

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NAUTILUS HYOSUNG INC.,  
Petitioner,

v.

DIEBOLD NIXDORF, INC.,  
Patent Owner.

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Case IPR2016-00529  
Patent 7,229,010

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**DIEBOLD NIXDORF, INC.'S NOTICE OF APPEAL**

via PTAB E2E  
Patent Trial and Appeal Board

via Priority Express Mail  
Director of the United States Patent & Trademark Office  
c/o Office of the General Counsel  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

via CM/ECF  
United States Court of Appeals for the Federal Circuit

Pursuant to 35 U.S.C. §§ 141(c), 142, 319; 37 C.F.R. §§ 90.2(a), 90.3(a), and Federal Rule of Appellate Procedure / Federal Circuit Rule 15, notice is hereby given that Diebold Nixdorf, Inc. ("Diebold") appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision (Paper 28) entered by the Patent Trial and Appeal Board ("Board") on August 10, 2017 in *inter partes* review case no. IPR2016-00529. This notice is timely filed within 63 days of the Board's Final Written Decision. 37 C.F.R. § 90.3(a)(1).

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Diebold's issues on appeal may include, without limitation, (i) the Board's finding that claims 1–11, 22–26, and 28–30 of U.S. Patent No. 7,229,010 ("'010 patent") would have been obvious in view of Jones (U.S. Patent Pub. No. 2005/0047642) and Kozima (U.S. Patent No. 4,731,523); (ii) the Board's finding that claims 12–14 and 18–20 of the '010 patent would have been obvious in view of Jones, Kozima, and Swinton (U.S. Patent No. 5,136,144); (iii) the Board's finding that claim 15 of the '010 patent would have been obvious in view of Jones, Kozima, Swinton, and Kazuhiro (JP Appl. Model Pub. No. 1991-108170); (iv) the Board's finding that claims 13, 14, and 18–20 of the '010 patent would have been obvious in view of Jones, Kozima, Swinton, and Arikawa (JP Patent No. 3330815 B2); (v) the Board's finding that claim 15 of the '010 patent would have been obvious in view of Jones, Kozima, Swinton, Arikawa, and Kazuhiro; (vi) whether the Board exceeded its administrative power under the

Constitution by extinguishing private property rights through a non-Article III forum without a jury (*see Oil States Energy Servs., LLC v. Greene's Energy Grp., LLC.*, 2017 WL 2507340 (U.S. June 12, 2017)); and (vii) any findings or determinations supporting or related to the aforementioned issues as well as all other issues decided adversely to Diebold in any orders, decisions, or rulings in IPR2016-00529.

Simultaneously with this submission, Diebold is filing a true and correct copy of this Notice of Appeal with the Director of the United States Patent and Trademark Office and with the Clerk of the United States Court of Appeal for the Federal Circuit, along with the required filing fee, as set forth in the accompanying Certificate of Filing and Service.

Dated: October 11, 2017

Respectfully submitted,

By: /Christopher B. Kelly/

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**Certificate of Filing and Service**

Pursuant to 37 C.F.R. § 90.2, the undersigned hereby certifies that, on October 11, 2017, a true copy of the foregoing Notice of Appeal was delivered by Priority Express Mail to the Director of the United States Patent and Trademark Office at the following address:

Director of the United States Patent & Trademark Office  
c/o Office of the General Counsel  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

The undersigned further certifies that, on October 11, 2017, an electronic copy of the foregoing Notice of Appeal, along with the required docketing fee, was submitted electronically with the United States Court of Appeals for the Federal Circuit.

The undersigned further certifies that, on October 11, 2017, a true and correct copy of the foregoing Petitioner's Notice of Appeal was served electronically via e-mail to IPR42590-0001IP3@fr.com, riffe@fr.com, and bisenius@fr.com on October 11, 2017, in its entirety on the following:

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The parties have consented to electronic service in this matter.

Dated: October 11, 2017

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NAUTILUS HYOSUNG INC.,  
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DIEBOLD NIXDORF, INC.,  
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Case IPR2016-00529  
Patent 7,229,010 B2

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Before BARBARA BENOIT, GEORGIANNA W. BRADEN, and  
KERRY BEGLEY, *Administrative Patent Judges*.

BRADEN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318 and 37 C.F.R. § 42.73*

## I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6, and this Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–15, 18–20, 22–26, and 28–30 of U.S. Patent No. 7,229,010 B2 (Ex. 1001, “the ’010 patent”) are unpatentable.

### A. Procedural History

Nautilus Hyosung, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1–15, 18–20, 22–26, and 28–30 of the ’010 patent. Diebold Nixdorf, Inc. (“Patent Owner”)<sup>1</sup> timely filed a Preliminary Response (Paper 6, “Prelim. Resp.”).

Pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review of (1) claims 1–11, 22–26, and 28–30 under 35 U.S.C. § 103(a)<sup>2</sup> as unpatentable over Jones<sup>3</sup> and Kozima<sup>4</sup>; (2) claims 12–14 and 18–20 under 35 U.S.C. § 103(a) as unpatentable over Jones, Kozima, and Swinton<sup>5</sup>;

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<sup>1</sup> Patent Owner informed the Board of a name change, but stated “the renaming of Diebold, Inc. to Diebold Nixdorf, Inc. does not at this time reflect any change in corporate structure and does not presently involve the addition or removal of any real party-in-interest.” Paper 14, 2 (Patent Owner Updated Mandatory Notices).

<sup>2</sup> The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 100 et seq. effective on March 16, 2013. The ’010 patent issued from an application filed before March 16, 2013; therefore, we apply the pre-AIA versions of the statutory bases for unpatentability.

<sup>3</sup> U.S. Patent Pub. No. 2005/0047642 (publ. Mar. 3, 2005) (“Jones,” Ex. 1004).

<sup>4</sup> U.S. Patent No. 4,731,523 (iss. Mar. 15, 1988) (“Kozima,” Ex. 1005).

<sup>5</sup> U.S. Patent No. 5,136,144 (iss. Aug. 4, 1992) (“Swinton,” Ex. 1006).

(3) claim 15 under 35 U.S.C. § 103(a) as unpatentable over Jones, Kozima, Swinton, and Kazuhiro<sup>6</sup>; (4) claims 13, 14, and 18–20 under 35 U.S.C. § 103(a) as unpatentable over Jones, Kozima, Swinton, and Arikawa<sup>7</sup>; and (5) claim 15 under 35 U.S.C. § 103(a) as unpatentable over Jones, Kozima, Swinton, Arikawa, and Kazuhiro. *See* Paper 7 (“Dec. to Inst.”), 37–38.

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 13, “PO Resp.”), to which Petitioner filed a Reply (Paper 17, “Reply”). In addition, Patent Owner filed a Motion to Exclude Evidence (Paper 21), to which Petitioner filed an Opposition (Paper 23), and Patent Owner filed a Response in support of its motion (Paper 24).

An oral argument was held on May 4, 2016. A transcript of the oral argument is included in the record. Paper 27 (“Tr.”).

#### *B. Related Proceedings*

The parties inform us of the following matters that would affect or could be affected by a decision in this proceeding: co-pending litigation *Diebold, Inc. v. Nautilus Hyosung Inc.*, No. 1:15-cv-2153, N.D. Ohio; and co-pending proceeding before the U.S. International Trade Commission (*In the Matter of Certain Automated Teller Machines, ATM Modules, Components Thereof, & Products Containing Same*, Docket No. 337-TA-972. Both of the related proceedings were filed on or before October 19, 2015. Pet. 2; Paper 5, 2 (Patent Owner Mandatory Notices).

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<sup>6</sup> JP Appl. Model Pub. No. 1991-108170 (filed Nov. 7, 1991) (“Kazuhiro,” Exs. 1007, 1008).

<sup>7</sup> JP Patent No. 3330815 B2 (iss. Sept. 30, 2002) (“Arikawa,” Exs. 1009, 1010).



Petitioner also informs us of concurrently filed and pending IPR2016-00530 challenging the '010 patent. Pet. 2.

*C. The '010 Patent*

The '010 patent, titled “Check Accepting and Cash Dispensing Automated Banking Machine System and Method,” discloses systems and methods for accepting checks and dispensing cash to users. Ex. 1001, Title, Abst. The '010 patent further discloses that the checks and cash are sorted into “storage locations” by “a transversely movable plunger mechanism [that] is operative to be movable such that the check can be either moved into a storage location on either transverse side of the vertical transport.” *Id.* at 3:44–50, 18:63–19:9. One embodiment of the '010 patent is illustrated in Figure 3, reproduced below.

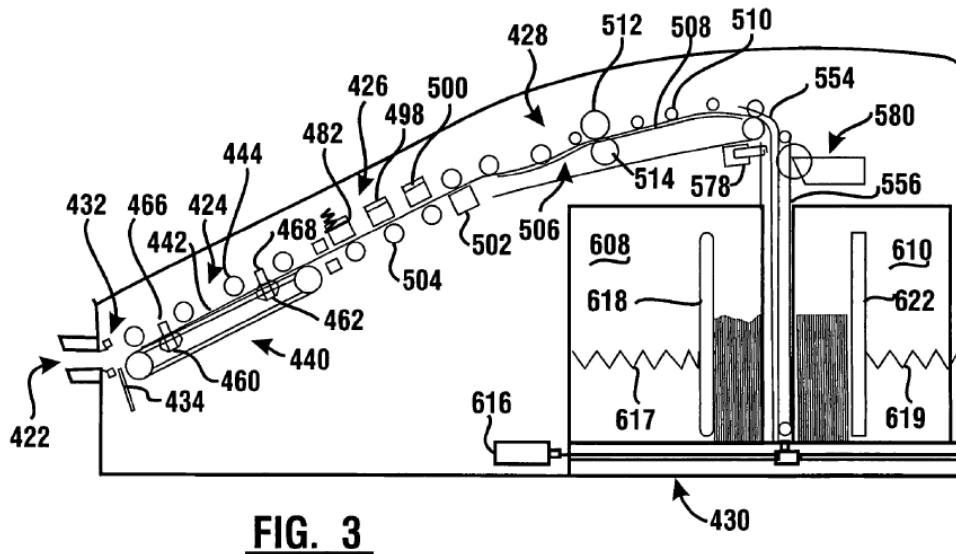


Figure 3 of the '010 patent is a schematic view of a deposit accepting device with document inlet opening 422, document alignment area 424, storage area 430, sensor 432, gate 434, magnetic read head 482, deflector 554, and vertical transport 556. *Id.* at 5:42–6:26, 10:12–21, 14:58–66, 18:59–61. Figure 3 further shows that storage area 420 is divided into first storage

location 608 positioned on a first side of the vertical transport and second storage location 610 positioned on an opposed transverse side of the vertical transport. *Id.* at 18:66–19:2. Another embodiment of the '010 patent is illustrated in Figure 31, reproduced below.

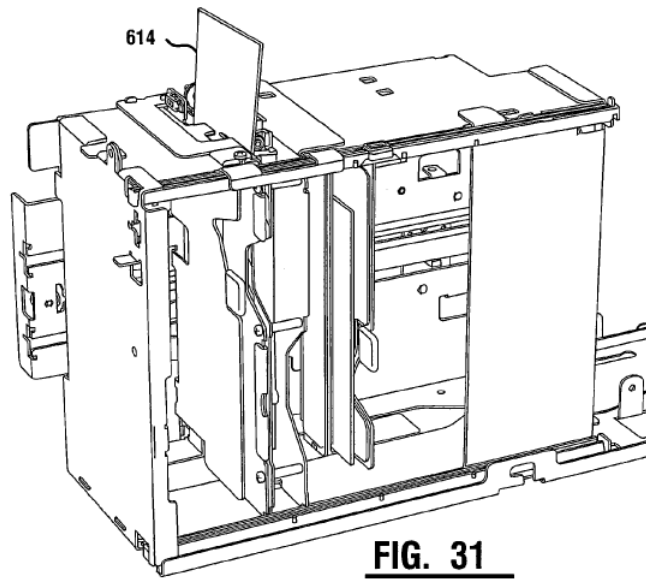
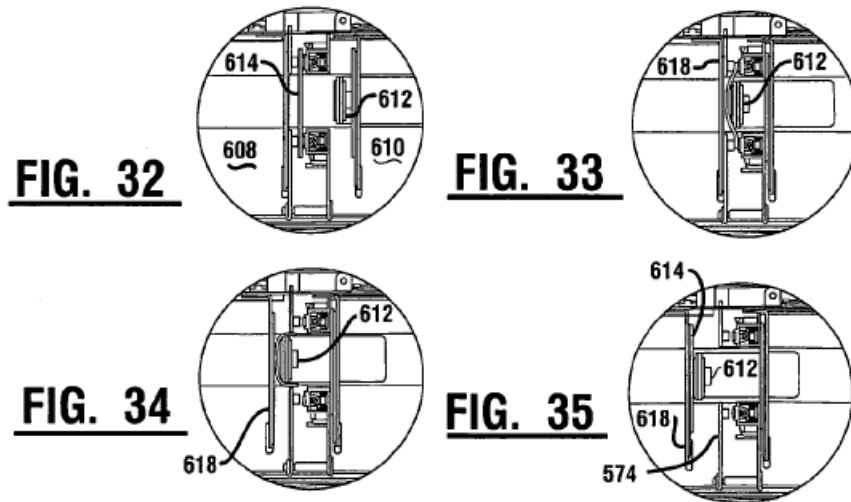


Figure 31 shows the movement of document 614 into a storage location. *Id.* at 19:9–11. According to the '010 patent, a movable plunger member operates responsive to one or more processors to disengage documents from the vertical transport and move the document into either the first storage location or second storage location of the storage area. *Id.* at 19:2–9. Figures 32–35, reproduced below, show the detailed operation of movable plunger member 612 in moving document 614 to storage location 608. *See id.* at 5:20–25.



Plunger member 612 moves from right to left to move document 614 away from engagement with guide rails into first storage location 608, or by moving from left to right to move document 614 from the guide rails into second storage location 610. *Id.* at 19:2–20:3. Movement of document 614 from the support rails to storage location 608 and into contact with backing plate 618 due to lateral movement of plunger 612 is shown in Figures 32–35. *Id.* at 3:55–58.

#### *D. Challenged Claims*

As noted above, an *inter partes* review was instituted as to claims 1–15, 18–20, 22–26, and 28–30 of the '010 patent, of which claims 1 and 28–30 are independent claims. Claim 1 is representative of the challenged claims and is reproduced below (with paragraphing):

1. An automated banking machine comprising:
  - at least one input device adapted to receive at least one input from users of the machine;
  - at least output device adapted to provide at least one output to users of the machine;
  - at least one currency dispenser adapted to dispense currency from the machine to users of the machine;

an item accepting opening adapted to receive into the machine, sheet items from users of the machine;

at least one sheet item transport in the machine, wherein the at least one transport is in operative connection with the item accepting opening, and wherein the at least one transport includes a pair of disposed sheet supporting rail portions;

a storage area, wherein the rail portions of the at least one transport extend in the storage area between a first sheet storage location in the storage area and a second sheet storage location in the storage area;

a movably mounted plunger member in the storage area, wherein the plunger member is movable transversely between the rail portions;

at least one drive in operative connection with the plunger member, wherein the at least one drive is operative to selectively move the plunger transversely between the rail portions;

wherein the plunger member is movable between the rail portions in the storage area in both a first transverse direction and a second transverse direction opposed of the first transverse direction, wherein the plunger member can move a sheet from the rail portions and into the first sheet storage location while moving in the first transverse direction, and wherein the plunger member can move a sheet from the rail portions and into the second sheet storage location while moving in the second transverse direction.

Ex. 1001, 23:18–53.

## II. DISCUSSION

### A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see*

*Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (“We conclude that the regulation represents a reasonable exercise of the rulemaking authority that Congress delegated to the Patent Office.”). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). An inventor, however, may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with “reasonable clarity, deliberateness, and precision.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Limitations, however, are not to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993). In addition, the Board may not “construe claims during [an *inter partes* review] so broadly that its constructions are *unreasonable* under general claim construction principles.” *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015).

Petitioner proposes constructions for “a movably mounted plunger member” and “[first/second] wall surfaces bounding the [first/second] storage location and in opposed facing direction of the [first/second] backing plate.” Pet. 7–8. Patent Owner does not contest Petitioner’s proposed constructions and does not offer its own constructions. *See generally* PO Resp.

After analyzing the claims and supporting specification of the ’010 patent, we determine that we need not provide express constructions for the claim terms noted by Petitioner. To the extent it is necessary, however,

we discuss certain other claims terms in the context of analyzing whether the prior art renders the challenged claims unpatentable.

*B. Principles of Law*

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

“[I]t is error to reach a conclusion of obviousness until all [the *Graham*] factors are considered.” *Apple v. Samsung Elecs. Co., Ltd.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc) (citations omitted). “This requirement is in recognition of the fact that each of the *Graham* factors helps inform the ultimate obviousness determination.” *Id.*

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics*,

*Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review). Furthermore, Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Thus, to prevail in an *inter partes* review, Petitioner must explain how the proposed combinations of prior art would have rendered the challenged claims unpatentable. At this final stage, we determine whether a preponderance of the evidence of record shows that the challenged claims would have been obvious over the proposed combinations of prior art.

We analyze the instituted grounds of unpatentability in accordance with the above-stated principles.

*C. Level of Ordinary Skill in the Art*

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991).

Petitioner’s declarant, Dr. Kaufman, opines that a person of ordinary skill in the art relevant to the ’010 patent would have been a person with “a minimum of a bachelor degree in mechanical engineering or a related engineering field plus 2–5 years of work and/or research experience in the field of mechanical engineering or electro-mechanical systems.” Ex. 1003 ¶ 20.

Patent Owner’s declarant, Dr. Thomas R. Kurfess opines that “a person of ordinary skill in the art would have had a combination of

experience and education in mechanical engineering, typically consisting of a minimum of a bachelor degree in mechanical engineering or a related field, and at least 4 years of working experience in the area of mechanical engineering.” Ex. 2001 ¶ 18. Dr. Kurfess notes that his definition of a person of ordinary skill in the art “falls within the definition offered by Dr. Kaufman.” *Id.* ¶ 19.

Based on our review of the ’010 patent, the types of problems and solutions described in the ’010 patent and cited prior art, and the testimony of Dr. Kaufman, we adopt and apply Dr. Kaufman’s definition of a person of ordinary skill in the art at the time of the claimed invention. We also note that the applied prior art reflects the appropriate level of skill at the time of the claimed invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

*D. Alleged Obviousness of Claims 1–11, 22–26, and 28–30 in View of Jones and Kozima*

Petitioner contends claims 1–11, 22–26, and 28–30 of the ’010 patent are unpatentable under 35 U.S.C. § 103 in view of Jones and Kozima. Pet. 8–14; Reply 2–14. Patent Owner disputes Petitioner’s contentions. PO Resp. 3–22. For reasons that follow, we determine Petitioner has demonstrated by a preponderance of the evidence the unpatentability of these claims.

*1. Overview of Jones*

Jones is titled “Document Processing Method and System” and discloses automatic teller machines and currency redemption machines that are capable of processing documents using full image scanning and currency



discriminators. Ex. 1004 ¶¶ 2-3, 107, 113, 405. One embodiment of Jones is shown in Figure 1b, reproduced below.

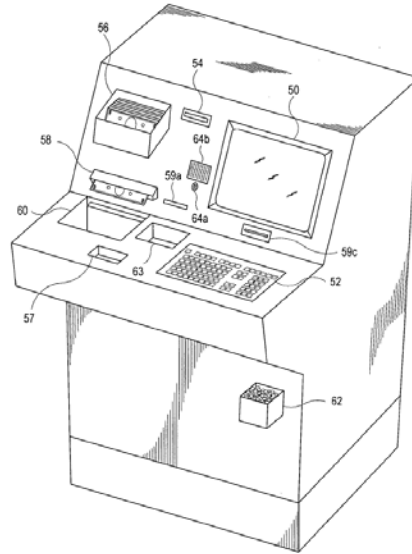


Figure 1b illustrates an automated banking machine with video screen 50, keyboard 52, document receptacle 56, and currency dispenser 58. *Id.* ¶ 136. Another embodiment of Jones is shown in Figure 4a, reproduced below.

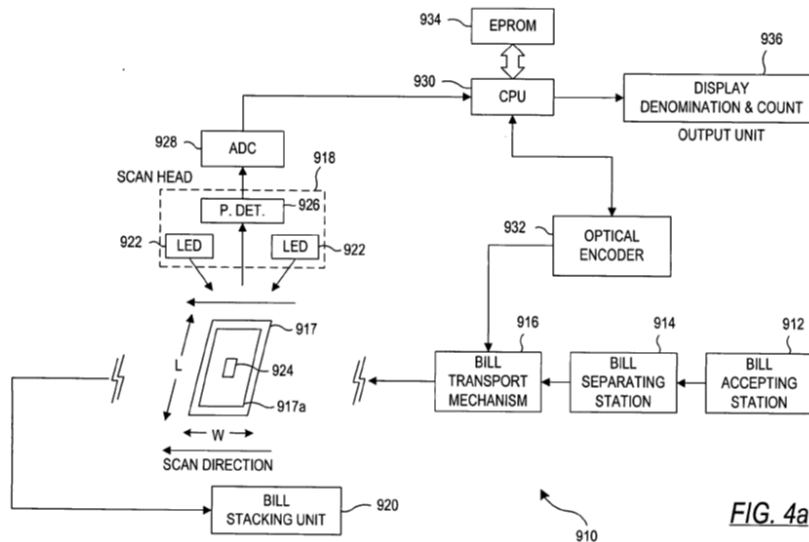
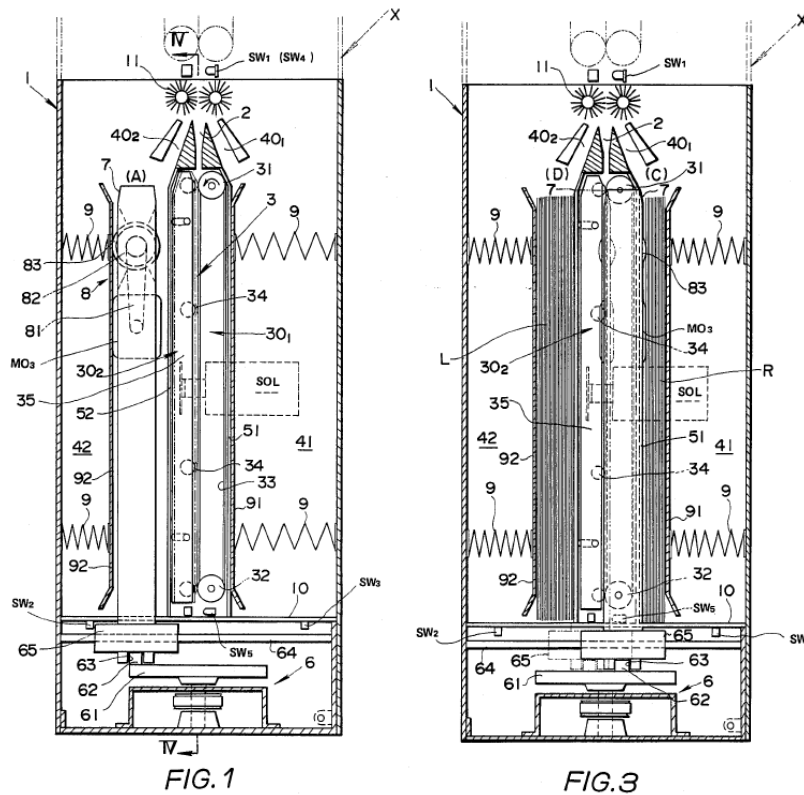


Figure 4a illustrates a currency discrimination unit having a single scan head. Unit 910 includes bill accepting station 912, bill separating

station 914, bill transport mechanism 916, scanhead 918, and bill stacking station 920. *Id.* ¶ 165. Optical scanhead 918 scans for characteristic information from a scanned bill 917, which is used to identify the denomination of the bill. *Id.* According to Jones, a bill transport path is defined in such a way that transport mechanism 916 moves currency bills so they may be scanned by scanhead 918. *Id.* ¶ 168.

## 2. *Overview of Kozima*

Kozima, titled “Bill Receiving Device,” discloses a compact bill receiving device that operates as part of a “money exchanger.” Ex. 1005, 1:5–14, 1:36–42, 12:31–36. The bill receiving device includes a storage area that is divided into “front and rear bill receiving chambers” and “receiv[es] bills in these chambers after sorting them into two kinds of bills.” *Id.* One embodiment of Kozima is shown in Figures 1 and 3, reproduced below.



As illustrated in Figures 1 and 3, the bill receiving device consists of casing 1, which includes bill entrance 2, bill passage 3, and bill receiving chambers 41 and 42. *Id.* at 3:44–56. Kozima discloses that “bill passage 3 is formed between a convey and drive means 30<sub>1</sub> and bill holding means 30<sub>2</sub> . . . . The bill holding means 30<sub>2</sub> consists of a pair of ribs 35 having rollers 34 provided in locations opposite to the conveyor belts 33.” *Id.* at 4:19–27; *see id.* at 3:53–56. According to Kozima, “[f]ront and rear spaces defined by this bill passage 3 constitute bill receiving chambers 41 and 42.” *Id.* at 3:50–51, Fig. 3.

Bill pushing member 7 moves between points in the middle of chambers 41 and 42 across bill passage 3. *Id.* at 3:63–65. According to Kozima, “bill pushing member 7 is fixedly secured to the slide portion 65 and, by the rotation of the motor MO2, is caused to reciprocate between”

positions. *Id.* at 4:53–57, Figs. 1–3. In certain embodiments, Kozima discloses that bill pushing member 7 is used to carry a bill received in bill receiving chamber 41 or 42 to bill outlet 40<sub>1</sub> or 40<sub>2</sub>. *Id.* at 3:66–68, 8:1–10:14. In other embodiments, Kozima discloses that bill pushing member 7 also is used to push a bill into bill passage 3 so that a bill is stacked into either bill receiving chamber 41 or 42. *Id.* at 6:28–7:67.

### 3. Analysis

#### a. Cited Art as Applied to Claim 1

Petitioner contends that the combined teachings of Jones and Kozima would have rendered each limitation of claim 1 of the '010 patent obvious to a person of ordinary skill in the art at the time of the invention. Pet. 8–14, 22–31. Petitioner specifically contends Kozima discloses a bill pushing member, which corresponds to the claimed “movably mounted plunger member.” *Id.* at 9–10. According to Petitioner, a “movably mounted plunger member” was the element added to claim 1 during an amendment that persuaded the Examiner to allow the claim. *Id.* at 10.

Petitioner further contends there would have been multiple reasons that would have prompted a person of ordinary skill in the art to modify Jones’s automated teller machine embodiment to include the bill sorting/storage device of Kozima. *Id.* at 11–12. First, Petitioner argues a person of ordinary skill would have reason to combine the teachings of Jones with Kozima, because Kozima’s “bill receiving device” provides an extremely simple and compact construction, which allows for a “small-sized” ATM. *Id.* at 12 (citing Ex. 1005, 1:36–50, 2:36–38, 12:31–35; Ex. 1003 ¶ 40). Second, Petitioner argues a person of ordinary skill would have understood that applying the teachings of Kozima to Jones’s ATM

embodiment would provide a “simplified” structure such that the “necessity for providing a bill receiving mechanism in each of the bill receiving chambers *is obviated.*” *Id.* (citing Ex. 1005, 2:29–33; Ex. 1003 ¶ 41); Reply 2–3. Third, Petitioner argues a person of ordinary skill would have recognized that a goal of Jones’s ATM is to transport/store checks or bills into different and separate compartments, while Kozima describes a specific mechanism for sorting bills into different compartments. Pet. 12–13 (citing Ex. 1003 ¶ 42); Reply 3–4. Fourth, Petitioner explains that a person of ordinary skill would have been motivated to incorporate Kozima’s device for sorting bills, and paying these sorted deposited bills back out to other customers via the ATM of Jones to allow for less frequent refills of the currency dispensing portions of Jones. Pet. 13 (citing Ex. 1003 ¶ 43). Lastly, Petitioner argues a person of ordinary skill would have understood that the combined teachings of Jones and Kozima would have been combining prior art elements according to known methods to yield predictable results, because Kozima’s sorting/storage device would have been incorporated into Jones’s ATM as “dual” storage bins. *Id.* (citing Ex. 1003 ¶ 44); Reply 5–6.

Patent Owner disputes Petitioner’s contentions, arguing Petitioner fails to show that claim 1 is unpatentable. PO Resp. 3–15. Patent Owner specifically argues that (1) Petitioner and its expert misunderstand the disclosure of Jones by improperly relying on an embodiment in Jones that describes a tabletop currency counter; (2) the Petition oversimplifies the combination of Jones and Kozima; (3) the Petition fails to provide sufficient explanation of how Jones could be modified in view of Kozima to arrive at the machine of claim 1; (4) the Petition only provides an ill-conceived and

insufficient motivation to combine the disclosures of Jones and Kozima; (5) Kozima's bill receiving device is incompatible with the components of Jones's currency counter; and (6) the Declaration of Dr. Kaufman does not and cannot cure the deficiencies of the Petition. *Id.* at 3. Patent Owner concludes that absent an explanation regarding how and why a person of ordinary skill in the art would have modified components of Jones in view of Kozima, Petitioner has failed to meet its burden of showing that Jones is compatible, and therefore, combinable with the design of Kozima. *Id.* at 11–16.

Having considered both Petitioner's and Patent Owner's respective positions and supporting evidence, we determine that the combined disclosures of Jones and Kozima teach or suggest all the limitations of claim 1. *See* Pet. 13–14, 22–31, 44, 47–48; Ex. 1003 ¶¶ 26–33; Ex. 1005, 2:20–22, 2:58–60, 8:1–3, 9:67–10:9, 10:52–11:6, Fig. 10. Specifically, we agree with Petitioner's arguments regarding the combination of the ATM embodiment of Jones with the compact bill receiving and dual storage device of Kozima, and that both references teach a sheet item transport path as required by claim 1. *See* Reply 2 (citing Ex. 1003 ¶¶ 30–31).

Additionally, we find that Kozima's bill pushing member corresponds to the “movably mounted plunger member” recited in independent claim 1, because Kozima's bill pushing member 7 (i) is fixedly secured to slide portion 65, (ii) moves between a point in the middle of bill receiving chambers 41 and 42 across bill passage 3, and (iii) is rotated by motor MO2. *See* Pet. 9–10, 27–29; Ex. 1005, 3:66–68, 4:53–57, 6:28–7:67, 8:1–10:14, Figs. 1–3. We also find that Kozima teaches “supporting rail portions” that “extend in the storage area” as recited in claim 1, because Kozima teaches

the use of a pair of ribs 35 with rollers in locations opposite to the conveyor belts in order to transport currency bills. *See* Pet. 25–26; Ex. 1005, 3:50–56, 4:19–27, 6:11–36, Figs. 3, 4.

We have considered Petitioner’s rationale regarding why a person of ordinary skill in the art would have been motivated to combine the teaching of Jones and Kozima for claim 1. We also have considered Patent Owner’s arguments that the Petition fails to provide a proper reason or explanation as to why a person of ordinary skill in the art would have combined the teaching of Jones and Kozima. We do not agree with Patent Owner. Contrary to Patent Owner’s position, it is not necessary that Jones and Kozima be physically combinable to render claim 1 obvious. *See In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983); *see also In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc) (“Etter’s assertions that Azure cannot be incorporated in Ambrosio are basically irrelevant, the criterion being not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole.”). “The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981); *see In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012).

Rather, to support the legal conclusion of obviousness “there must be some articulated reasoning with some rational underpinning” for combining the teachings of two prior art references. *KSR*, 550 U.S. at 418. Specifically, Petitioner must articulate a *reason why* a person of ordinary skill in the art would have combined the prior art teachings. *Personal Web Techs. v. Apple*, 848 F.3d 987, 991–92 (Fed. Cir. 2017); *In re NuVasive*, 842 F.3d 1376, 1382 (Fed. Cir. 2016); *Metalcraft of Mayville, Inc. v. The Toro*

*Company*, 848 F.3d 1358, 1366 (Fed. Cir. 2017) (“[I]t is insufficient to simply conclude the [prior art] combination would have been obvious without identifying any reason why a person of skill in the art would have made the combination.”); *see Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (“[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention . . . .”). Petitioner’s arguments must be supported by a “reasoned explanation.” *NuVasive*, 842 F.3d at 1383 (citing *In re Lee*, 277 F.3d 1338, 1342, 1345 (Fed. Cir. 2002)).

Here, Petitioner has shown that a person of skill in the art would have had reason to combine Kozima’s teachings regarding a specific mechanism for sorting bills into different compartments with the ATM system in Jones in order to solve the common problem of storing currency bills in different compartments. *See* Pet. 13–14; Ex. 1003 ¶ 44. We agree with Patent Owner’s declarant, Dr. Thomas R. Kurfess, that Jones’s ATM and Jones’s currency counter are different machines with different purposes. Ex. 2001 ¶ 60. We credit, however, the testimony of Petitioner’s declarant, Dr. Kaufman, that a person of ordinary skill in the art would have recognized that a goal of Jones’s ATM was to transport checks or bills into separate compartments (the two bin configuration) and Kozima teaches a specific mechanism for sorting moving bills into bins (Ex. 1003 ¶ 42 (citing Ex. 1004 ¶¶ 140, 343; Ex. 1005, 12:31–36)). Additionally, Jones discloses that “any number of output bins can be used to store the documents. Ex. 1004 ¶ 140. Figures 1e and 1f in Jones show multiple output receptacles for Jones’s ATM, and therefore, as Dr. Kurfess agreed during his deposition,



Jones would have some mechanism to sort sheets and put them into the appropriate receptacle. Ex. 1004, Figs. 1a–f; Ex. 1013, 21:9–21:22. Furthermore, we agree with Dr. Kaufman’s testimony that a person of ordinary skill in the art would have been motivated to implement Kozima’s sheet sorting mechanism as the storage bins in Jones’s ATM based on Kozima’s disclosure that the sheet sorting mechanism described therein provides a compact design in comparison to standard ATM designs. *See* Ex. 1003 ¶¶ 40 (citing Ex. 1005, 1:36–50, 2:36–38, 12:31–35), 42 (citing Ex. 1004 ¶¶ 140, 343; Ex. 1005, 12:31–36).

Therefore, we determine that one of ordinary skill in the art would have had a reason to combine the teachings of Jones and Kozima and would have been led to do so by the teachings of these references. Accordingly, we find that challenged independent claim 1 would have been obvious under 35 U.S.C. § 103 in view of the disclosures of Jones and Kozima.

*b. Cited Art as Applied to Independent Claims 28–30 and  
Dependent Claims 2–11 and 22–26*

Petitioner argues the combination of Jones and Kozima teaches, or at least suggests, the limitations recited in challenged independent claims 28–30 and dependent claims 2–11 and 22–26. Pet. 44–60. Petitioner supports its contentions with the testimony of Dr. Kaufman. *See* Ex. 1003 ¶¶ 25, 46–97. Patent Owner disputes Petitioner’s position and contends Jones and Kozima fail to teach the limitations of dependent claims 2–11 and 22–26, and independent claims 28–30. PO Resp. 22 (applying arguments regarding claim 1 to claims 2–11, 22–26, and 28–30). Patent Owner does not provide specific arguments regarding the patentability of independent claims 28–30 or dependent claims 2–11 and 22–26. We have considered carefully all

arguments and supporting evidence in light of the limitations recited in challenged independent claims 28–30 and dependent claims 2–11 and 22–26, and we agree with Petitioner’s analysis as supported by Dr. Kaufman’s testimony.

*(1) Dependent Claim 2*

For claim 2, we find that Kozima discloses “*Press plates 91 and 92 are provided for pushing bills received in the bill receiving chambers 41 and 42 inwardly by the force of springs 9,*” which corresponds to the limitations (1) “a first backing plate movably mounted in the storage area and bounding the first storage location” and (2) “a first biasing mechanism in operative connection with the first backing plate and biasing the first backing plate to move toward the rail portions.” *See* Ex. 1005, 5:11–17 (emphasis added); *see also id.* at 11:24–28 (“a press plate 92 which is provided for pushing a bill or a credit voucher (hereinafter referred to simply as a bill) received in the bill receiving chamber 42 inwardly consists of a leaf spring.”).

*(2) Dependent Claim 3*

For claim 3, which requires “a second backing plate movably mounted in the storage area” and “a second biasing mechanism,” this is met by Kozima’s disclosure of “*Press plates 91 and 92 are provided for pushing bills received in the bill receiving chambers 41 and 42 inwardly by the force of springs 9. A bill support plate 10 is also provided at the bottom of the bill receiving chambers 41 and 42.*” *See* Ex. 1005, 5:11–17 (emphasis added).

*(3) Dependent Claims 4, 10, 22, and 24*

Claims 4, 10, 22, and 24 are met by Jones’s disclosure that “analog output of *photodetector 926* is converted into a digital signal by means of an analog-to-digital (ADC) converter unit 928 whose output is fed as a digital

input to a *central processing unit (CPU) 930*” and “transport mechanism 18 transports the documents from the input receptacle 16 past a *full image scanner 12*, as the documents are illuminated by a light (not shown). The full image scanner 12, described in greater detail below, *scans the full image of the document.*” See Ex. 1004 ¶¶ 99, 125, 165–166 (emphasis added).

*(4) Dependent Claims 5 and 23*

Claims 5 and 23 are met by Kozima’s disclosure that “[u]pon receipt of the bill receiving signal, the bill R is fed to the bill entrance 2 by the *feeding mechanism* of the bill discrimination device X” and that “the feed mechanism” is in operable connection with the “insertion slit” to receive and return bills. See Ex. 1005, 6:11–13, 6:34–36 (emphasis added).

*(5) Dependent Claim 6*

Claim 6 is met by Kozima’s disclosure that when the “first bill which is frequently used . . . bill R” is detected, “the bill pushing member 7 is in the position A in the other bill receiving chamber 42. After the bill R has completely entered the bill passage 3, the bill pushing member 7 is moved in the direction of the bill receiving chamber 41 thereby pushing the bill R to the rear side of the ribs 51” and that

[o]n the other hand, when the bill discrimination device X has detected that a second bill which is less frequently used . . . bill L . . . has been inserted, the bill pushing member 7 is moved from the position A to the bill receiving chamber 41 and stopped at the standby position B where it enters the standby state for stacking the bill L.

Ex. 1005, 5:18–40.

*(6) Dependent Claims 7, 8, and 9*

Claims 7 and 8 are met by Kozima’s disclosure that “[t]he space 5 is defined by the pairs of ribs 51 and 52 which are provided on the front and

rear sides of the bill passage 3 along the conveyer belts 33. The distance between the pair of ribs 51 or 52 is smaller than the shorter side of the bill.” *See* Ex. 1005, 5:5–10, Fig. 2. Claim 9 is met by Kozima’s disclosure of the ribs 51 and 52 extending vertically in the chamber and “bill pushing member 7” moving horizontally from position A to position B. *See* Ex. 1005, 5:18–40, Figs. 1, 2.

*(7) Dependent Claims 11 and 26*

Claims 11 and 26 are met by Jones’s disclosure that “the scanhead may employ a variety of detection means such as magnetic, optical, electrical conductivity, and capacitive sensors,” which includes “a magnetic sensor 228, which detects the presence of magnetic ink,” and of “steps performed in magnetically determining the denomination of a bill.” *See* Ex. 1004 ¶¶ 167, 208, 294.

*(8) Dependent Claim 25*

We have considered both parties’ arguments and find that claim 25 is met by Jones’s disclosure that “[b]y ‘currency,’ ‘documents,’ or ‘bills’ it is meant to include not only conventional U.S. or foreign bills, such as \$1 bills, but also to include checks [and] deposit slips.” *See* Ex. 1004 ¶¶ 99, 100. Patent Owner argues that ‘banking machines are not necessarily appropriate for handling both’ bills and checks. PO Resp. 38–39. As Petitioner points out, this argument fails to consider Jones’s disclosure of handling both (Ex. 1004 ¶ 99) or that Kozima’s storage device can receive both bills and non-bill sheet items (“prepaid credit vouchers”) for storage while only “paying out” bills (Ex. 1005, 1:47–58). *See* Reply 26–27.

*(9) Independent Claims 28–30*

Claims 28–30 are met by the same disclosures for claim 1. *See* Pet. 45–51.

*(10) Summary*

Accordingly, we find that challenged independent claims 28–30 and dependent claims 2–11 and 22–26 would have been obvious under 35 U.S.C. § 103 in view of the disclosures of Jones and Kozima.

*c. Summary*

We have considered the entirety of the evidence, the arguments presented by Patent Owner in its Response, and its declarant’s testimony in support thereof. For the foregoing reasons, and weighing the evidence as a whole, we conclude Petitioner has proven by a preponderance of the evidence that the teachings of Jones and Kozima would have rendered the challenged claims obvious. We determine the record supports Petitioner’s contentions as summarized above and adopt the supported contentions as our fact finding. We, therefore, conclude that claims 1–11, 22–26, and 28–30 are unpatentable under 35 U.S.C. § 103 in view of Jones and Kozima.

*E. Alleged Obviousness of Claims 12–14 and 18–20 in View of Jones, Kozima, and Swinton*

Petitioner contends claims 12–14 and 18–20 of the ’010 patent are unpatentable under 35 U.S.C. § 103 in view of Jones, Kozima, and Swinton. Pet. 14–18; Reply 15–26. Patent Owner disputes Petitioner’s contentions. PO Resp. 22–38. For reasons that follow, we determine Petitioner has demonstrated by a preponderance of the evidence the unpatentability of these claims.

*1. Overview of Jones*

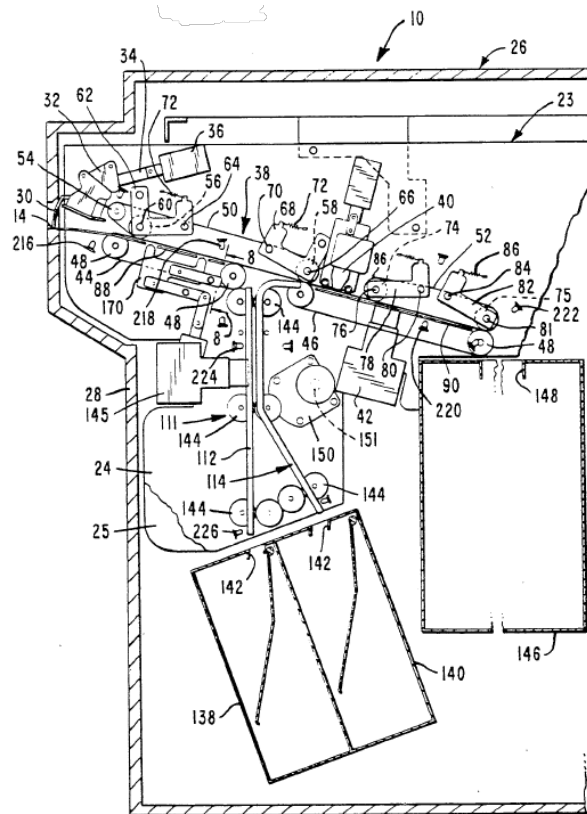
*See supra* Section II.D.1.

2. Overview of Kozima

See supra Section II.D.2.

3. Overview of Swinton

Swinton discloses a “depository apparatus[,] included in an . . . ATM,” which is adapted to accept deposits, such as checks or envelopes containing money. Ex. 1006, 1:6–16; see id. at 2:64–68. One embodiment of Swinton is shown in Figure 2, reproduced below.



As shown in Figure 2 above, depository apparatus 10 includes entry slot 14, transport mechanism 38, and two containers 138 and 140. See id. at 2:35–37, 3:1–23, 5:13–19, Figs. 2, 8. According to Swinton, transport mechanism 38 moves deposit items inward from entry slot 14 past optical read head 40 and ink jet printer 42. Id. at 3:20–23, Fig. 2. Swinton discloses that mechanism 38 includes two lower pairs of endless belts 44, 46, which

pass around pulleys 48, as well as two upper pairs of endless belts 50, 52, which pass around pulley 54. *Id.* at 3:23–38, Fig. 2. Transport mechanism 111 is positioned beneath transport mechanism 38 and includes two cooperating guide means 112 and 114, which extend downward away from diverter gate 92. *Id.* at 4:45–67, Figs. 2–5.

Depository apparatus 10 also includes electronic control means 228, which controls various operations of the apparatus and is “electrical[ly] interconnect[ed]” to other components, such as read head 40 and solenoid 130. *Id.* at 2:58–60; *see id.* at [57], 2:20–22, 8:1–3, Fig. 10. When a check is deposited, read head 40 reads characters on the check and applies signals representing the characters to electronic control means 228, which uses them to “determine[] whether a valid read operation has taken place.” *Id.* at 9:67–10:9. Electronic control means 228 later determines, based on characters read by read head 40, the container to which the check will be fed. *Id.* at 10:52–59. “If . . . electronic control means 228 determines that the check is to be fed into . . . container 138,” solenoid 130 remains de-energized such that the check is fed into container 138. *Id.* at 10:59–65. If, however, “electronic control means 228 determines that the check is to be fed into . . . container 140,” “electronic control means 228 energizes . . . solenoid 130,” which pivots components of the depository apparatus such that the check is fed into container 140. *Id.* at 10:65–11:6.

#### 4. Analysis

##### i. Claim 12

Claim 12 recites “at least one printer adjacent the sheet path, wherein the at least one printer is in operative connection with the at least one

processor, and wherein the at least one printer is adapted to print indicia on the sheet in the sheet path.” Ex. 1001, 25:21–26.

Petitioner contends that the combined teachings of Jones, Kozima, and Swinton would have rendered each limitation of claim 12 obvious to a person of ordinary skill in the art at the time of the invention. Pet. 14–15, 51–52. Petitioner specifically contends that Swinton discloses a “depository apparatus . . . for receiving both envelopes and single sheets, such as checks,” that includes “a printer (42) for printing data on envelopes and sheets.” *Id.* at 14 (citing Ex. 1006, Abst.; Ex. 1003 ¶¶ 98–99). Petitioner further argues that Swinton discloses a substantially horizontal transport path 38 that moves sheet items past “an ink jet printer 42” and a substantially vertical transport path 111 that includes “a second ink jet printer 145.” *Id.* at 14–15 (citing Ex. 1006, 3:21–24, 4:45–51, 5:22–26, Fig. 2).

Patent Owner does not provide separate contentions regarding the limitations of claim 12, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would be combined with Jones and Kozima. PO Resp. 22–23.

We do not agree with Patent Owner’s position, because we credit the testimony of Dr. Kaufman that a person of ordinary skill in the art would have been motivated to include Swinton’s printers, alignment mechanism, and transport paths 38 and 111 in Jones’s ATM. Ex. 1003 ¶¶ 98–103. Additionally, we find that the combined disclosures of Jones, Kozima, and Swinton teach or suggest the limitations of claim 12, because Swinton discloses a “depository apparatus . . . for receiving both envelopes and single sheets, such as checks” and includes “a printer (42) for printing data on

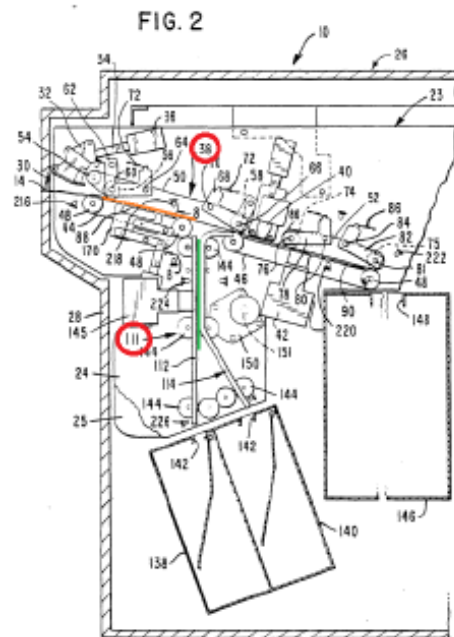


envelopes and sheets” that are adjacent to the sheet path as required by claim 12. *See* Ex. 1006, Abst., 3:21–24, 4:45–51, 5:22–26, Fig. 2.

*ii. Claim 13*

Claim 13 recites “a first sheet moving transport and a second sheet moving transport, wherein the first sheet moving transport moves the sheet in a first sheet moving direction and the second sheet moving transport moves the sheet in a second sheet moving direction generally perpendicular of the first sheet moving direction.” Ex. 1001, 25:27–33.

Petitioner contends Kozima discloses first and second sheet transport sections that move the sheets in perpendicular directions. According to Petitioner, this is because inserted sheets first move vertically past the “bill discrimination device X” through bill entrance 2 into bill passage 3, and then the sheets are transported horizontally to the left or right by pushing member 7 into one of bill receiving chambers 41 or 42. Pet. 15 (citing Ex. 1005, 4:6–18, 5:18–41; Ex. 1003 ¶ 105), 52–53. Petitioner further argues that Swinton teaches this limitation as shown below in an annotated version of Figure 2 of Swinton, reproduced from the Petition. *Id.* at 15 (citing Ex. 1003 ¶ 106; Ex. 1006, Fig. 2).



As shown above, in the annotated version of Swinton's Figure 2 from the Petition, Swinton teaches that sheet transport paths 38 (in orange) and 111 (in green) move sheets in substantially perpendicular first and second directions. *Id.* (citing Ex. 1006, 3:21–24, 5:19–26, Fig. 2; Ex. 1003 ¶ 106).

In its Patent Owner Response, Patent Owner does not provide separate contentions regarding the limitations of claim 12, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would be combined with Jones and Kozima. PO Resp. 22–23.

Based on the disclosure of Swinton, we agree with Petitioner that the combined disclosures of Jones, Kozima, and Swinton teach the limitations of claim 13. *See* Pet. 14–18, 51–58. Specifically, we find that Swinton teaches: (1) a first sheet moving transport (path 38) that moves a sheet in a first sheet moving direction; (2) a second sheet moving transport (path 111) that moves the sheet in a second sheet moving direction; and (3) the second

sheet moving direction is generally perpendicular to the first sheet moving direction. *See* Ex. 1006, 3:21–24, 5:19–26, Fig. 2.

Additionally, we do not agree with Patent Owner’s position regarding a lack of rationale to combine Jones, Kozima, and Swinton. PO Resp. 22–23. To the contrary, we credit the testimony of Petitioner’s declarant, Dr. Kaufman, that a person of ordinary skill in the art would have been motivated to include Swinton’s printers, alignment mechanism, and transport paths 38 and 111 in Jones’s ATM. Ex. 1003 ¶¶ 98–103.

*iii. Claim 14*

Claim 14 depends directly from claim 13 and recites:

a plurality of noncontact sensors disposed along the first direction, wherein each of the plurality of noncontact sensors is in operative connection with the at least one processor; at least one second transport drive in operative connection with the second transport and the at least one processor; wherein the at least one processor is operative to cause the sheet to be aligned in the first sheet moving direction by moving the sheet in the second sheet moving direction and sensing the sheet with a plurality of noncontact sensors.

Ex. 1001, 25:34–46.

*(1) “to cause the sheet to be aligned . . . by moving . . . and sensing . . .”*

Petitioner contends that the broadest reasonable construction of claim 14’s limitation of “to cause the sheet to be aligned . . . by moving . . . and sensing the sheet with a plurality of noncontact sensors” does not require that sensing be performed as part of an alignment process. Reply 23. We do not agree.

The phrase “by moving the sheet in the second sheet moving direction and sensing the sheet with a plurality of noncontact sensors” is a

prepositional phrase that serves as an adverb modifying an antecedent (the verb “to be aligned”). In simple form, the prepositional phrase with its antecedent reads, “to be aligned by moving and sensing.” The “distance” between “by” and “sensing” in the prepositional phrase appears to cause Petitioner confusion about whether “sensing . . .” is actually part of the phrase. Yet, we know that it is because we cannot remove “by moving the sheet in the second sheet moving direction” without creating a problem. Specifically, the clause as a whole would make no sense if it read: “at least one processor is operative to cause the sheet to be aligned in the first sheet moving direction and sensing the sheet with a plurality of noncontact sensors.” For such a clause to make sense, “sensing” would need to be replaced by the infinitive form, “to sense” to make it parallel with “to cause.” Then the clause would read: the “processor is operative to cause and to sense.” The use of the participle form, “sensing,” is a use that is parallel to the other participle, “moving” (in “moving the sheet”), and such parallelism indicates that “sensing” supplements “moving” in the prepositional phrase (i.e., by moving and sensing). Thus, claim 14 requires that alignment be caused by both moving and sensing the sheet.

(2) “*to cause the sheet to be  
aligned . . . by . . . sensing . . .*”

Petitioner contends that even if the plurality of noncontact sensors must be involved in Swinton’s alignment process, at least noncontact sensors 216 and 218 meet this limitation. Reply 23; *see* Pet. 16, 56–57. Petitioner notes that Swinton describes the optical sensor 218 as an “alignment control sensor 218.” Pet. 16 (citing Ex. 1006, Fig. 10). According to Petitioner, “Swinton discloses, ‘[i]f the *thickness sensor 216* indicates that the deposit item is a check, the electronic control means 228’

initiates the alignment process by stopping the forward motion of the check when ‘*the sensor means 218*’ senses ‘the leading edge of the check.’”

Reply 24 (citing Ex. 1006, 9:21–38; Fig. 10 (identifying sensor 218 as the “alignment control sensor”); Pet. 56–57; Ex. 1012 ¶ 2). Petitioner argues that sensor 216 controls the operation of Swinton’s alignment means and that sensor 216’s determination of whether the deposited item is a check or an envelope is “integral to initiating Swinton’s alignment process.” Reply 23–24. Petitioner further argues claim 14 does not recite any specific functionality for the noncontact sensors and certainly does not recite that the sensors “confirm alignment of the check.” *Id.* at 25.

Patent Owner contests Petitioner’s position, arguing that Swinton’s alignment process is purely mechanical and does not use any noncontact sensors to align its check 192. PO Resp. 32 (citing Ex. 1006, 7:50–57, 8:27–32, 9:21–26, 10:10–18; Ex. 2001 ¶¶ 86–92). Patent Owner further argues that Swinton’s “sensor means 216” is a “thickness sensor” configured to indicate whether a user has deposited a check or an envelope. *Id.* at 33 (citing Ex. 1006, 7:34–36, 8:27–32). According to Patent Owner, sensor 216 is positioned adjacent to entry slot 14 of Swinton’s depository apparatus and is not used in any way to align Swinton’s check 192. *Id.* (citing Ex. 2001 ¶ 88). Patent Owner relies on the deposition testimony of Petitioner’s declarant, Dr. Kaufman, to support its position. *Id.* at 33. During deposition, Dr. Kaufman testified that sensor 216 is not used to confirm alignment of Swinton’s check, it is only used to detect thickness in order to distinguish envelopes and single documents, and has no other purpose. Ex. 2003, 153:3–12, 158:17–159:5.

We do not agree with Patent Owner’s overly narrow reading of “to cause the sheet to be aligned,” because Patent Owner’s position requires that a sensor physically be involved in aligning the sheet. The plain language of the claim, however, only requires that the sensors “cause” alignment and not that the sensor physically align the sheet.

Despite Patent Owner’s arguments, we agree with Petitioner that sensor 216 is used in Swinton’s alignment process. Swinton specifically discloses that sensor 216 starts the alignment process when it sends a signal to processor 228 to stop main motor 150 in response to the sensing of the leading edge of a check by sensor 218. Ex. 1006, 9:21–38. The claim limitation is stated broadly as “to cause the sheet to be aligned” and not “to align.” We understand that sensor 218 would not send a signal to electronic control means 228 for the eventual movement of alignment plate 170 if sensor 216 failed to indicate that the deposit item is an envelope. *Id.* at 8:27–68. Therefore, we determine that sensor 216 is used in the alignment process and causes the sheet to be aligned as required by claim 14.

(3) “*to cause the sheet to be aligned . . . by moving the sheet*”

Petitioner contends that “[w]hile not expressly disclosed by Swinton, it would have been obvious to a [person of ordinary skill in the art] based on the disclosure of Swinton that alignment of a sheet would, in at least some cases, require movement of the sheet in the second sheet moving direction to align the sheet in the first sheet moving direction, depending on the initial orientation of the sheet.” Pet. 16–17 (citing Ex. 1003 ¶ 111). Petitioner further contends claim 14’s recitation of “moving the sheet in the second sheet moving direction” does not require “that the second sheet transport pathway must be used to align the sheet.” Reply 16. Petitioner argues it

identified in its arguments regarding claim 13 the second sheet moving direction as a generally vertical direction. *Id.* According to Petitioner, during Swinton’s “alignment process, the friction rolls 196 (1) lift the check in an upward vertical direction and then (2) lower the check in a downward vertical direction,” thereby moving in the second sheet moving direction. *Id.* (citing Ex. 1006, 7:15–28).

Petitioner relies on the testimony of Dr. Kaufman to support its position. *Id.* Dr. Kaufman specifically testified that “during Swinton’s alignment process the ‘motor 204’ rotates the D-shaped roller ‘until it engages the bottom of the check, and at that point it’s going to lift the check vertically upward in that second transport direction.’” Ex. 2003, 164:6–17, *see also* Reply 17 (citing 166:18–167:1 (“the alignment process . . . involves *lifting the check up*, pushing the check to the side, and then *lowering the check down*”); 174:11–22 (describing how Swinton “aligns [a check] by lifting it and pushing it towards the side” and then “set[ting] it back down”); 176:1–6 (“the vertical part is [an] important part of the alignment process”); 172:5–173:6 (“vertical motion of the check is always going to be present . . . once the D-shaped roll has continued to rotate, it will *lower the check* . . . so that its aligned edge is aligned along those tabs)).

Petitioner acknowledges “this vertical upward and downward motion of the check may be subtle,” but contends “it is still present in Swinton’s alignment device and, as Dr. Kaufman assessed, ‘an important part of the alignment process.’” Reply 19 (citing Ex. 2003, 176:1–6).

Patent Owner contests Petitioner’s position, arguing that it is not possible for movement of the sheet in the vertical direction identified by Petitioner to cause a sheet in Swinton’s device to be aligned in the horizontal

direction. PO Resp. 27–28 (citing Ex. 2001, 77–85). Patent Owner focuses its arguments on the mechanical aspects of the physical pieces in Swinton’s depository apparatus 10, noting “Swinton achieves alignment of the check 192 by moving the check with a pair of friction rolls 196 ‘from left to right with reference to FIG. 8, i.e. in a direction transverse to the feed path for the check 192.’” *Id.* at 28–31 (citing Ex. 1006, 7:8–26; Ex. 2001 ¶¶ 80–82). According to Patent Owner, it is the movement of the check in the left to right direction that causes “one of the long edges of the check 192 to engage the lugs 172,” so the check is aligned against lugs 172 and, therefore, aligned in the direction of transport path 38. *Id.* at 30 (citing Ex. 1006 at 7:28–33; Ex. 2001 ¶ 82). Patent Owner argues that “the second sheet moving direction identified in the Petition” (i.e., the vertical direction) does not cause alignment of check 192. *Id.* Patent Owner then concludes that even if the vertical direction did align the check, this is not an argument advanced by the Petition. *Id.* at 31–32.

We do not agree with Patent Owner’s overly narrow reading of “to cause the sheet to be aligned,” because Patent Owner’s position requires that alignment of the sheet to be caused only by movement of the sheet in the second sheet moving direction. We do not understand the language “to cause the sheet to be aligned in the first sheet moving direction by moving the sheet in the second sheet moving direction” to be so limited. Additionally, we note the Petition does not appear to limit its analysis of Swinton’s alignment process to only two directions; rather, the Petition specifically relied on the movement of friction rollers 196 to cause check 192 into a correctly aligned position. *See* Pet. 16.



Contrary to Patent Owner’s position, we understand that Swinton’s alignment motor 204 drives friction rollers 196 both left to right (horizontal direction) and up and down (vertical direction) during the process to align a sheet properly. Swinton’s Figures 8 and 9, reproduced below, illustrate movement of friction rollers 196 in up and down vertical directions.

FIG. 8

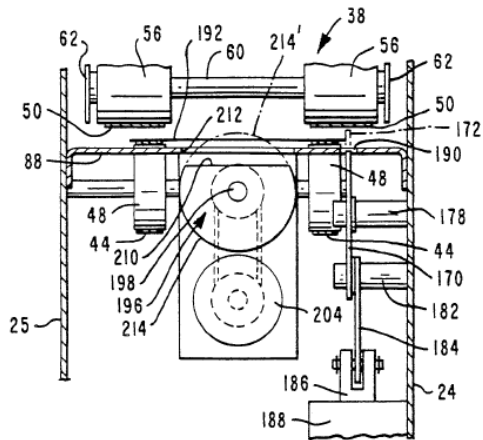
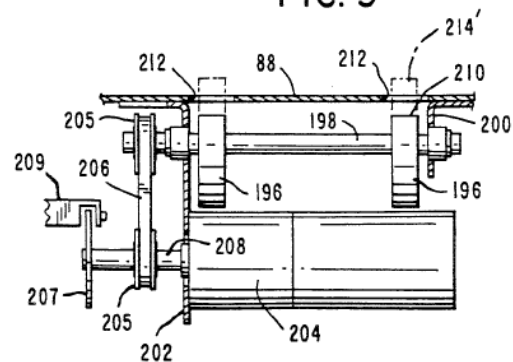


FIG. 9



As shown in Figures 8 and 9, above, friction rollers 196 “can project above the upper surface of the plate 88 as indicated by the portion 214’ shown in dashed outline in Figs 8 and 9.” Ex. 1006, 7:15–20. After friction rollers 196 move the check into a correctly aligned position, they descend into “their home positions with the flat portions 210 of their peripheries positioned immediately below, and parallel to, the underside of the support surface 88. *Id.* at 9:32–51.

Patent Owner acknowledges this “slight lifting of Swinton’s check 192,” but argues that the lifting is not the cause of the check’s alignment. PO Resp. 31 (citing Ex. 2001 ¶ 84). Although such up and down movement will not in itself cause alignment of the check, we find the lifting motion to be a necessary function in Swinton’s alignment process. We credit the deposition testimony of Dr. Kaufman, who states:

Q: So while the wheel lifts the check and moves it to the right simultaneously, the vertical component of that movement is not responsible for aligning the check?

A: If it—well, the vertical component is a—an important part of the alignment process. The vertical component is what lifts it off the wheels 48 and allows it to slide to the side. If it didn't lift it off, it would not align.

Ex. 2003, 175:14–22.

Q: So just moving the check vertically cannot align the check?

\* \* \*

A: I think I've explained that. But the vertical motion is an important part of the alignment process. The vertical motion by itself is not—does not do the alignment. The alignment happens because there's a vertical motion, a horizontal motion, and a twisting motion in the plane of the check, and those three things take a check that is unaligned and align it. If you—if you leave off any of them, Swinton's gadget won't align the check. So they're all—they're all tied together.

*Id.* at 176:22–177:14. Patent Owner's declarant, Dr. Kurfess, also testified as follows:

Q: You agree with me there could be additional steps as part of the alignment? In order, for example, to infringe this claim you have to at least move it in the second sheet moving direction but you could do other steps as part of the alignment, correct?

A: Yes, you have to—at least for this part you have to move it left to right to do the alignment.

Q: Again, the claim doesn't, Claim 14 doesn't say that the process causes the sheet to be aligned by only moving the sheet in the second sheet moving direction, correct?

A: Correct.

Ex. 1013, 52:12–25. Therefore, we find that Swinton teaches an alignment process that includes both vertical motion (constituting the second sheet moving direction from claim 13) and horizontal motion. Accordingly, we determine that Swinton teaches “to cause the sheet to be aligned . . . by moving the sheet” as recited in claim 14.

*(4) Summary*

For the foregoing reasons, we determine Petitioner has demonstrated by a preponderance of the evidence that claim 14 would have been obvious under 35 U.S.C. § 103(a) in view of Jones, Kozima, and Swinton.

*iv. Claim 18*

Claim 18 depends from claim 14 and recites “[t]he machine according to claim 14 wherein the magnetic sensing device is adapted to read micr on the sheet.”

Petitioner contends Jones in view of Kozima and Swinton discloses the invention recited in claim 18. Pet. 57 (citing Ex. 1003 ¶ 112). Petitioner notes that Jones discloses “the scanhead may employ a variety of detection means such as magnetic, optical, electrical conductivity, and capacitive sensors,” which includes “a magnetic sensor 228 which detects the presence of magnetic ink.” *Id.* (citing Ex. 1004 ¶¶ 167, 208). Jones further discloses “the check imager captures an image of each passing check, and wherein the

check imager processes the captured image to recognize the imprinted field data” and that “the imprinted field data comprises MICR data.” Ex. 1004, claims 1–2.

Patent Owner does not provide separate contentions regarding the limitations of claim 18, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would be combined with Jones and Kozima. PO Resp. 22–23.

We do not agree with Patent Owner’s position, because we credit the testimony of Dr. Kaufman that a person of ordinary skill in the art would have been motivated to include Swinton’s printers, alignment mechanism, and transport paths 38 and 111 in Jones’s ATM. Ex. 1003 ¶¶ 98–103. Additionally, we find that the combined disclosures of Jones, Kozima, and Swinton teach or suggest the limitations of claim 18, because Jones discloses use of magnetic sensor 228, which can read “low dispersion” magnetic inks on checks. According to Jones, “low dispersion” magnetic ink is used to print the name and address information on checks. Ex. 1004 ¶ 208.

*v. Claim 19*

Claim 19 depends from claim 14 and recites “[t]he machine according to claim 14 wherein the sheet path includes an escrow area between the at least one sensing device and the storage area.”

Petitioner contends Jones in view of Kozima and Swinton discloses the invention recited in claim 19. Pet. 57 (citing Ex. 1003 ¶¶ 113–114). Petitioner notes that Jones discloses “[t]he transport mechanism may also include an *escrow holding area* where the document being processed in a pending deposit transaction is held until the transaction is complete.” *Id.* (citing Ex. 1004 ¶ 387). Kozima disclose that “[w]hen the *bill*

*discrimination device X has judged that the bill is a true one, the bill stacking operation is not immediately started. The bill is temporarily retained in the bill discrimination device X in a returnable state until a signal indicating that vending or money exchange has been carried out in the vending machine or the money exchanger (hereinafter referred to as a vend start signal) is provided. When the vend start signal has been produced in the temporary retention state, a bill receiving signal is produced and, in response to this bill receiving signal, the bill stacking operation is now started.”* Ex. 1005, 6:14–25 (emphasis added).

Patent Owner does not provide separate contentions regarding the limitations of claim 19, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would be combined with Jones and Kozima. PO Resp. 22–23.

We do not agree with Patent Owner’s position, because we credit the testimony of Dr. Kaufman that a person of ordinary skill in the art would have been motivated to include Swinton’s printers, alignment mechanism, and transport paths 38 and 111 in Jones’s ATM. Ex. 1003 ¶¶ 98–103. Additionally, we find that the combined disclosures of Jones, Kozima, and Swinton teach or suggest the limitations of claim 19, because Jones discloses “[t]he transport mechanism may also include an *escrow holding area* where the document being processed in a pending deposit transaction is held until the transaction is complete.” Ex. 1004 ¶ 387.

*vi. Claim 20*

Claim 20 depends from claim 14 and recites “[t]he machine according to claim 14 wherein the sheet comprises a check and wherein the at least one

processor is operative to cause to be sent from the machine data corresponding to an image of at least a portion of the check.”

Petitioner contends Jones in view of Kozima and Swinton discloses the invention recited in claim 20. Pet. 58 (citing Ex. 1003 ¶ 115). Petitioner notes that Jones discloses “a user deposits bills or documents into an input receptacle 16. By ‘currency’, ‘documents’, or ‘bills’ it is meant to include not only conventional U.S. or foreign bills, such as \$1 bills, but also to include checks, deposit slips . . . .” *Id.* (citing Ex. 1004 ¶ 99). Furthermore, Jones discloses that “a document can be, for example, evaluated, analyzed, authenticated, discriminated, counted and/or otherwise processed by a full image scanning module. The results of the above process or processes may be used to determine to which output receptacle 5217a, 5217b a document is directed.” Ex. 1004 ¶ 143. Additionally, “full images of all documents can be stored on mass storage devices 17 at the central office. The images could also be stored at the unit itself, or at another remote system.” *Id.* ¶ 125; *see also id.* ¶ 113 (“information is read by the full image scanner and transmitted to the outside accounting system which conducts the required transfers”), ¶ 107 (“the documents could be received at the teller line, drive-up window, ATM, or by mail, and immediately be scanned at point of entry without transporting the document to a central location. This information is sent to an outside accounting system where it can be stored, monitored, and analyzed.”). Swinton discloses a “depository apparatus . . . for receiving both envelopes and single sheets, such as checks.” Ex. 1006, Abst.; *see also*

*id.* at 2:64–67 (“ATM 12 adapted to accept deposit items . . . single sheet items such as check or payment slips.”).

Patent Owner does not provide separate contentions regarding the limitations of claim 20, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would be combined with Jones and Kozima. PO Resp. 22–24.

We do not agree with Patent Owner’s position, because we credit the testimony of Dr. Kaufman that a person of ordinary skill in the art would have been motivated to include Swinton’s printers, alignment mechanism, and transport paths 38 and 111 in Jones’s ATM. Ex. 1003 ¶¶ 98–103. Additionally, we find that the combined disclosures of Jones, Kozima, and Swinton teach or suggest the limitations of claim 20, because Jones discloses depositing checks into an ATM that includes a scanner capable of scanning images of the checks. Ex. 1004 ¶¶ 99, 143.

*vii. Reasons to Combine Jones, Kozima, and Swinton*

Petitioner contends there would have been multiple reasons that would have prompted a person of ordinary skill in the art to modify Jones’s automated teller machine to include the bill sorting/storage device of Kozima. Pet. 17–18. First, Petitioner argues a person of ordinary skill would have had reason to combine the teachings of Jones and Kozima with Swinton, because Jones contemplates “tagging” a check “with the customer checking account number, the bank number,” and other relevant information and Swinton’s printers provide a specific mechanism for performing this “tagging.” *Id.* at 17 (citing Ex. 1004 ¶ 105; Ex. 1006, 8:54–60, 10:34–42; Ex. 1003 ¶ 100). Second, Petitioner argues for a rationale to combine the references, because incorporating Swinton’s alignment mechanism into

Jones's ATM would ensure that checks/bills are aligned properly before check images are scanned, checks are printed on, or checks/bills are sorted into the storage compartments disclosed by Kozima. *Id.* (citing Ex. 1006, 9:22–38; Ex. 1003 ¶ 101). Third, Petitioner argues that a person of ordinary skill in the art would have recognized that modifying Jones's ATM to include Swinton's transport mechanisms would allow for deposited checks to be transferred efficiently past the printing heads for "tagging" checks. *Id.* (citing Ex. 1003 ¶ 102). Fourth, Petitioner argues that a person of ordinary skill in the art would have been prompted to modify the system of Jones and Kozima based on the teachings of Swinton because doing so would be merely the use of known techniques (e.g., printing on checks, aligning checks, moving checks in perpendicular directions) to improve similar devices (e.g., ATMs) in the same way. *Id.* at 17–18 (citing *KSR*, 550 U.S. at 417). According to Petitioner, Jones, Kozima, and Swinton all disclose automated money handling devices, and therefore, Petitioner concludes that the combination of Jones (which describes an ATM) and Swinton (which describes various printers, sensors, and transport mechanisms for implementation in an ATM) would have been merely combining prior art elements according to known methods to yield predictable results. *Id.* at 18 (citing Ex. 1004, 1:47–50; Ex. 1005, 1:5–14; Ex. 1006, Abst.; Ex. 1003 ¶ 103).

Patent Owner disputes Petitioner's contentions, arguing Petitioner fails to provide an explanation or rationale as to how the teachings of Swinton would have been combined with Jones and Kozima. PO Resp. 22–24. According to Patent Owner, the Petition leaves the Board and Patent Owner "guess[ing]" as to where Swinton's optical sensors and transports



would be incorporated into Jones's devices and how that would be accomplished in harmony with an equally uncertain modification in view of Kozima." *Id.* at 23. Patent Owner argues that absent an explanation regarding how a person of ordinary skill in the art would have modified components of Jones in view of Swinton, Petitioner's position is legally insufficient and Petitioner has failed to meet its burden of showing that Jones is compatible with, and therefore, combinable with the design of Swinton. *Id.* at 24.

We do not agree with Patent Owner, because it is not necessary that Jones and Swinton be physically combinable to render claims 12–14 and 18–20 obvious. *See Sneed*, 710 F.2d at 1550; *see also Etter*, 756 F.2d at 859 (“*Etter's* assertions that Azure cannot be incorporated in Ambrosio are basically irrelevant, the criterion being not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole.”). “The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.” *Keller*, 642 F.2d at 425; *see Mouttet*, 686 F.3d at 1332. Rather “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418.

Contrary to Patent Owner's position, we find that Petitioner has provided sufficient reasoning with rational underpinning to support its position that a person of skill in the art would have had reason to combine Swinton's teachings regarding a specific alignment mechanism into Jones's ATM so as to ensure that checks/bills are aligned properly before check images are scanned, checks are printed on, or checks/bills are sorted into

storage compartments as disclosed by Kozima. *See* Pet. 17; Ex. 1006, 9:22–38; Ex. 1003 ¶ 101. We also credit the testimony of Dr. Kaufman, who testifies a person of ordinary skill in the art would have recognized that Swinton’s printers 42 and 145 provide a mechanism for implementing a “tagging” function that is discussed in Jones for “tagging” sheet documents, such as checks, with various information such as checking account number, a bank number, and other relevant information. Ex. 1003 ¶ 100 (citing Ex. 1004 ¶ 105; Ex. 1006, 2:7–22, 8:54–60, 10:34–42). Therefore, we are satisfied Petitioner has proffered adequate evidence to support the legal conclusion of obviousness. *See KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

*viii. Summary*

We have considered the entirety of the evidence, including the arguments presented by Patent Owner in its Preliminary Response. For the foregoing reasons, and weighing the evidence as a whole, we conclude Petitioner has proven by a preponderance of the evidence that the disclosure of Swinton combined with Jones and Kozima would have taught all elements of challenged claims 12–14 and 18–20 of the ’010 patent. We determine the record supports Petitioner’s contentions as summarized above and adopt the supported contentions as our own. We, therefore, conclude that claims 12–14 and 18–20 would have been obvious in view of Jones, Kozima, and Swinton, and thus, are unpatentable under 35 U.S.C. § 103(a).

*F. Alleged Obviousness of Claim 15 in View of Jones, Kozima, Swinton, and Kazuhiro*

Petitioner contends claim 15 of the ’010 patent is unpatentable under 35 U.S.C. § 103 in view of Jones, Kozima, Swinton, and Kazuhiro. Pet. 18–

20, 59. Patent Owner does not provide specific arguments regarding Petitioner’s contentions for claim 15. *See* PO Resp. 22–24. The burden, however, remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

For reasons that follow, we determine Petitioner has demonstrated by a preponderance of the evidence the unpatentability of this claim.

*1. Overview of Jones*

*See supra* Section II.D.1.

*2. Overview of Kozima*

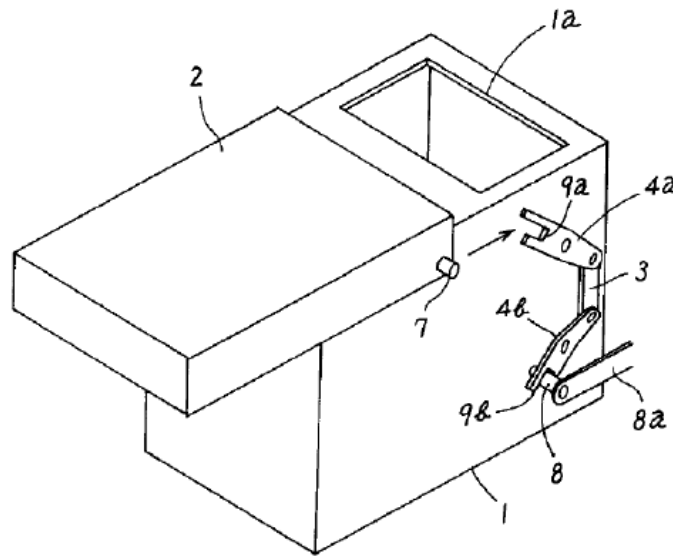
*See supra* Section II.D.2.

*3. Overview of Swinton*

*See supra* Section II.E.3.

*4. Overview of Kazuhiro*

Kazuhiro is a Japanese patent titled “Locking device for paper money strongbox,” and is directed to a locking device for a strongbox that can be inserted into and removed from a storage section of a money counter or ATM and locked. Ex. 1008, 2:25–30, 7:37–39. One embodiment of Kazuhiro is shown in Figure 3, reproduced below.



As shown in Figure 3, the strongbox includes cover 2 that is able to slide with respect to opening 1a in order to open and close the strongbox. *Id.* at 2:6–8, Fig. 3.

#### 5. Analysis

Claim 15 directly depends from claim 14 and recites, “at least one movable door overlying the storage area, wherein moving the door enables accessing the first and second storage locations.” Ex. 1001, 25:47–50.

Petitioner contends that the combined teachings of Jones, Kozima, Swinton, and Kazuhiro would have rendered each limitation of claim 15 in the '010 patent obvious to a person of ordinary skill in the art at the time of the invention. Pet. 18–20, 59. Petitioner specifically contends that for claim 15, a person of ordinary skill in the art would have found it obvious to include a “movable door” from Kazuhiro as part of Kozima’s document storage area to allow a person easy access to remove bills/checks from bill receiving chambers 41 and 42. *Id.* at 18 (citing Ex. 1003 ¶¶ 116–121).

Petitioner further contends there would have been multiple reasons that would have prompted a person of ordinary skill in the art to modify

Jones's automated teller machine and the bill sorting/storage device of Kozima to include the access way of Kazuhiro. *Id.* at 19–20. First, Petitioner argues a person of ordinary skill would have been prompted to modify Kozima's storage device to include Kazuhiro's cover because Kazuhiro provides "a simple structure" for a locking cover that can restrict access to a money storage area of an ATM. *Id.* at 19 (citing Ex. 1008, 3:23–25); *see also* Ex. 1008, 7:38–8:2 (the "removable strongbox . . . has the advantage of being a locking device of simple design and reliable operation that can be advantageously implemented"); Ex. 1003 ¶ 119). Second, Petitioner argues that a person of ordinary skill in the art would have recognized that checks/bills stored in Kozima's bill receiving chambers 41 and 42 would need to be removed by a bank employee, and Kazuhiro discloses a simple cover structure that permits access to a bill storage area. *Id.* (citing Ex. 1003 ¶¶ 116, 120; Ex. 1008, 2:6–8, Fig. 3). Third, according to Petitioner, a person of ordinary skill in the art would have been prompted to modify the ATM resulting from the combination of Jones with Kozima and Swinton to include Kazuhiro's cover door because doing so would have been merely the use of a known technique (an access door for accessing a currency storage area) to improve similar devices (ATMs) in the same way. *Id.* at 20 (citing *KSR*, 550 U.S. at 417; Ex. 1003 ¶ 121).

Patent Owner does not provide separate contentions regarding the limitations of claim 15, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would be combined with Jones and Kozima. PO Resp. 22–24.

As discussed previously, we do not agree with Patent Owner's position, because we credit the testimony of Dr. Kaufman that a person of

ordinary skill in the art would have been motivated to include Swinton's printers, alignment mechanism, and transport paths 38 and 111 in Jones's ATM. Ex. 1003 ¶¶ 98–103. Additionally, we find that the combined disclosures of Jones, Kozima, Swinton, and Kazuhiro teach or suggest the limitations of claim 15, because Kazuhiro discloses a “paper money strongbox” having “a cover (2) able to slide with respect to an opening (1a) in order to open/close same.” Ex. 1008, 2:6–8.

*G. Alleged Obviousness of Claims 13, 14, and 18–20 in View of Jones, Kozima, Swinton, and Arikawa*

Petitioner contends claims 13, 14, and 18–20 of the '010 patent are unpatentable under 35 U.S.C. § 103 in view of Jones, Kozima, Swinton, and Arikawa. Pet. 20–22. Patent Owner does not provide specific arguments regarding Petitioner's contentions for claims 13, 14, and 18–20. *See* PO Resp. 22–24. The burden, however, remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

For reasons that follow, we determine Petitioner has demonstrated by a preponderance of the evidence the unpatentability of these claims.

*1. Overview of Jones*

*See supra* Section II.D.1.

*2. Overview of Kozima*

*See supra* Section II.D.2.

*3. Overview of Swinton*

*See supra* Section II.E.3.

*4. Overview of Arikawa*

Arikawa is a Japanese patent titled “Banknote Processing Machine” and discloses a mechanism for conveying currency bills along several

perpendicularly arranged transport paths to different storage boxes.

Ex. 1010 ¶¶ 5, 12–15. One embodiment of Arikawa is shown in Figure 4, reproduced below.

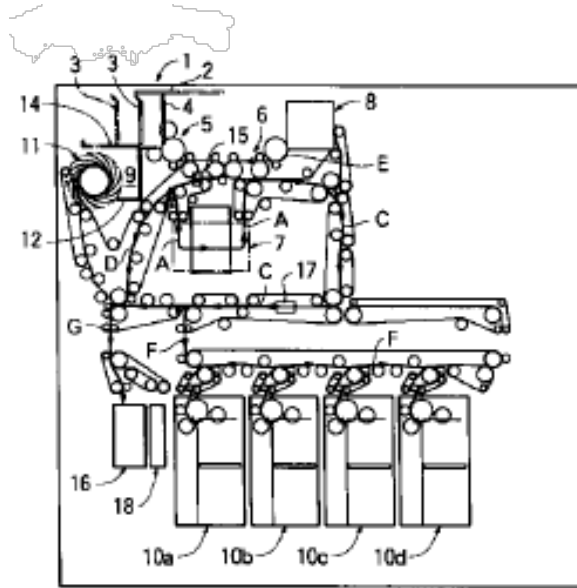


Figure 4 illustrates a conveyance pathway where acceptable bills “pass through the banknote conveying pathway C and a banknote conveying pathway F” for storage in the “banknote accommodating boxes” 10a-d, while heavily soiled bills “pass through the banknote conveying pathway C and a banknote conveying pathway G” to “banknote recovery box 16.” *Id.* ¶¶ 14–15.

### 5. Analysis

Petitioner contends that the combined teachings of Jones, Kozima, Swinton, and Arikawa would have rendered each limitation of claim 13 and its dependent claims 14, and 18–20 of the '010 patent obvious to a person of ordinary skill in the art at the time of the invention. Pet. 20–22. Petitioner specifically contends that the term “generally perpendicular” as used in challenged claim 13 to describe the direction of movement of sheets, if

interpreted to mean “exactly perpendicular,” was a feature “commonly known in the prior art,” and Arikawa discloses transporting banknotes along several perpendicular paths. *Id.* at 20–21 (citing Ex. 1010 ¶¶ 5, 12–15, Figs. 2–5; Ex. 1003 ¶¶ 122–124).

Petitioner further contends there would have been multiple reasons that would have prompted a person of ordinary skill in the art to modify an automated teller machine resulting from the combination of Jones, Kozima, and Swinton to include the perpendicular pathways of Arikawa. *Id.* at 21–22. First, Petitioner argues a person of ordinary skill would have had reason to combine the teachings of Jones, Kozima, and Swinton with Arikawa for the efficient transporting of bills into different storage compartments where more than two storage compartments are desired; separating rejected (soiled) banknotes from non-rejected banknotes. *Id.* at 21. Because Swinton discloses a substantially perpendicular arrangement, Petitioner contends that a perpendicular arrangement would have been obvious. *Id.* (citing Ex. 1010 ¶¶ 14–15, Figs. 2–5; Ex. 1006, Fig. 2; Ex. 1003 ¶¶ 106, 125). Additionally, Petitioner argues that implementing the transport paths of Jones and Swinton in a perpendicular arrangement (as suggested by Arikawa) would have been the mere use of a known technique to improve similar devices (ATMs) in the same way. *Id.* at 21–22 (citing *KSR*, 550 U.S. at 417).

Petitioner relies on the testimony of Dr. Kaufman to support its position. Dr. Kaufman specifically opines that Jones, Kozima, Swinton, and Arikawa all describe very similar automated banking machines for receiving, identifying, transporting, and storing banknotes, and that a person of ordinary skill in the art would have recognized that modifying these systems “would not significantly alter or hinder the functions performed by



the systems but would have provided additional benefits.” *See* Ex. 1003 ¶ 126.

Patent Owner does not provide separate contentions regarding the limitations of claims 13, 14, and 18–20 with regards to this challenge by Petitioner, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would be combined with Jones and Kozima. PO Resp. 22–24. Patent Owner, however, specifically contests Petitioner’s arguments that the combination of Jones, Kozima, and Swinton renders claim 14 obvious.

As discussed previously, we do not agree with Patent Owner’s position with regards to claim 14. Specifically, we find that Swinton teaches an alignment process that includes (1) a plurality of sensors and (2) both vertical motion (constituting the second sheet moving direction from claim 13) and horizontal motion so as to meet the limitation “to cause the sheet to be aligned . . . by moving . . . and sensing the sheet” as recited in claim 14.

We also do not agree Petitioner failed to provide an explanation or rationale for how the teachings of Swinton would be combined with Jones and Kozima. Rather, we credit the testimony of Dr. Kaufman that a person of ordinary skill in the art would have been motivated to include Swinton’s printers, alignment mechanism, and transport paths 38 and 111 in Jones’s ATM. Ex. 1003 ¶¶ 98–103. Additionally, we find that the combined disclosures of Jones, Kozima, Swinton, and Arikawa teach or suggest the limitations of claims 13, 14, and 18–20, because Arikawa discloses perpendicular pathways that would be complementary to the substantially perpendicular pathway of Swinton and implemented in the transport paths of

Jones's ATM. *See* Pet. 21; Ex. 1010 ¶¶ 14–15, Figs. 2–5; Ex. 1006, Fig. 2; Ex. 1003 ¶¶ 106, 125.

Accordingly, we determine Petitioner has proven by a preponderance of the evidence that the disclosure of Arikawa combined with Jones, Kozima, and Swinton would have taught all elements of challenged claims 13, 14, and 18–20 of the '010 patent. We determine the record supports Petitioner's contentions as summarized above and adopt the supported contentions as our own. We, therefore, conclude that claims 13, 14, and 18–20 would have been obvious in view of Jones, Kozima, Swinton, and Arikawa, and thus, are unpatentable under 35 U.S.C. § 103(a).

*H. Alleged Obviousness of Claim 15 in View of Jones, Kozima, Swinton, Arikawa, and Kazuhiro*

Petitioner contends claim 15 of the '010 patent is unpatentable under 35 U.S.C. § 103 in view of Jones, Kozima, Swinton, Arikawa, and Kazuhiro. Pet. 22, 59. Patent Owner does not provide separate contentions regarding the limitations of claim 15 with regards to this challenge by Petitioner, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would be combined with Jones and Kozima. PO Resp. 22–24.

For the reasons discussed above in Sections F and G, we determine that the combined disclosures of Jones, Kozima, Swinton, Arikawa, and Kazuhiro teach or suggest the limitations of claim 15. *See* Pet. 18–20, 58. Furthermore, we have considered all of Petitioner's rationale regarding why a person of ordinary skill in the art would have been motivated to combine the teachings of Jones, Kozima, Swinton, Arikawa, and Kazuhiro for claim 15. Pet. 18–20, 22. We conclude Petitioner has proven by a preponderance

of the evidence that the disclosure of Kazuhiro combined with Jones, Kozima, Swinton, and Arikawa would have taught all elements of challenged claim 15 of the '010 patent. We determine the record supports Petitioner's contentions and adopt the supported contentions as our own. We, therefore, conclude that claim 15 would have been obvious in view of Jones, Kozima, Swinton, Arikawa, and Kazuhiro and thus, is unpatentable under 35 U.S.C. § 103(a).

### III. MOTION TO EXCLUDE EVIDENCE

Patent Owner filed a Motion to Exclude Evidence seeking to exclude a second Declaration of Dr. Roger Kaufman (Ex. 1012) submitted by Petitioner. Paper 21 ("Mot."). Because our Decision does not rely on the challenged exhibit, we *dismiss* Patent Owner's motion as moot.

### IV. CONCLUSION

For the foregoing reasons, upon consideration of the entirety of the record, we determine Petitioner has shown by a preponderance of the evidence that: (1) claims 1–11, 22–26, and 28–30 would have been obvious in view of Jones and Kozima; (2) claims 12–14 and 18–20 would have been obvious in view of Jones, Kozima, and Swinton; (3) claim 15 would have been obvious in view of Jones, Kozima, Swinton, and Kazuhiro; (4) claims 13, 14, and 18–20 would have been obvious in view of Jones, Kozima, Swinton, and Arikawa; and (5) claim 15 would have been obvious in view of Jones, Kozima, Swinton, Arikawa, and Kazuhiro.

Patent Owner's Motion to Exclude Exhibit 1012 is dismissed as moot.

V. ORDER

For the reasons given, it is

ORDERED that, by a preponderance of the evidence, claims 1–15, 18–20, 22–26, and 28–30 of the '010 patent are unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *dismissed as moot*; and

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

Case IPR2016-00529  
Patent 7,229,010 B2

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**UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT****CERTIFICATE OF SERVICE**I certify that I served a copy on counsel of record on October 11, 2017

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