

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CANON INC.,
Petitioner,

v.

INTELLECTUAL VENTURES I LLC,
Patent Owner.

Case IPR2014-00535
Patent 7,315,406 B2

Before THOMAS L. GIANNETTI, JAMES A. TARTAL, and
PATRICK M. BOUCHER, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background

Canon Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 1–31 of U.S. Patent No. 7,315,406 B2 (“the ’406 patent”). After consideration of a Preliminary Response (Paper 7) filed by Intellectual Ventures I LLC (“Patent Owner”), the Board instituted trial on September 24, 2014. Paper 9 (“Dec.”).

During the trial, Patent Owner timely filed a Patent Owner Response (Paper 15, “PO Resp.”), and Petitioner timely filed a Reply to the Patent Owner Response (Paper 22, “Reply”). An Oral Hearing was held on June 24, 2015 (Paper 36, “Tr.”).

We have jurisdiction under 35 U.S.C. § 6(c). This is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has demonstrated by a preponderance of the evidence that claims 1–31 are unpatentable.

B. Related Proceedings

The ’406 patent has been asserted against Petitioner in *Intellectual Ventures I LLC v. Canon Inc.*, 13-cv-473-SLR (D. Del.). Pet. 1.

C. The '406 Patent

The '406 patent describes scanning circuit structures for scanners capable of reducing distortion during high-speed image signal transmission. Ex. 1001, col. 2, ll. 3–7. Figure 2 of the '406 patent is reproduced below.

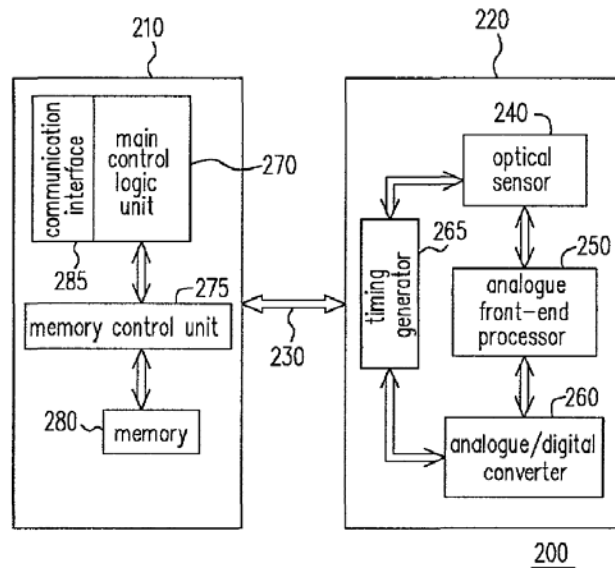


Figure 2 illustrates a circuit structure for a scanner, including main circuit module 210 and optical sensor circuit module 220 linked together with flat cable 230. *Id.* at col. 3, ll. 36–40. Communication interface 285 of the main circuit module allows interfacing with a human being, such as over a universal serial bus (“USB”) interface. *Id.* at col. 3, ll. 48–57. The communication interface receives scanning instructions regarding image resolution, brightness level, and scanning range, and converts such scanning instructions into scanning control signals that are conveyed to the optical sensor circuit module over the flat cable. *Id.* Timing generator 265 produces timing control signals for extracting an analog signal image from optical sensor 240, which may be a charge-coupled device (“CCD”) or complementary metal-oxide-semiconductor (“CMOS”) image sensor. *Id.* at

col. 3, ll. 58–64. After preprocessing of a collected image by analog front-end preprocessor 250, analog/digital converter 260 (“A/D converter”) converts the preprocessed image to digital data, which are transmitted to the main circuit module over the flat cable.

The ’406 patent identifies two specific advantages of this arrangement. First, a clearer image can be obtained at higher scanning speeds because the flat cable transmits digital data instead of easily distorted analog image signals. *Id.* at col. 4, ll. 23–25. Second, electromagnetic-interference effects are mitigated because the flat cable transmits scanning control signals rather than timing control signals. *Id.* at col. 4, ll. 26–29.

D. Illustrative Claims

Claims 1 and 11 of the ’406 patent are illustrative of the claims at issue:

1. A scanning circuit for a document scanner, comprising:
 - a main circuit module capable of receiving a scanning instruction from a communication interface, converting the scanning instruction into scan control signals, passing the scan control signals to a connection cable as well as receiving a digital image data captured in a document scanning operation through the connection cable; and
 - an optical sensor circuit module connected to the main circuit module through the connection cable capable of receiving the scan control signals and converting the scan control signals to timing control signals that control document scanning, extraction of an analog image signal from the document and conversion of the analog image signal into the digital image data.

11. A scanning method, comprising:
receiving scan control signals at an optical sensor circuit module via a connection cable; and
converting the scan control signals to timing control signals to control document scanning.

E. Grounds of Unpatentability

Petitioner relies on the following references.

Ochiai	US 5,457,544	Oct. 10, 1995	Ex. 1009
Koshimizu	US 2001/0030278 A1	Oct. 18, 2001	Ex. 1012
Kono	US 6,958,830 B2	Oct. 25, 2005	Ex. 1006
Takagawa	JP H10-215353	Aug 11, 1998	Ex. 1017
Tsuboi	JP H11-046302	Feb. 16, 1999	Ex. 1015
Nakamura	JP H11-353471	Dec. 24, 1999	Ex. 1018

We instituted this proceeding based on the following grounds.

Reference(s)	Basis	Claim(s) Challenged
Tsuboi	§ 102(b)	1–3, 5, 6, and 10–31
Tsuboi	§ 103(a)	1–3, 5, 6, and 10–31
Tsuboi and Takegawa	§ 103(a)	4
Tsuboi and Koshimizu	§ 103(a)	7
Tsuboi and Nakamura	§ 103(a)	9
Tsuboi and Kono	§ 103(a)	5, 6, 8, 16–25, 29, and 31
Tsuboi, Kono, and Koshimizu	§ 103(a)	7
Tsuboi and Ochiai	§ 103(a)	2, 3, 14, 15, 18, 19, 23, 27, and 28
Tsuboi, Ochiai, and Takegawa	§ 103(a)	4
Tsuboi, Ochiai, and Kono	§ 103(a)	18, 19, and 23

II. ANALYSIS

A. *Claim Construction*

The Board interprets claims of an unexpired patent using the broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, at 1277–1279 (Fed. Cir. 2015); Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012).

1. “*converting*”

In the Institution Decision, we construed phrases of the form “converting [X] into [Y] signals,” which are recited in various claims, as generating Y signals from X. Dec. 5–6. After considering the submissions of the parties and their respective positions regarding the prior art, discussed *infra*, we revisit our construction of this term.

Petitioner proposes that “converting” as used in the claims be construed to mean “changing an instruction or signal from one form to another.” Pet. 5–6. Patent Owner proposes specific constructions of phrases that include the word “converting,” contending that the term should not be construed as a standalone word. Prelim. Resp. 30–33. Patent Owner also opposes Petitioner’s construction because “it attempts to introduce extraneous words ‘instruction,’ ‘signal,’ and ‘form,’” and because “[c]hanging is not the same as converting.” *Id.* at 30.

We partially agree with Patent Owner, in that Petitioner’s proposed construction includes the words “instruction” and “signal,” which are unnecessary for a construction of the word “converting” itself. But a

dictionary definition of “convert” is “to change from one form or function to another.” Ex. 3001. Patent Owner offers no explanation for its position that “changing is not the same as converting,” and that position is inconsistent with the dictionary definition. Accordingly, we refine our construction herein to construe “converting [X] into [Y] signals” as changing the form of X into Y signals.

2. “*scan control signals*” and “*timing control signals*”

Patent Owner proposes that the phrase “converting the scanning instruction into scan control signals,” which is recited in claims 1, 2, 12, 14, 22, 26, and 27, be construed as converting the scanning instruction into scan control signals *that do not include timing control signals*. PO Resp. 4–6. Patent Owner takes a similar position in its proposed construction of other phrases recited in the claims, including “converting the scan control signals to timing control signals,” which appears in claims 1, 11, 22, 26, and 30 (*id.* at 6–7), and “generating [the] timing control signals that control a generation of the analog image signal and a conversion of the analog image signal into the digital image data,” which appears in claims 5, 16, 17, 21, 29, and 31 (*id.* at 8–10).

Patent Owner contends that, in the ’406 patent, timing control as embodied in timing control signals is *completely independent* of the scan control signals. Tr. 49:20–50:20. Patent Owner observes that the Specification of the ’406 patent explains that the “flat cable transmits scanning control signals . . . *instead of* timing control signals.” PO Resp. at 4 (citing Ex. 1001, col. 4, ll. 26–29) (emphasis added). Patent Owner

reasons that such disclosure would be understood by one of ordinary skill in the art as describing “transmission of scanning control signals, not timing control signals, across the flat cable connecting the main circuit module and the optical sensor module,” and supports its reasoning with testimony from Richard G. Zech, Ph.D. *Id.* at 5 (citing Ex. 2004 ¶ 38).

We are not persuaded by Patent Owner’s reasoning. Although the portion of the Specification cited by Patent Owner suggests a distinction between scanning control signals and timing control signals, it does not support unambiguously Patent Owner’s position of complete independence between scan control signals and timing control signals. That is, it is not apparent from the statement identified by Patent Owner that the scan control signals transmitted over the flat cable lack any signal that affects timing control. For example, Patent Owner acknowledged at the Oral Hearing that the specific scanning control signals mentioned in the ’406 patent are the image resolution, the brightness level, and the scanning range, and that these scanning control signals are used “to create the timing [control] signal on the optical unit 220.” Tr. 50:13–20. Moreover, the plain language of claims 1, 2, 12, 14, 22, 26, and 27, which recite “converting” scan control signals into timing control signals, is inconsistent with Patent Owner’s position. Under the construction we adopt, “converting” scan control signals into timing control signals means changing the form of scan control signals into timing control signals, which does not require their complete independence. The negative limitation that Patent Owner proposes to read into the expression appears nowhere in the text of the claim itself. “[A] claim construction analysis must begin and remain centered on the claim language itself.”

Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1116 (Fed. Cir. 2004). Claims terms can be assigned a scope narrower than their ordinary meaning only if there is some indication in the patent or the prosecution history that a term was meant to have a more restrictive meaning or a broader meaning was disclaimed during prosecution. *Saunders Grp., Inc. v. Comfortrac, Inc.* 492 F.3d 1329, 1331 (Fed. Cir. 2007). Neither the portion of the Specification identified by Patent Owner nor the prosecution history persuades us that the phrase was meant to have the more restrictive meaning Patent Owner now advocates.

Furthermore, the language of the claims in the '406 patent contrasts with the claims of Application No. 11/694,472, a child of the '406 patent. The claims in the child explicitly were amended during prosecution to include the negative limitation for the purpose of overcoming prior art. *See* Ex. 1023, 2. We determine that this amendment is inconsistent with Patent Owner's claim construction argument in this proceeding. *See Microsoft Corp. v. Multi-Tech Systems Inc.*, 357 F.3d 1340, 1349–50 (Fed. Cir. 2004) (prosecution history of related application is relevant to claim construction); *see Laitram Corp. v. Morehouse Indus., Inc.*, 143 F.3d 1456, 1460 n.2 (Fed. Cir. 1998) (applying the prosecution histories of two sibling patents, which shared a common written description, to one another). Patent Owner has not identified a persuasive reason why, under the broadest-reasonable-interpretation standard, the broader language of the parent '406 patent claims should not be given its full scope.

Accordingly, we construe “timing control signals” as signals that affect timing control, and we construe “scan control signals” as signals that

affect scan control. Our construction, moreover, does not preclude the inclusion of a timing control signal as part of a scan control signal.

3. *“optical sensor circuit module”*

Independent claim 1 recites “an optical sensor circuit module . . . capable of receiving the scan control signals and converting the scan control signals to timing control signals that control document scanning, extraction of an analog image signal . . . and conversion of the analog image signal into the digital image data.” In the Institution Decision, we adopted a construction in which the recited “receiving,” “converting,” “extraction,” and “conversion” are all capabilities of the optical sensor circuit module, without the further requirement that the extraction and conversion be controlled by the timing control signals. Dec. 7. We see no reason to alter that construction based on the positions of the parties as developed during the trial, and accordingly adopt it herein.

4. *Means-plus-function Limitations*

Claims 21–25 include several terms recited as “means for” performing identified functions. In the Institution Decision, we construed these recitations under 35 U.S.C. § 112, ¶ 6, as follows. We see no reason to alter those constructions based on the positions of the parties as developed during the trial, and accordingly adopt them herein.

“means for . . .”	Corresponding structure
“. . . extracting an analog image signal”	optical sensor circuit module 220 and optical sensor 240
“. . . converting the analog image signal into a digital image data”	analog/digital converter 260
“. . . receiving the digital image data”	main circuit module 210 and main control logic unit 270
“. . . generating timing control signals”	timing signal generator 265
“. . . receiving a scanning instruction”	main control logic unit 270
“. . . converting the scanning instruction into scan control signals”	main control logic unit 270 and communication interface 285
“. . . passing the scan control signals to said connection cable”	main circuit module 210
“. . . receiving the scan control signals”	optical sensor circuit module 220
“. . . converting the scan control signals to timing control signals”	optical sensor module 220 and timing signal generator 265
“. . . holding the digital image data”	memory unit 280
“. . . controlling the access of the digital image data”	memory controller 275
“. . . compensating and adjusting the digital image data”	main control logic unit 270
“. . . preprocessing the analog image signal”	analog front-end preprocessor 250
“. . . converting the pre-processed analog image signal into the digital image data”	analog/digital converter 260

B. Anticipation of Claims 1, 3, 5, 6, and 10–31 by Tsuboi

Tsuboi describes an image-reading device that uses a CCD to collect image data. Ex. 1015 ¶ 1. Figure 4 of Tsuboi is reproduced below.

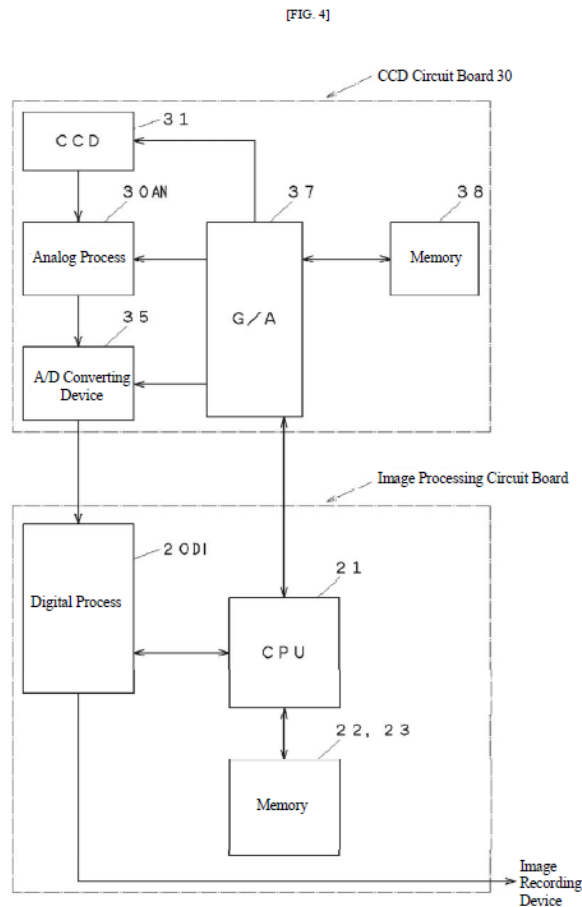


Figure 4 provides a schematic illustration of the image-reading device with components distributed between an image processing circuit board and a CCD circuit board. *Id.* ¶ 36. Petitioner draws a correspondence between (1) the image processing circuit board of Tsuboi and the optical sensor circuit module recited in the claims of the '406 patent, and (2) the CCD circuit board of Tsuboi and the main circuit module recited in the claims. Pet. 17. The image processing circuit board and the optical sensor circuit module are connected by a flexible cable. Ex. 1015 ¶ 25. Similar to the configuration shown in Figure 2 of the '406 patent, Tsuboi discloses that the CCD circuit board includes CCD image sensor 31, analog processing circuit

30AN, analog-digital converter 35, and “signal processing circuit 37 for controlling the timing with which the CCD 31 is driven and for generating a clock.” *Id.* ¶ 36; *see also id.* ¶ 3. Signals processed to generate information for controlling the timing are received from the image processing circuit board. *Id.* ¶ 39. Petitioner reasons that “the timing control signals and digital image data are generated on the optical sensor side, and the digital image data is transmitted to the main module via a cable, as claimed in the ’406 [p]atent.” Pet. 18.

Petitioner provides charts at pages 18–30 of the Petition that set forth its detailed positions that claims 1, 3, 5, 6, and 10–31 are anticipated by Tsuboi in light of Tsuboi’s teaching of generating timing control signals and digital image data on the optical sensor side, and transmitting digital image data to the main module via a cable. We have reviewed the charts and conclude that Petitioner has demonstrated, by a preponderance of the evidence, that each of claims 1, 3, 5, 6, and 10–31 is anticipated by Tsuboi.

Patent Owner contends that Tsuboi neither explicitly nor inherently discloses converting scanning instructions into scan control signals and neither explicitly nor inherently discloses converting scan control signals to timing control signals. PO Resp. 13–24. Although Patent Owner is correct that “Petitioner acknowledges that the term ‘converting’ is not explicitly present in Tsuboi” (*id.* at 14), anticipation “is not an ‘ipsissimis verbis’ test.” *In re Bond*, 910 F.2d 831, 832–33 (Fed. Cir. 1990) (citing *Akzo N.V. v. United States Int’l Trade Comm’n*, 808 F.2d 1471, 1479 & n.11 (Fed. Cir. 1986)). “An anticipatory reference . . . need not duplicate word for word what is in the claims.” *Standard Havens Prods., Inc., v. Gencor Indus., Inc.*,

953 F.2d 1360, 1369 (Fed. Cir. 1991). The proper test is what the reference would have taught a person of ordinary skill in the art. *See In re Preda*, 401 F.2d 825, 826 (CCPA 1968) (“[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.”). For example, Petitioner’s expert witness, L. Richard Carley, Ph.D., identifies control signals and certain intermediate-level clock signals in determining that main module 20 of Tsuboi converts scanning instructions in the form of various inputs and a start instruction into scan control signals. Ex. 1002 ¶ 65 (citing Ex. 1015 ¶¶ 20, 25, 27, 29, 39–41). Dr. Carley further identifies generation of other control signals that include primary scanning synchronization signals and primary scanning effective interval signals by main module 20. *Id.* (citing Ex. 1015, ¶¶ 39, 40). Dr. Carley presents reasoning that one of ordinary skill in the art would have understood that CPU 21 of Tsuboi generates these scan control signals from the user-level scanning instructions because “CPUs ‘process’ signals that they receive” and because “the control signals for scanning issued by CPU 21 (e.g., primary scanning synchronization signal) provide the operation controls for performing scanning in accordance with the user’s instructions.” *Id.*

In addition, Patent Owner’s expert witness, Dr. Zech, acknowledged that Tsuboi’s synchronization and interval signals are the result of processing by CPU 21 of instructions that relate to such factors as document size. Ex. 1028, 240:8–241:4, 284:1–285:10, 165:12–169:2, 170:22–173:16, 152:12–155:13, 157:5–9. A person of ordinary skill in the art would have

understood that CPU 21 processes the instructions received from board 14 to convert the input scanning instructions into the scanning synchronization signal and the effective interval signals, which are transmitted to signal processing circuit 37. See Reply 6 (citing Ex. 1031 ¶¶ 28, 32, 34–36, 40, 53).

We disagree with Patent Owner’s contention that “the Petition itself concedes that Tsuboi does not explicitly disclose converting a scanning instruction into [a] scan control signal” through its acknowledgment that the term “converting” is not explicitly present in Tsuboi. PO Resp. 14. Although Dr. Carley and Petitioner acknowledge that Tsuboi does not explicitly refer to “converting,” Dr. Carley’s reasoning, which we credit, is based directly on the explicit teachings of the reference and how they would be understood by one of ordinary skill in the art. Therefore, we do not understand Petitioner to be making an inherency argument, and we conclude that Petitioner has shown, by a preponderance of the evidence, that the recited “converting” is taught explicitly by the reference.

With respect to the conversion of scan control signals into timing control signals, Dr. Carley identifies various timing control signals that are generated from scan control signals received by signal processing circuit 37 of Tsuboi. Ex. 1002 ¶ 69. These include a clock signal generated by signal processing circuit 37 that controls the timing of the sensor and a signal that controls the timing of the A/D converter. *Id.* (citing Ex. 1005 ¶¶ 36–39). Patent Owner responds that “signal processing circuit 37 merely **provides** the clock received through the flexible cable to other synchronous circuit components of the CCD circuit board.” PO Resp. 19 (citing Ex. 2004

¶¶ 58–65). As we note above, however, our construction of “scan control signals” does not preclude inclusion of a timing control signal as part of a scan control signal. We are not persuaded, therefore, by Patent Owner’s distinction that the signal processing circuit “merely provides” the clock signal rather than operates on the scan control signals it receives to perform a conversion.

We conclude that Petitioner has shown, by a preponderance of the evidence, that Tsuboi anticipates claims 1, 3, 5, 6, and 10–31.

C. Obviousness of Claims 1, 3, 5, 6, and 10–31 Over Tsuboi

In addition to its challenge of claims 1, 3, 5, 6, and 10–31 as anticipated by Tsuboi, Petitioner advances alternative grounds for challenging those claims as obvious over Tsuboi: “to the extent that Tsuboi does not explicitly describe ‘converting,’ such as converting a scanning instruction into scan control signals, such a conversion would have been obvious to one of ordinary skill.” Pet. 31. Dr. Carley testifies that, although the term “converting” is not explicitly used in Tsuboi, one of ordinary skill in the art would have recognized that by receiving and processing instructions, the CPU in Tsuboi converts the user scanning instruction into a different form, namely “control signals” or the “primary scanning synchronization signal.” Ex. 1002 ¶ 65. We credit this testimony and conclude that claims 1, 3, 5, 6, and 10–31 would have been obvious over Tsuboi.

*D. Obviousness of Claims 5, 6, 8, 16–25, 29, and 31
Over Tsuboi and Kono*

Kono discloses a scanner having a separate main board and carriage. Ex. 1006, col. 3, ll. 37–41; col. 5, ll. 6–9. Figure 2 of Kono is reproduced below.

FIG. 2

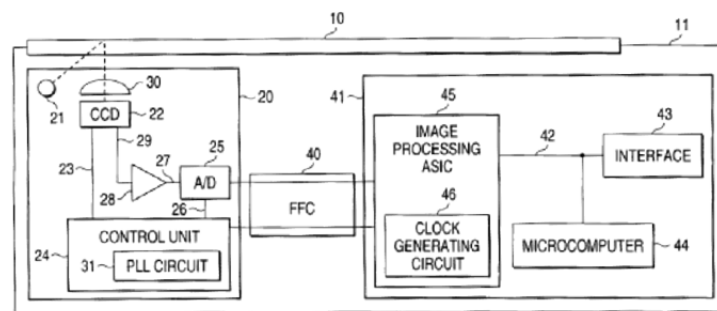


Figure 2 depicts main board 41 connected to carriage 20 with flexible flat cable 40. *Id.* at col. 4, ll. 56–57. Petitioner draws a correspondence between (1) main board 41 and the “main circuit module” recited in the claims; and (2) the circuitry on carriage 20 and the “optical sensor circuit module” recited in the claims. Pet. 35; *see also* Ex. 1002 ¶ 71. Similar to Tsuboi, the optical sensor side of the scanner includes CCD 22, analog-digital converter 25, and control unit 24. Ex. 1006, col. 3, l. 59–col. 4, l. 27.

Petitioner contends that it would have been obvious, in light of Kono’s teachings, to use timing control signals to control both the image sensor and A/D converter. Pet. 35. Claims 5, 6, 16–25, 29, and 31 include limitations related to such timing coordination. As Petitioner observes, Kono discloses that control unit 24 acts as a timing generator that generates

timing control signals that provide a shift pulse and a sampling pulse. *Id.* (citing Ex. 1006, col. 4, ll. 13–55; col. 5, l. 29–col. 6, l. 10; Fig. 1). The control unit is coupled to both the CCD and A/D converter, with the shift pulse transmitted to the CCD to control generation of the analog image signal and the sampling pulse transmitted to the A/D converter to control conversion to digital data. Ex. 1006, col. 4, ll. 13–55; col. 5, l. 29–col. 6, l. 10. Petitioner reasons that, because both Tsuboi and Kono disclose generation of timing control signals on the optical sensor side of a scanning circuit, one of ordinary skill in the art would have found it obvious to send timing control signals both to the image sensor and to A/D converter in Tsuboi according to the scheme described in Kono. Pet. 35–36. Petitioner has articulated a sufficient rationale to make the asserted combination. Patent Owner challenges this reasoning, based on its position that Tsuboi does not disclose generation of timing control signals on the optical sensor side of a scanning circuit. PO Resp. 47. As we explain above, we disagree with Patent Owner’s position on this.

Patent Owner also responds that Kono fails to cure a further asserted deficiency in Tsuboi, namely, that Kono fails to disclose conversion of scanning instructions into scan control signals. PO Resp. 46. For the reasons we express above, however, we find that Petitioner has established, by a preponderance of the evidence, that Tsuboi discloses such conversion, and therefore Petitioner’s argument that there is a deficiency fails.

We conclude that Petitioner has shown, by a preponderance of the evidence, that claims 5, 6, 16–25, 29, and 31 would have been obvious over Tsuboi and Kono.

*E. Obviousness of Claim 7 Over Tsuboi and Koshimizu or
Tsuboi, Kono, and Koshimizu*

Petitioner challenges claim 7, which recites that “the optical sensor includes a complementary metal-oxide-semiconductor (CMOS) image sensor,” as unpatentable under 35 U.S.C. § 103(a) over Tsuboi and Koshimizu, together, or in further combination with Kono. Pet. 32–33, 36–37. Tsuboi’s scanner includes a CCD image sensor for reading a document. Ex. 1015 ¶¶ 14, 23–24. Koshimizu “relates to an image reading apparatus” and discloses a CMOS image sensor for use in a scanner. Ex. 1012 ¶¶ 1, 25. Petitioner’s reasoning that one of skill in the art would have “provide[d] Tsuboi’s scanner with a CMOS image sensor, as described in Koshimizu” articulates sufficient rational underpinnings for making the combination. Pet. 33.

Patent Owner responds that Koshimizu does not cure the deficiencies with Tsuboi it identifies for claims 1 and 5, from which claim 7 depends, either for the Tsuboi grounds or for the Tsuboi-Kono grounds. PO Resp. 44, 48–49. Because we disagree that Petitioner’s analysis is deficient for those underlying base claims, we do not find this argument persuasive.

We conclude that Petitioner has shown, by a preponderance of the evidence, that claim 7 would have been obvious over Tsuboi and Koshimizu, together or in further combination with Kono.

*F. Obviousness of Claims 2, 3, 14, 15, 18, 19, 23, 27, and 28
Over Tsuboi and Ochiai and of
Claims 18, 19, and 23 Over Tsuboi, Ochiai, and Kono*

Petitioner challenges claims 2, 3, 14, 15, 18, 19, 23, 27, and 28, which relate to coupling of the main control logic unit with the memory control logic unit, as unpatentable under 35 U.S.C. § 103(a) over Tsuboi and Ochiai. Pet. 37–38. Petitioner also challenges claims 18, 19, and 23 as unpatentable under 35 U.S.C. § 103(a) over Tsuboi, Ochiai, and Kono. *Id.* at 38–39. Claims 2 and 3 depend from claim 1, claims 14 and 15 depend from claim 11, claims 18 and 19 depend from claim 17, claim 23 depends from claim 21, and claims 27 and 28 depend from claim 26.

Ochiai “relates to a facsimile device having an image memory.” Ex. 1009, col. 1, ll. 12–13. The facsimile device includes a scanner unit, as well as a memory control unit coupled to a CPU and memory. *Id.*, col. 2, ll. 32–53. The memory control unit controls writing data to and reading data from the memory. *Id.* at col. 5, ll. 49–53. Petitioner reasons that it

would have been obvious to one of ordinary skill that the memory 23 and logic unit arrangement in Tsuboi would preferably have been implemented as shown in Ochiai to provide a separate memory logic unit coupled to the main control logic unit because doing [so] would provide better processing speeds for high volumes of image data.

Pet. 37–38. Petitioner supports its reasoning with testimony by Dr. Carley. *Id.* (citing Ex. 1002 ¶ 109).

Patent Owner responds that Ochiai does not cure deficiencies with Tsuboi it identifies for underlying base claims from which these claims

depend. PO Resp. 49, 51. Because we disagree that Petitioner’s analysis is deficient for those underlying base claims, we do not find this response persuasive.

We conclude that Petitioner has shown, by a preponderance of the evidence, that claims 2, 3, 14, 15, 18, 19, 23, 27, and 28 would have been obvious over Tsuboi and Ochiai, and that claims 18, 19, and 23 would have been obvious over Tsuboi, Ochiai, and Kono.

G. Obviousness of Claim 4 Over Tsuboi and Takegawa and Over Tsuboi, Ochiai, and Takegawa

Petitioner challenges claim 4, which recites that “the memory comprises a dynamic random access memory,” as unpatentable under 35 U.S.C. § 103(a) over Tsuboi and Takegawa, together, or in further combination with Ochiai. Pet. 31–32, 38. Tsuboi’s scanner includes RAM 23, which stores digital image data from a scanning operation. Ex. 1015 ¶ 27. Takegawa describes a book-reading device that may be used as an image scanner. Ex. 1017 ¶ 1. A scanning unit includes an image processing unit that has a DRAM module for storing image signals. *Id.* at ¶¶ 11–12. Petitioner reasons that one of skill in the art would make a simple substitution of Tsuboi’s RAM with Takegawa’s DRAM “because Takegawa describes using such a memory to store the same type of image data from a scanning operation.” Pet. 32 (citing Ex. 1002 ¶ 135). Petitioner articulates a sufficient rationale to combine the teachings of Tsuboi and Takegawa in this way.

Patent Owner responds that Takegawa does not cure deficiencies with Tsuboi it identifies for claims 1 and 2, from which claim 4 depends. PO Resp. 44, 50. Because we disagree that Petitioner's analysis is deficient for those underlying base claims, we do not find this response persuasive.

We conclude that Petitioner has shown, by a preponderance of the evidence, that claim 4 would have been obvious over Tsuboi and Takegawa, alone or in combination with Ochiai.

H. Obviousness of Claim 9 Over Tsuboi and Nakamura

Petitioner challenges claim 9, which recites that “the communication interface includes a universal serial bus interface,” as unpatentable under 35 U.S.C. § 103(a) over Tsuboi and Nakamura. Pet. 33–34. Although Tsuboi discloses that main circuit module 20 receives input from operating board 14, it does not disclose the specific type of communication interface used between those elements. Nakamura “relates to a printing system that uses a USB (Universal Serial Bus), for printing scanner-read information through a printer device.” Ex. 1018 ¶ 1. In particular, Nakamura discloses that a scanner start instruction can be transmitted via a USB interface. *Id.* at ¶¶ 13, 14, 25, 32, 39. Petitioner reasons that “one of ordinary skill in the art would have reason to use a USB interface between the scanner and computer in Tsuboi at least because it was known to use such interfaces between those elements in order to avoid restarting the computer after the connection.” Pet. 34 (citing Ex. 1002 ¶ 193).

Patent Owner responds that Nakamura does not cure deficiencies with Tsuboi it identifies for claim 1, from which claim 9 depends. PO Resp. 44–

45. Because we disagree that Petitioner's analysis is deficient for those underlying base claims, we do not find this response persuasive.

We conclude that Petitioner has shown, by a preponderance of the evidence, that claim 9 would have been obvious over Tsuboi and Nakamura.

III. ORDER

For the reasons given above, it is

ORDERED that claims 1–31 of U.S. Patent No. 7,315,406 B2 are unpatentable; and

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

IPR2014-00535
Patent 7,315,406 B2

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