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.

_____

Case IPR2016-00530
Patent 7,229,010

_____

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. IPR2016-00530. 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 1–9, 22, 23, 28, and 29 of U.S. Patent No. 7,229,010 ("'010 patent") would have been obvious in view of Swinton (U.S. Patent No. 5,136,144) and Nobuaki (JP Patent No. H05-294479); (ii) the Board's finding that claims 10–14 and 18 of the '010 patent would have been obvious in view of Swinton, Nobuaki, and Kallin (U.S. Patent No. 7,051,928); (iii) the Board's finding that claim 15 of the '010 patent would have been obvious in view of Swinton, Nobuaki, Kallin, and Kazuhiro (JP Appl. Model Pub. No. 1991-108170); (iv) the Board's finding that claims 19 and 20 of the '010 patent would have been obvious in view of Swinton, Nobuaki, Kallin, and Jones (U.S. Pat. Pub. No. 2005/0047642); (v) the Board's finding that claims 24–26 and 30 of the '010 patent would have been obvious in view of Swinton, Nobuaki, and Jones; (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 IPR2016-00530.

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/

Christopher B. Kelly, Esq.
Reg. No. 62,573
ALSTON & BIRD LLP
1201 West Peachtree Street, N.W.
Atlanta, Georgia 30309
Tel: 404-881-4416
Email: Chris.Kelly@alston.com
Counsel for Diebold Nixdorf, Inc.

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 IPR42590-0001IP8@fr.com, riffe@fr.com, and bisenius@fr.com on October 11, 2017, in its entirety on the following:

Lead Counsel	Backup Counsel
Timothy W. Riffe	Patrick J. Bisenius
Reg. No. 43,881	Reg. No. 63,893
Fish & Richardson P.C.	Fish & Richardson P.C.
3200 RBC Plaza	3200 RBC Plaza
60 South Sixth Street	60 South Sixth Street

Minneapolis, MN 55402
Tel: 202-626-6429
Fax: 202-783-2331

Minneapolis, MN 55402
Tel: 612-766-2048
Fax: 612-288-9696

The parties have consented to electronic service in this matter.

Dated: October 11, 2017

/Christopher B. Kelly/

Christopher B. Kelly, Esq.
Reg. No. 62,573
ALSTON & BIRD LLP
1201 West Peachtree Street, N.W.
Atlanta, Georgia 30309
Tel: 404-881-4416
Email: Chris.Kelly@alston.com

Trials@uspto.gov
571.272.7822

Paper No. 28
Filed: August 10, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NAUTILUS HYOSUNG INC.,
Petitioner,

v.

DIEBOLD NIXDORF, INC.,
Patent Owner.

Case IPR2016-00530
Patent 7,229,010 B2

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")[1] 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 1–9, 22, 23, 28, and 29 under 35 U.S.C. § 103(a)[2] as unpatentable over Swinton[3] and Nobuaki[4]; (2) claims 10–14 and 18 under

[1] 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 (Patent Owner Updated Mandatory Notices), 2.

[2] 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.

[3] U.S. Patent No. 5,136,144 (iss. Aug. 4, 1992) ("Swinton," Ex. 1006).

[4] Japanese Patent No. H05-294479 (iss. Nov. 9, 1993) ("Nobuaki," Ex. 1011, 1012). In accordance with 37 C.F.R. § 42.63(b), Petitioner provided an English translation of Nobuaki, along with an affidavit attesting

35 U.S.C. § 103(a) as unpatentable over Swinton, Nobuaki, and Kallin[5]; (3) claim 15 under 35 U.S.C. § 103(a) as unpatentable over Swinton, Nobuaki, Kallin, and Kazuhiro[6]; (4) claims 19 and 20 under 35 U.S.C. § 103(a) as unpatentable over Swinton, Nobuaki, Kallin, and Jones[7]; and (5) claims 24–26 and 30 under 35 U.S.C. § 103(a) as unpatentable over Swinton, Nobuaki, and Jones. *See* Paper 7 ("Dec. to Inst."), 44–45.

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 13, "PO Resp."), to which Petitioner filed a Corrected 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*,

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to its accuracy, as Exhibit 1012. Our citations to Nobuaki in this Decision are to Exhibit 1012.

[5] U.S. Patent No. 7,051,928 (iss. May 30, 2006) ("Kallin," Ex. 1013).

[6] JP Appl. Model Pub. No. 1991-108170 (filed Nov. 7, 1991) ("Kazuhiro," Exs. 1007, 1008).

[7] U.S. Patent Pub. No. 2005/0047642 (publ. Mar. 3, 2005) ("Jones," Ex. 1004).

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).

Petitioner also informs us of concurrently filed and pending IPR2016-00529 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.

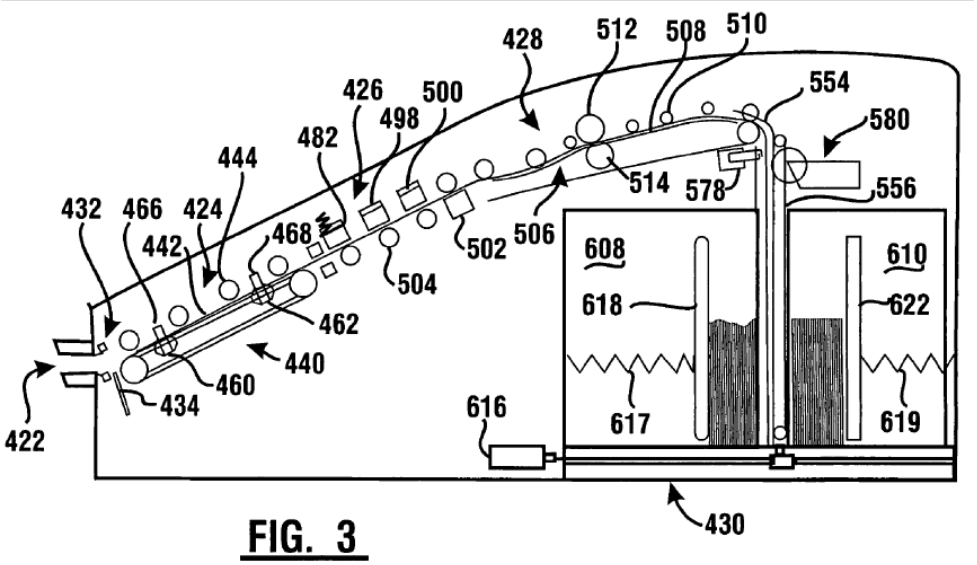


FIG. 3

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.

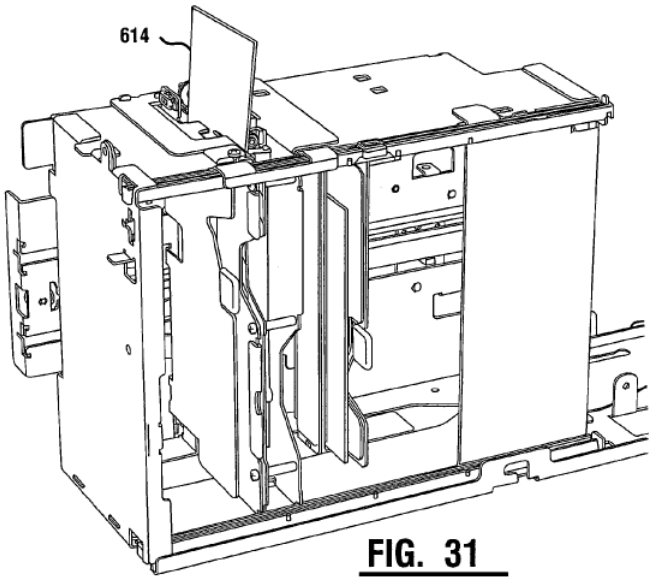


FIG. 31

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.

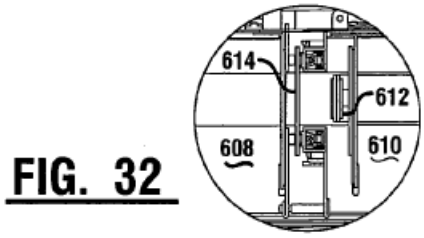


FIG. 32

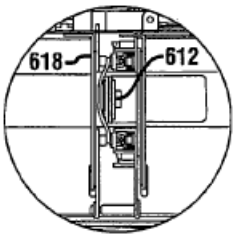


FIG. 33

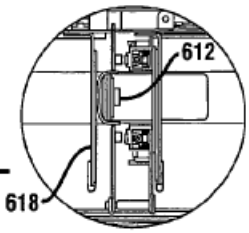


FIG. 34

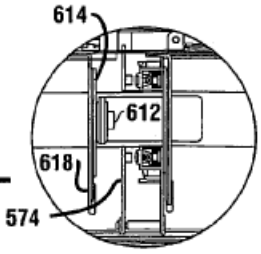


FIG. 35

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.*, 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. Roger 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.

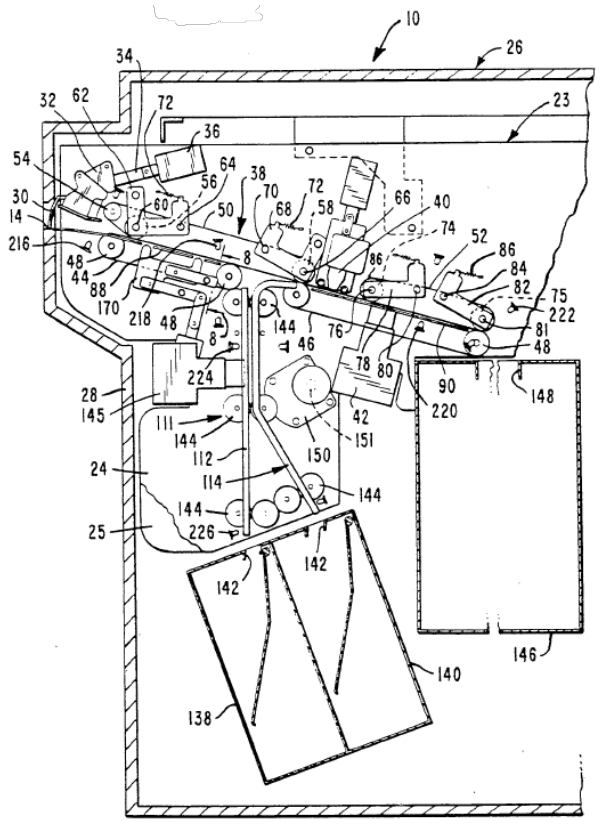
Based on our review of the '010 patent, the types of problems and solutions described in the '010 patent and cited prior art, and the testimony of Drs. Kaufman and Kurfess, we adopt and apply Dr. Kaufman's definition of a person of ordinary skill in the art at the time of the claimed invention. We also 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 1–9, 22, 23, 28, and 29 in View of Swinton and Nobuaki

Petitioner contends claims 1–9, 22, 23, 28, and 29 of the '010 patent are unpatentable under 35 U.S.C. § 103 in view of Swinton and Nobuaki. Pet. 8–16, 26–47; Reply 2–13. 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 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.



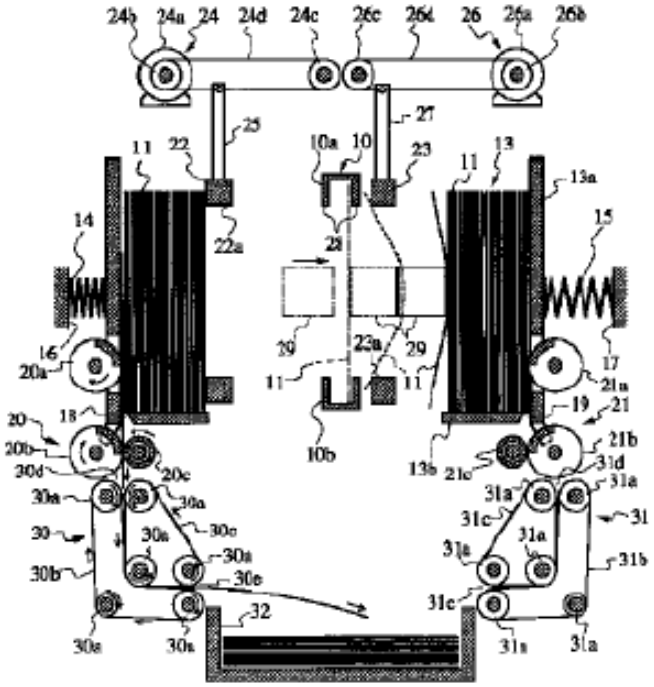
As shown in Figure 2 above, depository apparatus 10 includes entry slot 14, transport mechanism 38, and two containers 138 and 140. *See id.* at 2:35–37, 3:1–23, 5:13–19, Figs. 2, 8. According to Swinton, transport mechanism 38 moves deposit items inward from entry slot 14 past optical read head 40 and 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 co-operating 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.

2. Overview of Nobuaki

Nobuaki is titled "Device for storing/issuing paper sheets" and discloses a sheet receiving device with a storage area that is divided into first and second storage parts 12, 13. Ex. 1012, Abst. One embodiment of Nobuaki is shown in Figure 1, reproduced below.



As illustrated in Figure 1 above, the sheet receiving device alternatively pushes paper sheets 11 into storage parts 12, 13 by the reciprocating movement of pressing element 29. *Id.* Nobuaki discloses the paper sheets are pushed out of paper sheet issuing part 32 via feed-out mechanisms 20, 21 and conveyance mechanism 30, 31, which correspond to first and second storage parts 12, 14. *Id.* According to Nobuaki, first and second storage parts 12, 13 comprise vertical walls 12a, 13a and horizontal walls 12b, 13b. *Id.* ¶ 19. Vertical walls 12a, 13a face holder 10, and first and second storage parts 12, 13 are urged toward holder 10 by means of springs 14, 15. *Id.*

Nobuaki discloses that pressing element 29 moves to the left/right using holder 10 as a boundary, so that paper sheets 11 held by holder 10 are alternately pushed inside first and second storage parts 12, 13 and stored. *Id.* ¶ 29. In one embodiment in Nobuaki, pressing element 29 is driven by means of a drive mechanism. *Id.*

3. Analysis

a. Cited Art as Applied to Claim 1

Petitioner contends that the combined teachings of Swinton and Nobuaki 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. 8–16, 26–47. Petitioner specifically contends that Nobuaki's pressing element 29 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 (citing Ex. 1002, 20, 27–28).

Petitioner relies on Swinton for teaching a "sheet item transport . . . connection with the item accepting opening," because Swinton discloses "transport mechanism 38" that receives checks fed into "entry slot 14" and is "operatively connected to 'the transport mechanism 111.'" *Id.* at 27 (citing Ex. 1006, 9:57–60, 10:34–38, 7:53–61, Fig. 2). Petitioner also relies on Nobuaki for teaching "a pair of disposed sheet supporting rail portions," because

> Nobuaki discloses that "10 is a holder fixed to a machine frame (not depicted) and ***comprising channel members 10a, 10b lying opposite each other*** with a predetermined gap therebetween. ***Paper sheets*** (e.g. paper money) 11 introduced from a paper sheet introduction part which is not depicted are ***inserted between the channel members 10a, 10b as shown in fig. 2 and held with a vertical orientation***.

Id. at 27–28 (citing Ex. 1012 ¶ 18).

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

Swinton's automated teller machine to include the bill sorting/storage device of Nobuaki. *Id.* at 11–12. First, Petitioner argues a person of ordinary skill would have had reason to combine the teachings of Swinton's ATM with Nobuaki's bill sorting mechanism, because it would allow for less request refills of the currency dispensing portion of the ATM given that received bills stored in the storage parts 12, 13 would have been later issued to subsequent users of the ATM. *Id.* at 13–14 (citing Ex. 1012 ¶ 13, claim 1; Ex. 1003 ¶ 51). According to Petitioner, a person of ordinary skill in the art would have been motivated to replace Swinton's "two containers 138 and 140" with Nobuaki's "storage parts 12, 13" and its corresponding sorting mechanism. Reply 2 (citing Pet. 13–15).

Second, Petitioner argues a person of ordinary skill would have understood that applying the teachings of Nobuaki to Swinton would allow for quicker service as "a withdrawal and deposit operations" could have been performed simultaneously. Pet. 14 (citing Ex. 1012 ¶¶ 12, 16; Ex. 1003 ¶ 52). According to Petitioner, a person of ordinary skill in the art would have identified "Nobuaki's bill storage mechanism [that] allows for bills stored in the storage areas 12 and 13 to later be paid out" as an improvement over Swinton's bill sorting and storing mechanism that would have added additional beneficial functionality to Swinton's ATM. Reply 5 (citing Ex. 1003 ¶¶ 51–52; Pet. 13–14).

Third, Petitioner argues a person of ordinary skill would have recognized that a goal of Swinton's ATM is to transport checks or bills into separate compartments and Nobuaki teaches a specific mechanism for achieving such a goal. Pet. 14–15 (citing Ex. 1003 ¶ 53). Lastly, Petitioner argues a person of ordinary skill would have understood that the combined

teachings of Swinton (which describes an ATM) and Nobuaki (which describes a specific mechanism for sorting bills into different compartments) merely would have been combining prior art elements according to known methods to yield predictable results. *Id.* at 15 (citing Ex. 1003 ¶ 54); Reply 7–8.

Patent Owner disputes Petitioner's contentions, arguing Petitioner fails to show that claim 1 is unpatentable. PO Resp. 2–13. Patent Owner specifically argues: (1) the Petition provides no explanation of how Swinton could be modified in view of Nobuaki to arrive at the machine of claim 1 (*id.* at 3–7); (2) Petitioner's alleged motivations to combine are ill-conceived and lack a rational underpinning (*id.* at 7–11); and (3) the Declaration of Dr. Kaufman does not and cannot cure the deficiencies of the Petition (*id.* at 11–13). Patent Owner concludes that absent an explanation and explicit analysis regarding how a person of ordinary skill in the art would have modified components of Swinton in view of Nobuaki and combined the disclosed technology, Petitioner has failed to meet its burden of showing that claims are unpatentable in view of the cited art. *Id*. at 1.

Having considered both Petitioner's and Patent Owner's respective positions and supporting evidence, we agree with Petitioner and determine that the combined disclosures of Swinton and Nobuaki teach or suggest the limitations of claim 1. *See* Pet. 8–16, 26–47; Ex. 1006, 1:11–15, 2:64–3:1, 3:5–9, 9:1–10:38, Fig. 2; Ex. 1012 ¶¶ 1, 18, 19, 29, 36–39, Abst., Fig. 2. Specifically, we agree with Petitioner's arguments that Nobuaki's pressing element 29 corresponds to the "movably mounted plunger member" recited in independent claim 1, because Nobuaki's pressing element 29 (i) is provided between first and second storage parts 12, 13, (ii) moves in the

left/right direction within a predetermined range, and (iii) is driven "by means of a drive mechanism which is not depicted" in Nobuaki. *See* Pet. 9–10, 28–30; Ex. 1012 ¶¶ 18, 19, 29, 36–40, Abst., Fig. 1–6. We also are persuaded that Nobuaki teaches "supporting rail portions" that "extend in the storage area" as recited in claim 1, because Nobuaki teaches the use of channel members 10a, 10b in order to transport currency bills into first and second storage parts 12, 13. *See* Pet. 27–28; Ex. 1012 ¶ 18.

For the other limitations of claim 1 that are not directed to a "movably mounted plunger member" or "supporting rail portion," Petitioner argues that Swinton and Nobuaki teach or suggest these limitations and provides a claim chart and testimony of Dr. Kaufman to support its position. *See* Pet. 26–31; Ex. 1003 ¶¶ 25–49. Patent Owner does not provide specific arguments regarding Petitioner's contentions for these limitations. *See* PO Resp. 3–13. The burden, however, remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on our review of the evidence, we determine that Swinton and Nobuaki teach these limitations because the cited portions of the references in the claim chart meet the respective limitations of claim 1, as Petitioner contends (Pet. 26–31). We also credit Dr. Kaufman's declaration testimony regarding how Swinton and Nobuaki would have conveyed the limitations of claim 1 to one of ordinary skill in the art. Ex. 1003 ¶¶ 25–49. Dr. Kaufman's detailed analysis is based on multiple citations to the references and, therefore, provides sufficient factual corroboration.

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 teaching of Swinton and Nobuaki 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 Swinton and Nobuaki. Having considered the entirety of the record, we do not agree with Patent Owner on this point. Contrary to Patent Owner's position, it is not necessary that Swinton and Nobuaki 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 Nobuaki's teachings regarding a specific mechanism for moving currency into different storage compartments with the ATM system in Swinton in order to solve the common problem of transporting currency bills or checks in different compartments. *See* Pet. 14–15; Ex. 1003 ¶ 53. We agree with Petitioner's position that a person of ordinary skill in the art would have been motivated to replace the storage bins and sorting mechanism of Swinton's ATM with the sorting/storage device of Nobuaki. *See* Pet. 13–14; Reply 2; Ex. 1003 ¶¶ 51–54. Specifically, we credit the testimony of Dr. Kaufman that a person of ordinary skill in the art would have recognized that a goal of Swinton's ATM was to transport checks or bills into separate compartments and Nobuaki teaches a specific mechanism for achieving that goal. Ex. 1003 ¶ 53 (citing Ex. 1004 ¶¶ 140, 343; Ex. 1012, 12:31–36).

Therefore, we determine that one of ordinary skill in the art would have had a reason to combine the teachings of Swinton and Nobuaki 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 Swinton and Nobuaki.

b. Cited Art as Applied to Independent Claims 28 and 29 and Dependent Claims 2–9, 22, and 23

Petitioner argues the combination of Swinton and Nobuaki teaches, or at least suggests, the limitations recited in challenged independent claims 28 and 29 as well as dependent claims 2–9, 22, and 23. Pet. 10–13, 31–47. Petitioner supports its contentions with the testimony of Dr. Kaufman. *See* Ex. 1003 ¶¶ 55, 46–89. Patent Owner does not provide specific arguments regarding the patentability of independent claims 28 and 29 and dependent claims 2–9, 22, and 23. *See* PO Resp. 13 (applying arguments regarding claim 1 to claims 2–9, 22, 23, and 28–30). We have considered carefully all arguments and supporting evidence in light of the limitations recited in challenged independent claims 28 and 29 and dependent claims 2–9 and 23, and we agree with Petitioner's analysis as supported by Dr. Kaufman's testimony. We next summarize our findings that reflect Petitioner's analysis.

(1) Dependent Claim 2

For claim 2, we find that Nobuaki discloses "[t]he first and second storage parts 12, 13 are urged toward the holder 10 by means of springs 14, 15. The springs 14, 15 are interposed between the vertical walls (right-hand walls in the drawing) 12a, 13a of the first and second storage parts 12, 13, and receivers 16, 17 fixed to the machine frame." *See* Ex. 1012 ¶ 19, 20, 35. Nobuaki further discloses that the "whole of the second storage part 13 moves to the right against resistance from the urging force of the spring 15 as a result of the pressing force of the pressing element 29." *Id.* ¶¶ 37–38.

(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 Nobuaki's disclosure that "[a]s the pressing element 29 is restored to the initial position, the first storage part 12 moves to the right in fig. 4 by the urging force of the spring 14 and one side surface of the paper sheet 11 positioned on the very right abuts the first pressuring element 22, whereby the set storage position is restored to produce the same state as the initial state shown in fig. 1." *Id.* ¶ 40.

(3) Dependent Claims 4 and 22

Claims 4 and 22 are met by Swinton's disclosure that "an electronic control means 228 included in the ATM 12" controls the various components of the ATM. Ex. 1006, 8:2–11; *see also id.* at 2:20–22 ("control means responsive to the output of said sensing means for controlling the operation of said transport means and said alignment means"). Swinton further discloses that "the electronic control means 228 makes a determination as regards to which of the two containers 138 and 140 the check is to be fed." *Id.* at 10:54–11:2.

(4) Dependent Claims 5 and 23

Claims 5 and 23 are met by Swinton and Nobuaki. Specifically, Swinton discloses "transport mechanism 38," which receives checks fed into "entry slot 14" and is operatively connected to "the transport mechanism 111." Ex. 1006, 9:57–60, 10:34–38, 7:53–61, Fig. 2. Swinton further discloses "the read head 40 reads a pre-printed code line of optical E13B characters on the check and applies signals representing these characters to the electronic control means 228. On the basis of the signals applied to it by

the read head 40, the electronic control means 228 determines whether a valid read operation has taken place, that is to say whether a valid series of E13B characters has been read." *Id.* at 10:2–9.

The positioning of the plunger member limitation of these claims is met by Nobuaki's disclosure that (1) "[i]n the state shown in fig. 1, when a paper sheet 11 is introduced from the paper sheet introduction part, said paper sheet 11 is held with a vertical orientation between the channel members 10a, 10b of the holder 10" (Ex. 1012 ¶ 36) and (2) "[w]hen the pressing element 29 is moved further to the right from this state, the paper sheet 11 advances into the opening 23a in the second pressuring element 23 together with the pressing element 29 so that the pressing element 29 shown by the solid line in fig. 2 abuts one side surface of the paper sheet 11 on the very left inside the second storage part 13 with said paper sheet 11 interposed" (*id.* ¶¶ 37–38).

(5) Dependent Claim 6

Claim 6 is met by Nobuaki's disclosure that

> [w]hen the pressing element 29 is moved further to the right from this state, the paper sheet 11 advances into the opening 23a in the second pressuring element 23 together with the pressing element 29 so that the pressing element 29 shown by the solid line in fig. 2 abuts one side surface of the paper sheet 11 on the very left inside the second storage part 13 with said paper sheet 11 interposed. When the pressing element 29 is then moved by a predetermined amount to the right from this state, the paper sheet 11 advances into the second storage part 13 together with the pressing element 29; the paper sheet 11 shown by the solid line in fig. 3 is then completely separated from the holder 10 and assumes a state in which it is pressed against one side surface of the paper sheet 11 positioned on the very left inside the second storage part 13.

Ex. 1012 ¶¶ 37–38.

Nobuaki further describes that

> a paper sheet 11 is stored inside the second storage part 13 in this way, but a paper sheet 11 introduced from the paper sheet introduction part and held in the holder 10 shown by the two-dot chain line in fig. 4 is stored inside the first storage part 12 as a result of the pressing element 29 being moved in the opposite direction to that described in the abovementioned operation, i.e. to the left shown by the arrow in fig. 4. As the pressing element 29 is restored to the initial position, the first storage part 12 moves to the right in fig. 4 by the urging force of the spring 14 and one side surface of the paper sheet 11 positioned on the very right abuts the first pressuring element 22, whereby the set storage position is restored to produce the same state as the initial state shown in fig. 1.

See id. ¶ 40.

(6) Dependent Claims 7, 8, and 9

Claims 7 and 8 are met by Nobuaki's disclosure that "[f]irst and second pressuring elements 22, 23 are provided within the first and second storage parts 12, 13." Ex. 1012 ¶ 24. Figure 1 of Nobuaki shows the wall surfaces of pressuring element 22 bounding storage part 12 and in opposed facing direction of the vertical backing plate, while Figure 4 shows the sheet moving beyond wall surfaces 22 into storage part 12 and positioned between the vertical backing plate and wall surfaces 22. *Id.* at Figs. 1, 4. Figure 1 of Nobuaki also shows the wall surfaces of pressuring element 23 bounding storage part 13 and in opposed facing direction of the vertical backing plate, while Figure 3 shows the sheet moving beyond wall surfaces 23 so that the sheet is positioned between the vertical backing plate of second storage part 13 and the wall surfaces 23. *Id.* at Figs. 1, 3.

Claim 9 is met by Nobuaki's disclosure that "said paper sheet 11 is held with a vertical orientation between the channel members 10a, 10b of the

holder 10." *See id.* ¶ 36, Fig. 3; *see id.* ¶ 53 ("paper sheets 11 are stacked and stored inside the first and second storage parts 12, 13 with a vertical orientation in the left/right direction").

(7) Independent Claims 28 and 29

Claims 28 and 29 are met by the same disclosures as claim 1. *See* Pet. 45–51.

(8) Summary

Accordingly, we find that challenged independent claims 28 and 29 and dependent claims 2–9, 22 and 23 would have been obvious under 35 U.S.C. § 103 in view of the disclosures of Swinton and Nobuaki.

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 Swinton and Nobuaki 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 1–9, 22, 23, 28, and 29 are unpatentable under 35 U.S.C. § 103 in view of Swinton and Nobuaki.

E. Alleged Obviousness of Claims 10–14 and 18 in View of Swinton, Nobuaki, and Kallin

Petitioner contends claims 10–14 and 18 of the '010 patent are unpatentable under 35 U.S.C. § 103 in view of Swinton, Nobuaki, and Kallin. Pet. 16–30; Reply 10–20. Patent Owner disputes Petitioner's contentions. PO Resp. 14–28. For reasons that follow, we determine

Petitioner has demonstrated by a preponderance of the evidence the unpatentability of these claims.

1. Overview of Swinton

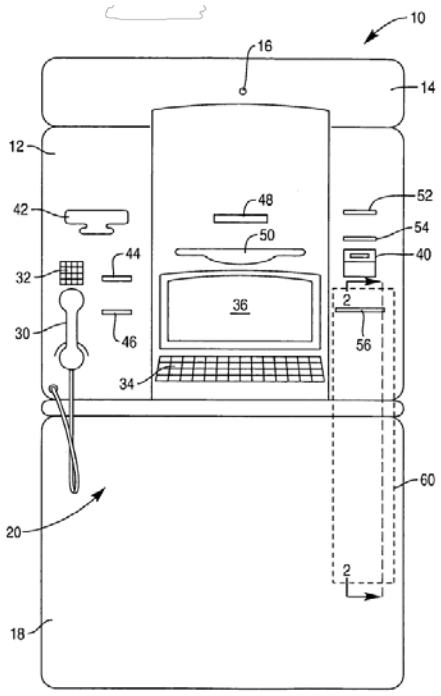
See supra Section II.D.1.

2. Overview of Nobuaki

See supra Section II.D.2.

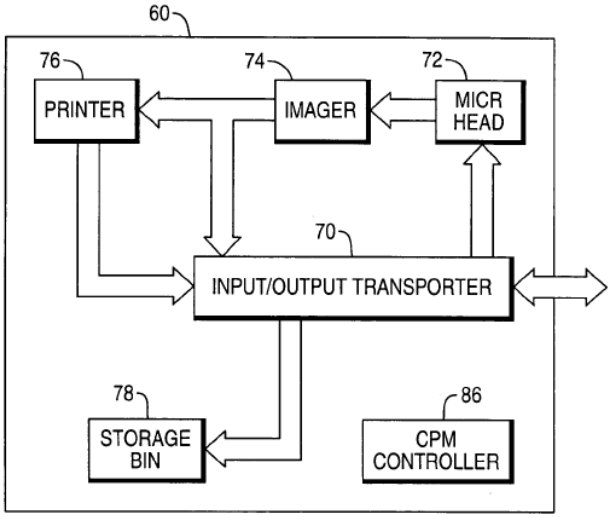
3. Overview of Kallin

Kallin is titled "Document Diverter Apparatus for Use in a Self-Service Terminal" and discloses a check cashing ATM with a document transport mechanism that includes rollers connected by endless belts drivers. Ex. 1013, Abst., 2:16–38. One embodiment of Kallin is shown in Figure 1, reproduced below.



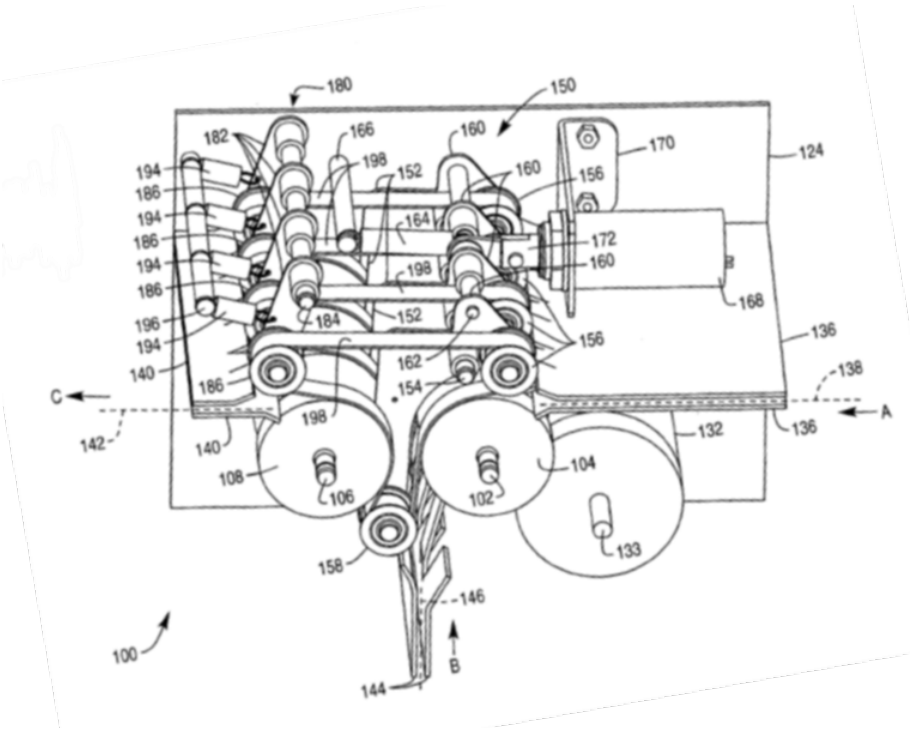
As shown in Figure 1, above, Kallin's check cashing ATM 10 includes fascia 12 and lower panel 18, which provide user interface 20 for allowing a user to execute a transaction. *Id.* at 4:36–48. Fascia 12 also includes

keyboard 34, display 36, cash dispense slot 50, and check input/output slot 56. *Id.* at 4:54–60. Kallin's check cashing ATM 10 further includes a check processing module, which is illustrated in Figure 3, reproduced below.



As shown in Figure 3, above, check processing module 60 includes check input/output transport mechanism 70, printer 76, storage bin 78, and controller 86. *Id.* at 5:1–17. Controller 86 controls the operation of the elements within check processing module 60. *Id.* at 5:19–20.

Another embodiment of Kallin is shown in Figure 7, reproduced below.



Kallin depicts in Figure 7, above, part of a check transport mechanism where a check is transported from slot 56 (see Figure 1) and engaged by four drive rollers 104 and four drive belts 198 to move the check from first path portion 138 to third path portion 146 so as to eventually move the check to printer 76. *Id.* at 6:47–65. Kallin further discloses that when a check is transported from printer 76 to slot 56, controller 86 commands driver motor 132 to rotate its drive shaft 133 and to energize solenoid 168. *Id.* at 6:65–7:1. According to Kallin, when a check is in the zone of printer 76, controller 86 can command that the check be transported into storage bin 78. *Id.* at 7:20–23.

4. Analysis

i. Claim 10

Claim 10 depends from claim 9 and further recites "wherein the at least one sensing device comprises a scanning sensor, and wherein the at

least one processor is operative responsive to the scanning sensor to generate data corresponding to an image of at least a portion of the sheet." Ex. 1001, 25:13–17.

Petitioner contends that the combined teachings of Swinton, Nobuaki, and Kallin would have rendered each limitation of claim 10 obvious to a person of ordinary skill in the art at the time of the invention. Pet. 16–20, 47–54. Petitioner relies on its contentions discussed above regarding how Swinton and Nobuaki would have conveyed to one of ordinary skill in the art every element of claims 1–9. *Id.* at 16.

Petitioner specifically contends Swinton discloses limitations such as a scanning in the form of "read means for reading data from deposit items," including "the read head 40 [which] reads a preprinted code line of optical E13B characters on the check[s]," which communicates information to Swinton's "electronic control means 228," which Petition argues is equivalent to the recited "at least one processor." *Id.* at 16 (citing Ex. 1006, 2:15–17, 10:2–9; Ex. 1003 ¶¶ 61–62, 90). Petitioner further argues that "Kallin's controller 86 would have controlled the imager 74 to generate data corresponding to an image of at least a portion of the sheet." *Id.* at 16–17 (citing Ex. 1013, 4:36–37, 5:1–20, 8:43–45, Fig. 2; Ex. 1003 ¶ 91).

Patent Owner does not provide separate contentions regarding the limitations of claim 10, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would have been combined with Nobuaki. PO Resp. 13. We additionally note that although Patent Owner does not provide specific arguments regarding Petitioner's contentions for claim 10, the burden remains on

Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and Nobuaki. Additionally, we find that the combined disclosures of Swinton, Nobuaki, and Kallin teach or suggest the limitations of claim 10, because Kallin discloses "a cheque cashing ATM" that includes a "cheque processing module (CPM) 60" having "an imager 74 including an upper 74a and lower 74b CCD camera for capturing an image of each side of a cheque (front and rear)." *See* Ex. 1013, 3:42–44, 4:36–37, 5:1, 5:10–16; *see id.* at 8:43–45 ("The cheque is then transported to the imager 74 to image the endorsed cheque"); Pet. 14–18, 51–58.

ii. Claims 11 and 18

Claim 11 recites "wherein the at least one sensing device further comprises a magnetic sensing device." Ex. 1001, 25:18–20. Claim 18 recites "wherein the magnetic sensing device is adapted to read micr on the sheet." *Id.* at 25:61–62.

Petitioner contends that Kallin discloses "a MICR head 72 for reading magnetic details on a code line of a che[ck]" while Swinton discloses that "known depository apparatuses include reading means 40 for reading characters, such as magnetic ink or optical characters." Pet. 17 (citing Ex. 1013, 5:12–13, 3:42–44; Ex. 1006, 1:40–42).

Patent Owner does not provide separate contentions regarding the limitations of claims 11 and 18, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would have been combined with Nobuaki. PO

Resp. 13. We additionally note that although Patent Owner does not provide specific arguments regarding Petitioner's contentions for claims 11 and 18, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and Nobuaki. Additionally, we find that the combined disclosures of Swinton, Nobuaki, and Kallin teach or suggest the limitations of claims 11 and 18, because Swinton discloses that "known depository apparatuses include reading means for reading characters, such as magnetic ink or optical characters." Ex. 1006, 1:40–41. Additionally, Kallin discloses "a MICR head 72 for reading magnetic details on a code line of a cheque." Ex. 1013, 5:12–13; *see id.* at 3:42–44 ("The cheque processing module includes a magnetic ink character recognition (MICR) reader disposed along the bi-directional cheque transport path."); Pet. 14–18, 51–58.

iii. 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 Swinton, Nobuaki, 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 limitations such as 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).

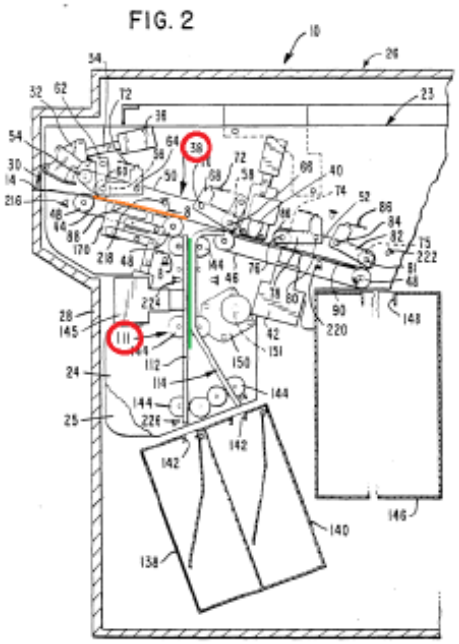
Patent Owner does not provide separate contentions regarding the limitations of claim 12, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would have been combined with Nobuaki. PO Resp. 13. We additionally note that although Patent Owner does not provide specific arguments regarding Petitioner's contentions for claim 12, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and Nobuaki. Additionally, we find that the combined disclosures of Swinton, Nobuaki, and Kallin teach or suggest the limitations of claim 12, because 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." Ex. 1006, Abst., 5:22–26, 8:54–60, 10:34–42. Kallin also discloses "a printer 76 for endorsing a cheque." Ex. 1013, 5:16, 6:62–64 ("The cheque is transported along this first continuous document transport path from the slot 56 to the printer 76."), 5:19–20 ("CPM 60 also includes a controller 86 for controlling the operation of the elements within the CPM 60.").

iv. 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 Jones discloses first and second sheet transport sections that move the sheets in perpendicular directions. Pet. 17–18. According to Petitioner, Swinton teaches this limitation as shown below in an annotated version of Figure 2 of Swinton reproduced from the Petition. *Id.* at 17 (citing Ex. 1003 ¶¶ 98–99; Ex. 1006, Fig. 2, 3:21–24; 5:19–26).



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 ¶¶ 98–99).

Petitioner then argues that if the term "generally perpendicular" in claim 13 is interpreted narrowly to mean "exactly perpendicular" or Swinton's configuration is not considered to be generally perpendicular, such a configuration for the transport paths 38 and 111 would have been an obvious design choice. *Id.* at 18 (citing Ex. 1003 ¶ 99). Petitioner cites to Kallin as an example that would have indicated perpendicularity as a design choice, because Kallin discloses various "path portions" that transport checks in perpendicular transport directions. *Id.* (citing Ex. 1013, 6:47–48; 7:7–14, 7:34–42, Fig. 8).

Patent Owner does not provide separate contentions regarding the limitations of claim 13, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would have been combined with Nobuaki. PO Resp. 13. We additionally note that although Patent Owner does not provide specific arguments regarding Petitioner's contentions for claim 13, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and Nobuaki. Additionally, we find that the combined disclosures of Swinton, Nobuaki, and Kallin teach or suggest the limitations of claim 13, because 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; *see* Pet. 17–18.

v. 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 17. 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 17; *see* Pet. 18–19, 51–54. Petitioner notes that Swinton describes optical sensor 218 as an "alignment control sensor 218." Pet. 18 (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 18 (citing Ex. 1006, 9:21–38; Fig. 10 (identifying sensor 218 as the "alignment control sensor"); Pet. 51–54). 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 18–19. 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 19.

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. 22 (citing Ex. 1006, 7:50–57, 8:27–32, 9:21–26, 10:10–18; Ex. 2001 ¶¶ 73–79). 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 23 (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 ¶ 75). Patent Owner relies on the deposition testimony of Petitioner's declarant, Dr. Kaufman, to support its position. *Id.* at 23. 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 an 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. 19 (citing Ex. 1003 ¶ 104). 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 10. Petitioner argues it identified in its arguments regarding claim 13 that the second sheet moving direction is 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 11 (citing Ex. 2003, 166:18–167:1 (emphasis added) ("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 (emphasis added) ("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 13 (citing Ex. 2003, 176:1–6). Petitioner further notes that it cites to and relies on the Kallin reference in addressing claim 14 as well as Swinton. *Id.* at 10 (citing Pet. 53–54).

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. 17 (citing Ex. 2001 ¶¶ 64–72). 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 17–21 (citing Ex. 1006, 7:8–26; Ex. 2001 ¶¶ 68–71). 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 19 (citing Ex. 1006, 7:28–33; Ex. 2001 ¶¶ 69–72). Patent Owner argues that "the second moving direction identified by the Petitioner" (i.e., the vertical direction) does not cause alignment of check 192. *Id.* at 20–21. 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 21–22.

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 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 to move into a correctly aligned position. *See* Pet. 18–19 (citing Ex. 1006, 7:50–52, 8:60–63, 9:22–38).

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

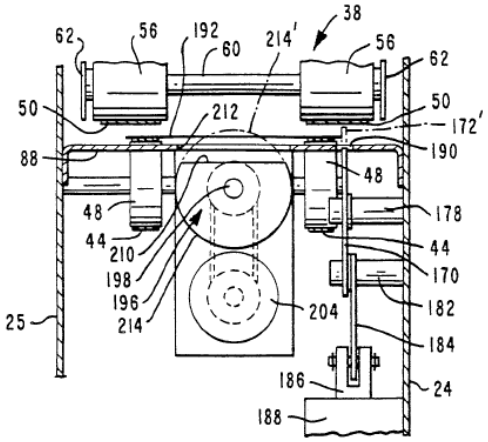
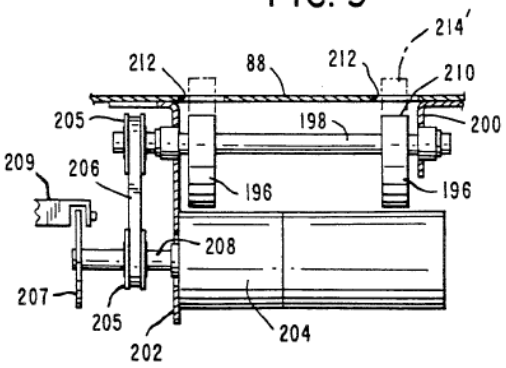


FIG. 9



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. 21 (citing Ex. 2001 ¶¶ 64–72). 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 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. 1016, 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 the combination of Swinton, Nobuaki, and Kallin teaches or suggests each element of claim 14.

vi. Reasons to Combine Swinton, Nobuaki, and Kallin

Petitioner contends there would have been multiple reasons that would have prompted a person of ordinary skill in the art to modify Swinton's automated teller machine to implement the teachings of Nobuaki and Kallin. Pet. 19–20. First, Petitioner argues a person of ordinary skill would have recognized that Swinton indicates that "known depository apparatuses include reading means 40 for reading characters, such as magnetic ink or optical characters" and "Kallin discloses just such a known device having both the imager 74 and the magnetic MICR read head 72 that a [person of ordinary skill in the art] could have readily implemented as Swinton's read means 40." *Id.* at 19 (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 Swinton's read head 40 "applies signals representing" information read from checks to control means 228 and Kallin

provides the beneficial suggestion of having these "signals" include a full image of the check, and a person of ordinary skill in the art would have "recognized that having an image of an 'endorsed che[ck]' would be beneficial so that the deposit can later be verified in the event that the physical check is lost or damaged." *Id.* at 19–20 (citing Ex. 1006, 10:2–9; Ex. 1013, 5:10–16, 8:43–45; Ex. 1003 ¶ 93). Lastly, Petitioner argues that a person of ordinary skill would have been prompted to modify the system of Swinton and Nobuaki based on the teachings of Kallin, because doing so would have been merely the use of known techniques (e.g., capturing images of checks, moving checks in perpendicular directions) to improve similar devices (e.g., ATMs) in the same way. *Id.* at 20 (citing Ex. 1003 ¶ 94).

Patent Owner does not provide separate contentions regarding the rationale to combine Swinton, Nobuaki, and Kallin, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would have been combined with Nobuaki. PO Resp. 13. We additionally note that although Patent Owner does not provide specific arguments regarding Petitioner's contentions for combining the teachings of Swinton and Nobuaki with Kallin, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

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 teaching of Swinton and Nobuaki with Kallin for claims 10–14 and 18. Based on the evidence of record, including the testimony of both Dr. Kaufman and Dr. Kurfess, we find Petitioner has provided sufficient reasoning with rational underpinning to support its position. Specifically,

we find that a person of skill in the art would have had reason to combine Swinton's teachings regarding "known depository apparatuses, includ[ing] reading means 40 for reading characters, such as magnetic ink or optical characters," with Kallin's teaching of "such a known device having both the imager 74 and the magnetic MICR read head 72, [so] that a [person of ordinary skill in the art] could have readily implemented as Swinton's read means 40." *See* Pet. 19 (citing Ex. 1004 ¶ 105; Ex. 1006 8:54–60, 10:34–42; Ex. 1003 ¶ 100).

We also credit the testimony of Dr. Kaufman, who testifies a person of ordinary skill in the art would have known how to readily implement either or both of imager 74 (including the CCD cameras) and MICR read head 72 from Kallin as read means 40 disclosed by Swinton. Ex. 1003 ¶ 100 (citing Ex. 1006, 1:40–42; Ex. 1013, 5:10–16, 3:42–44). Dr. Kaufman's declaration testimony is well-reasoned because it is supported by multiple citations to express disclosures in the references.

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)).

vii. Summary

Having considered the entirety of the evidence and weighing it as a whole, we conclude Petitioner has proven by a preponderance of the evidence that the disclosure of Kallin combined with Swinton and Nobuaki would have taught or suggested all elements of challenged claims 10–14 and 18 of the '010 patent, and that a person of ordinary skill in the art would have had reason to combine the references to achieve the claimed subject matter. 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 10–14 and 18 would have been obvious in view of Swinton, Nobuaki, and Kallin, and thus, are unpatentable under 35 U.S.C. § 103(a).

F. Alleged Obviousness of Claim 15 in View of Swinton, Nobuaki, Kallin, and Kazuhiro

Petitioner contends claim 15 of the '010 patent is unpatentable under 35 U.S.C. § 103 in view of Swinton, Nobuaki, Kallin, and Kazuhiro. Pet. 18–20, 59. Patent Owner does not provide specific arguments regarding Petitioner's contentions for claim 15. *See* PO Resp. 13. 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 Swinton

See supra Section II.D.1.

2. Overview of Nobuaki

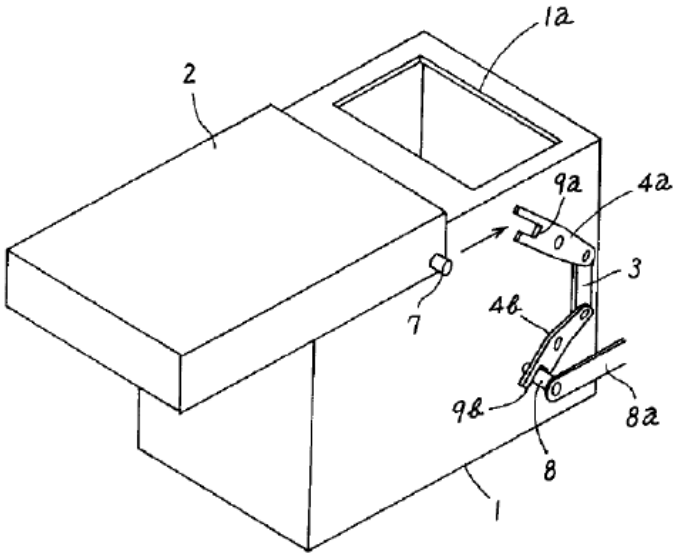
See supra Section II.D.2.

3. Overview of Kallin

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 Swinton, Nobuaki, Kallin, and Kazuhiro would have rendered all limitations of claim 15 in the '010 patent obvious to a person of ordinary skill in the art at the time of the invention. Pet. 20–22, 54–55. 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 Nobuaki's document storage area to allow a person easy access to remove bills/checks from storage parts 12 and 13. *Id.* at 21 (citing Ex. 1003 ¶ 106).

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

Swinton's automated teller machine and the bill sorting/storage device of Nobuaki to include the access way of Kazuhiro. *Id.* First, Petitioner argues a person of ordinary skill would have been prompted to modify Nobuaki'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 21–22 (citing Ex. 1008, 3:23–25, 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 ¶ 108). Second, Petitioner argues that a person of ordinary skill in the art would have recognized that checks/bills stored in Nobuaki's storage parts 12 and 13 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 ¶¶ 106, 109; 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 Swinton with Nobuaki and Kallin 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 ¶ 110).

Patent Owner does not provide separate contentions regarding the rationale to combine Swinton, Nobuaki, Kallin, and Kazuhiro, but argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would have been combined with Nobuaki. PO Resp. 13. We additionally note that although Patent Owner does not provide specific arguments regarding Petitioner's contentions for

combining the teachings of Swinton, Nobuaki, and Kallin with Kazuhiro, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and Nobuaki. Moreover, we agree with Petitioner's showing that a person of ordinary skill in the art would have combined the teachings of Kazuhiro with those of Swinton, Nobuaki, and Kallin. *See* Pet. 21–22. Additionally, we find that the combined disclosures of Swinton, Nobuaki, Kallin, 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." *See* Ex. 1008, 2:6–8. We, therefore, conclude that claim 15 would have been obvious in view of Swinton, Nobuaki, Kallin, and Kazuhiro and thus, is unpatentable under 35 U.S.C. § 103(a).

G. Alleged Obviousness of Claims 19 and 20 in View of Swinton, Nobuaki, Kallin, and Jones

Petitioner contends claims 19 and 20 of the '010 patent are unpatentable under 35 U.S.C. § 103 in view of Swinton, Nobuaki, Kallin, and Jones. Pet. 22–24. Patent Owner does not provide specific arguments regarding Petitioner's contentions for claims 19 and 20. *See* PO Resp. 13. 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 Swinton

See supra Section II.D.1.

2. Overview of Nobuaki

See supra Section II.D.2.

3. Overview of Kallin

See supra Section II.E.3.

4. 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.

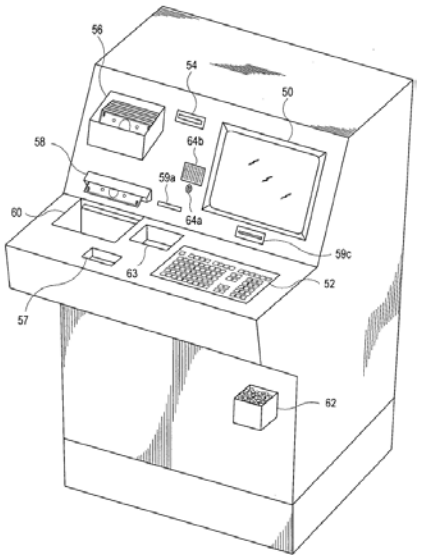


Figure 1b illustrates an automated banking machine with video screen 50, keyboard 52, document receptacle 56, and currency dispenser 58. *Id.* ¶ 136. Another embodiment of Jones is shown in Figure 4a, reproduced below.

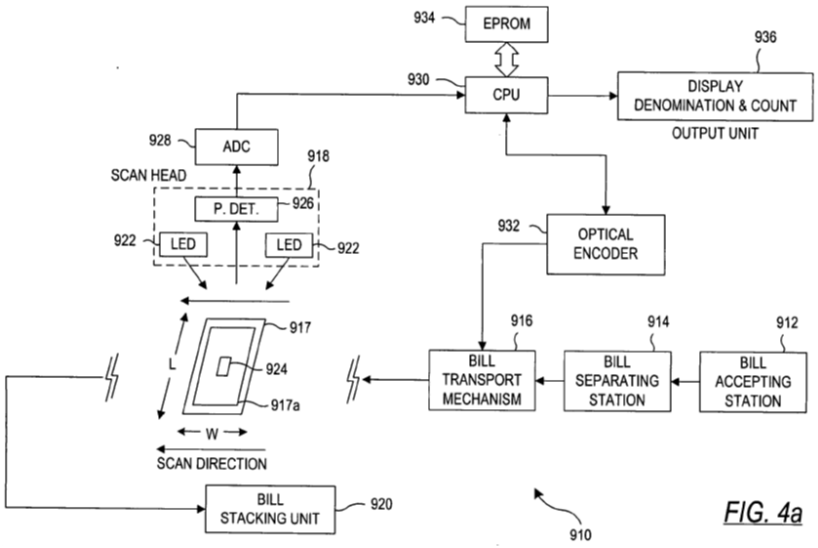


FIG. 4a

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.

5. Analysis

Claim 19 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." Ex. 1001, 25:63–65. Claim 20 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." *Id.* at 25:66–26:2.

Petitioner contends that the combined teachings of Swinton, Nobuaki, Kallin, and Jones would have rendered each limitation of claims 19 and 20 in the '010 patent obvious to a person of ordinary skill in the art at the time of the invention. Pet. 22–24, 55–56. Petitioner specifically contends that for claim 19, to the extent that Swinton, Nobuaki, and Kallin do not disclose an "escrow area," as recited by claim 19, such a feature was well known in prior art ATMs. *Id*. at 23 (citing Ex. 1003 ¶ 111). Petitioner relies on Jones as an example of an "escrow area" in the art, 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." *Id.* at 55 (citing Ex. 1004 ¶ 387, Fig. 56a).

Petitioner contends that for claim 20, both Swinton and Kallin disclose that "the sheet comprises a check," and that scanners can be used for obtaining check image data. *Id.* (citing Ex. 1006, 2:15–17, 2:64–67, 10:2–9; Ex. 1013, 5:10–16, 8:43–45). Petitioner also relies on Jones for a disclosure that "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.* at 23 (emphasis added) (citing Ex. 1004 ¶ 113 ("information is read by the full image scanner and *transmitted to the outside accounting system*"), ¶ 125).

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 Swinton, Nobuaki, and Kallin to include teachings from Jones. *Id*. at 24. First, Petitioner argues a person of ordinary skill would have had reason to combine the teachings of Swinton, Nobuaki, and Kallin with Jones to

include an escrow area so as to provide the beneficial functionality of allowing a user to accept or reject the transaction after the deposited check should be accepted. *Id.* (citing Ex. 1004 ¶ 387; Ex. 1003 ¶ 114). Second, Petitioner argues a person of ordinary skill would have had reason to combine the teachings of Swinton, Nobuaki, and Kallin to include Jones's suggestion of sending image data to a remote computing system in order to allow processing of that information (such as a check deposit or money transfer process) to be performed more quickly and efficiently. *Id.* (citing Ex. 1003 ¶ 115). Lastly, Petitioner argues that implementing the transport paths of Jones and Swinton in a perpendicular arrangement (as suggested by Jones) would have been the mere use of a known technique to improve similar devices (ATMs) in the same way. *Id.* (citing *KSR*, 550 U.S. at 417).

Petitioner relies on the testimony of Dr. Kaufman to support its position. Dr. Kaufman specifically opines that Swinton, Nobuaki, Kallin, and Jones all describe very similar automated banking machines, 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 ¶ 116.

Patent Owner does not provide specific arguments regarding Petitioner's contentions for claims 19 and 20, nor does Patent Owner provide separate contentions regarding the rationale to combine Swinton, Nobuaki, Kallin, and Jones. Rather, Patent Owner argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how or why the teachings of Swinton would have been combined with Nobuaki. PO Resp. 13. We additionally note that although Patent Owner does not

provide specific arguments regarding Petitioner's contentions for claims 19 and 20, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and Nobuaki. To the contrary, we find a person of ordinary skill in the art would have had reason to combine Swinton, Kallin, and Nobuaki with Jones. Specifically, we credit the testimony of Dr. Kaufman that a person of ordinary skill in the art would have been motivated to provide Jones's escrow area in Swinton's ATM in order to provide the beneficial functionality of allowing a user to accept or reject the transaction after a check is deposited. Ex. 1003 ¶ 114.

Regarding claim 19, we find that the combined disclosures of Swinton, Nobuaki, Kallin, and Jones teach or suggest the limitations of this claim because Swinton 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.

Regarding claim 20, we find that the combined disclosures of Swinton, Nobuaki, Kallin, and Jones teach or suggest the limitations of this claim because Swinton and Kallin disclose scanners that obtain check image data. Ex. 1006, 2:15–17, 10:2–9; Ex. 1013, 5:10–16, 8:43–45.

Accordingly, we determine Petitioner has proven by a preponderance of the evidence that the disclosure of Jones combined with Swinton, Nobuaki, and Kallin would have taught all elements of challenged claims 19 and 20 of the '010 patent. 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 19 and 20 would have been obvious in view of Swinton, Nobuaki, Kallin, and Jones, and thus, are unpatentable under 35 U.S.C. § 103(a).

H. Alleged Obviousness of Claims 24–26 and 30 in View of Swinton, Nobuaki, and Jones

Petitioner contends claims 24–26 and 30 of the '010 patent are unpatentable under 35 U.S.C. § 103 in view of Swinton, Nobuaki, and Jones. Pet. 25, 56–60. Patent Owner does not provide specific arguments regarding Petitioner's contentions for claims 24, 26, and 30. *See* PO Resp. 13. Patent Owner does contest Petitioner's position with regards to claim 25. *Id.* at 28–27.

1. Overview of Swinton

See supra Section II.D.1.

2. Overview of Nobuaki

See supra Section II.D.2.

3. Overview of Jones

See supra Section II.G.4.

4. Analysis

a. Dependent Claim 24

Claim 24 recites "at least one processor; at least one scanning sensor operative to sense indicia on the sheet, wherein the at least one scanning sensor is in operative connection with the at least one processor; 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 sheet." Ex. 1001, 26:28–34.

Petitioner contends the combined disclosures of Swinton, Nobuaki, and Jones teach the elements of claim 24, including "at least one processor" in operative connection with a "scanning sensor operative to sense indicia on the sheet." Pet. 25 (citing Ex. 1006, 2:15–17, 10:2–9, 10:54–11:2; Ex. 1003 ¶¶ 61–64, 117–118), 56–57. Specifically, Petitioner cites to Jones to teach the limitation "sent from the machine," because Jones discloses that precise functionality. *Id.* (citing Ex. 1004 ¶¶ 125, 113, 107).

Patent Owner does not provide separate contentions regarding the limitations of claim 24 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 Nobuaki. PO Resp. 13.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and Nobuaki. To the contrary, we find a person of ordinary skill in the art would have had reason to combine Swinton and Nobuaki with Jones. Specifically, we credit the testimony of Dr. Kaufman that a person of ordinary skill in the art would have been motivated to provide Jones's escrow area in Swinton's ATM in order to provide the beneficial functionality of allowing a user to accept or reject the transaction after a check is deposited. Ex. 1003 ¶ 114.

Moreover, we agree with Petitioner and find that the combined disclosures of Swinton, Nobuaki, and Jones teach or suggest the limitations of claim 24 because Swinton and Jones both teach processors in operative connection with at least one scanning sensor and it collects and sends data corresponding to an image off a deposited sheet. Specifically, Swinton discloses "an electronic control means 228 included in the ATM 12." *See*

Ex. 1006, 8:2–11; *see also id.* at 2:20–22 ("control means responsive to the output of said sensing means for controlling the operation of said transport means and said alignment means"). Jones discloses 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." Ex. 1004 ¶ 166. Additionally, Jones discloses "[s]canhead 918 is an optical scanhead that scans for characteristic information from a scanned bill 917 which is used to identify the denomination of the bill. The scanned bill 917 is then transported to a bill stacking station 920." *Id.* ¶ 165; *see also id.* ¶ 168. Jones further discloses that "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.").

b. Dependent Claim 25

Claim 25 recites "[t]he machine according to claim 24 wherein the sheet comprises a check." Ex. 1001, 26:35–36.

Petitioner contends the combined disclosures of Swinton, Nobuaki, and Jones teach claim 25. Pet. 25, 57–58 (citing Ex. 1006, 2:64–3:1; Ex. 1004 ¶¶ 99, 100; Ex. 1003 ¶ 119). Specifically, Petitioner cites to Swinton's disclosure that "a depository 10 (FIG. 2) is incorporated in an

ATM 12 adapted to accept deposit items, represented by envelopes containing money or single sheet items such as check or payment slips, through an entry slot 14, and to dispense currency notes through a slot 16." *Id.* at 57 (citing Ex. 1006, 2:64–3:1). Petitioner also relies on Jones for this limitation. *Id.* at 57–58 (citing Ex. 1004 ¶¶ 99, 100).

Patent Owner contests Petitioner's position arguing that the Petition provides no argument regarding claim 25 and, as such, Petitioner has failed to carry its burden to show that the claim is invalid. PO Resp. 28–29. Patent Owner also argues that Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would be combined with Nobuaki. *Id.* at 13.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and Nobuaki. Additionally, we find that claim 25 is met by Swinton and Jones. Specifically, we note 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, deposit slips." *See* Ex. 1004 ¶¶ 99, 100; *see also* Reply 20–22 ("P[atent Owner] argues that 'banking machines are not necessarily appropriate for handling both' bill and checks (PO Resp. 38–39), this ignores Swinton's clear disclosure of handling both." (citing Ex. 1006, 2:64–3:9 (describing processing of "checks," "currency notes," or "money")).

c. Dependent Claim 26

Claim 26 further recites "at least one magnetic sensing device in operative connection with the at least one processor, wherein the at least one magnetic sensing device is operative to read micr data on the check, and

wherein the at least one processor is operative to cause to be sent from the machine, data corresponding to the micr data read from the check." Ex. 1001, 26:37–43.

Petitioner contends the combined disclosures of Swinton, Nobuaki, and Jones teach the elements of claim 26. Pet. 25, 58. Patent Owner does not provide separate contentions regarding the limitations of claim 26 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 Nobuaki. PO Resp. 13.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and Nobuaki. To the contrary, for the reasons previously discussed, we find a person of ordinary skill in the art would have had reason to combine Swinton and Nobuaki with Jones.

Moreover, we agree with Petitioner and find that the combined disclosures of Swinton, Nobuaki, and Jones teach or suggest the limitations of claim 26 because Swinton discloses that "known depository apparatuses include reading means for reading characters, such as magnetic ink or optical characters." Ex. 1006, 1:40–41.

d. Independent Claim 30

Petitioner contends the combined disclosures of Swinton and Nobuaki teach most elements of claim 30. Pet. 25, 58–60. Specifically, Petitioner argues Jones discloses claim 30's recitation of "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 a document." *Id.*

Patent Owner does not provide separate contentions regarding the limitations of claim 30 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 Nobuaki. PO Resp. 13.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and Nobuaki. To the contrary, for the reasons previously discussed, we find a person of ordinary skill in the art would have had reason to combine Swinton and Nobuaki with Jones.

Moreover, we agree with Petitioner and find that the combined disclosures of Swinton, Nobuaki, and Jones teach or suggest the limitations of claim 30 because (1) Swinton discloses a transversely movable plunger member in a storage area with supporting rail portions that extend into the storage area, (2) Nobuaki discloses a storage area with rail portions and a plunger members, and (3) Jones discloses a processor operatively connected to a scanning sensor. *See* Ex. 1004 ¶¶ 107, 113, 125, 165–168; Ex. 1006, 2:64–3:1, 8:2–11, 2:20–22, 9:57–60, 10:34–38, 7:53–61, Fig. 2; Ex. 1012 ¶¶ 29, 36–40, Figs 2, 3.

e. Alleged Rationale to Combine Swinton, Nobuaki, and Jones

Petitioner contends a person of ordinary skill in the art would have been prompted to modify the ATM resulting from the combination of Swinton and Nobuaki to further include the teachings of Jones for multiple reasons. Pet. 25 (citing Pet. 24; Ex. 1003 ¶¶ 114–116, 124). First, Petitioner argues a person of ordinary skill would have had reason to combine the

teachings of Swinton and Nobuaki with Jones to include an escrow area so as to provide the beneficial functionality of allowing a user to accept or reject the transaction after the deposited check should be accepted. *Id.* at 24 (citing Ex. 1004 ¶ 387; Ex. 1003 ¶ 114). Second, Petitioner argues a person of ordinary skill would have had reason to combine the teachings of Swinton and Nobuaki to include Jones's suggestion of sending image data to a remote computing system because this would allow processing of that information (such as a check deposit or money transfer process) to be performed more quickly and efficiently. *Id.* (citing Ex. 1003 ¶ 115). Lastly, Petitioner argues that implementing the transport paths of Jones and Swinton in a perpendicular arrangement (as suggested by Jones) would have been the mere use of a known technique to improve similar devices (ATMs) in the same way. *Id.* (citing *KSR*, 550 U.S. at 417).

Petitioner relies on the testimony of Dr. Kaufman to support its position. Dr. Kaufman specifically opines that Swinton, Nobuaki, and Jones all describe very similar automated banking machines, 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 ¶ 124.

Patent Owner does not provide separate contentions regarding Petitioner's proffered rationale to combine Swinton, Nobuaki, and Jones, but instead argues Petitioner and its declarant, Dr. Kaufman, fail to provide an explanation or rationale for how the teachings of Swinton would be combined with Nobuaki. PO Resp. 13.

As discussed previously, we do not agree with Patent Owner's position regarding a rationale to combine the teachings of Swinton and

Nobuaki. 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 teaching of Swinton, Nobuaki, and Jones, and we are satisfied that a person of skill in the art would have had reason to combine the known perpendicular arrangement (as suggested by Jones) to improve similar automatic banking machines (as disclosed by Swinton and Jones). *See* Pet. 24–25; Ex. 1003 ¶ 126. Therefore, we are satisfied Petitioner has proffered adequate evidence to support the legal conclusion of obviousness. *See KSR*, 550 U.S. at 418 (quoting *Kahn*, 441 F.3d at 988).

f. Summary

For the reasons discussed above, we determine that the combined disclosures of Swinton, Nobuaki, and Jones teach or suggest the limitations of the challenged claims. Accordingly, we find that challenged independent claim 30 and dependent claims 24–26 would have been obvious under 35 U.S.C. § 103 in view of the disclosures of Swinton, Nobuaki, and Jones.

III. MOTION TO EXCLUDE EVIDENCE

Patent Owner filed a Motion to Exclude Evidence seeking to exclude a second Declaration of Dr. Roger Kaufman (Ex. 1015) 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 1–9, 22, 23, 28, and 29 would have been obvious

in view of Swinton and Nobuaki; (2) claims 10–14 and 18 would have been obvious in view of Swinton, Nobuaki, and Kallin; (3) claim 15 would have been obvious in view of Swinton, Nobuaki, Kallin, and Kazuhiro; (4) claims 19 and 20 would have been obvious in view of Swinton, Nobuaki, Kallin, and Jones; and (5) claims 24–26 and 30 would have been obvious in view of Swinton, Nobuaki, and Jones.

V. ORDER

For the reasons given, it is

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

FOR PETITIONER:

Timothy W. Riffe
Patrick J. Bisenius
Daniel Tishman
Kevin Wheeler
IPR42590-0001IP3@fr.com
riffe@fr.com
bisenius@fr.com
tishman@fr.com
kwheeler@fr.com

FOR PATENT OWNER:

Jason P. Cooper, Esq.
Christopher B. Kelly
Jason.cooper@alston.com
Chris.kelly@alston.com

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 by:

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- ☒ Electronic Means (by E-mail or CM/ECF)

Christopher B. Kelly
Name of Counsel

/s/ Christopher B. Kelly
Signature of Counsel

Law Firm	Alston & Bird LLP
Address	1201 West Address Peachtree Street NW
City, State, Zip	Atlanta, GA 30309-3424
Telephone Number	404-881-4416
Fax Number	404-253-8216
E-Mail Address	chris.kelly@alston.com

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