motivation to combine” the teachings of Hooven with Heinrich or Milliman. *Id.* at 62–69. In taking that view, Patent Owner’s urges that: (1) “Heinrich and Milliman Discourage a Combination with Hooven” (*id.* at 64–65); (2) Petitioner has relied on “Impermissible

Hindsight to Combine Hooven and Heinrich” (*id.* at 65–67); and (3) a person of ordinary skill in the art “would not have a reasonable expectation of success in combining Hooven and Heinrich” (*id.* at 67–69). Lastly, Patent Owner also argues that the testimony of Petitioner’s declarant, Dr. Fischer, is “entitled to little weight because he failed to understand the scope of the claims before offering an opinion that the prior art discloses and/or renders obvious the key claim limitations.” *Id.* at 69–72.

*G. Proposed Ground of Unpatentability for claims 1–10, 16, and 17 Based on Hooven and Heinrich*

*1. Claim Features—Claims 1 and 16*

With respect to claims 1 and 16 (and intrinsically claims 2–10, which ultimately depend from claim 1), the dispute between the parties largely centers on the power limitation. That limitation specifically reads “said motor is configured to receive power from a power source such that said motor can only selectively receive power from said power source when said means for removably attaching said housing to the surgical instrument is operably coupled to the surgical instrument.” Ex. 1001, 80:56–61; 82:36–41. As discussed above with respect to claim construction, we do not share Patent Owner’s view as to the type of connection required by the power limitation. To that end, we conclude that the power limitation encompasses within its scope a scenario in which a motor “selectively receive[s] power” from a power source through attachment and detachment of the motor from the power source. That is a scenario that Petitioner offers as a part of its ground of unpatentability based on Hooven and Heinrich. The Petition sets forth the following annotated versions of Hooven’s Figures 3 and 6.



Pet. 61.

The figures above depict and annotated and colorized version of Hooven's Figures 3 and 6 showing a "Housing" of Hooven's instrument 30 with handle 40 containing DC motor 45. Heinrich's Figure 7, showing its robotic system 600, is reproduced below.

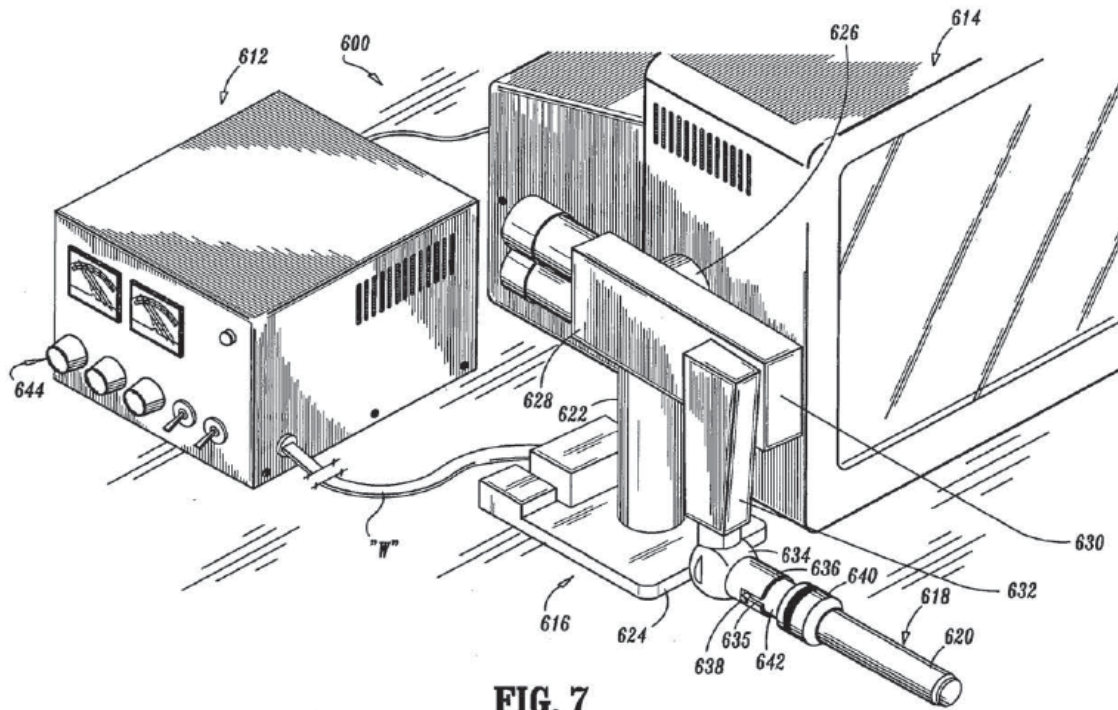


Figure 7, above, is a perspective view of a “robotic system” according to Heinrich’s disclosure. *Id.* ¶ 62. Petitioner contends the following:

[I]n the proposed combination of Hooven’s disposable loading unit (*i.e.*, instrument 30) with Heinrich’s surgical instrument (*i.e.*, the combination of actuation assembly 612, monitor 614, and robot 616), Hooven’s motor 45, which is in handle 40, would be configured to receive power from Heinrich’s surgical instrument, which includes a power source. . . . Because the housing of Hooven’s instrument 30 (*i.e.*, the housing of handle portion 40) would be detachable from Heinrich’s surgical instrument system (*i.e.*, the robot 616 portion of the surgical instrument system), Hooven’s motor 45 could only selectively receive power from the power source when the means for removably attaching the housing of handle portion 40 to robot 616 (*i.e.*, protrusions 638) is operably coupled to robot 616.

*Id.* at 61–62 (citing Ex. 1003 ¶ 276).

Petitioner, thus, submits that the combined teachings of Hooven and Heinrich suggest that Hooven’s instrument 30 having handle 40 with motor



45 may be selectively attached or detached from Heinrich's robot 616. In doing so, motor 45 only selectively receives power from a power source associated with robot system 600. We conclude that such a proposal reasonably accounts for the power limitation of claims 1 and 16. We also conclude that Petitioner has accounted adequately for the remaining features of claims 1 and 16, as well as claims 2–5 which ultimately depend from claim 1. *See* Pet. 55–69.

*2. Claim Features—Claims 6 and 17*

In conjunction with claims 6 and 17 (and also claims 7–10, which ultimately depend from claim 6), the central disagreement between the parties rests on the operably disconnected/connected limitation. That limitation reads as follows:

wherein said electric motor is operably disconnected from a power source when said housing is not attached to the surgical instrument system, and wherein said electric motor is operably connected to the power source when said housing is attached to the surgical instrument system.

Ex. 1001, 81:35–41; 82:62–67.

Petitioner takes a similar position with respect to the operably disconnected/connected limitation as it did with respect to the power limitation. In particular, Petitioner contends the following with regard to what the combined teachings of Hooven and Heinrich would have conveyed to a skilled artisan:

Because the housing of Hooven's instrument 30 (*i.e.*, the housing of handle portion 40) would be detachable from Heinrich's surgical instrument system (*i.e.*, robot 616 portion of the surgical instrument system), Hooven's DC motor 45 would be operably disconnected from the power source in Heinrich's surgical instrument system when the housing of Hooven's handle 40 is

not attached to Heinrich's robot 616. IS1003, ¶ 307. Likewise, Hooven's DC motor 45 would be operably connected to the power source in Heinrich's surgical instrument system when the housing of Hooven's handle 40 is attached to Heinrich's robot 616. *Id.*

Pet. 46.

Patent Owner bases its challenge to Petitioner's contention on its claim construction theory that the term "operably" connotes a meaning when applied to "disconnected" and "connected" that distinguishes between electrical disconnection/connection and physical disconnection/connection. PO Resp. 18–20. As discussed above, however, we do not agree with Patent Owner that "operably" disconnected and connected precludes physical disconnection and connection of a motor to a power source. We find credible the position of Petitioner, and its declarant, Dr. Fischer, that the connection and disconnection of Hooven's DC motor 45 from the power source associated with Heinrich's robot 616 is understood reasonably as operable connection and disconnection. Accordingly, we are satisfied that Petitioner has accounted adequately for the operably disconnected/connected limitation based on the combined teachings of Hooven and Heinrich. We have considered the record before us, and also conclude that Petitioner has accounted adequately for the remaining features of claims 6 and 17, as well as dependent claims 7–10. *See* Pet. 28–49, 53–54.

### *3. Reasons to Combine*

We conclude that Petitioner has presented adequate and credible reason to combine the teachings of Hooven and Heinrich. We reasoned the following in our Decision on Institution.

The similarity of the disposable loading unit disclosed in Hooven

(e.g., Ex. 1004, Fig. 1) and that disclosed in Heinrich (e.g., Ex. 1005, Fig. 1) is notable. Heinrich explains that it was known in the art that a variety of its disclosed disposable loading units may be attached to a robotic assembly via a type of releasable coupling. *See, e.g.,* Ex. 1005, Figs. 9–12. Thus, the record at hand demonstrates that there are a finite number of known solutions for coupling a disposable loading unit with a robotic surgical instrument system. A person of ordinary skill seemingly would have adequate reason to apply those known finite solutions so as to connect Hooven’s disposable unit to such a robotic system. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.”)

Dec. on Inst. 25–26.

Patent Owner’s premise that Heinrich somehow discourages a combination with Hooven’s teachings is unpersuasive. Patent Owner theorizes that Heinrich incorporates by reference Milliman, and that disclosure in Milliman pertaining to knife blade replacement somehow renders Hooven “incompatible” with Heinrich. PO Resp. 64–65. Milliman discloses a stapling instrument and characterizes, in connection with discussion of the background of related art, use of a “fresh knife blade” as being “advantageous[.]” Ex. 1006, 2:26–31. According to Patent Owner, Hooven describes use of a “reusable knife architecture.” PO Resp. 65. Patent Owner, however, does not articulate reasonably why the recognition of an advantage of use of a fresh knife blade leads to “incompatibility” of a combination of Hooven and Heinrich’s teachings, even if Hooven contemplates some reuse of a knife blade. Although Patent Owner’s

declarant, Dr. Cimino, also testifies that such “incompatibility” somehow emerges (*see, e.g.*, Ex. 2006 ¶¶ 173–177), he does not support that testimony with persuasive explanation.

We further are not persuaded that Petitioner’s proposed combination of the teachings of Hooven and Heinrich relies on impermissible hindsight or that there would not have been a reasonable expectation of success. As noted in the Decision on Institution (and again above), it is readily apparent that both Hooven and Heinrich disclose similar disposable loading units, and Heinrich, itself, contemplates use of such loading units with robotic systems. Patent Owner does not support with adequate argument or record evidence the premise that, despite those noted disclosures of Hooven and Heinrich, it is only impermissible hindsight that governs a combination of Hooven and Heinrich’s teachings.

We also are not persuaded that a skilled artisan would not have had a reasonable expectation of success in the combination. Patent Owner does not explain adequately why Hooven’s surgical cutting and stapling instrument should be regarded as a “completely different device” from the stapler of Heinrich. *See* PO Resp. 68. Although Dr. Cimino seemingly testifies that a skilled artisan would have recognized different “level[s] of complexity” between the devices of Hooven and Heinrich (*see* Ex. 2006 ¶ 182), we are not persuaded that even if such differences exist, it somehow precludes any combination of Hooven’s and Heinrich’s teachings. Patent Owner bases its argument on the premise that “Heinrich *never* discloses a surgical cutting and stapling instrument (such as the handheld cutting and stapling device disclosed in Milliman and shown in Heinrich Figure 3) coupled to the robotic system.” PO Resp. 68. Yet, as noted by Petitioner

(Pet. Reply 21), that argument does not appear to be consistent with Heinrich's own teachings of the use of a "loading unit" for "open gastrointestinal anastomosis and transverse anastomosis staplers" used with robotic surgical system 600. *See, e.g.*, Ex. 1005 ¶¶ 132–133; *see* Pet. Reply 21 (citing Ex. 1003 ¶¶ 76–78; Ex. 1005 ¶¶ 132–133).

#### *4. Dr. Fischer's Testimony*

Lastly, we are not persuaded on the record before us that the testimony of Petitioner's declarant, Dr. Fischer is unreliable with respect to claims 1–10, 16, and 17 of the '677 patent or should be given "little weight" in considering the ground of unpatentability based on Hooven and Heinrich. Patent Owner challenges Dr. Fischer's testimony in that respect based on questions that were asked during a deposition in this proceeding on February 20, 2019 (Ex. 2008). Patent Owner contends that such questions demonstrate that Dr. Fischer "did not believe that understanding the scope of the claim terms was necessary to provide his expert opinion." PO Resp. 69–70. It is difficult, however, to ascertain from the limited quotations provided in Patent Owner's Response the full nature of the questions to which Patent Owner directs our attention, for instance, the specific claim terms that were the subject of the inquiry. Although Patent Owner presents some of Dr. Fischer's testimony, e.g., that he did not "believe it's necessary to broadly define the term or find the extent of the boundary of the scope of that term to find examples," without context that testimony is not particularly meaningful. *See id.* (citing Ex. 2008, 356:18–357:6). Moreover, even considering in greater detail the testimony on which Patent Owner relies, it simply does not emerge to this panel that Dr. Fischer lacks understanding of the scope of the claims to render his testimony "meaningless." *See id.* at 70.

We agree with Petitioner that there is no requirement that a declarant must provide a “broad all-encompassing definition” of a term to provide reliable testimony for this panel to evaluate a ground of unpatentability. *See* Pet. Reply 25 (citing *Vivid Techs., Inc. v. American Science & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (terms need to be construed “only to the extent necessary to resolve the controversy.”))

We further do not regard Patent Owner’s assertion meaningful that “Dr. Fischer’s obviousness analysis is undermined by the fact that Dr. Fischer testified that he did not consider the advantages and disadvantages in adapting an instrument like Hooven for use on a system like Heinrich.” PO Resp. 71–72. It is the role of this panel to make its own obviousness evaluation rather than assess the obviousness analysis of a declarant offered as an expert. Moreover, the noted questioning and testimony appears directed to advantages and disadvantages in generally “converting a handheld surgical device to a robotic surgical device” rather than specific questions pertaining to Hooven and Heinrich. *Id.* Furthermore, whether Dr. Fischer considered the “advantages and disadvantages” (*id.* at 71) of a combination of Hooven and Heinrich does not mean that this panel cannot reliably consider his testimony, including, for instance, his testimony as to the content of the prior art and reasons for combining that prior art. In reviewing Dr. Fischer’s credentials that are presented on this record, we are satisfied that he is qualified to provide reliable testimony for this panel to consider when evaluating the proposed ground of unpatentability proposed for claims 1–10, 16, and 17 of the ’677 patent. *See* Ex. 1003, Appendix B.

*5. Conclusion – Obviousness of Claims 1–10, 16, and 17*

We have considered carefully each of the parties’ briefings in this proceeding and the underlying evidence offered in support of those briefings. After such consideration, we are persuaded that Petitioner has shown by a preponderance of the evidence that claims 1–10, 16, and 17 of the ’677 patent would have been obvious in view of the combined teachings of Hooven and Heinrich.

*H. Proposed Grounds of Unpatentability for claims 1–5 and 16 Based on Hooven and Heinrich and Milliman or Alesi*

Petitioner alternatively proposes grounds of unpatentability of claims 1–5 and 16 based on Hooven and Heinrich taken with either Milliman or Alesi. As discussed above, we are persuaded that Petitioner’s ground styled as being based on the combined teachings of Hooven and Heinrich renders obvious claims 1–5 and 16. We however make the following observations in connection with the grounds adding Milliman and Alesi.

With respect to the ground involving Milliman, Petitioner states that “[i]f Heinrich is deemed not to disclose the Milliman subject matter incorporated by reference, it would have been obvious to combine Heinrich and Milliman to arrive at the same subject matter. Pet. 69 (citing Ex. 1003 ¶ 268, n. 3; ¶¶ 99–101). We observe that Heinrich makes reference to Milliman and states that “the entire contents” of that reference are “incorporated herein by reference.” Ex. 1005 ¶ 99. We conclude that Heinrich incorporates by reference Milliman in its entirety. *See Harari v. Lee*, 656 F.3d 1331, 1335 (Fed. Cir. 2011) (holding the statement “[t]he disclosures of the two applications are hereby incorporate[d] by reference” is sufficient to incorporate by reference the disclosures of the two patent

applications in their entirety). Accordingly, we conclude that Milliman's disclosure is part of Heinrich's disclosure.

In conjunction with the ground involving Alesi, that ground is offered as an alternative in the event that we conclude that Hooven does not disclose the following feature of claim 1: "a linear member coupled with said rotary drive which moves axially upon the application of a rotary motion thereto from said motor." Pet. 70. Petitioner contends that "Hooven's translatable drive member, which includes the linear knife 82 and wedge 83, is a linear member." Pet. 62 (citing Ex. 1003 ¶ 277). Patent Owner does not challenge that contention. We conclude that the record before us adequately establishes that Hooven discloses the required linear member of claim 1. The addition of the teachings of Alesi does not alter that conclusion.

Accordingly, we also are persuaded that Petitioner has shown, by a preponderance of the evidence, that claims 1–5 and 16 would have been obvious based on the teachings of Hooven and Heinrich taken with either Milliman or Alesi.

#### *I. Patent Owner's Contingent Motion to Amend*

Patent Owner filed a contingent motion to substitute proposed claims 19–24 should any of challenged claims 1–5 and 16 be found unpatentable. Because, as discussed above, we conclude that claims 1–5 and 16 (and also claims 6–10 and 17) have been shown to be unpatentable, the contingency has manifested. Mot. to Amend 1. As noted by Patent Owner, "[i]n *Aqua Products, Inc. v. Joseph Matal*, 872 F.3d 1290, 1327–28 (Fed. Cir. 2017) (*en banc*), the Federal Circuit held that the burden of persuasion to establish that proposed amendments are patentable no longer rests with the patent owner." *Id.* Here, that burden rests with Petitioner. *See Bosch Auto. Serv. Sols., LLC*



*v. Matal*, 878 F.3d 1027, 1040 (Fed. Cir. 2017) (citing *Aqua Products*, 872 F.3d at 1311 (O’Malley, J., plurality)). Patent Owner need only satisfy the requirements of 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121. *See Lectrosonics, Inc. v Zaxcom, Inc.*, IPR2018-01129, -01130, Paper 15 (PTAB Feb. 25, 2019) (designated precedential). Pursuant to that statute and that rule, a patent owner meets its required showing if: (1) it presents a reasonable number of substitute claims; (2) the substitute claims are responsive to a ground of unpatentability; (3) the substitute claims do not enlarge the scope of the claims or the patent; and (4) the substitute claims do not introduce new subject matter.

*1. Reasonable Number of Substitute Claims*

Pursuant to 37 C.F.R. § 42.121(a)(3), there is a “presumption that only one substitute claim would be needed to replace each challenged claim.” Here, Patent Owner proposes six substitute claims, 19–24, to replace six challenged claims, 1–5 and 16. Petitioner does not contend that Patent Owner’s proposal in that regard is unreasonable. We conclude that this one-for-one substitution presents a reasonable number of substitute claims.

*2. Respond to Ground of Unpatentability*

Patent Owner contends that its substitute claims respond to the proposed grounds of unpatentability based on Hooven in combination with Heinrich, Milliman, or Alesi by adding claim features that Patent Owner contends are absent from the disclosures of those references. Mot. to Amend 17–21. Petitioner does not dispute that substitute claims 19–24 are responsive to the noted grounds of unpatentability. We conclude that the substitute claims satisfy the requirement that the claims “respond to a ground

of unpatentability involved in the trial.” *See* 37 C.F.R. § 42.121(2)(i).

### 3. *Scope of Substitute Claims*

Pursuant to 35 U.S.C. § 316(d)(3) and 37 C.F.R. § 42.121(a)(2)(ii), an amendment may not “enlarge the scope of the claims of the patent . . .”

Patent Owner contends that the substitute claims it proposes “narrow—and do not broaden—the original claims.” Mot. to Amend 2 (emphasis omitted). More specifically, Patent Owner contends the following:

Substitute independent claims 19 and 24 include all of the original features of original independent claims 1 and 16, respectively. With respect to independent claims 1 and 16, Patent Owner has clarified in proposed independent claims 19 and 24 that the claimed motor is configured for attachment to a power source independent from the means for removably attaching the housing to the surgical instrument.

Proposed dependent claims 20-23 are identical to dependent claims 2-5. The proposed claims 20-23 are, thus, narrower than the original, granted versions of those claims.

*Id.* at 2–3.

Petitioner does not challenge the above-noted contentions. In reviewing the substitute claims, we discern that the following changes to each of claims 1 and 16 are captured in substitute claims 19 and 24

[deletions shown in ~~strike-through~~ and additions shown with underlining]:

a motor supported within said housing and operably interfacing with said rotary drive to selectively apply a rotary motion thereto, wherein said motor is configured ~~to receive power from~~ for attachment to a power source independent of said housing connector attachment to the surgical instrument system, and wherein ~~such that~~ said motor can only selectively receive power from said power source when said means for removably attaching said housing to the surgical instrument is operably coupled to the surgical instrument[.]

*Id.* at A1, A3.

Claims 19 and 24, thus, add features pertaining to the independence of the attachment of a motor to a power source with respect to a housing connector attachment. Although we are mindful that the amendments also substitute the phrase “for attachment to” in lieu of “to receive power from,” we do not view such substitution as enlarging the scope of claims 1 and 16 vis-à-vis claims 19 and 24. The changes to dependent claims 20–23 are directed solely to amending their dependency. We conclude that the amendments do not enlarge the scope of claims 1–5 and 16 of the ’677 patent.

#### *4. New Matter*

Pursuant to 35 U.S.C. § 316(d)(3) “[a]n amendment . . . may not . . . introduce new matter”; *see also* 37 C.F.R. § 42.121(2)(ii) (“[a] motion to amend may be denied where: . . . [t]he amendment seeks to . . . introduce new subject matter.”) Patent Owner contends that substitute claims 19–28 do not introduce new matter. Mot. to Amend 3. Patent Owner presents a detailed table laying out where all of the features of claims 19–28 are found “from the original disclosure of the [’677 patent]—U.S. Pat. App. Pub. 2014/0252067 A1 (Exhibit 2009)—and from the application to which the [’677 patent] claims priority—U.S. Appl. No. 12/031,628 (Ex. 2010).” *Id.* at 3–16.

Petitioner contends that the substitute claims introduce new matter. Pet. Opp. 1–3. In particular, Petitioner argues the following:

Here, each of the substitute claims includes the following amendment: “said motor configured ~~to receive power from~~ for attachment to a power source independent of said housing connector attachment to the surgical instrument system, and

~~wherein such that.~~” [Mot. to Amend] at 16, 23. However, this amendment does not have written description support (and thus introduces new matter) because the portions of the ’677 patent and all of its priority applications identified by Patent Owner clearly teach the opposite; namely, that “attachment” of the power source to the motor (*i.e.*, an electrical connection that allows current to flow there between) is **dependent** on the housing connector’s attachment to the surgical instrument system.

*Id.* at 2.

Petitioner directs our attention to an embodiment of the ’677 patent shown in Figure 3, which Petitioner describes as requiring that “‘switch portion 520 . . . movably houses a battery 526 therein,’ (shown in Fig. 3) and switch portion 520 is configured to move between a contact state and a non-contact state **depending** on whether the disposable loading unit is attached to the handheld surgical cutting and stapling instrument 10.” Pet. Opp. 2 (citing Ex. 1001, 11:62–12:24; Supplemental Declaration, Dr. Gregory S. Fischer, Ex. 1030 ¶¶ 33–36). Petitioner concludes that such disclosure is “in direct contradiction with the requirements of the amended claims.” *Id.* at 3.

Patent Owner characterizes Petitioner’s new matter assertion as being incorrectly based on its contention that “‘motor configured to attach to a power source’ is limited to an electrical attachment” there between. PO Reply. 1. Patent Owner instead contends that the meaning of “attached,” in the context of the ’677 patent and with specific regard to the proposed claim amendments, dictates that a motor may be “physically (but not electrically) attached to a power source independent of whether the housing connector is attached to the surgical instrument system.” *Id.* at 2.<sup>11</sup>

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<sup>11</sup> Patent Owner also contends that its proposed meaning of “attached” is

Having reviewed the conflicting viewpoints of the parties, we conclude that Patent Owner relies on persuasive and credible evidence that, in the context of the '677 patent, a motor may be physically attached to a power source but that such physical attachment does not require that the such configuration necessarily at all times permit flow of power from the power source to the motor. To that end, Patent Owner provides persuasive support for its view in its citation and quotation to the operation and function of motor 562 with respect to battery 526 appearing in U.S. Pat. App. Pub. 2014/0252067 A1 (Exhibit 2013) and U.S. Appl. No. 12/031,628 (Ex. 2010). *See, e.g.*, Mot. to Amend 7–8.

Accordingly, we are persuaded by Patent Owner that its Motion to Amend does not introduce new matter.

#### *5. Conclusion – Contingent Motion to Amend*

For the foregoing reasons, we conclude that Patent Owner's Contingent Motion to Amend satisfies the requirements of 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121. Accordingly, Patent Owner has met its burden when it comes to that Motion to Amend.

#### *J. Petitioner's Proposed Grounds of Unpatentability for Substitute Claims 19–24*

We now turn to Petitioner's two proposed grounds of unpatentability for substitute claims 19–24.

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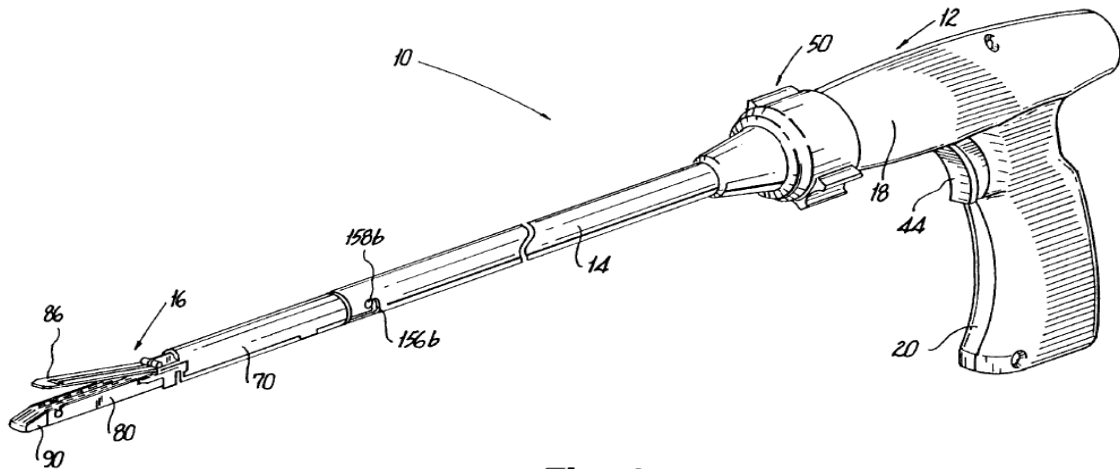
supported by other evidence including: (1) a dictionary definition of “attached” (Ex. 2015, 3); (2) supplemental Declaration testimony of Dr. Cimino (Ex. 2014 ¶¶ 25–30); (3) content of U.S. Patent 5,954,259 to Viola et al. issued September 21, 1999 (Ex. 1031, “Viola”); and (4) the deposition testimony of Petitioner's declarant, Dr. Fischer (Ex. 2016). PO Reply 2–3.

Claim(s) Challenged	35 U.S.C. §	References
19–22, 24	103	Viola, Heinrich
23	103	Viola, Heinrich, Young <sup>12</sup>

*1. Viola and Heinrich*

*a) Overview of Viola*

Viola is titled “Self-Contained Powered Surgical Apparatus for Applying Surgical Fasteners.” Ex. 1031, code (54). Figures 1 and 2a of Viola are reproduced below.



**Fig. 1**

<sup>12</sup> U.S. Patent 5,653,374 to Young et al. issued Aug. 5, 1997 (Ex. 1032, “Young”).

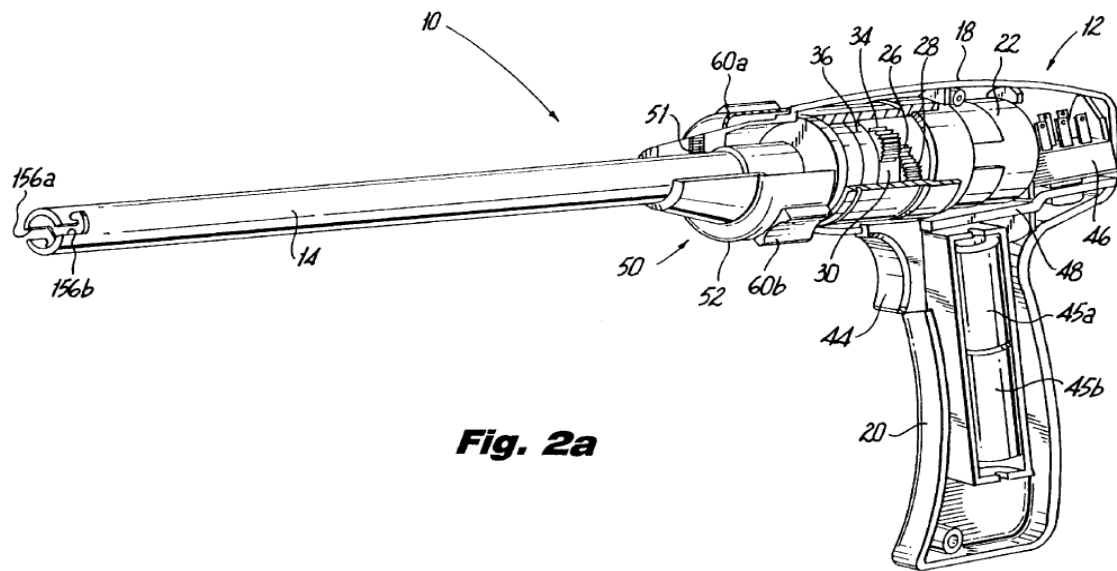


Figure 1 “is a perspective view of a powered surgical stapling apparatus” in accordance with an embodiment of the invention. *Id.* at 3:14–16. Figure 2a “is a perspective view of the elongated body portion and the handle assembly with one of the housing halves removed to illustrate the motor assembly.” *Id.* at 3:20–22. Viola describes that its self-contained surgical stapler 10 includes handle portion 12, elongate body portion 14, and cartridge assembly 16. *Id.* at 4:7–17. Handle portion 12 contains motor assembly 22, power cells 45a, 45b, and trigger 44 for controlling operation of motor assembly 22. *Id.* at 4:18–48.

*b) Discussion*

Petitioner contends that substitute claims 19–22 and 24 would have been obvious in view of Viola and Heinrich. A key addition to substitute independent claims 19 and 24 is the requirement of a motor that is configured for attachment to a power source where such attachment is “independent of a housing connector attachment to the surgical system” wherein the motor only selectively receives power from the power source

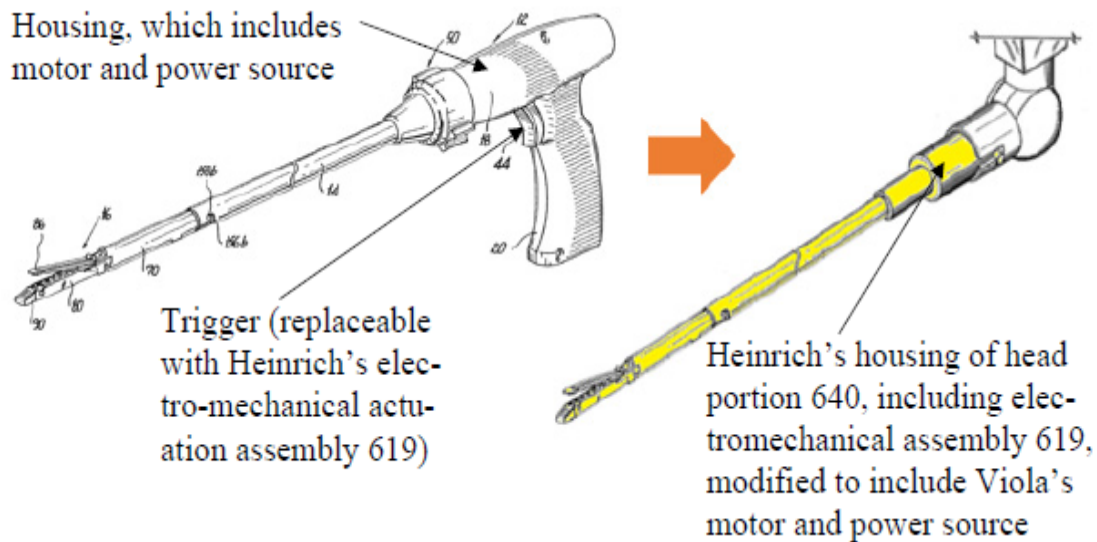
when the housing connector is attached to the instrument system.<sup>13</sup>

Petitioner contends the following:

[I]t would have been obvious to (1) incorporate the components inside Viola's handle 12 (*e.g.*, motor assembly 22 and power cells 45a-b) into Heinrich's housing, and (2) replace or actuate Viola's trigger 44 with Heinrich's electromechanical assembly 619, which is also included in the housing of disposable loading unit 618 and is controlled by Heinrich's robotic surgical system . . . .

Pet. Opp. 4–5.

Images offered in Petitioner's Opposition are reproduced below.

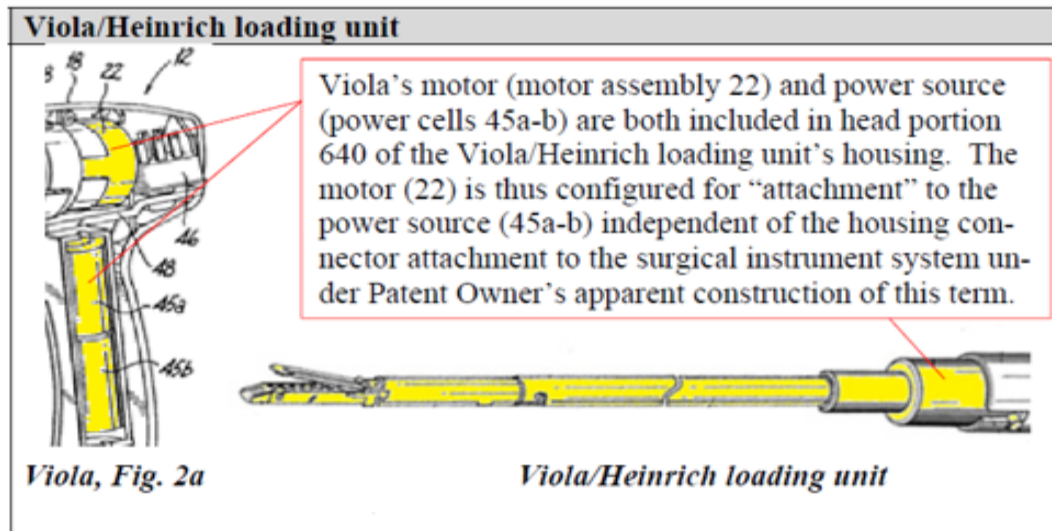


Petitioner seeks to add clarity to its proposed combination with the annotated and colored versions of Viola's Figure 1 (above on left) and Heinrich's Fig. 9 (above on right). Pet. Opp. 5. Petitioner also offers the

<sup>13</sup> Claims 20–22 ultimately depend from claim 19. Those dependent claims, thus, also include the noted requirement.



following additional annotated figures that purportedly provide further explanation:



*Id.* at 12. The figures above show an annotated and colorized version of Viola's Figure 2a and a depiction of an alleged "Viola/Heinrich loading unit."

However, the premise of Petitioner's proposed combination is uncertain. Petitioner seemingly contends that a person of ordinary skill in the art would have somehow incorporated Viola's motor assembly 22 and power cells 45a–b into Heinrich's load unit in a manner such that Heinrich's robotic system, which itself includes motor components, operates motor assembly 22. Petitioner also apparently is of the view that such incorporation also provides the necessary motor and power source attachment that is "independent" of the attachment of the housing connector and surgical instrument. Petitioner further points to the teachings of an additional item of prior art, Anderson,<sup>14</sup> which apparently suggests that robotic systems "may include OEM parts" with the intent "to reduce costs

<sup>14</sup> U.S. Patent No. 6,783,524 B2 issued Aug. 31, 2004 to Anderson et al. (Ex.

and for manufacturing convenience.” Pet. Opp. 7 (citing Ex. 1013, 7:6–7).

What is wanting, however, from that reasoning is any credible explanation why components of Viola constitute “OEM parts” that would provide the alleged benefits of cost reduction and manufacturing convenience.

Petitioner also attempts to support its obviousness position with the supplemental Declaration testimony of Dr. Fischer (Ex. 1030). *See, e.g.*, Pet. Opp. 6–8 (citing Ex. 1030 ¶¶ 46–50). We have considered that testimony. The testimony, however, provides little persuasive explanation to support Petitioner’s proposal that a skilled artisan would have combined teachings of Viola and Heinrich to arrive at the particular attachment configurations required by claims 19 and 24.

Patent Owner contends that one of ordinary skill in the art would have had “no reason to combine a first loading unit, which contains a motor and power source, to a second loading unit, which contains a second motor, to a robotic system, which contains a second power source.” PO Reply 6. Patent Owner also characterizes Petitioner’s proposed combination as “overly complicated,” as posing “technical challenges that would have been beyond the skill” of a person of ordinary skill in the art, and as born only of “hindsight bias.” *Id.* at 6–11. Patent Owner further argues that Petitioner has not presented adequate explanation why the combination would result in any of the proposed advantages that Petitioner suggests. *Id.* Patent Owner relies on the Supplemental Declaration testimony of Dr. Cimino, who echoes Patent Owner’s arguments. *See, e.g., id.* (citing Ex. 2014 ¶¶ 47–66).

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1013, “Anderson”).

Having considered the conflicting positions of the parties, we conclude that Petitioner has not met its burden of establishing that any of claims 19–22 and 24 are unpatentable based on the teachings of Viola and Heinrich. We do agree with Petitioner that there is “no legal requirement that Petitioner must prove the structures disclosed in Viola and Heinrich could be physically combined to result in an operable device.” Pet. Sur-reply 3–4. That, indeed, is not the test for obviousness. Rather, “the test for obviousness is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). Also required is “articulated reasoning with a rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

Here, Petitioner has not made an adequate showing that a combination of the teachings of Viola and Heinrich would have suggested to a skilled artisan that the amalgamated structure proposed by Petitioner in advocating the obviousness of substitute claims 19–22 and 24. Petitioner also has not articulated suitable reasoning with rational underpinnings that one of ordinary skill in the art would have had a reason to combine the teachings of Viola and Heinrich to render obvious those claims. Accordingly, for the above-discussed reasons, we are not persuaded that Petitioner has met its burden to show, by a preponderance of the evidence, that claims 19–22 and 24 are unpatentable based on Viola and Heinrich.

## 2. *Viola, Heinrich, and Young*

Petitioner also contends that substitute claim 23 “is obvious over Viola in view of Heinrich and, if necessary, further in view of Young.” Pet. Opp. 16. Claim 23 depends from claim 19. Petitioner relies on Young only

to account for features added by claim 23, and not to remedy any of the deficiencies discussed above with respect to the proposed combination of Viola and Heinrich as applied to claim 19. Thus, we also are not persuaded that Petitioner has met its burden to show, by a preponderance of the evidence, that claim 23 is unpatentable based on Viola, Heinrich, and Young.

### III. CONCLUSION

For the foregoing reasons, we conclude that Petitioner has met its burden to show, by a preponderance of the evidence, that (1) claims 1–10, 16, and 17 of the '677 patent are unpatentable based on the combined teachings of Hooven and Heinrich; (2) claims 1–5 and 16 are unpatentable based on the combined teachings of Hooven, Heinrich, and Milliman; and (3) claims 1–5 and 16 are unpatentable based on the combined teachings of Hooven, Heinrich, and Alesi. We conclude, however, that Petitioner has not met that burden when it comes to substitute claims 19–24. Accordingly, we grant Patent Owner's Motion to Amend (Paper 18) to substitute claims 19–24 for claims 1–5 and 16 of the '677 patent.

In summary,

<b>Claims</b>	<b>35 U.S.C. §</b>	<b>References</b>	<b>Claims Shown Unpatentable</b>	<b>Claims Not Shown Unpatentable</b>
1–10, 16, 17	103	Hooven, Heinrich	1–10, 16, 17	
1–5, 16	103	Hooven Heinrich, Milliman	1–5, 16	
1–5, 16	103	Hooven, Heinrich, Alesi	1–5, 16	
<b>Overall Outcome</b>			1–10, 16, 17	

Motion to Amend Outcome	Claims
Original Claims Cancelled by Amendment	
Substitute Claims Proposed in the Amendment	19–24
Substitute Claims: Motion to Amend Granted	19–24
Substitute Claims: Motion to Amend Denied	
Substitute Claims: Not Reached	

#### IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has shown by a preponderance of the evidence that claims 1–10, 16, and 17 of the '677 patent are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Amend (Paper 18) seeking substitution of claims 19–24 for claims 1–5 and 16 in the '677 patent is *granted*; and

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

IPR2018-00935  
Patent 8,991,677 B2

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