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Paper 7
February 7, 2019

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTUITIVE SURGICAL, INC.,
Petitioner,

v.

ETHICON LLC,
Patent Owner.

Case IPR2018-01248
Patent 8,479,969 B2

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

MEYERS, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Intuitive Surgical, Inc. ("Petitioner") filed a Petition (Paper 2, "Pet.") requesting an *inter partes* review of claims 23–26 of U.S. Patent No. 8,479,969 B2 (Ex. 1001, "the '969 patent"). Ethicon LLC ("Patent Owner") filed a Preliminary Response (Paper 6, "Prelim. Resp.") to the Petition. We have authority under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted "unless . . . the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Moreover, a decision to institute under 35 U.S.C. § 314 may not institute on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

Upon consideration of the Petition and the Preliminary Response, we conclude that the information presented shows there is a reasonable likelihood that Petitioner would prevail in showing the unpatentability of at least one challenged claim. Accordingly, we authorize an *inter partes* review to be instituted as to claims 24–26 of the '969 patent on the grounds raised in the Petition.[1] Our factual findings and conclusions at this stage of the proceeding are based on the evidentiary record developed thus far (prior to Patent Owner's Response). This is not a final decision as to patentability of claims for which *inter partes* review is instituted. Any final decision will be based on the record, as fully developed during trial.

[1] Although the Petitioner initially sought to challenge claim 23 of the '969 patent, Patent Owner has statutorily disclaimed that claim. *See* Ex. 2002. For the reasons discussed *infra*, claim 23 is no longer regarded as a claim challenged in the Petition.

II. BACKGROUND

A. The '969 Patent

The '969 patent issued July 9, 2013 from an application filed February 9, 2012, and claims priority, as a continuation, to an application filed May 27, 2011, and claims priority, as a continuation-in-part, to an application filed January 10, 2007. Ex. 1001, [45], [22], [63]. The '969 patent is titled "Drive Interface for Operably Coupling a Manipulatable Surgical Tool to a Robot," and generally relates to endoscopic surgical instruments. Ex. 1001, [54]; 1:54–57. The '969 patent summarizes its disclosure as encompassing a surgical instrument "for use with a robotic system that has a control unit and a shaft portion," which together with an electrically conductive elongated member, "transmit[s] control motions from the robotic system to an end effector." Ex. 1001, [57]. Figure 26 of the '969 patent is reproduced below:

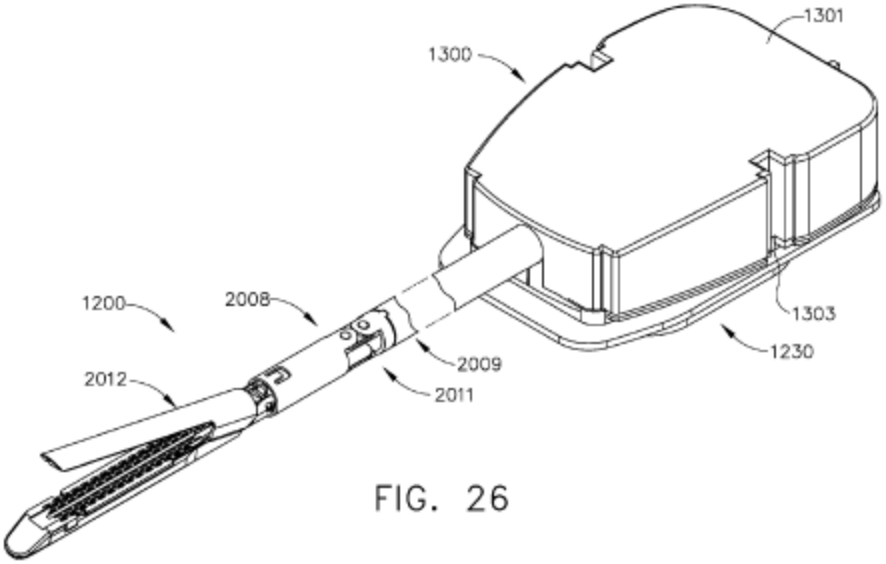

FIG. 26

Figure 26 depicts "a perspective view of a surgical tool embodiment of the present invention." Ex. 1001, 5:19–20. Figure 26 illustrates surgical tool 1200 with an end effector 2012, elongated shaft assembly 2008, and articulation joint 2011. Ex. 1001, 24:66–25:5. The '969 patent describes

that surgical tool 1200 is coupled to a robotic manipulator (not shown) by a tool mounting portion 1300. Ex. 1001, 25:5–7.

Figure 31 of the '969 patent is reproduced below:

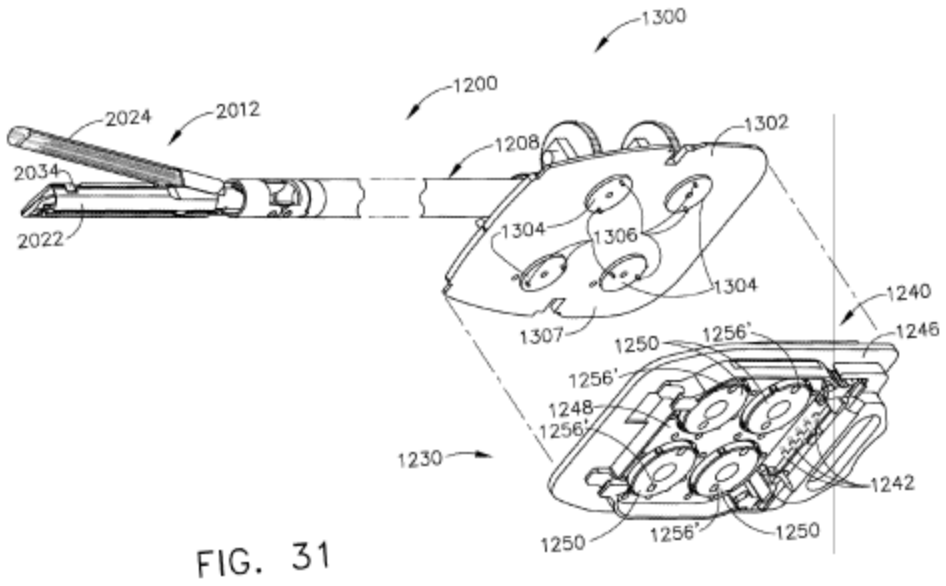

FIG. 31

Figure 31 depicts "a partial bottom perspective view of the surgical tool embodiment of FIG. 26." Ex. 1001, 5:27–28. Figure 31 illustrates "tool mounting portion **1300** includes a tool mounting plate **1302** that operably supports a plurality of (four are shown in FIG. 31) rotatable body portions, driven discs or elements **1304**, that each include a pair of pins **1306** that extend from a surface of the driven element 1304." Ex. 1001, 25:11–16. Figure 31 further depicts that "[i]nterface **1230** includes an adaptor portion **1240** that is configured to mountingly engage the mounting plate **1302**." Ex. 25:19–22. The '969 patent describes that "adapter portion **1240** generally includes a tool side **1244** and a holder side **1246**." Ex. 1001, 25:30–31.

Figure 27 of the ’969 patent is reproduced below:

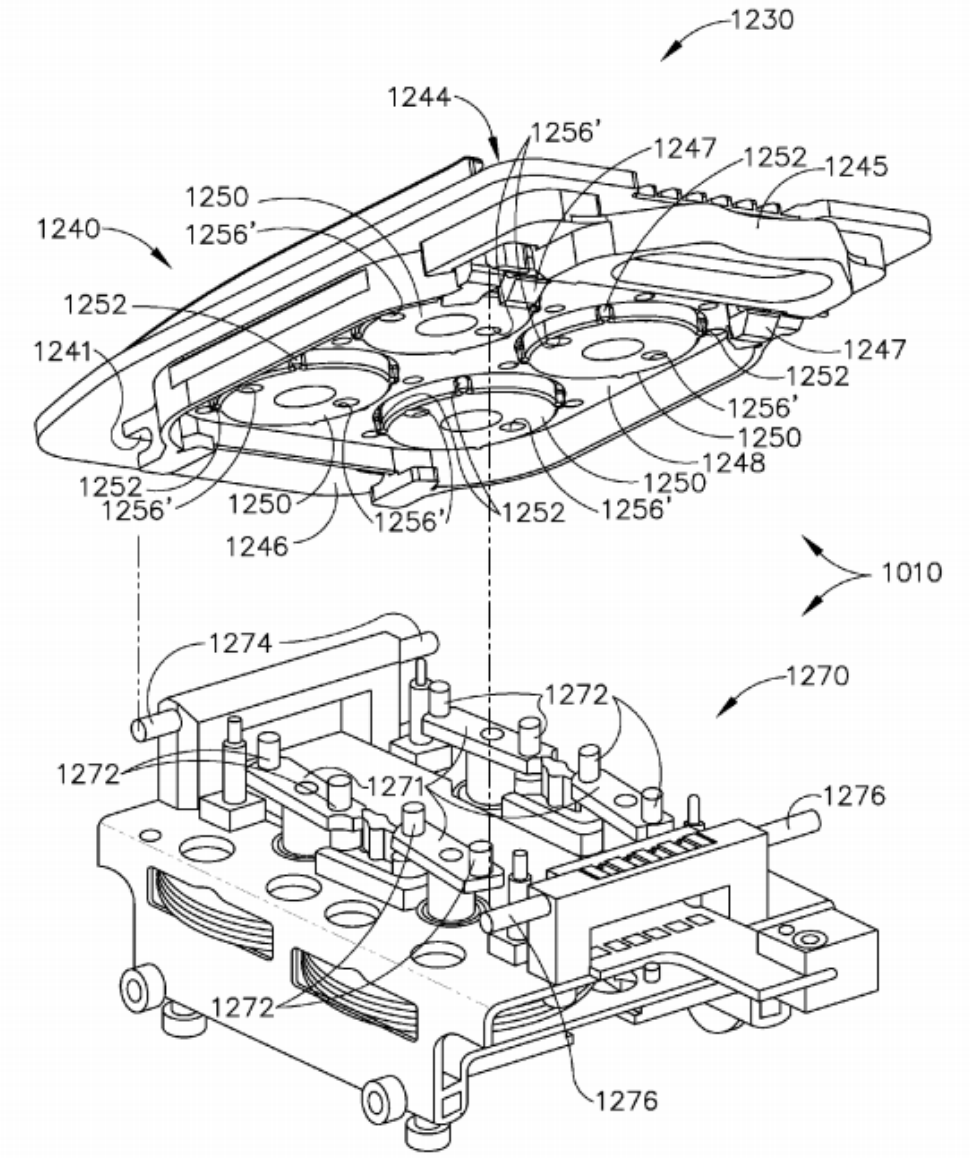

FIG. 27

Figure 27 depicts “an exploded assembly view of an adapter and tool holder arrangement for attaching various surgical tool embodiments to a robotic system.” Ex. 1001, 5:21–23. The ’969 patent discloses that tool drive assembly 1010 “is operatively coupled to a master controller 1001.” Ex. 1001, 24:62–66.

B. Illustrative Claim

Challenged claim 24 is independent. Claims 25 and 26 ultimately depend from claim 24. Claim 24 is illustrative and is reproduced below.

> 24. A surgical tool for use with a robotic system that has a tool drive assembly that is operatively coupled to a control unit of the robotic system that is operable by inputs from an operator and is configured to provide at least one rotary output motion to at least one rotatable body portion supported on the tool drive assembly, said surgical tool comprising:
>
> a surgical end effector comprising at least one component portion that is selectively movable between first and second positions relative to at least one other component portion thereof in response to control motions applied to said selectively movable component portion;
>
> an elongated shaft assembly defining a longitudinal tool axis and comprising:
>
> a distal spine portion operably coupled to said end effector; and
>
> a proximal spine portion pivotally coupled to said distal spine portion at an articulation joint to facilitate articulation of said surgical end effector about an articulation axis that is substantially transverse to said longitudinal tool axis; and
>
> at least one gear-driven portion that is in operable communication with said at least one selectively movable component portion of said surgical end effector and wherein said surgical tool further comprises:
>
> a tool mounting portion operably coupled to a proximal[2] end of said proximal spine portion, said tool mounting portion being configured to operably

[2] A Certificate of Correction, mailed January 23, 2018, deleted the term "distal," and inserted in its place the term "proximal" in claim 24 of the '969 patent. *See* Ex. 1002, 686.

> interface with the tool drive assembly when coupled thereto, said tool mounting portion comprising:
>
> a driven element rotatably supported on said tool mounting portion and configured for driving engagement with a corresponding one of the at least one rotatable body portions of the tool drive assembly to receive corresponding rotary output motions therefrom; and
>
> a transmission assembly in operable engagement with said driven element and in meshing engagement with a corresponding one of said at least one gear-driven portions to apply actuation motions thereto to cause said corresponding one of said at least one gear driven portions to apply at least one control motion to said selectively movable component.

C. Related Proceedings

The parties indicate that the '969 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").[3] Pet. 7; Paper 4, 2.

Petitioner is also challenging the '969 patent as well as other related patents in the following proceedings before the Board: (1) Case No. IPR2018-00933 (the '601 patent); (2) Case No. IPR2018-00934 (the '058 patent); (3) Case No. IPR2018-00938 (the '874 patent); (4) Case Nos. IPR2018-01247 and IPR2018-01254 (the '969 patent); (5) Case No.

[3] Patent Owner contends that U.S. Patent Nos. 9,585,658 B2 ("the '658 Patent"), 8,616,431 B2 ("the '431 Patent"), 9,113,874 B2 ("the '874 Patent"), 8,991,677 ("the '677 Patent"), 9,084,601 B2 ("the '601 Patent"), and 8,998,058 B2 ("the '058 Patent") are also asserted in the Delaware litigation. Paper 4, 2.

IPR2018-00936 (the ’658 patent); and (6) Case No. IPR2018-01703 (the ’431 patent).

D. Earliest Effective Filing Date

Petitioner asserts that May 27, 2011, the day the ’969 patent application was filed as a continuation-in-part, is the earliest effective filing date. Pet. 8–9.

Patent Owner asserts that the ’969 patent “claims priority to application No. 11/651,807, which was filed on Jan. 10, 2007.” Prelim. Resp. 11 (citing Ex. 1001, (63). Patent Owner further asserts

> [b]ecause the Petition should be denied, for the reasons set forth herein, regardless of the effective filing date of the challenged claims, Patent Owner does not address Petitioner’s priority date arguments in this paper, but reserves all rights to subsequently contend in any instituted IPR or in any other proceeding that the challenged claims are entitled to their earliest claimed effective filing date.

Prelim. Resp. 11. In view of the above, and at this stage, we do not resolve this issue at this time.

E. Real Parties in Interest

Petitioner identifies itself as the only real party-in-interest. Pet. 3.

F. Evidence Relied Upon

Petitioner relies on the following references in asserting that claims 24–26 of the ’969 patent are unpatentable:

Reference	**Exhibit No.**
U.S. Patent No. 8,545,515 issued Oct. 1, 2013 (“Prisco”)	1006
U.S. Patent No. 6,817,974 issued Nov. 16, 2004 (“Cooper”)	1007

U.S. Patent No. 6,331,181 issued Dec. 18, 2001 ("Tierney")	1009
U.S. Patent No. 6,699,235 issued Mar. 2, 2004 ("Wallace")	1008

Petitioner also relies upon a Declaration of Dr. Bryan Knodel. Ex. 1003.

G. The Asserted Grounds of Unpatentability

Petitioner contends that claims 24–26 are unpatentable based on the following grounds:

References	Basis	Claim(s) Challenged
Prisco	§ 102	24–26
Prisco and Cooper	§ 103	24–26
Prisco, Cooper, and Tierney	§ 103	24–26
Prisco, Cooper, Wallace, and Tierney	§ 103	25 and 26

III. ANALYSIS

A. Statutory Disclaimer of Claim 23

As noted above, along with claims 24–26, Petitioner sought *inter partes* review of claim 23 of the '969 patent. After the filing of the Petition, Patent Owner filed a statutory disclaimer of claim 23. Ex. 2002; *see* Prelim. Resp. 4.

Patent Owner contends that "[b]ased on this disclaimer, the ['969 patent] is to be treated as though claim 23 never existed." Prelim. Resp. 4 (citing *Vectra Fitness, Inc. v. TNWK Corp.*, 162 F.3d 1379, 1383 (Fed. Circ. 1998)("This court has interpreted the term 'considered as part of the original patent' in section 253 to mean that the patent is treated as though the disclaimed claims never existed."). We also observe that our rules state that

"[n]o *inter partes* review will be instituted based on disclaimed claims." 37 C.F.R. §42.107(e).

In considering Federal Circuit precedent and our rules, we conclude that we cannot institute a trial on a claim that has been disclaimed, and, thus, no longer exists. That conclusion is consistent with other panel decisions in *inter partes* review proceeding that addressed a near identical circumstance as we do here. *See, e.g., Vestas-American Wind Technology, Inc. and Vestas Wind Systems A/S v. General Electric Co.*, IPR2018-01015, Paper 9, 12–14 (PTAB, Nov. 14, 2018)("the '1015 IPR"). We share the same view as the panel in the '1015 IPR that such a conclusion is consistent with the statutory scope of *inter partes* review as laid out in 35 U.S.C.§§ 311(b) and 318(a), and is not at odds with the Supreme Court's recent decision in *SAS*. *See id.* Accordingly, we treat claim 23 as having never been part of the '969 patent, and Petitioner cannot seek *inter partes* review of that claim.

B. Claim Construction

The claim construction standard to be employed in an *inter partes* review recently 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 June 14, 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 determine whether to institute trial 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).

Here, neither Petitioner nor Patent Owner identifies terms for construction or provides any proposed constructions. *See* Pet. 28–29; Prelim. Resp. 11–12. Instead, the parties agree that claims of '969 patent should be construed according to their broadest reasonable interpretation. Pet. 28–29; Prelim. Resp. 11. For the purposes of this Decision, we determine that no claim term needs express interpretation. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) ("[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.").

C. Level of Ordinary Skill in the Art

Petitioner's Declarant, Dr. Knodel, 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 alleged invention would have had the equivalent of a Bachelor's degree or higher in mechanical engineering with at least 3 years working experience in the design of comparable surgical devices. Additional education in a relevant field, such as mechanical engineering or robotics (to the extent pertinent), or industry experience may compensate for a deficit in one of the other aspects of the requirements stated above.

Ex. 1003 ¶ 25.

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 Dr. Knodel'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. Ground 1: Claims 24–26 – Anticipation by Prisco

Petitioner contends that claims 24–26 are anticipated by Prisco. Pet. 51–74. Patent Owner opposes. Prelim. Resp. 24–31.

1. Overview of Prisco (Ex. 1006)

Prisco is titled "CURVED CANNULA SURGICAL SYSTEM." Ex. 1006, (54). Prisco's Abstract reads-in-part as follows:

> A robotic surgical system is configured with rigid, curved cannulas that extend through the same opening into a patient's body. Surgical instruments with passively flexible shafts extend through the curved cannulas. The cannulas are oriented to direct the instruments towards a surgical site. Various port features that support the curved cannulas within the single opening are disclosed. Cannula support fixtures that support the cannulas during insertion into the single opening and mounting to robotic manipulators are disclosed. A teleoperation control system that moves the curved cannulas and their associated instruments in a manner that allows a surgeon to experience intuitive control is disclosed.

Ex. 1006, (57). Figure 2B of Prisco is reproduced below.

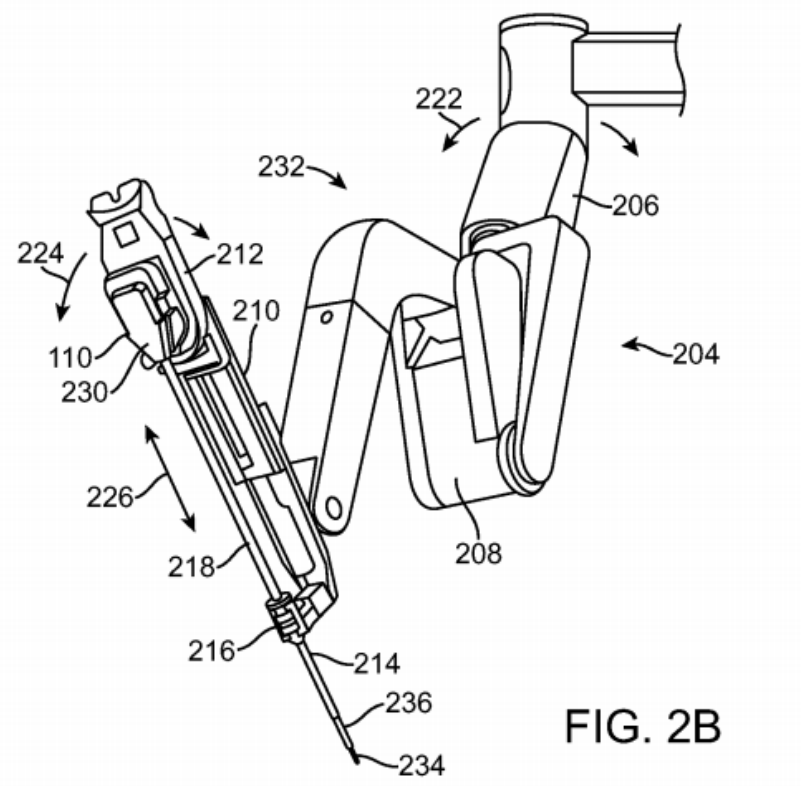

FIG. 2B

Figure 2B depicts a perspective view of a patient side manipulator (PSM) "with an illustrative instrument 110 mounted." Ex. 1006, 8:12–13. With reference to Figure 2B, Prisco discloses

> [m]atching force transmission disks in mounting carriage **212** and instrument force transmission assembly **230** couple actuation forces from actuators **232** in PSM **204** to move various parts of instrument **110** in order to position, orient, and operate instrument end effector **234**. Such actuation forces may typically roll instrument shaft **218** (thus providing another DOF [degree of freedom] through the remote center), operate a wrist **236** that provides yaw and pitch DOF's, and operate a movable piece or grasping jaws of various end effectors (e.g., scissors (cautery or non-cautery capable), dissectors, graspers, needle drivers, electrocautery hooks, retractors, clip appliers, etc.).

Ex. 1006, 8:34–44.

Figure 4A of Prisco is reproduced below.

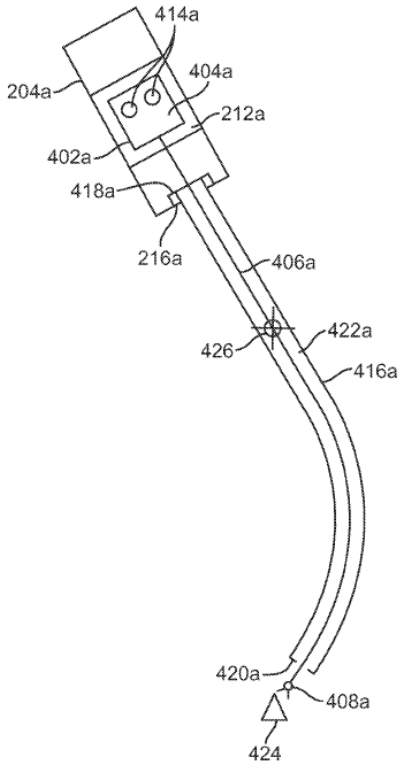

FIG. 4A

Figure 4A depicts "a schematic view of a portion of a patient side robotic manipulator that supports and moves a combination of a curved cannula and a passively flexible surgical instrument." Ex. 1006, 10:31–34. More particularly, Figure 4A illustrates

> a telerobotically operated surgical instrument **402***a* includes a force transmission mechanism **404***a*, a passively flexible shaft **406***a*, and an end effector **408***a*. Instrument **402***a* is mounted on an instrument carriage assembly **212***a* of a PSM **204***a* (previously described components are schematically depicted for clarity). Interface discs **414***a* couple actuation forces from servo actuators in PSM **204***a* to move instrument **402***a* components. End effector **408***a* illustratively operates with a single DOF (e.g., closing jaws).

Ex. 1006, 10:34–43. Prisco discloses that "[a] wrist to provide one or more end effector DOF's (e.g., pitch, yaw; see e.g., U.S. Pat. No. 6,817,974 (filed

Jun. 28, 2002) (disclosing 'Surgical Tool Having Positively Positionable Tendon-Actuated Multi-Disk Wrist Joint'), which is incorporated herein by reference) is optional and is not shown." Ex. 1006, 10:43–48. Prisco describes that "[o]mitting the wrist simplifies the number of actuation force interfaces between PSM **204***a* and instrument **402***a*, and the omission also reduces the number of force transmission elements (and hence, instrument complexity and dimensions) that would be necessary between the proximal force transmission mechanism **404***a* and the distally actuated piece." Ex. 1006, 10:49–55; *cf. id.* at 16:38–43, 17:53–56.

Figure 7D of Prisco is reproduced below.

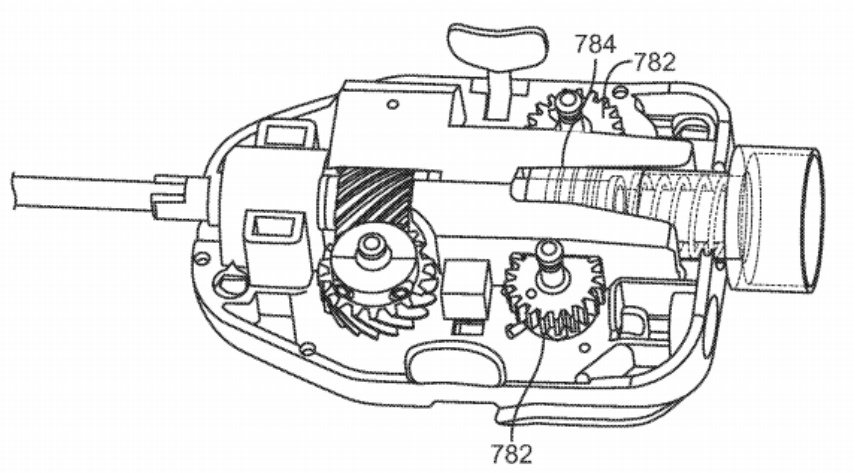

FIG. 7D

Figure 7D depicts "a perspective view of another force transmission mechanism used in a push/pull instrument design." Ex. 1006, 3:33–34. Figure 7D illustrates that pinion drive gears 782 engage rack gear 784 between them. Ex. 1006, 16:19–20. Prisco describes that push/pull drive element rod 764 is coupled to rack gear 784 using a free rolling bearing 768 (not shown). Ex. 1006, 16:19–23, 15:55–16:7.

Figures 9D and 9E are reproduced below.

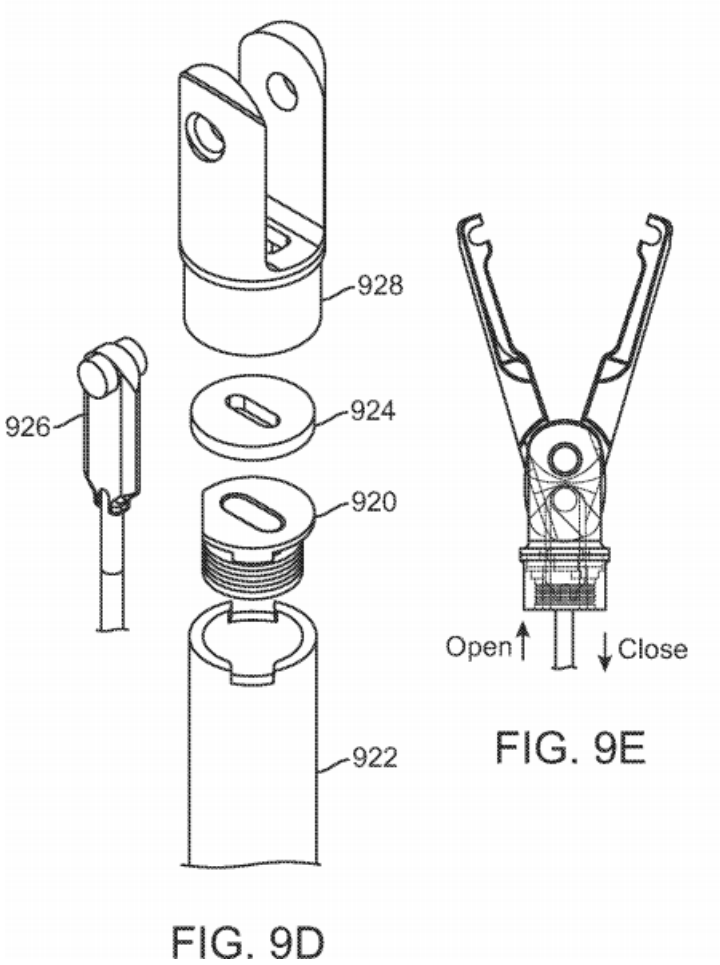

FIG. 9D

FIG. 9E

Figure 9D depicts "an exploded perspective view of another implementation of the distal end of a flexible shaft instrument." Ex. 1006, 19:28–29. More particularly, Figure 9D illustrates that "push/pull drive rod connector **926** extends through end cap **920** and seal **924** to couple with the movable component of the end effector." Ex. 1006, 19:32–34. Figure 9E depicts "a diagrammatic view of a push/pull type end effector." Ex. 1006, 3:51–52. Prisco discloses that "pushing on the drive rod closes the end effector jaws, and pulling on the drive rod opens the end effector jaws." Ex. 1006, 19:45–47.

Prisco incorporates Cooper by reference to provide a more detailed discussion on a wrist joint to provide additional end effector DOFs. Ex.

1006, 10:43–48. Prisco also incorporates Tierney by reference to provide a more detailed discussion on "surgical robotic tools, data architecture, and use." Ex. 1006, 15:16–20. Accordingly, we discuss Cooper and Tierney below.

2. Overview of Cooper (Ex. 1007)

Cooper is titled "Surgical Tool Having Positively Positionable Tendon-Actuated Multi-Disk Wrist Joint." Ex. 1007, (54). Cooper is directed to "various wrist mechanisms in surgical tools for performing robotic surgery." Ex. 1007, 1:44–46. Figure 36 is reproduced below.

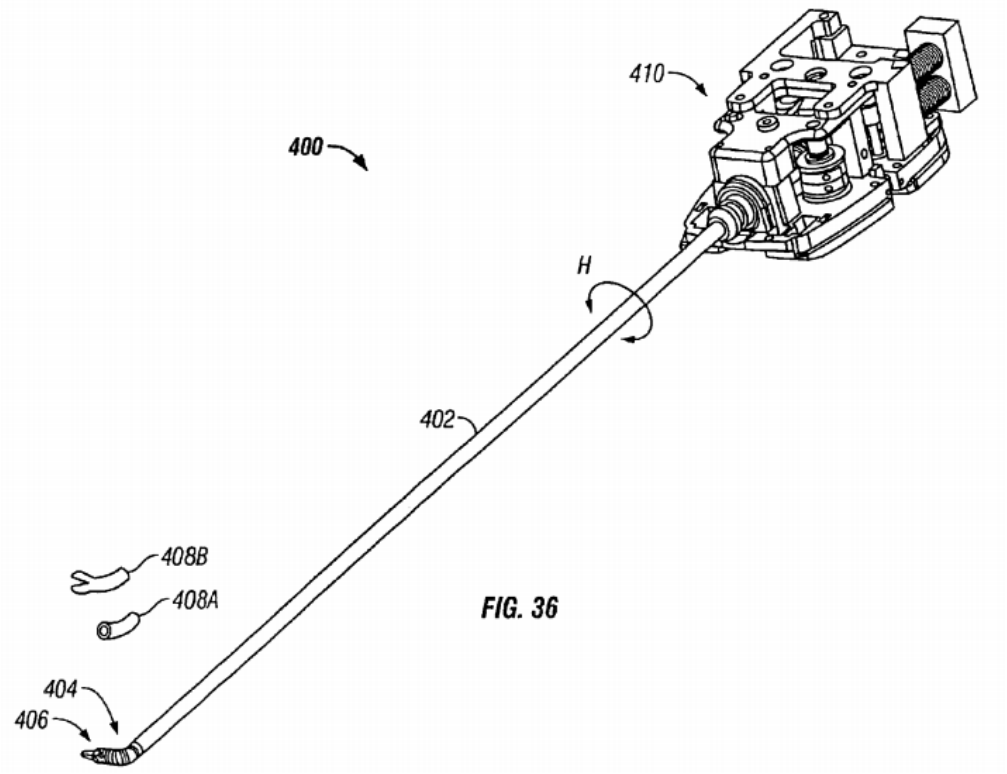

FIG. 36

Figure 36 depicts a perspective view of Cooper's surgical instrument according to one embodiment of the present invention. Ex. 1007, 9:33–34. More particularly, Figure 36 illustrates "a surgical instrument 400 having an elongate shaft 402 and a wrist-like mechanism 404 with an end effector 406." Ex. 1007, 17:25–27.

Figure 37 is reproduced below.

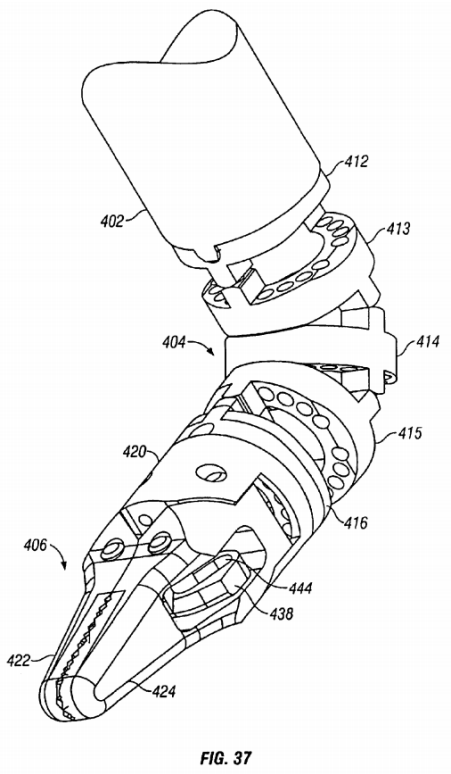

FIG. 37

Figure 37 depicts "a perspective view of the wrist and end effector of the surgical instrument of FIG. 36." Ex. 1007, 9:35–36. More particularly, Figure 37 illustrates proximal disk 412 connected to the distal end of shaft 402, distal disk 416, and end effector 406 which is connected to distal disk 416 by grip support 420. Ex. 1007, 17:51–59.

3. Overview of Tierney (Ex. 1009)

Tierney is titled "Surgical Robotic Tools, Data Architecture, and Use." Ex. 1009, [54]. More particularly, Tierney is directed 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. 1009, 1:11–15. Tierney describes that robotic surgery generally involves the use of robotic arms which "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)." Ex. 1009, 6:20–28.

4. Petitioner's Contentions

In support of its contention that Prisco anticipates claims 24–26 of the '969 patent, Petitioner discusses the teachings of Prisco—as well as the teachings of Cooper and Tierney, both of which Prisco incorporates by reference. Petitioner provides detailed assessment of the content of the prior art in advocating that all the features of claim 24 are shown therein. *See* Pet. 51–69. Petitioner also supports that assessment with citation to the Declaration testimony of Dr. Knodel (Ex. 1003).

> For example, the preamble of independent claim 24 sets forth
>
> [a] surgical tool for use with a robotic system that has a tool drive assembly that is operatively coupled to a control unit of the robotic system that is operable by inputs from an operator and is configured to provide at least one rotary output motion to at least one rotatable body portion supported on the tool drive assembly.

Ex. 1001, 95:35–40. Petitioner asserts that Prisco discloses a surgical instrument which is used by a robotic surgical system for minimally invasive surgery. Pet. 51 (citing Ex. 1003 ¶ 78); *see also id.* at 30–31 (citing Ex. 1006, 6:14–15, 6:26–28, 6:38–42, 10:31–41, Figs. 1A, 1B, 1C, 4A, 5; Ex. 1003 ¶¶ 52–53). Petitioner asserts that Prisco's robotic system includes a tool drive assembly comprising "actuators 232" and "mounting carriage 212" (Pet. 51 (citing Ex. 1003 ¶ 78); *see also id.* at 32–33 (citing Ex. 1006, 8:15–17, 8:34–38, 10:37–41, Fig. 2B; Ex. 1009, 11:33–35, 4:33–35, 7:65–8:7, 10:12–15, 11:3–6, Figs. 3A, 7A, 7F–7M, 8A, 8B; Ex. 1003 ¶¶ 50, 54–

55)) which is "coupled to a control unit" (Pet. 51 (citing Ex. 1003 ¶ 78); *see also id.* at 34 (citing Ex. 1006, 6:7–12, 6:38–43, 6:47–52, Fig. 23; Ex. 1003 ¶¶ 54, 56)), "operable by inputs from an operator" " (Pet. 51 (citing Ex. 1003 ¶ 78); *see also id.* at 34 (citing Ex. 1006, 2:53–57, 6:3–46; Ex. 1003 ¶ 57)), and "configured to provide at least one rotary output motion to at least one rotatable body portion supported on the tool drive assembly." Pet. 51 (citing Ex. 1003 ¶ 78); *see also id.* at 35–37 (citing Ex. 1006, 8:34–38, 10:39–41, Fig. 4A; Ex. 1003 ¶¶ 49, 58, 59; Ex. 1009, 10:46–51; 11:3–10, Figs. 6–7L, 7C, 7F; Ex. 1001, Figs. 29, 30).

Petitioner also explains how Prisco accounts for each of: (1) an "end effector comprising at least one component portion that is selectively movable . . . relative to at least one other component portion thereof in response to control motions applied to said selectively movable component portion" (Pet. 52 (citing Ex. 1003 ¶ 79); *see also id.* at 37–41); (2) "an elongated shaft . . . comprising: a distal spine portion operably coupled to said end effector; and a proximal spine portion pivotally coupled to said distal spine portion at an articulation joint" (*id.* at 52–58); (3) "at least one gear-driven portion that is in operable communication with said at least one selectively movable component portion" (*id.* at 58–62); (4) "a tool mounting portion operably coupled to a [proximal][4] end of said proximal spine portion . . . to operably interface with the tool drive assembly" (*id.* at 62–64); (5) "a driven element rotatably supported on said tool mounting portion and configured for driving engagement with a corresponding one of the at least one rotatable body portions of the tool drive assembly to receive

[4] On January 23, 2018, the PTO entered a Certificate of Correction replacing the word "distal" with the word "proximal." *See* Ex. 1002, 686.

corresponding rotary output motions therefrom" (*id.* at 65–66); and, finally, (6)

> a transmission assembly in operable engagement with said driven element and in meshing engagement with a corresponding one of said at least one gear-driven portions to apply actuation motions thereto to cause said corresponding one of said at least one gear-driven portions to apply at least one control motion to said selectively movable component

(*id.* at 67–69).

In further respect in connection with the requirement noted above of "at least one gear-driven portion that is in operable communication with said at least one selectively movable component portion of said surgical end effector," Petitioner identifies Prisco's end effector jaws as being the "selectively movable component." Pet. 52, emphasis omitted (citing Ex. 1003 ¶ 79); *see also id.* at 37–41 (citing Ex. 1006, 6:38–7:2, 8:12–15, 8:41–44, 19:42–48; 14:65–15:8, 15:55–16:7, Figs. 7C, 9E). Petitioner explains "[a] POSITA would have understood that each jaw is at least one component portion of the end effector that is selectively movable between first (e.g., open) and second (e.g., closed) positions relative to the other jaw." Pet. 39 (citing Ex. 1003 ¶ 61). And, in connection with the requirement noted above of "at least one gear-driven portion that is in operable communication with said at least one selectively movable component portion of said surgical end effector," Petitioner provides the following copy of Figure 7D of Prisco, annotated to identify rack gear 784 and pinion drive gears 782.

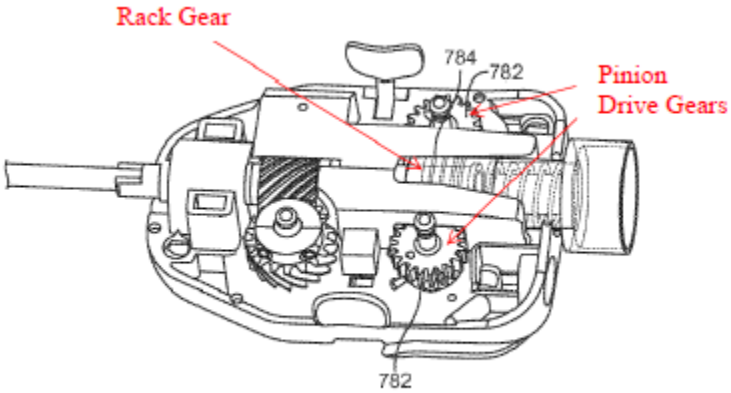

FIG. 7D

Figure 7D, annotated, depicts "a perspective view of another force transmission mechanism used in a push/pull instrument design." Ex. 1006, 3:33–34. Petitioner asserts that Prisco's "rack gear 784" constitutes "at least one gear-driven portion." Pet. 58–59 (citing Ex. 1003 ¶ 86; Ex. 1006, 16:17–37, Fig. 7D). Petitioner explains

> rack gear 784 is in operable communication with the at least one selectively movable component portion of the surgical end effector (e.g., the jaws) such that movement of the rack opens and closes the jaws: "The push/pull drive element rod [764] is coupled to the rack (*e.g.*, with a free rolling bearing as described above)."

Pet. 59 (citing Ex. 1006, 15:55–16:7, 16:22–23, Fig. 7C; Ex. 1003 ¶ 87). Petitioner also provides the following copies of Figures 9D and 9E of Prisco, annotated to identify, among several items, "push/pull drive rod connector 926" and "push/pull drive element rod 764."

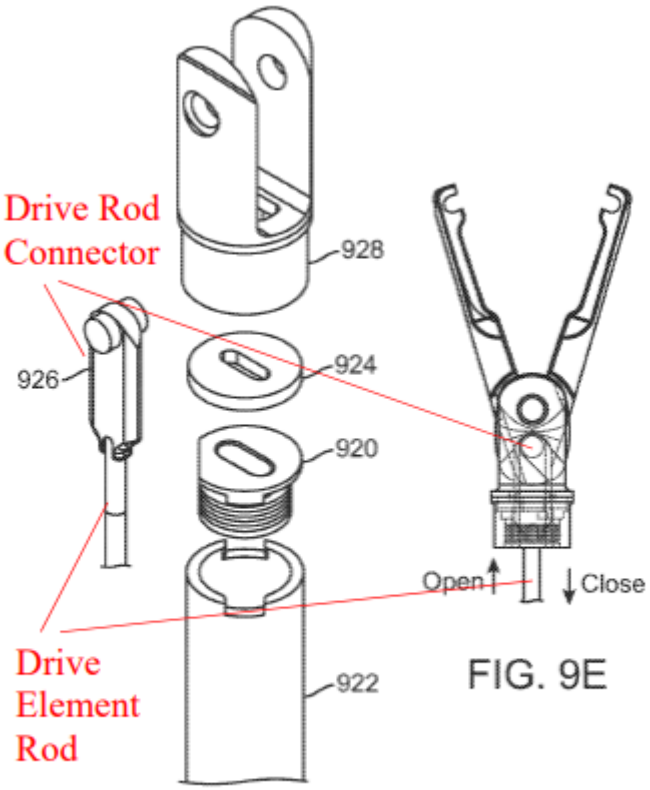

FIG. 9E

FIG. 9D

Figure 9D depicts "an exploded perspective view of the distal end of another flexible shaft instrument" and Figure 9E depicts "a diagrammatic view of a push/pull type end effector." Ex. 1006, 3:49–52. Petitioner alternatively asserts that the combination of Prisco's "push/pull drive rod connector 926, drive element rod 764, and rack gear 784" comprises "a gear-driven portion that operably communicates with the end effector jaws." Pet. 60 (citing Ex. 1003 ¶ 88).

In further respect in connection with the requirement noted above of a "proximal spine portion pivotally coupled to said distal spine portion at an articulation joint to facilitate articulation of said surgical end effector about an articulation axis that is substantially transverse to said longitudinal axis," Petitioner asserts Prisco's incorporation of Cooper discloses a "proximal

spine portion," i.e., "Prisco's 'shaft 506,'" and "distal spine portion," i.e., "Cooper's 'distal disk 416.'" Pet. 52–54 (citing Ex. 1006, 16:38; 10:31–55; Ex. 1007, 17:25–64, 14:14–59, 21:49–22:41, 17:1–3, 17:25–64, Figs. 14–21, 36–39; Ex. 1003 ¶¶ 81–83). Petitioner explains that Prisco's shaft 506 is pivotally coupled to Cooper's distal disk 416 at an "articulation joint" which Petitioner identifies as "the pivot points between the proximal disk 412 and the distal disk 416 that together form a 'Multi-Disk Wrist Joint'[] to facilitate articulation of end effector 406." Pet. 54 (citing Ex. 1003 ¶ 83).

Petitioner provides similar detailed analysis, supported by the testimony of Dr. Knodel, for claims 25 and 26. *See* Pet. 69–74.

5. Patent Owner's Contentions

Patent Owner contends that Petitioner's ground of unpatentability based on Prisco is deficient. *See* Prelim. Resp. 24–31. Patent Owner first contends that neither Prisco's "cable-driven embodiment" nor "drive-rod embodiment" discloses "a gear-driven portion that is in operable communication with and applies a control motion to one of the end effector *jaws*," as required by independent claim 24. Prelim. Resp. 25–27. Patent Owner contends that "a POSITA would not have understood Prisco to clearly and unequivocally disclose Cooper's wrist mechanism and Prisco's instrument, arranged as in claim 24, in the same embodiment" (Prelim. Resp. 31). More particularly, Patent Owner argues that a person of ordinary skill in the art

> would not have understood *Prisco's* purported incorporation of Cooper's disclosure to disclose that *Prisco's* instrument includes "a proximal spine portion pivotally coupled to said distal spine portion at an articulation joint to facilitate articulation of said surgical end effector about an articulation axis that is

substantially transverse to said longitudinal axis," arranged as in claim 24.

Prelim. Resp. 27–28, 31 (citing *Microsoft Corp. v. Biscotti, Inc.*, 878 F.3d 1052, 1069 (Fed. Cir. 2017)). To support its contention, Patent Owner first asserts that "incorporating Cooper's wrist mechanism into Prisco's drive rod embodiment would have resulted in an incompatible or inoperable device." Prelim Resp. 28–29 (citing Ex. 1006, 16:19–29, 19:42–47, Figs. 7D and 9E; Ex. 1007, Fig. 67). Patent Owner further asserts that "Prisco expressly teaches away from using Cooper's wrist mechanism in Prisco's embodiments." Prelim. Resp. 29–31 (citing Ex. 1006, 14:59–63, 10:43–55). Patent Owner does not address claims 25 and 26 expressly.

6. Discussion

Having considered the conflicting positions of the parties, we conclude that, at this stage of the proceeding, Petitioner has shown a reasonable likelihood that it would prevail in challenging the patentability of claims 24–26. In our view, Petitioner's anticipation analysis, on this record, adequately identifies where all the elements of claims 24–26 are found in the prior art.

At this stage of the proceeding, we are not persuaded by Patent Owner's argument that Prisco fails to disclose "a gear-driven portion that is in operable communication with and applies a control motion to one of the end effector *jaws*," as required by independent claim 24. *See* Prelim. Resp. 25–27. Patent Owner's argument that Prisco does not disclose the argued limitation because "shaft roll gear 742 does not operably communicate with or apply a control motion to one of the end effector *jaws* in any way" (Prelim. Resp. 26–27) is unpersuasive as it mischaracterizes Petitioner's

position. Petitioner does note that "Prisco includes a tube gear ('shaft roll gear 742') 'to provide a roll DOF [degree of freedom] for end effector 504.'" Pet. 60; *cf.* Pet. 43 (describing that "Prisco's elongated shaft assembly includes a tube gear ('shaft roll gear 742')" with respect to "said elongated shaft assembly including a tube gear segment on a proximal end thereof," as recited by disclaimed independent claim 23). Petitioner, however, relies on Prisco's "rack gear 784" to address the claimed "at least one gear-driven portion." *See* Pet. 58–59 (citing Ex. 1003 ¶ 86; Ex. 1006, 16:17–37, Fig. 7D). To that end, Petitioner explains

> rack gear 784 is in operable communication with the at least one selectively movable component portion of the surgical end effector (*e.g.*, the jaws) such that movement of the rack opens and closes the jaws: "The push/pull drive element rod [764] is coupled to the rack (*e.g.*, with a free rolling bearing as described above)." The "push/pull drive rod connector 926 [connected to the drive rod 764] . . . couple[s] with the movable components [(jaw)] of the end effector."

Pet. 59 (citing Ex. 1006, 15:55–16:7, 16:22–23, 19:29–34; Fig. 7C, 9D, 9E; Ex. 1003 ¶ 87).

We are persuaded, at this time, that the operation of rack gear 784 to operate push/pull drive element rod 764, which ultimately opens and closes the end effector jaws satisfies the "gear-driven portion" feature of claim 24. *See*, *e.g.*, Ex. 1006 19:45–47 ("As depicted in FIG. 9E, pushing on the drive rod closes the end effector jaws, and pulling on the drive rod opens the end effector jaws.")

Furthermore, Patent Owner's argument that "a POSITA would not have understood Prisco to clearly and unequivocally disclose Cooper's wrist mechanism and Prisco's instrument, arranged as in claim 24, in the same embodiment" (Prelim. Resp. 31; *see also id.* at 27–30), is also, at this stage,

unpersuasive.

In making this determination, we note that at this stage of the proceeding, Patent Owner does not dispute that Prisco incorporates Cooper's teachings by reference.[5] Further, we agree with Petitioner that Prisco unambiguously incorporates Cooper by reference (*see* Ex. 1003 ¶ 42; *see also* Ex. 1006, 10:43–48 ("A wrist to provide one or more end effector DOF's (e.g., pitch, yaw; see e.g., U.S. Pat. No. 6,817,974 (filed Jun. 28, 2002) (disclosing 'Surgical Tool Having Positively Positionable Tendon-Actuated Multi-Disk Wrist Joint'), which is incorporated herein by reference) is optional and is not shown.")).

The Federal Circuit has deemed similar language as constituting an incorporation by reference. *See Paice LLC v. Ford Motor Co.*, 881 F.3d 894, 907–909 (Fed. Cir. 2018) (holding the statement "[patent] . . . is incorporated herein by reference" is "broad and unambiguous," and "identifies with detailed particularity the specific material subject to incorporation," i.e., the entire patent); *Harari v. Lee*, 656 F.3d 1331, 1335 (Fed. Cir. 2011) (holding the statement "[t]he disclosures of the two [patent] applications are hereby incorporate[d] by reference" is sufficient to incorporate by reference the disclosures of the two patent applications in their entirety).

Further, the Federal Circuit has held that "a reference can anticipate a

[5] We also note that Patent Owner does not dispute that Prisco incorporates Tierney's teachings by reference, and we agree with Petitioner that Prisco unambiguously incorporates Tierney by reference (*see* Ex. 1003 ¶ 48; *see also* Ex. 1006, 15:17–20 "(see e.g., U.S. Pat. No. 6,331,181 (filed Oct. 15, 1999) (disclosing surgical robotic tools, data architecture, and use), which is incorporated herein by reference)."

claim even if it does not expressly spell out all the limitations arranged or combined as in the claim, if a person of skill in the art, reading the reference, would at once envisage the claimed arrangement or combination." *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1341 (Fed. Cir. 2016) (internal quotation marks omitted). Here, Petitioner asserts that "Prisco's surgical instrument 'may be adapted for use in instruments that include a movable wrist mechanism or other mechanism at the distal end of the instrument shaft.'" Pet. 52 (citing Ex. 1006, 16:38–53). Petitioner asserts that Prisco identifies Cooper, as disclosing a wrist mechanism, that can be used with Prisco's surgical instrument (Pet. 52 (citing 10:31–53), and explains

> Prisco's incorporation of Cooper discloses a proximal spine portion (*e.g.*, Prisco's "shaft 506") pivotally coupled to the distal spine portion (*e.g.*, Cooper's "distal disk 416") at an articulation joint (the pivot points between the proximal disk 412 and the distal disk 416 that together form a "Multi-Disk Wrist Joint") to facilitate articulation of end effector 406.

Pet. 54 (citing Ex. 1003 ¶83; Ex. 1007, Title, 14:14–59; 21:49–22:41, 17:25–64, Figs. 14-21, 36–39, 51–56); *see also* Pet. 52–54 (citing Ex. 1003 ¶¶ 80–85). Petitioner supports its position with citations to both Prisco and Cooper, and with testimony from Dr. Knodel. *See* Ex. 1003 ¶ 42 (stating, "One of ordinary skill in the art would have understood that Prisco is pointing to Cooper for additional details about the wrist mechanism of Prisco, and, would have understood that Cooper was being incorporated into Prisco as if it were set out expressly rather than through incorporation."); *see also id.* ¶¶ 80–85.

At this stage, we consider this to be a sufficient showing that one of ordinary skill would at once envisage the claimed arrangement. In this

regard, we note that Prisco clearly directs one of ordinary skill in the art to Cooper's wrist joint mechanism in order to provide additional DOFs. *See* Ex. 1006, 10:42–48. Prisco further discloses "that additional tension elements may be included to operate, e.g., an optional multi-DOF wrist mechanism at the distal end of the instrument shaft." Ex. 1006, 17:53–56; *see also id.* at 8:38–44, 16:38–44, 18:20–23, Fig. 2B. The fact that Prisco describes that a wrist joint "is optional and is not shown" (Prelim. Resp. 30 (citing Ex. 1006, 10:43–48), by itself, does not persuade us that one of ordinary skill in the art would not be able to envisage Prisco's instrument with Cooper's wrist joint mechanism. Indeed, that Prisco recognizes such a "wrist" as an available "option[]" seemingly undermines Patent Owner's position that Prisco somehow precludes a skilled artisan from implementing that very option. However, determining whether one of ordinary skill in the art would have envisaged using Cooper's wrist joint with Prisco's instrument can be evaluated on a complete record after trial.

We also are not persuaded by Patent Owner's argument that "incorporating Cooper's wrist mechanism into Prisco's drive rod embodiment would have resulted in an incompatible or inoperable device." Prelim Resp. 28–29. As discussed above, Prisco, itself, discloses the use of a wrist joint mechanism at the distal end of its instrument shaft in order to provide additional DOFs. *See* Ex. 1006, 17:53–56; *see also id.* at 8:38–44, 16:38–44, 18:20–23. It simply does not follow on the evidentiary record before us that there is some incompatibility in the implementation of a wrist joint mechanism, including that of Cooper, into Prisco's device. Thus, at this stage in the proceeding, we do not agree that incorporating Cooper's wrist joint mechanism into Prisco would result in an incompatible or

inoperable device.

Moreover, we are not persuaded by Patent Owner's argument that "Prisco expressly teaches away from using Cooper's wrist mechanism in Prisco's embodiments." Prelim. Resp. 28–31. At the outset, we note that, although a "teaching away" argument could be relevant to an obviousness analysis, "whether a reference teaches away from an invention is inapplicable to an anticipation analysis." *ClearValue, Inc. v. Pearl River Polymers, Inc.*, 668 F.3d 1340, 1344 (Fed. Cir. 2012) (quoting *Celeritas Techs., Ltd. v. Rockwell Int'l Corp.*, 150 F.3d 1354, 1361 (Fed. Cir. 1998)) (internal quotation marks omitted). Notwithstanding, and discussed in greater detail below, we do not find Prisco teaches away from Cooper as it "does not does not criticize, discredit, or otherwise discourage the claimed solution." *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

On this record, we determine that the Petition shows a reasonable likelihood that Petitioner would prevail with respect to claims 24–26 being anticipated by Prisco.

E. Ground 2: Claims 24–26 – Obvious over Prisco and Cooper

Petitioner contends that claims 24–26 would have been obvious over Prisco[6] and Cooper. Pet. 74–77. Patent Owner opposes. Prelim. Resp. 32–37, 40–42.

1. Petitioner's Contentions

Petitioner states that if the "Board concludes that Prisco does not disclose a surgical tool with Cooper's wrist mechanism, it would have been

[6] Petitioner relies on the teachings of Prisco—as well as the teachings of Tierney, which Prisco incorporates by reference. *See* Ex. 1006, 15:17–20.

obvious to a POSITA to look to Cooper for further details on the articulation mechanism because Prisco directs the reader to Cooper for teachings of the wrist implementation." Pet. 74 (citing Ex. 1003 ¶ 103; Ex. 1006, 10:43–48).

2. Patent Owner's Contentions

In response, Patent Owner contends that Petitioner's ground of unpatentability based on Prisco and Cooper is deficient. Prelim. Resp. 31–42. Patent Owner first contends that "Petitioner provides no explanation for how the surgical systems of Prisco and Cooper would be combined with each other." Prelim. Resp. 33. More particularly, Patent Owner argues

> Prisco's drive rod embodiment and Cooper's wrist mechanism are incompatible, and if combined would result in an inoperable system. This is because Prisco's drive rod embodiment uses three of four rotary elements on the instrument base to control end effector grip and shaft roll, while Cooper's wrist mechanism requires an additional two rotary elements to provide pitch and yaw articulation.

Prelim. Resp. 34–35 (citing Ex. 1006, 16:19–29, 19:42–47; Ex. 1007, 24:8–21). And, because the proposed combination of Prisco and Cooper is "incompatible and inoperable," Patent Owner contends that "a POSITA would not have had a reasonable expectation of success from attempting the proposed combinations." Prelim. Resp. 40; *see also id.* at 32–37, 41–42. Patent Owner further asserts that Prisco teaches away from including Cooper's wrist mechanism because Prisco discloses that omitting the wrist mechanism from a surgical instrument "reduces instrument complexity by simplifying the number of force interface and transmission elements required to operate the instrument." Prelim. Resp. 37 (citing Ex. 1006, 10:49–55). Accordingly, Patent Owner contends that "a POSITA would not have been motivated to combine Prisco with Cooper to add back a wrist

mechanism that was purposely omitted, because Prisco expressly teaches away from such a combination." Prelim. Resp. 37.

3. Discussion

Having considered the conflicting positions of the parties, we conclude that, at this stage of the proceeding, Petitioner has shown a reasonable likelihood of success in challenging the patentability of claims 24–26. In our view, Petitioner's obviousness approach, on this record, adequately identifies where all the elements of claims 24–26 are found in the prior art, and Petitioner demonstrates adequate reasoning to combine the teachings of Prisco and Cooper.

We are not persuaded, at this time, that Patent Owner's arguments are availing and demonstrate that institution of a trial is unwarranted. At the outset, Patent Owner's argument that Petitioner fails to explain how a POSITA would combine the surgical systems of Prisco and Cooper is unpersuasive, at least because Prisco directs a POSITA to look to Cooper for details on an articulation mechanism. *See* Ex. 1006, 10:43–48. And, to the extent Patent Owner argues that the proposed combination of Prisco and Cooper would result in a device that is "incompatible and inoperable" (Prelim. Resp. 34–36), Patent Owner's argument is, at this stage, unpersuasive.

Patent Owner's argument appears to be premised on the physical combinability of Prisco and Cooper. However, "it is not necessary that the inventions of the references be physically combinable to render obvious the invention under review." *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983); *see, e.g.*, *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) ("It is well-established that a determination of obviousness based on teachings from

multiple references does not require an actual, physical substitution of the elements."). Rather, the relevant inquiry is whether the claimed subject matter would have been obvious to those of ordinary skill in the art in light of the combined teachings of those references. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Here, Prisco directs a POSITA to Cooper as disclosing a wrist joint mechanism to provide additional DOFs (Ex. 1006, 10:43–47), and explains

> [i]t should be understood that principles described for moving an end effector component may be adapted for use in instruments that include a movable wrist mechanism or other mechanism at the distal end of the instrument shaft. Such a wrist mechanism allows an end effector orientation to be changed without changing shaft position.

Ex. 1006, 16:38–44. Accordingly, we consider Prisco's explicit suggestion to incorporate Cooper's wrist joint mechanism into Prisco's device, to suffice, on this record and at this stage of the proceeding, as a showing of reasonable expectation of success. *See In re O'Farrell*, 853 F.2d 894, 903–04 (Fed.Cir.1988).

Moreover, we are not persuaded by Patent Owner's argument that Prisco teaches away from Cooper, and as such, "a POSITA would not have been motivated to combine Prisco with Cooper." Prelim. Resp. 36–37; *see also id.* at 29–31. We are cognizant that Prisco identifies the benefits of omitting a wrist joint. *See, e.g.*, Ex. 1006, 10:48–55. Prisco, however, also discloses that there is a benefit in the use of a wrist mechanism at the distal end of its instrument shaft: to provide additional DOFs. *See* Ex. 1006, 17:53–56; *see also id.* at 8:38–44, 16:38–44, 18:20–23. That Prisco recognizes that there are distinct benefits to the presence and absence of a wrist joint does not establish, in our view, that Prisco teaches away from

either approach. *See Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) ("a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine."); *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000) ("The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.").

More particularly, although Prisco generally may prefer one option over another, that does not establish, in our view, a criticism or discount of the non-preferred option or serve to discourage a skilled artisan from selecting that option. *See In re Fulton*, 391 F.3d at 1201 ("[t]he prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage" modifying the reference to arrive at the claimed invention.) Moreover, selecting between two known options each with their own recognized benefit does not suggest an innovative process, but rather, one of ordinary skill and common sense. *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.") Thus, at this stage in the proceeding, we do not agree that Prisco teaches away from the proposed

combination.

On this record, we determine that the Petition shows a reasonable likelihood that Petitioner would prevail with respect to claims 24–26 being unpatentable over Prisco and Cooper.

F. Ground 3: Claims 24–26 – Obvious over Prisco, Cooper, and Tierney

Petitioner contends that claims 24–26 would have been obvious over Prisco, Cooper, and Tierney. Pet. 77–78. Patent Owner opposes. Prelim. Resp. 32–37, 40–42.

1. Discussion

Petitioner states that "[i]f Prisco is deemed not to disclose the Tierney subject matter incorporated by reference, it would have been obvious to combine Prisco and Tierney to arrive at the same subject matter." Pet. 77–78 (citing Ex. 1003 ¶¶ 109–112). In other words, Petitioner asserts that Prisco either incorporates Tierney by reference or expressly teaches combining the two references.

At this stage of the proceeding, and as discussed above with respect to Ground 1, Patent Owner does not dispute that Prisco incorporates Tierney's teachings by reference. Patent Owner argues Petitioner provides no explanation for combining the incompatible system of Prisco, Cooper, and Tierney. Prelim. Resp. 35. This argument is likely moot in view of our determination that Prisco expressly incorporates Tierney by reference. In any event, we understand Petitioner's position to be that Tierney provides additional details of the tool drive assembly, and based on its disclosure, "[a] POSITA would have understood that Tierney's rotatable bodies 134 correspond to Prisco's force transmission disks and that the combination of

Tierney's adapter 128 and tool holder 129 correspond to Prisco's mounting carriage 212." *See, e.g.*, Pet. 36–37 (citing Ex. 1003 ¶¶ 54–59).

G. Ground 4: Claims 25 and 26 – Obvious over Prisco, Cooper, Wallace, and if necessary, Tierney

Petitioner contends that claims 25 and 26 would have been obvious over Prisco, Cooper, and Wallace.[7] Pet. 79–87. Patent Owner opposes. Prelim. Resp. 31–34, 36–42.

1. Overview of Wallace (Ex. 1008)

Wallace is titled "Platform Link Wrist Mechanism." Ex. 1008, [54]. Wallace's Abstract reads as follows:

> The present invention provides a robotic surgical tool for use in a robotic surgical system to perform a surgical operation. The robotic surgical tool includes a wrist mechanism disposed near the distal end of a shaft which connects with an end effector. The wrist mechanism includes a distal member configured to support the end effector, and a plurality of rods extending generally along an axial direction within the shaft and movable generally along this axial direction to adjust the orientation of the distal member with respect to the shaft. The distal member has a base to which the rods are rotatably connected by orthogonal linkage assemblies.

Ex. 1008, [57]. Figure 1 of Wallace is reproduced below:

[7] Petitioner states "if Prisco is deemed not to disclose the Tierney subject matter incorporated by reference, then it would have been obvious to combine Prisco and Tierney . . . in the combination used for claim 24 to arrive at the same subject matter for claim 25 for the reasons explained above." Pet. 84 (citing Ex. 1003 ¶ 133).

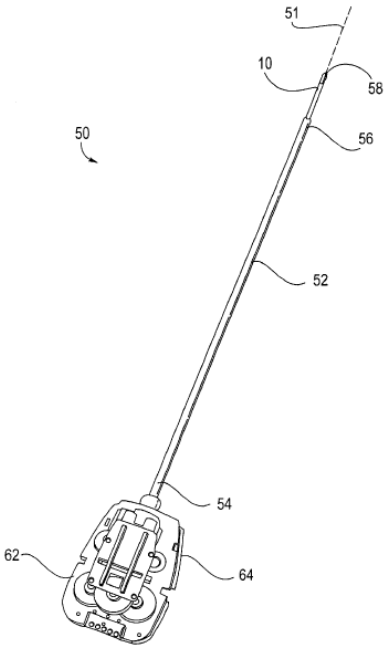

Fig. 1

Figure 1 "is a perspective overall view of an embodiment of the surgical tool of the present invention." Ex. 1008, 6:26–27. Figure 1 illustrates surgical tool 50 including

> rigid shaft **52** having a proximal end **54**, a distal end **56** and a longitudinal axis therebetween. The proximal end **54** is coupled to a tool base **62**. The tool base **62** includes an interface **64** which mechanically and electrically couples the tool **50** to a manipulator on the robotic arm cart. A distal member, in this embodiment a distal clevis **58**, is coupled to shaft **52** by a wrist joint or wrist mechanism **10**, the wrist mechanism **10** providing the distal clevis **58** with at least 1 degree of freedom and ideally providing at least 3 degrees of freedom. The distal clevis **58** supports a surgical end effector **66**, the actual working part that is manipulable for effecting a predetermined treatment of a target tissue.

Ex. 1008, 7:33–47. Wallace discloses that "end effector **66** is manipulated by the wrist mechanism **10** to provide the ability of continuous movement in a wide range of angles (in roll, pitch and yaw) relative to an axial direction or the longitudinal axis **51** of the shaft **52**." Ex. 1008, 7:57–60. Wallace

further discloses that its "wrist mechanism includes a distal member, configured to support the end effector, and a plurality of rods extending generally along an axial direction within the shaft and movable generally along this axial direction to adjust the orientation of the distal member with respect to the axial direction or shaft." Ex. 1008, 3:54–59. Wallace additionally discloses that "[t]he plurality of rods may comprise two, three, four or more rods." Ex. 1008, 4:28–29.

2. Petitioner's Contentions

Petitioner contends that claims 25 and 26 of the '969 patent would have been obvious in view of the combined teachings of Prisco, Cooper, and Wallace. Petitioner provides detailed assessment of the content of the prior art in advocating that all the features of claims 25 and 26 are shown therein. *See* Pet. 79–87. Petitioner also supports that assessment with citation to the Declaration testimony of Dr. Knodel (Ex. 1003).

Claim 25 depends from independent claim 24, and recites "wherein said at least one gear-driven portion comprises an articulation system interfacing with said distal spine portion and said transmission assembly." Ex. 1001, 96:16–19. Petitioner asserts that Prisco in view of Cooper and Wallace discloses the aforementioned limitation. Pet. 79 (citing Ex. 1003 ¶¶ 113–122). Petitioner takes the position that "it would have been obvious to a POSITA in view of Wallace to modify the gear driven portion of the surgical tool to include an articulation system interfacing with said distal spine portion and said transmission assembly." Pet. 79 (citing Ex. 1003 ¶¶ 113–122). Petitioner explains

> [a] POSITA would have understood that, in the combination of Prisco and Wallace, the Wallace articulation gears, articulation rods, distal member, and clevis would be the "movable wrist

> mechanism" of Prisco that provides the additional degrees of freedom, and the gears 400 of Wallace would be driven by Prisco's "interface disks" which receive rotary motion from the tool drive assembly.

Pet. 82 (citing Ex. 1006, 8:34–40, 14:58–15:1, 16:23–43, 10:39–48; Ex. 1003 ¶ 117); *see also id.* at 79–87 (citing Ex. 1008, 7:33–65, 13:6-14:15, Figs. 1, 2A, 30; Ex. 1003 ¶¶ 115–117). Petitioner provides several reasons why a POSITA would have been motivated "to modify Prisco's surgical tool to include Wallace's articulation assembly." Pet. 82–84 (citing Ex. 1003 ¶¶ 118–121).

Petitioner provides similar detailed analysis, supported by the testimony of Dr. Knodel, for claim 26. *See* Pet. 84–87.

3. Patent Owner's Contentions

Patent Owner contends that Petitioner's ground of unpatentability based on Prisco, Cooper, and Wallace is deficient. *See* Prelim. Resp. 31–34, 36–42. Patent Owner first contends that "Petitioner fails to explain how Wallace's articulation could be further incorporated into the combination of Prisco and Cooper, which, as already discussed above, is itself incompatible and inoperable." Prelim. Resp. 39. More particularly, Patent Owner argues

> the proposed combination requires at least five transmission members: one for shaft rotation, one for opening and closing the end effector jaws, one for firing the stapler, and two for articulation (one for each degree of freedom, as taught in Wallace). Thus, like the proposed combination of Prisco and Cooper, the proposed combination of Prisco, Cooper, and Wallace is incompatible.

Prelim. Resp. 40.

4. Discussion

Having considered the conflicting positions of the parties, we conclude that, at this stage of the proceeding, Petitioner has shown a reasonable likelihood that it would prevail in challenging the patentability of claims 25 and 26. In our view, Petitioner's obviousness approach, on this record, adequately identifies where all the elements of claims 25 and 26 are found in the prior art, and Petitioner demonstrates adequate reasoning to combine the teachings of Prisco, Cooper, and Wallace.

At this stage of the proceeding, Patent Owner's argument that a person of ordinary skill in the art would not have understood or had a sufficient reason to combine the teachings of Prisco, Cooper, and Wallace is unpersuasive. Here, as Petitioner points out, Prisco contemplates using a wrist mechanism like the one disclosed in Cooper, and thus, "a POSITA would turn to other wrist mechanisms, such as that disclosed by Wallace for the advantages that each may offer." Pet. 82–83 (citing Ex. 1003 ¶ 118; Ex. 1008, 13:6–14:15; Ex. 1006, 16:38–43). As such, we agree with Petitioner that:

> a POSITA would have been prompted to modify Prisco's surgical tool to include Wallace's articulation assembly because doing so would be merely the application of a known technique (using articulation bars and sector gears) to a known system (*e.g.*, Prisco's surgical tool) ready for improvement to yield predictable results, without significantly altering or hindering the functions performed by Prisco's surgical instrument.

Pet. 83 (citing Ex. 1003 ¶ 121). In our view, these statements suffice as an articulated reason with a rationale underpinning to support combining Prisco, Cooper, and Wallace.

At this stage of the proceeding, we are also unpersuaded by Patent Owner's argument that the proposed combination of Prisco, Cooper, and Wallace is incompatible. *See* Prelim. Resp. 38–40. Patent Owner's argument appears to be premised on the physical combinability of Prisco, Cooper, and Wallace. As discussed above, such physical combinability is not a requirement in an obviousness determination. *See Sneed*, 710 F.2d at 1550. Instead, the relevant inquiry is whether the claimed subject matter would have been obvious to those of ordinary skill in the art in light of the combined teachings of those references. *See Keller*, 642 F.2d at 425. Based on the record before us, we are persuaded that Petitioner provides sufficient reason to modify the surgical tool of Prisco in view of Cooper to include Wallace's gear-driven articulation assembly. *See* Pet. 79–84; *see also* Ex. 1003 ¶¶ 118–121.

On this record, we determine that the Petition shows a reasonable likelihood that Petitioner would prevail with respect to claims 25 and 26 being unpatentable over Prisco, Cooper, and Wallace.

IV. CONCLUSION

For the foregoing reasons, we determine that Petitioner has shown that there is a reasonable likelihood that it would prevail with regard to at least one of the claims challenged in the Petition. Accordingly, we institute *inter partes* review. 35 U.S.C. § 314(a). At this stage of the proceeding, we have not made a final determination as to the patentability of any challenged claim or any underlying factual or legal issue.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 24–26 of the '969 patent is instituted with respect to all grounds of unpatentability presented in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), notice is hereby given of the institution of a trial, which commences on the entry date of this Decision.

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