UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PNC BANK, N.A.,
Petitioner,

v.

UNITED SERVICES AUTOMOBILE ASSOCIATION,
Patent Owner.

IPR2022-00075
Patent 9,224,136 B1

Before MICHAEL R. ZECHER, BRIAN J. McNAMARA, and TERRENCE W. McMILLIN, *Administrative Patent Judges*.

McNAMARA, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. BACKGROUND

On June 13, 2022, in response to a Petition ("Pet.") filed by PNC Bank ("Petitioner"), we instituted an *inter partes* review of claims 1–18 ("the challenged claims") of U.S. Patent No. 9,224,136 B1 ("the '136 Patent"). Paper 20 ("Dec. to Inst."). United Services Automobile Association ("Patent Owner") filed a Patent Owner Response (Paper 28, "PO Resp."), Petitioner filed a Petitioner Reply (Paper 33, "Reply") and Patent Owner filed a Patent Owner Sur-reply (Paper 39, "Sur-reply"). A transcript of an oral hearing held on March 13, 2023 (Paper 46, "Hr'g. Tr.") has been entered into the record.

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. §318(a). We base our decision on the preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

Having reviewed the arguments of the parties and the supporting evidence, we conclude that Petitioner has demonstrated by a preponderance of the evidence that all the challenged claims are unpatentable.

II. THE '136 PATENT

The '136 patent discloses using a customer's general purpose computer and an imaging device to capture an image of a check, deliver the check image to financial institution electronics, collect additional data as needed, and complete a transaction, using the acquired images and data. Ex. 1001, code (57). Figure 2 of the '136 patent (with the background of its dark boxes modified to enhance readability) is shown below.

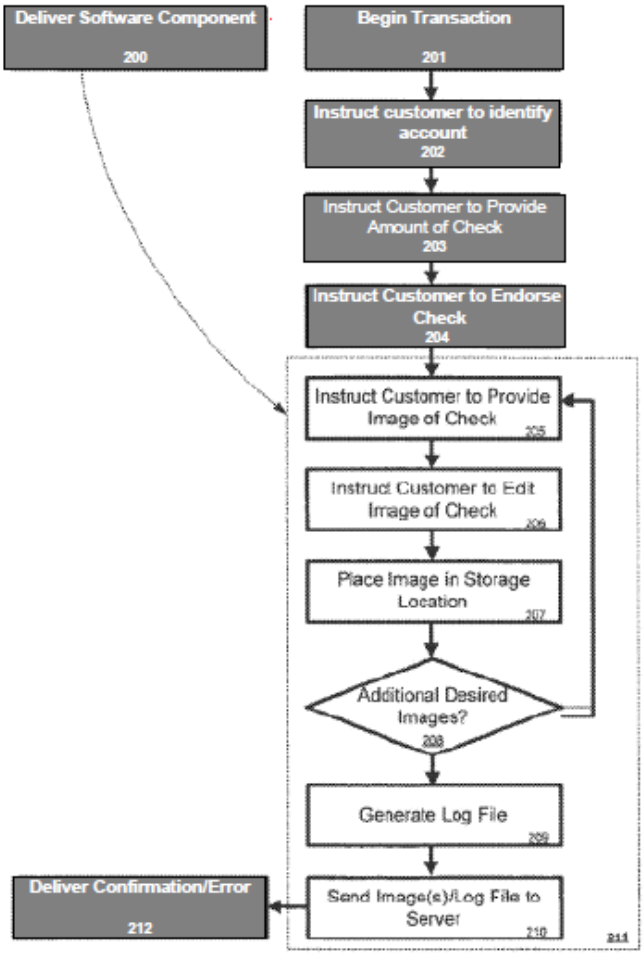

FIGURE 2

Id., Fig. 2. "Figure 2 illustrates a method for facilitating deposit of a check from a customer-controlled general purpose computer." *Id.* at 6:51–52. In Figure 2, the darker boxes indicate steps performed by a server associated with a financial institution and the lighter boxes indicate steps performed by a software component that is downloaded from a server and executed on a customer's computer (step 200). *Id.* at 6:60–7:3. According to the '136 patent, "[t]hose of skill will recognize that alternative configurations are readily achievable by moving functions from server to software component or vice versa." *Id.* at 7:1–3.

At step 201, a customer points a browser to a website that may provide a link where the user receives a log in prompt and begins a transaction, such as depositing a check. *Id.* at 7:40–47. At step 202, the server instructs the customer to identify the relevant account, e.g., by providing a list of accounts from which the customer can select the account to receive the deposit. *Id.* at 7:48–63. At step 203, the server instructs the user to provide the amount of the deposit; at step 204 the server prompts the user to endorse the check. *Id.* at 8:2–3.

As shown in box 211, steps 205–210 are carried out by the software component downloaded to the customer's device. At step 205, the software component downloaded to the customer's device prompts the user to provide an image of the check, e.g., by placing the check face down on a scanner, or taking a digital photograph using a digital camera. *Id.* at 8:4–9. The downloaded software component also may provide the customer instructions concerning the orientation of the check and camera positioning. *Id.* at 8:9–18. At step 206, the downloaded software component may present the check image to the customer for editing, e.g., by cropping the image or rotating the check. *Id.* at 8:42–52. At step 207, an appropriately edited version of the check is placed in a storage location, e.g. a folder in a hard drive of the general purpose computer that works in conjunction with the software interfacing with the image capture device. *Id.* at 8:22–26, 8:52–53. Steps 205–207 can be repeated if step 208 determines further images are required, e.g., to obtain an image of the customer's endorsement on the back of the check. *Id.* at 8:53–59. At step 209, the downloaded software component generates a log file and places the log file in the storage location along with the check images. *Id.* at 8:60–64. At step 210, the images (and possibly the log file) are delivered to the server that processes the deposit;

then the server process appropriately credits the customer's account, delivers a confirmation via the customer's browser application, and instructs the customer concerning the physical check (step 212). *Id.* at 8:65–9:12, Fig. 2.

To complement the method of Figure 2, Figure 3 of the '136 patent "illustrate[s] exemplary steps that may be carried out by a server or other electronics operated by a financial institution before, during, and after the various steps of Figure 2." Ex. 1001, 9:13–18. Upon receipt of check images at step 304, either in real-time or as part of a batch process, the server invokes an optical character recognition (OCR) process on the face of the check to determine certain information about the check, e.g., the payor bank's routing number, which may be validated against a list of known routing numbers, the account number, the check number, and the amount of the check, which may be compared to the amount input by the customer. *Id.* at 9:37–53. The server also can perform OCR on the back of the check to identify endorsements or other validation criteria. *Id.* at 9:54–10:6. The server also may check for duplicative deposits and generate error messages or terminate the transaction if a routing number is not validated or the amount on the check does not match the amount input by the customer. *Id.* at 10:7–61. The server also may receive and modify log files to comply with image quality specifications, overlay a bank stamp on the image of the back of the check, forward images to the payor bank, and provisionally credit the customer's account in accordance with Automated Clearinghouse (ACH) procedures. *Id.* at 10:61–11:45.

III. ILLUSTRATIVE CLAIM

Claim 1 is illustrative of the subject matter of the '136 patent and is reproduced below.

1. A system comprising:
a processor; and
a memory storing processor-executable instructions that, when executed by the processor, cause the processor to:
receive an account identification number, check amount indication, and check image, where the check image is an image of a check captured by a camera;
perform optical character recognition on the check image to determine a routing number for the check image;
validate the routing number for the check image; and
initiate a check deposit for the check image.

Ex. 1001, 14:10–20.

IV. GROUNDS OF INSTITUTION

We instituted trial on all grounds asserted in the Petition as follows:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–3, 7–9	103	Garcia[1], Acharya[2], Richardson[3]
5, 11, 13	103	Garcia, Acharya, Richardson, Randle[4]
6, 12	103	Garcia, Acharya, Richardson, Slater[5]
4, 10	103	Garcia, Acharya, Richardson, Pintsov[6]
14–16	103	Garcia, Acharya, Richardson, Randle, Davis[7]
17	103	Garcia, Acharya, Richardson, Randle, Davis, Pintsov
18	103	Garcia, Acharya, Richardson, Randle, Davis, Slater

[1] International Patent Application Publication No. WO 2005/043857 (Ex. 1003).
[2] International Patent Application Publication No. WO 01/61436 (Ex. 1004).
[3] U.S. Patent Application Publication No. 2005/0281450 (Ex. 1005).
[4] U.S. Patent Application Publication No. 2006/0106717 (Ex. 1008).
[5] European Patent Application Publication No. 0984410 (Ex. 1006).
[6] U.S. Patent Application Publication No. 2007/0118747 (Ex. 1007).
[7] U.S. Patent Application Publication No. 2005/0216410 (Ex. 1009).

V. CLAIM CONSTRUCTION

We interpret claim terms using "the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b) (2019). In this context, claim terms "are generally given their ordinary and customary meaning," as would have been understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (citations omitted) (en banc). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Extrinsic evidence is "less significant than the intrinsic record in determining 'the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317 (citations omitted).

Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

We construe only those claim terms that require analysis to determine whether Petitioner has met its burden of establishing unpatentability by a preponderance of the evidence. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that "only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy").

In the Decision on Institution, we noted that neither party had proposed any claim constructions, that we perceived no need to construe the

any claim terms, and that we applied the plain and ordinary meaning to the claim language. Dec. to Inst. 18–19.

A. Camera

Patent Owner now proposes that we construe "camera" to mean "consumer digital camera" and to "specifically exclude specialized equipment as may be purchased by a business or other commercial enterprise, for example, for the specialized purpose of high-speed, high-volume check deposits." PO Resp. 12–13. Petitioner contends that Patent Owner attempts to construe the claim to suggest that a person of ordinary skill would not have been able to deposit checks successfully using images captured from a mobile phone. Reply 3. Petitioner emphasizes that any such technical difficulties are irrelevant because the claims do not address them, i.e., none of the claims describes specific algorithms or image resolution requirements for any kind of customer device. *Id*. at 3–4. Claim 1 recites a system comprising a processor and a memory. Ex. 1001, 14:9–12. The memory stores processor-executable instructions. *Id.* at 14:12. The stored instructions cause the processor to perform OCR on a check image captured by a camera to determine the routing number of the check. Ex. 1001 14:12–17. Claim 1 is directed to the system and does not recite any specific limitations on the camera.

Patent Owner's claim construction proposal exclude from "camera" specialized equipment and is limited to consumer digital cameras. PO Resp. 12–13 (citing Ex. 3:66–4:6; Ex. 2017, Transcript of Deposition of Dr. Brian Noble of Sept. 23, 2022 ("Noble Depo. Tr.") 110:8–13). The subject matter of the '136 patent at column 3, line 66 through column 4, line 6 concerns the meaning of "general purpose computer" as "excluding specialized equipment purchased [ ] by a business," and distinguishes "equipment as

may be purchased by a business or other commercial enterprise" from embodiments of the invention that "operate in conjunction with electronics that today's consumers might actually own or can easily acquire, such as a general purpose computer, a scanner, and a digital camera." Ex. 1001 4:2–6. The '136 patent describes an "image capture device" as a scanner or digital camera. *See* Ex. 1001, 4:61–5:5. Exemplary claim 1 recites a system in which a processor executes instructions to receive account information, an indication of the amount of the check, and an image of the check captured by a camera. *Id.* at 14:9–15. Claim 1 also recites performing OCR on the check image to determine the routing number, validating the routing number of the check image, and initiating a check deposit. *Id.* at 14:15–19. Claim 1 does not recite limit the camera to any particular grade or resolution and does not limit the camera to any particular type of camera device. Consistent with the Decision to Institute, for purposes of this Decision, we apply the plain and ordinary meaning to the term "camera" and do not read into the claim a limitation on the type of camera.

B. Deposit Information

Patent Owner also proposes that we construe "deposit information" (claim 14) to mean "the amount of the check, the routing number of the payor bank, and the account number into which the check is deposited." PO Resp. 13. Patent Owner notes that "deposit information" does not include the date of the check. *Id.* at 16. The Specification does not explicitly define "deposit information." The Specification's sole use of the term "deposit information" is in the context of OCR and does not mention the amount of the check. *See* Ex. 1001, 9:46–53 (comparing embodiments in which OCR is conducted in real time "to validate some initial deposit information immediately" to filter transactions subject to error if OCR is

performed later against efficiencies gained in batch OCR operations). The Specification states that upon receipt of check images, the OCR process may be invoked to determine "information about the check." Ex. 1001, 9:37–39, *see also id*. at 9:39–42 ("OCR may be performed on the check's MICR line location 305 to determine information such as payor bank routing number, account number, and check number.").

Petitioner does not comment on Patent Owner's proposed construction. We agree with the parties that "deposit information" includes at least the payor bank routing number, the account number into which the funds are to be deposited and the amount of the check. As the amount of the check need not be the subject of OCR, all parties agree that not all deposit information is obtained using OCR. We do not perceive any need to further construe this term.

C. Initiate a check deposit for the check image/system for deposit a check

Patent Owner notes that "[t]he district court construed [these] terms as requiring 'a transaction involving provision of a check to a depository in a form sufficient to allow money to be credited to an account.'" PO Resp. 16 (citing Ex. 2019, 20). Patent Owner notes that this same construction is applied in the Petition. *Id.* (citing Pet. 42). We do not perceive a need to construe this term.

D. Determining whether a mark is present at an endorsement location in the image of back side of the check without further performing a signature identification procedure

Patent Owner notes that the district court construed "signature identification procedure" to mean "a procedure to determine the presence of a signature on the check or to determine that a signature on the check matches a particular known signature." PO Resp. 16–17 (citing Ex. 2019,

17). Accordingly, Patent Owner proposes that we construe the term in claim 14 to mean "determining whether a mark is present at an endorsement location in the image of the back side of the check without further performing a procedure to determine the presence of a signature on the check or to determine that a signature on the check matches a particular known signature." *Id.* at 17. Patent Owner cites the Specification of the '136 patent as disclosing an embodiment in which it is advantageous to determine the presence of a mark, rather than a signature, in the endorsement location without conducting further signature identification procedures because signatures are often illegible. *Id.* at 17–18 (citing Ex. 1001, 9:56–10:6).

Petitioner notes that the district court entered its claim construction after the Petition was filed. Reply 22. Based on the district court's construction, Petitioner contends that "determining whether a mark is present . . . without further performing a signature identification procedure" means "looking for a ***mark*** without either (1) looking for the ***presence of a signature***; or (2) ***matching a signature*** with a known signature on file." *Id.* at 22–23.

In construing the term "signature identification procedure," the court states that word "mark" is broader than the word "signature" and the use of the word "further" indicates that determining the presence of a signature is a type of signature identification procedure. Ex. 2019, 15–17. As the word "mark" is broader than the word "signature" an endorsement in the form of a "signature" is a type of "mark." Construing the claim to exclude marks that happen to be signatures would render the claim inoperative, as many checks, especially those photographed by consumers with cameras, are endorsed with the payee's signature. Determining the presence of a mark, does not

preclude the mark from being a signature—the claim's negative limitation simply means that once a mark of some kind is determined to be present, no further procedure is performed to determine whether that mark is a signature.

The claim language before us positively recites "determining that a mark is present at an endorsement location on the back side of the check." As the claim does not limit how the presence of the mark is determined, the presence of the mark can be determined by any suitable means or procedure. The claim recites that the determination is made "without further performing a signature identification procedure." Applying the district court's construction, we construe the language of the claim before us to mean that the presence of mark is determined by any suitable means without further performing a procedure (1) to determine the presence of a signature on the check or (2) to determine that a signature on the check matches a particular known signature.

VI. ANALYSIS OF PRIOR ART CHALLENGES

A. Introduction

"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")). Except in limited circumstances not present here, the 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).

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 ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Additionally, the obviousness inquiry typically requires an analysis of "whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness")); *see In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

An obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). 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). Instead, Petitioner must "articulate a reason why a [person of ordinary skill in the art] would have combined the prior art" references. *In re NuVasive*, 842 F.3d 1376, 1382 (Fed. Cir. 2016).

A reason to combine or modify the prior art may be found explicitly or implicitly in market forces; design incentives; the "'interrelated teachings

of multiple patents;'" "'any need or problem known in the field of endeavor at the time of invention and addressed by the patent;'" and the background knowledge, creativity, and common sense of the person of ordinary skill. *Perfect Web Techs., Inc. v. InfoUSA, Inc*., 587 F.3d 1324, 1328–29 (Fed. Cir. 2009) (quoting *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418–21 (2007)).

Before determining whether a claim is obvious in light of the prior art, we consider any relevant evidence of secondary considerations of non-obviousness. *See Graham*, 383 U.S. at 17. Notwithstanding what the teachings of the prior art would have suggested to one of ordinary skill in the art at the time of the invention, the totality of the evidence submitted, including objective evidence of non-obviousness, may lead to a conclusion that the challenged claims would not have been obvious to one of ordinary skill. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). No evidence of secondary considerations is before us at this stage in the proceeding.

We analyze the asserted grounds of unpatentability in accordance with these principles to determine whether Petitioner has met its burden of establishing unpatentability by a preponderance of the evidence.

B. Garcia (Ex. 1003, Exhibit B (English Translation))

Garcia relates to a method of processing and accepting documents, such as bank checks, that authenticates the issuer and the document, using a mobile device to capture and send images via an Internet connection.

Ex. 1003, 30:6–13.[8] The system "replac[es] [a typical] check reader with a multipurpose mobile device." *Id.* at 36:21–22. Data entry for user recognition, image capture, encryption and transmission of data and images, as well as other functions (e.g., information display and related processing) are performed by a mobile device that incorporates a digital camera, captures and transmits images, and performs usual telephony functions. *Id.* at 34:1–35:20; *see also id.* at 40:1–6 ("[t]he mobile equipment that performs the initial processes of capturing digitizing, and processing the image consists of a mobile telephone equipped with the features and functions necessary for said purpose, particularly a mobile telephone with camera and processing capacity);" *id*. at 35 (disclosing that image capture, transmission and encryption operations "are performed with a mobile device with incorporated digital camera, able to capture and transmit digital images, as well as the usual telephony operations").

In order to recognize, verify, and process the information sent by the user, the receiving institution uses "equipment connected to the Internet that has an optical character recognition (OCR) system, a code authentication

[8] Exhibit 3 includes a translator's declaration and Spanish and Englsh versions of Garcia. The English translation begins at page 27 of Ex. 1003 and is referred to as Exhibit B. When referring to Exhibit 1003, this Decision uses the page numbers of Exhibit 1003; the Petition uses page numbers that appear at the top of each page of the text of the English translation (Exhibit 1003, Exhibit B); in some cases the Patent Owner Preliminary Response used page numbers of Exhibit 1003, in other cases, Patent Owner appeared to use page numbers at the top of each page of the English translation in Exhibit 1003, Exhibit B. For consistency, in the Decision to Institute, we instructed the parties to use the page numbers of Exhibit 1003. We continue that convention in this Decision.

system and means of transmitting data to the institution's document processing system." *Id.* at 40:7–15.

C. Acharya (Ex. 1004)

Acharya "relates generally to a system and method for initiating a deposit transaction, where the depositor is a non-commercial banking customer located at a remote location." Ex. 1004, 1, 7–9.[9] Acharya states that it was commonly known to use Electronic Check Presentment (ECP), in which a bank of first deposit (BOFD) replaces a paper check with a captured image of the check to process an electronic transaction through a clearing house and the paying bank. *Id.* at 1:29–2:6. Acharya seeks to improve customer convenience, by removing the requirement for the customer to deliver the check physically; e.g., Acharya "allow[s] non-commercial bank customers to deposit third party checks from remote locations." *Id.* at 1:29–2:6, 2:18–20. Acharya employs a remote customer terminal (RCT) that includes a computer with an attached scanner to capture images of third-party checks that are communicated to the BOFD using an Internet-based application. *Id.* at 3:5–12; *see also id.* at 9:21–25 (claims 10 reciting a system with an interface to a check clearing system and a remote customer terminal that includes a digital image scanner, and claim 11 reciting that OCR software is used in conjunction with the digital image scanner to convert printed characters to electronic text) . The user initiates the transaction with a Personal Identification Number (PIN) and, when prompted, the user captures the image of the check on the scanner and forwards the digital image to the BOFD system. *Id.* at 3:12–21.

[9] Petitioner did not number the pages of Exhibit 1004. Therefore, consistent with the Petition, this Decision refers to the page numbers at the top of each page of text of the reference.

Figure 1 of Acharya, reproduced below, illustrates an example:

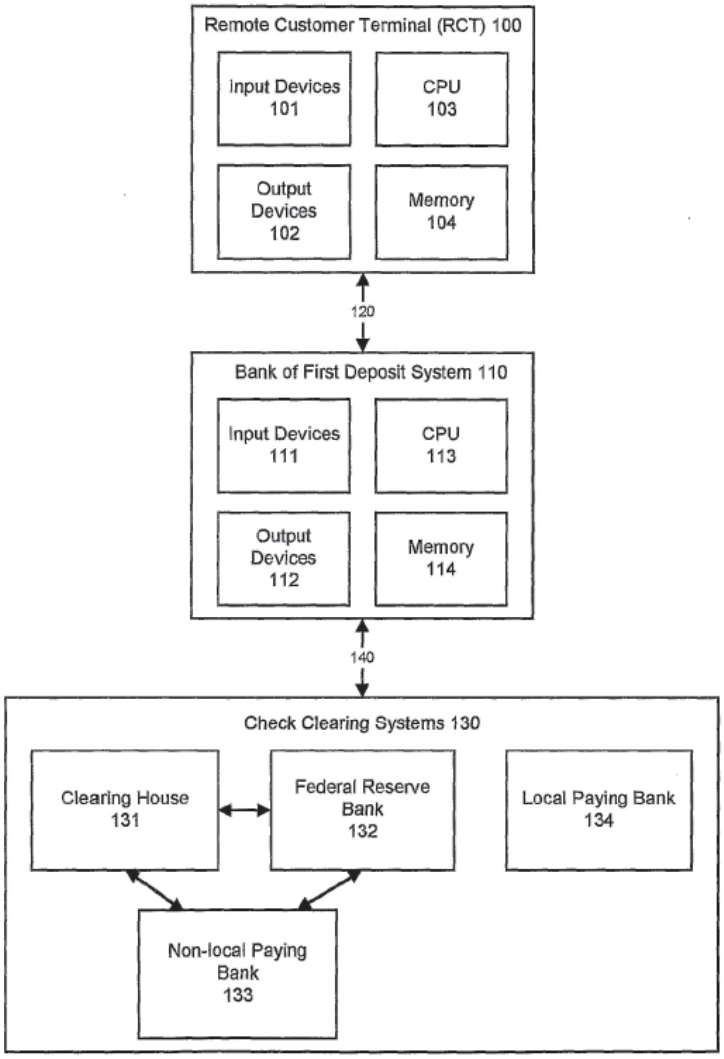

Figure 1 of Acharya

Figure 1 is a schematic diagram of a system for depositing financial instruments. *Id*. at 3:29–30.

In Figure 1, RCT 100 is connected to BOFD system 110. RCT 100 can be a telephone, fax machine, personal computer automated teller machine (ATM), and includes input devices 101 (e.g., "a keypad, a keyboard, a microphone, a Magnetic Ink Character Reader (MICR), a Digital Image Scanner (DIS) and any other device capable of collecting data"). *Id.* at 4:11–18. RCT 100 also has output devices 102 (e.g. printer,

display), memory 104, and CPU 103 executing software stored in the RCT memory 104 to collect data and perform communication functions. *Id*. at 4:18–22. The software may include an Internet browser to facilitate Internet communications and OCR software and intelligent character recognition software to convert printed characters to electronic text. *Id*. at 4:22–27. RCT 100 communicates with BOFD system 110, which may include input/output devices and network servers needed for communications and data collection, via a communication link 120 that is suitable for electronic transactions, e.g., a dedicated line or the Internet. *Id.* at 5:1–15. BOFD system 110 is connected to check clearing systems 130 via communication link 140. *Id.* at 5:16–22.

A method of depositing financial instruments in the context of the Acharya's system of Figure 1 is depicted in Figure 2, reproduced below:

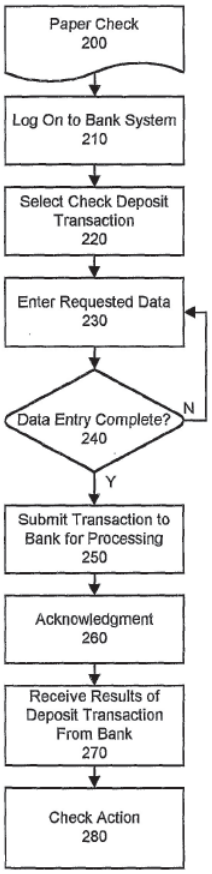

Figure 2 of Acharya

Figure 2 of Acharya is a flow diagram illustrating the flow of information from the perspective of a banking customer. *Id.* at 5:26–27.

At steps 200–220, a banking customer may log on to the system from RCT 100 using a PIN and select "check deposit" from a menu of transaction options. *Id.* at 6:4–7. At steps 230–240 the bank customer enters information and responds to prompts until all the required information is entered. *Id.* at 6:8–11. "A complete set of data may comprise customer identification, customer account number, name of payor, name and routing number of the payor's bank, the amount of the check, an image of the check, and other information." *Id.* at 12–14. At steps 250–260, the customer submits the transaction and receives an acknowledgement; at step 270, the

system notifies the customer as to whether the transaction has been accepted. *Id.* at 6:15–20. As discussed above, at step 240, the customer may have been prompted to provide an image of the check. *Id.* at 6:11–14. At step 280, if the paper check is available, the check may be marked or to prevent re-deposit or captured by the RCT. *Id.* at 6:21–25. Acharya also discloses the BOFD clearing a check through a third-party bank using Electronic Funds Transfer (EFT), Electronic Check Presentment (ECP) or physically routing a reconstructed check "printed from an image of the check that was received by the bank customer." *Id.* at 7:5–29, 10:18–31, 11:3–4.

D. Richardson (Ex. 1005)

Richardson relates to the field of document processing in financial transactions and, in particular, to correction of data fields on financial documents. Ex. 1005 ¶ 2. Recognizing that errors commonly occur in magnetic ink character recognition (MICR) readers used to process checks, (*see generally, id.* ¶¶ 5–20), Richardson discloses an image controller that transmits a check image over a communications link to a recognition controller that performs data correction functions (*id.* ¶ 39). In one embodiment, the data correction function in the recognition controller incorporates logic that receives a routing number that may contain, e.g., four unrecognizable characters out of nine routing number digits. *Id.* ¶ 41. The data correction function searches a list of all valid and assigned routing numbers, returning a set of five or fewer routing numbers out of a possible one billion routing numbers, thereby allowing the data correction function to improve its success in deciphering the routing number. *Id.* Among alternative approaches, Richardson discloses iteratively performing character recognition. *Id.* ¶ 42.

E. Reasons to combine the teachings of Garcia, Acharya and Richardson

1. Petitioner's Reasons for Combining Garcia, Acharya, and Richardson

According to Petitioner, "[i]t would have been obvious to a POSITA to combine Garcia's check deposit system with Acharya's check processing technique and system to provide a remote check deposit solution." Pet. 23. Petitioner notes that Garcia discloses computer equipment at a financial institution that receives an image of a check from a mobile device and includes an OCR system for recognizing, verifying and processing the information sent by the user. *Id.* at 20 (citing Ex. 1003, 33:11–16 (describing the use of a mobile device that incorporates a camera capable of capturing and transmitting digital images), 38:11–18, 40:7–15 (describing "computer equipment connected to the Internet that has an optical character recognition (OCR) system"), Fig. 2). Acknowledging that Garcia's description of its check imaging, image transmission, and OCR equipment does not specifically disclose the check processing steps and implementation details for using its computer equipment for the check deposit process, Petitioner contends that a person of ordinary skill would have had reason to supplement Garcia's disclosure with such details and cites Acharya as providing the relevant details. *Id.* at 20–21, 25, 27 ("Garcia does not expressly describe the computer equipment or the usual means of deposition processing . . . Acharya provided one of the finite and predictable solutions for implementing it.").

Noting that Acharya discloses a system in which a RCT provides each item of data needed to deposit a check, e.g., a customer account number, and an image of the check to be submitted to a BOFD system, Petitioner

contends that "it would have been obvious to a POSITA to incorporate Acharya's check deposit steps and BOFD system —including CPU and memory—into Garcia's computer equipment (which receives a check image from a payee)" because "the combination would [ ] have entailed the computer equipment processing a check deposit using a check image and check translation data received from the user's device." *Id*. at 22–24 (citing Ex. 1003, 40:7–13, Fig. 2; Ex. 1004, Fig. 1).

According to Petitioner, a person of ordinary skill would have understood that the combination of Garcia and Acharya uses known techniques (implementing check deposit steps and the bank's system using a processor and a memory, as disclosed in Acharya) to improve similar devices (Garcia's check deposit system) in the same way, i.e. by providing a bank computing device for processing check deposits, to yield predictable results (electronic check processing). Pet. 25 (citing Ex. 1002, Noble Decl. ¶¶ 84–85). Petitioner further notes that it was well-known that back-end check processing systems, such as those taught by Acharya, were compatible with a wide variety of check image and data sources, such a phones and faxes. *Id.* at 26 (citing Ex. 1004, 4:11–13).

Acknowledging that Garcia does not expressly disclose details about how a check image is recognized, verified and processed, and that Acharya does not disclose how to review the identity of the paying bank, Petitioner contends that a person of ordinary skill would have had reason to seek out implementation details, such as those disclosed by Richardson, concerning the recognition, verification, and processing of information, particularly OCR information obtained from images sent by the user. Pet. 29–31. In particular, Petitioner cites Richardson's image controller 410 and recognition controller 420 that receives a document image and performs data

character recognition and correction. *Id.* at 30 (citing Ex. 1005 ¶¶ 39, 40, 195, 200; Ex. 1002, Noble Decl. ¶¶ 96–98). As Richardson's data correction function includes logic that searches a list of all valid, assigned, and active bank routing numbers, Petitioner argues that a person of ordinary skill would have had reason to combine Garcia's computer equipment with Richardson's recognition controller to determine and validate OCR based check routing numbers that uniquely identify banks. *Id.* at 30–31. According to Petitioner, a person of ordinary skill would have had a reasonable expectation of success in using Garcia's OCR system to determine and validate the routing number by OCR as taught by Richardson because the technology was widely known and used for check deposit transactions. *Id.* at 32–33 (citing Ex. 1002, Noble Decl. ¶¶ 100–105).

2. Patent Owner's Contentions Concerning the Combination of Garcia, Acharya, and Richardson

Almost 40 pages of the 70 page Patent Owner Response addresses Patent Owner's contentions that Petitioner fails to establish a person of ordinary skill would have been motivated to modify Garcia's system to extract check deposit information via OCR on the bank server. PO Resp. 19–58. Bearing in mind that Petitioner bears the burden of persuasion, *Dynamic Drinkware,* 800 F.3d at 1378, we address each of Patent Owner's contentions responsive to Petitioner's articulation of why a person of ordinary skill would have had reason to combine the teachings of these references.

a) Patent Owner's contention that Garcia teaches a complete check processing system that does not require OCR to determine the routing number

Patent Owner asserts that "in all instances the claims require at least the payor bank and account number present on the MICR line of the check

image be extracted from the camera image." PO Resp. 19. Contrary to Patent Owner's assertion, claim 1 recites a system in which instructions cause the processor to receive an account identification number, a check amount indication, and a camera captured image of a check and to perform OCR to determine a routing number for the imaged check. Ex. 1001, 14:13–18. Claim 1's separate recitation of receiving the account identification number and the check image does not require that account identification number be extracted from the camera acquired check image. "The Petition relies on Acharya for the teaching of 'receive an account identification number,' not for OCRing the check image to obtain information from its face." Reply 11 (citing Pet. 38–39).

The only information claim 1 recites as obtained from OCR of the check image is the routing number. Claim 1 is silent as to how OCR is performed to obtain the routing number (as claim 1 concerns depositing a check, the routing number on the imaged check identifies the paying or payor bank). Although, as a practical matter, contemporary check technology placed the routing number in the MICR line, claim 1 does not explicitly limit the OCR to determining the routing number from the MICR line.

Patent Owner also asserts that "all the independent claims specify that the process results in an image this [sic] is useable for deposit, which means that it is in a form sufficient to allow deposit." PO Resp. 19. Claim 1 recites that the instruction causes the processor to "initiate a check deposit for the image." Ex. 1001, 14:20. With these requirements in mind, Patent Owner reasons that a person of ordinary skill would not have combined Garcia with Acharya and Richardson because there would have been no reasonable expectation of success. *Id.*

According to Patent Owner, because Garcia teaches that certain information, such as MICR data and the deposit amount, can be keyed-in by the user, Garcia discloses a complete system that is not concerned with images of sufficient quality for OCR. *Id.* at 21 (citing Ex. 2017, Transcript of Deposition of Dr. Brian D. Noble ("Noble IPR Dep. Tr.") 141:4–13, as testimonial evidence that Garcia does articulate a concern with the quality of the image; Ex. 2021, Transcript of Deposition of Todd Mowry[10] ("Mowry Tr.") 85:1–6, as testimonial evidence by Petitioner's expert for the proposition that Garcia does not describe a system that fails to enables creation of an efficient check deposit system).

Patent Owner further emphasizes Garcia is an application filed by BankInter[11] and that BankInter required a user of its system to mail in the physical check to confirm the deposit. *Id.* at 22 (citing Ex. 2010, 7). According to Patent Owner, BankInter's requirement that the user mail in the physical check is evidence a person of ordinary skill would not have had reason to combine Garcia with the other teachings, such as those of Acharya and Richardson. PO Resp. 22–24.

Patent Owner's BankInter arguments are unavailing. Petitioner points out that "Garcia, the relevant printed publication at issue in this proceeding, says nothing about mailing a check and, indeed, expressly teaches that a check image is what is used to make a deposit." Reply at 9 (citing Ex. 1003, 41:17–22). As Petitioner notes, Patent Owner's expert acknowledges Garcia's preferred embodiment expressly teaches the content of the check images are machine read, not input by the customer. Reply 6 (citing

[10] *USAA v. PNC Bank, N.A*. Case 2:21-cv-246 (D. Ct. E.D. Tex.)
[11] BankInter is also spelled "BankInter" in Exhibit 2010.

Ex. 1027, 155:14–156:7, 157:7–21; Ex. 1003 38:9–39:18). We further note that the description of BankInter's Movilcheck service emphasizes the image of the check, stating that it "allows checks to be deposited from a cell phone," and instructing the user "to deposit a check, just download the app, take a photo of the document with your phone camera, and the photo will be sent to BankInter for validation." Ex. 2010, 7.

BankInter describes Movilcheck as "a completely network-based process," and states that a user with a cell phone can access the BankInter website "and review images of the photographed checks, their processing status, checks deposited into BankInter and, if applicable, any checks returned after sending." *Id.* We draw no conclusions from the requirement that the user mail the physical check to BankInter, as Patent Owner provides no evidence of the reason for the requirement. Patent Owner fails to provide documentation supporting its contention that the requirement to mail in the physical check is evidence BankInter's system (or Garcia) was not concerned with extracting the routing number from the check image, as claimed. PO Resp. 22–23. Patent Owner also fails to address other reasons for the mail-in requirement, e.g., whether possession of the physical check was a legal requirement in one or more of the jurisdictions where BankInter's Movilcheck was available. The existence of BankInter's Movilcheck not only supports Petitioner's contention that a person of ordinary skill would have had reason to employ the teachings of Garcia in check deposit transactions, it is evidence that persons of ordinary skill had actually deployed systems such as that described by Garcia.

Garcia's disclosure of a system including OCR equipment is consistent with use of OCR in the BankInter's Movilcheck system. Patent Owner's citation of the BankInter's Movilcheck demonstrates at least some

version of a system using a camera captured check image was actually in use at least as early as July 22, 2005 (more than one year before the filing date of the earliest application in the priority chain that led to issuance of the '136 patent). Ex. 2010, 7; Ex. 1001, 1:4–12, (code 63). As a person of ordinary skill would have been aware of the BankInter's Movilcheck and had reason to consider Garcia's disclosure of using OCR equipment in connection with such systems, Patent Owner's arguments that a person of ordinary skill would not have combined Garcia's disclosure of OCR in connection with a camera captured check image with the check processing teachings of Acharya and the verification and bank routing number validation teachings of Richardson are unavailing.

Patent Owner's other arguments that Garcia is a complete system that does not require processing a check image are also unavailing. Petitioner emphasizes that Patent Owner ignores Garcia's preferred embodiment. Reply 6. Patent Owner acknowledges that Garcia discloses its bank servers include computer equipment connected to the Internet with an OCR system, a code authentication system, a means of transmitting data to the institution's document processing system, and truncation systems the receiving institution uses to make a digital image of the document in its bank account available to the user and to process the document in question by the usual means. PO Resp. 24. Patent Owner contends that the Petition does not point to any disclosure in Garcia that its OCR system is used to read the critical deposit information (Sur-reply 16) and that the "usual means" (truncation systems) mentioned in Garcia (Ex. 1003, 40:15–19) does not involve OCR of the MICR line from a customer camera image (PO Resp. 24–26 (citing Ex 2022, Trial Testimony of Dr. Brian Noble ("Noble Trial Tr.") 832:10–14: Ex. 2017, Noble IPR Dep. Tr. 106:16–23, for the

proposition that Dr. Noble could not identify any commercial system that could decode a MICR by OCR before the 2006 filing date of the application that matured into the '136 patent).

Patent Owner's contention that Garcia's system allows the customer to enter information necessary for deposit (*see* PO Resp. 20–21) does not negate Garcia's disclosure of a system that employs a camera on a mobile device and uses OCR of the image. Petitioner notes that Garcia discloses that the institution rendering the service must have electronic means of recognizing information sent by the user and include computer equipment connected to the Internet that has an OCR system. Reply 7 (citing Ex. 1003, 40:7–13). Petitioner argues that a person of ordinary skill would have understood Garcia to disclose that the financial institution extracts data from the check image using the OCR system to automatically process the check deposit. *Id.* (citing Ex. 1003, 41:20–22). As discussed further below, Petitioner relies on Acharya to disclose the details of check processing, e.g. check truncation systems. Pet. 24–25.

Garcia discloses "mobile equipment that performs the initial process of capturing, digitizing, and processing the image consists of a mobile telephone equipped with the features and functions necessary for said purpose, particularly a mobile telephone with camera and processing capacity." Ex. 1003, 40:1–6. Garcia teaches the user equipment must allow the following actions, (a) identifying the user, e.g., by opening a computer application in the mobile phone; (b) user entry of recognition data, e.g., user name and password; (c) identifying the device in relation to the user, e.g., by confirming the associated telephone number; (d) capturing a digital image of the obverse and reverse side of the check; (e) capturing data associated with the document, e.g. check amount and check number; (f) digitally encrypting

and certifying the data and/or images; and (g) transmitting the digital image and the recognition data to the receiving institution. *Id.* at 38:19–39:19.

Garcia states that it provides a method for processing and accepting documents, such as "bank checks, [ ] guarantee and authentication of the issuer and the document itself, using electronic media for its implementation through a mobile device capable of capturing and sending images via an Internet connection." Ex. 1003, 30:6–13. Garcia chronicles developments concerning the use of mobile devices to perform various transactional functions, e.g., storing and retrieving facial images for authentication purposes, and check processing that captures an image of obverse side of a check, but notes that "no advances have been made in cases in which remittances are, for example, bank checks, because in these cases, physical documents must be present or sent to the respective bank for processing, whether manually or via reader terminals that capture certain data from the actual documents." *See id.* at 31:1–3:20.

Contrary to Patent Owner's argument, Garcia is not a complete system without an image of the check. Garcia explicitly states that it achieves "greater simplicity, speed, and security . . . in depositing checks . . . by replacing the traditional check reader with a multi-purpose mobile device." Ex. 1003 36:18–22. Using an image of a check obtained from a customer's mobile device camera and transmitted to the bank, Garcia seeks to overcome the bank's need to possess a physical check obtained from a person or a reader at the time of the transaction. Petitioner points out that Patent Owner's expert acknowledges that Garcia's preferred embodiment expressly teaches that the content of the check images are machine read with OCR, not input by the customer. Reply 6 (citing Ex 1027, Trial Deposition of Dr. Charles Creusere, Case 2:21-cv-0311, May 26, 2022 ("Creusere Trial

Depo Tr."), 155:14–156:7, 157:7–21). Garcia's description of users providing additional information for authentication is consistent with known security procedures. Even BankInter's requirement for mailing the physical check to the bank within some period of time does not change the fact that, in the first instance, Garcia uses the check image and OCR to process the transaction.

b) Patent Owner's contention that Acharya's "usual means" does not employ the check image at the bank server to extract routing information

Petitioner acknowledges that Garcia does not provide a detailed description of check processing at the receiving bank and cites Acharya as disclosing such processing steps for imaged documents. Pet. 24–25. Patent Owner argues that a person of ordinary skill would not have looked to Acharya to perform OCR on a check image to extract routing information because Acharya's servers obtain such information from electronically entered data at the customer device, i.e. a Remote Customer Terminal (RCT). PO Resp. 26–31. According to Patent Owner, the subject matter Petitioner cites in Acharya "directs a POSA to enter all the required information for deposit at the RTC and does not rely on OCR at the bank server for routing information or any other information." *Id.* at 29 (citing Pet. 65; Ex. 1004, 6:8–17), *id.* at 31 ("[T]he actual embodiment of Acharya that the Petition relies on in Figure 2 and at pages 6-7 makes clear that the

system does not rely on successful OCR for deposit information, because the user will type in any required data.").[12]

Patent Owner's arguments are unavailing because the Petition cites Acharya, not for its OCR capabilities, but for its check deposit processing details. Pet. 21 ("[A] POSITA would have been motivated to look to prior art to find such implementation details for Garcia's computer equipment and check deposit process. . . [a] POSITA would have readily understood that Acharya provides such implementation details." (citing Ex. 1003, 11:10–15; Ex. 1002, Noble Decl. ¶ 75)). Acharya's RCT device may include OCR software that may be used in connection with a digital image scanner to convert machine printed information to electronic text. Ex. 1004, 23–24. Petitioner notes that Acharya's customer operated RCT provides to a Bank of First Deposit (BOFD) system each item of data needed to deposit the check and that a complete set of data may include a customer account number, the amount of the check and an image of the check. *Id.* at 22.

[12] Patent Owner correctly points out that some material inadvertently incorporated into the Institution Decision's description of Acharya comes from a continuation-in-part of Acharya filed in 2007 (after the priority of the challenged claims), but does not appear in the International Patent Application filed in 2001 by Acharya relied on in the Petition (Ex. 1004). PO Resp. 30 (discussing about 25 lines spanning pages 25–26 of the Decision on Institution). Patent Owner points out that the inadvertently incorporated subject matter discusses details about how a user of Acharya uses a digital camera to prepare a digital image, but that the earlier version of Acharya does not discuss a camera and instead describes the use of a personal computer with a scanner. *Id.* The Decision to Institute does not cite this subject matter in its analysis of the basis for combining the teachings of Garcia and Acharya or in its substantive analysis of the claim limitations. *See e.g.,* Dec. to Inst. 27–38. This Final Decision does not rely on subject matter identified by Patent Owner that is not in Exhibit 1004.

Petitioner notes that the BOFD system then determines how to clear and deposit the check. *Id.* (citing EX. 1004, Fig. 1, 6:8–17).

The premise of Petitioner's argument is that it would have been obvious to a person of ordinary skill in the art to incorporate Acharya's check deposit processing steps and BOFD system into Garcia's "computer equipment processing a check deposit using a check image and check transaction data received from the user's device." Pet. 22–23. The computer equipment in Garcia receives the check image from a mobile phone camera (Ex. 1003, 11: 1–19) and in Acharya receives the check image data from an RCT equipped with "any kind of input device capable of collecting data" to accept paper checks, e.g., a keypad, microphone, MICR reader, a digital image scanner (Ex. 1004, 3:5–9, 4:14–18).

Acharya is drawn to extending bank-to-bank check processing systems to customer transactions. Ex. 1004 2:11–14 ("[E]xisting systems that perform electronic transactions are either not equipped to handle paper checks, are configured only for bank-to-bank transactions, or do not accept third party checks for deposit . . . and . . . limit the utility of such systems for non-commercial bank customers."). Acharya seeks "to provide a system and method allowing non-commercial bank customers to deposit third party checks from remote locations . . . and . . . initiate such transactions at home." *Id.* at 2:17–22. Petitioner cites the processing in Acharya as teaching details not disclosed in Garcia, i.e., how to initiate the check deposit for the check image and data from the user's device by transferring the data directly to a local bank, a clearing house, or a Federal Reserve bank. *Id.* at 23.

c) Patent Owner's contention that a person of ordinary skill would have no motive to modify Garcia/Acharya with Richardson

Patent Owner also contends that a person of ordinary skill would not have looked to Richardson because Richardson scans physical checks, e.g. using a scanner to perform bulk processing of checks. PO Resp. 34, *see generally*, *id.* at 32–45. Patent Owner notes that a MICR line is printed with magnetic ink that can be read much like a credit card strip, that Richardson's processor includes a dedicated MICR reader, that Richardson discloses a specialized scanner that uses OCR to fill in characters not recognized by the MICR reader, and that OCR recognizes only 65%–90% of the missing characters. *Id.* at 34–36. Patent Owner further argues that Richardson does not suggest using OCR as the primary tool for extracting routing information because its recitation of a method and system for improving character recognition of the routing number field visible on an image of a check applies OCR after MICR reader failure. *Id.* at 36–37. Accordingly, Patent Owner asserts that Richardson teaches away from using OCR as the primary means of obtaining MICR information from a check. *Id.* at 34–38.

Patent Owner's MICR argument is unavailing because Petitioner does not cite Richardson as a primary OCR device or for its specialized scanning capabilities, e.g., its ability to perform bulk scanning or to use OCR to account for limitations of MICR readers. Reply 13. Petitioner cites Garcia as teaching performing OCR on a check and turns to Richardson as providing techniques to validate or verify the information obtained from OCR of the check image including the bank routing number. Pet. 40–41, Reply 13–14. Petitioner also notes that Patent Owner's argument that Richardson teaches away from employing OCR as a primary means of

obtaining MICR information points to an embodiment in Richardson that combines OCR with a magnetic reader, but ignores that Richardson expressly teaches performing OCR to determine each digit of a routing number without a dedicated MICR reader. Reply 15 (citing Ex. 1005 ¶¶ 40, 195, 200, Figs. 5–6).

Petitioner notes that Garcia's disclosure of check imaging and the incorporation of OCR equipment does not explicitly state that the contents of the check includes the routing number, but that Richardson discloses OCR of the MICR line. *Id.* at 13. Petitioner notes that Patent Owner cannot dispute that Richardson discloses applying OCR to the MICR line of a bank check to determine routing numbers. Reply 12–13. Richardson discloses using OCR of a check image to improve MICR data recognition to decipher the routing number. Ex. 1005 ¶ 39 ("[F]or improving the character recognition rate of the routing number field visible on the image of a check . . . [t[he system includes an image controller configured to transmit a check image over a communications line to a recognition controller configured to perform character recognition functions."); *id.* ¶ 40 ("The recognition controller performs the character recognition function to determine the value of the check's routing number by examining the check's image."); *see also id.* ¶ 200, Fig. 5.

Petitioner cites Garcia's teaching of capturing a check image, noting there is no physical check on which a magnetic reader could be used. Reply 15. Petitioner cites Garcia as teaching that OCR is performed on the check image; but Petitioner acknowledges that Garcia does not disclose how information sent by the user, such as the check image is recognized, verified and processed. Pet 29 (arguing "the user '[c]aptur[es] at least one digital image of the [check]' and then '[t]ransmit[s] the digital image … to the

institution that must accept the [check],'" and "the computer equipment [r]ecogniz[es], verif[ies], and electronically treat[s] and process[es] the information received" (citing Ex. 1003, 5:21–6:10, 10:10–18, 11:7–13)). Petitioner also cites Acharya as teaching reviewing the identity of the paying bank, but acknowledges that Acharya does not expressly disclose how to review the identity of the paying bank. *Id.* (citing Ex. 1004, 7:5; Ex. 1002, Noble Decl. ¶ 95). Petitioner cites Richardson as teaching such recognition and verification details. Pet. 30.

Petitioner notes (i) that it was well-known for a bank's unique routing number to be in the MICR line of a check, and (ii) that "[t]here was nothing special about the MICR line that would have prevented the operation of the OCR system" because standardized printing of the MICR line allows a computer to recognize the numbers and characters therein using conventional character recognition software. Pet. 32 (citing Ex. 1009 ¶ 35; Ex. 1005 ¶¶ 6, 18). Petitioner asserts a person of ordinary skill would have reasonably expected that Garcia's OCR could be used to determine the routing number printed on a check's MICR line. *Id.* (citing Ex. 1011 ¶ 28 (disclosing "an optical character recognition (OCR) reader [] for optically reading a MICR line from check image data . . . the OCR reader provides decoded MICR line data . . . the OCR reader [] may be any type of reader including a software-type of OCR reader or a hardware-type of OCR reader")); Ex. 1014 ¶ 10 (disclosing a MICR reader may capture or generate check data in any appropriate format output from OCR). Petitioner cites Richardson as teaching recognition and verification techniques applicable to bank routing numbers, i.e. techniques that compare the OCR determined routing number against a stored list of valid routing numbers to confirm a match. *Id.* (citing Ex. 1002, Noble Decl. ¶¶ 100–101).

Patent Owner argues that Petitioner fails to produce evidence of commercially successful systems that use OCR to determine a bank's routing number from the MICR line. *See, e.g.* PO Resp. 25. Patent Owner also refers to district court testimony concerning the suitability of the image. *Id.* 40–45. The claims before us are not drawn to technology that improves the suitability of the image or the capabilities of OCR. Claim 1 broadly recites that the processor executes steps to "perform optical character recognition on the check image to determine a routing number for the check image." Petitioner cites Garcia as disclosing performing such OCR. Patent Owner's attempt to present evidence that a person of ordinary skill would not have looked to Garcia's image acquisition and OCR capabilities because Garcia does not enable images of sufficient quality is unavailing in this proceeding. PO Resp. 21–22. Patent Owner's trial expert testified that Patent Owner was "clearly not" the first to propose capturing an image of a check using a mobile device. Ex. 1027, Creusere Trial Depo. Tr. 140:7–12

Claim 1 recites validating the routing number for the check image. Petitioner cites Richardson as technology that validates Garcia's OCR of the contents of the check image when applied to making bank deposits and determining bank routing numbers. Pet. 32–33. As discussed above, Petitioner cites Acharya as teaching the additional back-end check deposit processing details that may be missing from Garcia and Richardson, in the context of deposit information obtained by check imaging and OCR, e.g., as obtained from Acharya's RCT. We find on this basis that a person of ordinary skill would have had reason to combine the teachings of Garcia, Acharya, and Richardson.

d) Patent Owner's contention that Petitioner's generic motivation to combine arguments are insufficient to show obviousness

Some of Patent Owner's lack of "generic motivation" arguments parallel or repeat Patent Owner's arguments concerning the purported absence of "usual means" of processing a check image, arguing uncertainties in the availability of cameras of sufficient quality to provide images suitable for OCR. PO Resp. 45–52. According to Patent Owner, Petitioner does not explain why a person of ordinary skill would have been motivated to use OCR-based extraction processing, especially when the same information is already being entered by the user in Garcia's system. *Id.* at 48. As discussed above, Patent Owner's argument ignores Garcia's explicit disclosure of taking an image with a mobile device camera and performing OCR as the preferred embodiment and Richardson's disclosure of using OCR to decipher and validate the routing number. *See* Section VI.E.2.a–c *supra*.

Responding to Petitioner's assertions that a person of ordinary skill would have had reason to combine the references using known methods in a known way to achieve a predictable result, Patent Owner cites testimony in the district court concerning unpredictability and enablement of the claims based on contemporary digital camera imaging capabilities. PO Resp. 50. Acknowledging that enablement and obviousness are different legal doctrines, Patent Owner contends that the underlying factual questions, predictability in the art, are common between the two. *Id.* As discussed above, the claims before us recite a method of depositing checks—they do not recite improvements to camera technology. *See* Section VI.E.2.c *supra*. Even Patent Owner's expert, Dr. Creusere, testified that Patent Owner was

"clearly not" the first to propose capturing an image of a check using a mobile device. Ex. 1027, Creusere Trial Depo. Tr. 140:7–12. Dr. Creusere acknowledged that the suggestion in Garcia is to use OCR to recognize text or information in an image sent by a user. *Id.* at 155:18–156:21. With this testimony in mind, we find that a person of ordinary skill would have had a reason to capture an image of a check and apply OCR as taught by Garcia and combine those teachings with those of Acharya to process a check for deposit. We further note that the scope of the teachings of Garcia, Acharya and Richardson is commensurate with the scope of the claims, e.g., both the claims and Garcia assume the ability to acquire an image of sufficient quality to perform OCR.

We further note that it is the very limitations on the predictability of the capabilities of commercially available imaging and OCR emphasized by Patent Owner that would have given a person of ordinary skill reason to combine Garcia's check imaging and OCR teachings with Richardson's recognition and verification techniques using OCR to overcome difficulties in reading bank routing numbers. Ex. 1005 ¶¶ 18, 19 (describing difficulties experienced by MICR readers and character recognition processes).

e) Patent Owner's contention that the trial record shows a person of ordinary skill would have been discouraged from using OCR to extract routing/deposit information from Garcia's camera phone images

Patent Owner argues that, based on the trial record, "it is clear that a POSA would not have been motivated and would have viewed it as unpredictable, to apply OCR extraction of routing information for a Garcia phone image." PO Resp. 53. Each of independent claims 1, 7, and 14 recites a system having one or more processors and a memory that stores instructions to be executed by the processors. Claims 1 and 7 recite that the

instructions cause the processors to (1) receive an image of a check captured by a camera, (2) perform OCR on the check to determine a routing number, and (3) initiate a check deposit for the check image. Claim 14 recites the memory is configured to cause the processor to (1) receive a check image, (2) process the front side of the check to determine deposit information, (3) process the back side of the check to determine whether a mark is present in the endorsement location without performing a signature identification procedure, and (4) generate a log file including at least a portion of the deposit information for the check. Claim 14 does not recite initiating steps to make a deposit. None of the independent claims recites completing the deposit. Although all of the independent claims recite a memory that stores instructions that enable a processor to carry out steps involved in making a deposit, and claims 1 and 7 recite initiating a deposit, none of the independent claims recites limitations on the check image itself.

Referencing its earlier argument that Garcia teaches an already complete system without using the imaging and OCR processes claimed in the '136 patent, Patent Owner contends that the Petition focuses on what is possible, rather than what a POSA would have been motivated to seek out and implement to achieve an advantage over what Garcia offered. Pet. 53. According to Patent Owner "the relevant question is not whether one could physically perform OCR operations on an image that came from a Garcia camera phone, but whether it was predictable that results of the OCR processing would be acceptable for processing a check deposit." *Id.* at 54. As discussed above, Patent Owner acknowledges that it was "clearly not" the first to propose capturing an image of a check using a mobile device and the '136 patent does not address the capabilities of cameras. *See* Section VI.E.2.d *supra* (citing Ex. 1027, Creusere Trial Depo. Tr. 140:7–12).

As discussed above, claim 1 of the '136 patent is drawn to a system for processing a check deposit by capturing a check's image using a camera and applying OCR to obtain the routing number. The claims do not recite limitations concerning the quality of the image, the technical specifications of the camera or the OCR technology. Patent Owner's arguments ignore that Garcia explicitly discloses a mobile phone camera taking an image of a check for purposes of deposit. Patent Owner's argument that its district court trial witnesses testified sufficient resolution is a necessary, but not sufficient, condition for a successful camera phone check deposit implementation emphasizes features, e.g., positioning the check, that are not recited in claim 1 of the '136 patent. *See* Pet. 54.

Petitioner also notes that Patent Owner's discussion of IPR proceedings pursued by a third party (*Mitek*), where the panel recognized difficulties using digital cameras to capture check images, concerned a different prior art combination with a different motive to combine the references. Reply 16 (citing PO Resp. 55–56). Petitioner points out that the *Mitek* IPR did not include Garcia's explicit teaching of using OCR to read information from the check image. *Id.* Rather than adding complexity to Garcia, as argued by Patent Owner, Petitioner points out that it cites Acharya and Richardson for their disclosure of implementation details, i.e., Acharya's disclosure of identifying a bank account into which the check will be deposited and Richardson's disclosure of reading the routing number from the check. *Id.* at 16–17 (citing PO Resp. 57–58). Moreover, Patent Owner's arguments that image resolution is necessary, but not sufficient, for successful check deposit only further supports Petitioner's assertion that a person of ordinary skill would have had reason to combine Garcia's teachings with other teachings drawn to completing a check deposit

transaction. For example, as discussed above, Richardson discloses using image recognition to obtain the routing number present in the MICR line. Ex. 1005 ¶¶ 39–40).

3. Conclusion as to reasons to combine

The '136 patent is not drawn to improvements in camera or OCR technology—claim 1 of the '136 patent is drawn to initiating a check deposit by using certain information that can be received in any way without limitation, a camera captured image of the check, and OCR of the check image to read the bank routing number. Ex. 1001, 14:9–19. Petitioner cites Garcia as disclosing a system in which a user enters the amount of the check with a keypad, captures a digital image of the check, and the institution rendering the service has electronic means of recognizing, verifying and processing the information sent by the user (including the image of the check) that "consists basically of computer equipment connected to the Internet that has an optical character recognition system." *See* Ex. 1003, 19:1–13. Patent Owner's arguments asserting uncertainties in camera image quality are unavailing because they relate only to whether the '136 patent provides a sufficiently enabling disclosure, an issue that is beyond the scope of this proceeding and is not before us. The scope of camera imaging and OCR in Garcia and the '136 patent are comparable, i.e., both the '136 patent and Garcia assume that the image quality is sufficient to perform OCR processing of the check image.

As discussed extensively above, Petitioner cites Acharya to provide details not disclosed in Garcia concerning electronic check processing. *See* Pet. 25–29. As further discussed above, Petitioner cites Richardson for its disclosure of details concerning procedures to recognize and verify the identity of the payor bank using OCR of information from the MICR line.

See Pet. 29–34. We find that a person of ordinary skill would have had a reasonable expectation of success in combining these teachings because Acharya teaches known electronic check processing and Richardson teaches known techniques using OCR to determine or verify the bank routing number. Pet. 27–29, 32–33

Having considered all the arguments of record, we find that Petitioner has demonstrated by a preponderance of the evidence that a person of ordinary skill would have had reason to combine the teachings of Garcia, Acharya, and Richardson.

F. Claims 1-3 and 7-9 As Obvious Over Garcia, Acharya, and Richardson

1. Independent claims 1 and 7

Claim 1 recites a system that includes a memory storing processor-executable instructions that, when executed by a processor causes the processor to perform a series of steps on an image of a check captured by a camera.

a) Claim 1 - preamble

The preamble of claim 1, designated limitation 1[pre] by Petitioner, recite a "system comprising." Petitioner cites Garcia as disclosing a system for depositing checks that encompasses a user's mobile device, a mobile communication network, and computer equipment at the financial institution. Pet. 34–36. The preamble of claim 1 is not limited to any particular system. Having considered all the arguments and evidence of record, we find that, to the extent the preamble is treated as limiting, Petitioner has demonstrated that Garcia discloses the preamble of claim 1.

b) Claim limitations 1[a] and 1[b]

Petitioner designates claim limitation 1[a] as reciting "a processor" and claim limitation 1[b] as reciting "a memory storing processor-executable instructions that, when executed by the processor cause the processor to." Pet. 36. Petitioner cites Garcia as disclosing a financial institution rendering the check deposit service must have electronic means of recognizing, verifying, and processing the information sent by the user and that such means includes computer equipment. Pet. 37–38 (citing Ex. 1003, 40:7–11, 38:16–18; Ex. 1002, Noble Decl. ¶ 109). Petitioner further contends that a person of ordinary skill would have understood well-known computer equipment, such as computer equipment used in financial applications, includes a processor and a memory storing instructions to be executed by the processor. *Id.* at 37 (citing Ex. 1014 ¶¶ 11–14; Ex. 1002, Noble Decl. ¶ 110). Petitioner further cites Acharya as teaching a bank computer that includes a processor executing instructions stored in a memory. *Id.*

Claim limitations 1[a] and 1[b] are not limited to any particular processor executing any particular instructions. Other than its argument concerning reasons to combine the teachings of Garcia, Acharya, and Richardson, which we find unavailing, Patent Owner does not dispute Petitioner's contentions concerning this limitation. Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that Garcia and Acharya each disclose claim limitations 1[a] and 1[b].

c) Claim limitation 1[c]

Petitioner designates as claim limitation 1[c] the step that recites "receive an account identification number, check amount indication, and check image, where the check image is captured by a camera." Pet. 38.

(1) Petitioner's contentions

Petitioner contends the combined teachings of Garcia and Acharya disclose this limitation. *Id.* Petitioner cites Garcia as disclosing that, during the check deposit process, the user enters data concerning the check, such as the amount on the check, and captures an image of the check by taking a digital photograph of the check. *Id.* at 38 (citing Ex. 1003, 33:13–17, 34:14–19, 34:21–22, 39:10–11, 40:1–6, 41:6–13; Ex. 1002, Noble Decl. ¶ 113). Petitioner further cites Acharya as disclosing that the user enters an account number into the user's device and sends that account number to the computer equipment. *Id.* at 38–39 (citing Ex. 1004, 6:8–14, 7:1–4; Ex. 1002, Noble Decl. ¶ 114).

Claim 1 recites that the processor executes instructions to receive an account identification number. Ex. 1001 14:12–14. Claim 1 does not otherwise limit how the account number is received. The Petition contends that a person of ordinary skill would have had reason to combine the camera image and OCR teachings of Garcia with the check processing teachings of Acharya for details not discussed in Garcia. Pet. 25–29. The Petition then cites Acharya as teaching computer equipment that receives an account identification number, because the user enters the account number. Pet. 38 (citing Ex. 1004, 6:8–14, 7:1–4).

(2) Patent Owner's contentions concerning modifying Garcia with Acharya's customer account number

Separate and apart from its contentions that a person of ordinary skill would not have combined the teachings of Garcia, Acharya, and Richardson, Patent Owner contends that the Petition fails to establish an ordinarily skilled artisan would have modified Garcia with Acharya's disclosure of the

user entering the account number, because Garcia does not explicitly articulate a need for the user to enter an account number. PO Resp. 58. According to Patent Owner, "in situations like this where the [prior art] reference teaches a complete working system and Petitioner is asserting that a POSA would have added steps to that system, Petitioner must identify a specific reason a POSA would have desired to make that modification." *Id.* at 60 (citing *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019)).

(3) Analysis

Patent Owner's reliance on *Henny Penny* is inapposite. Patent Owner notes that in *Henny Penny* the U.S. Court of Appeals for the Federal Circuit affirmed the Board's finding that a person of ordinary skill would not have been motivated to combine teachings in a second reference where a reference already taught a feature (a sensor that measures an indicia of oil quality). PO Resp. 60. Patent Owner fails to recognize that *Henny Penny* also articulates "the longstanding principle that the prior art should be considered for all its teachings, not selectively" and recognizes that benefits both lost and gained should be weighed against one another. *See Henny Penny*¸938 F.3d at 1332 (citing *Winner Int'l Royalty Corp. v. Wang,* 202 F.3d 1340, 1349 n.8 (Fed. Cir 2000) ("The fact that the motivating benefit comes at the expense of another benefit, [however,] should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. [Instead] the benefits, both lost and gained should be weighed against one another."); *see also, Winner Int'l* at 1349 ("Trade-offs often concern what is feasible, not what is [ ] desirable. Motivation to combine requires the latter.").

Petitioner does not present Acharya as offering a trade-off, but a desirable modification of Garcia that provides check processing steps and implementation details for using the computer equipment that are not disclosed in Garcia. Pet. 20–21, 25. Petitioner notes Patent Owner's contentions that Garcia includes a step that identifies the user, but in Garcia once an interactive session is open, users with multiple bank accounts would need to select the desired account via the interactive session. Reply 19 (citing PO Resp. 62–63). Arguing that Patent Owner acknowledges Garcia must be modified to allow a user with multiple accounts to identify the target account for the deposit during an interactive session, Petitioner contends such a modification would be obvious from Garcia alone. Reply 19–20; *see also* Sur-reply 8–9 (acknowledging that Garcia teaches the user entering an ID, but not an account number), Pet. 26 ("an account number would have indicated which account to deposit the check into"); Ex. 1002, Noble Decl. ¶¶ 86–87 Petitioner also points to Acharya as accomplishing this additional step by allowing the user to enter an account number. Reply 19; Pet. 38 ("Acharya teaches that the computer equipment 'receive[s] an account identification number' because the user enters the account number in [the] device" (citing Ex. 1004, 6:8–14 ("the customer may respond to prompts for each item of data needed to deposit the check . . . . [a] complete set of data may comprise customer identification, customer account number, . . . an image of the check"))).

Patent Owner's arguments drawn to the security of account numbers or the difficulty of remembering long account numbers (PO Resp. 63–64) are unavailing because Acharya does not specify how the user is prompted for missing information or the form of the missing information, e.g., after a customer is identified, Acharya would include a system where the customer

responds to the prompt by identifying one of the customer's account using a number (e.g., account 1, 2, 3, etc.) or by using some other designator. Ex. 1004, 6:4–11, *see also* Sur-reply 10 (acknowledging that Acharya discloses data input fields visible on a video display screen and the user entering requested data).

Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that a person of ordinary skill would have had reason to modify Garcia and that the combined teachings of Garcia and Acharya would have disclosed or suggested claim limitation 1[c] to a person of ordinary skill in the art.

d) Claim limitation 1[d]

Petitioner identifies as claim limitation 1[d] the step that recites "perform optical character recognition on the check image to determine a routing number for the check image." Pet. 39. Petitioner cites Garcia as disclosing the financial institution's computer equipment connected to the Internet includes an OCR system. Pet. 39 (citing Ex. 1003, 40:7–13; Ex. 1002, Noble Decl. ¶ 116). Petitioner further cites Richardson as disclosing a recognition controller that performs a character recognition function to determine a check's routing number by examining the check's image. *Id.* (citing Ex. 1005 ¶¶ 5, 9, 39, 40, 200).

Other than its argument concerning reasons to combine the teachings of Garcia, Acharya, and Richardson, which we find unavailing, Patent Owner does not dispute Petitioner's contentions concerning this limitation. Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that the combined teachings of the references would have disclosed or suggested claim limitation 1[d] to an ordinarily skilled artisan.

e) Claim limitation 1[e]

Petitioner identifies as claim limitation 1[e] the step that recites "validate the routing number for the check image." Petitioner cites Garcia as disclosing that the banking institution stores, processes, and validates the image of the check transmitted by a user device to verify the relevant information. Pet. 40–41 (citing Ex. 1003, 33:13–15, 35:8–10; 40:7–10, 12:17–22; Ex. 1002 ¶ 121). Petitioner also cites Richardson's recognition controller as teaching validating the routing number on the check image and performing a data correction function that searches valid, assigned, and active routing numbers to return "a set containing a plurality of valid routing numbers where each known digit in the document's routing number equals the digit in the corresponding position of each valid routing number in the set." *Id.* at 41 (citing Ex. 1004 ¶¶ 41, 200; Ex. 1002, Noble Decl. ¶¶ 122–123).

Other than its argument concerning reasons to combine the teachings of Garcia, Acharya, and Richardson, which we find unavailing, Patent Owner does not dispute Petitioner's contentions concerning this limitation. Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that the combined teachings of the references would have disclosed or suggested claim limitation 1[e] to an ordinarily skilled artisan.

f) Claim limitation 1[f]

Petitioner identifies as claim limitation 1[f] the step that recites "initiate a check deposit for the check image." Pet. 42. Petitioner cites Garcia as disclosing its computer equipment obtains a digital photograph of the check and a data set that allows automatic processing, deposits the check into the user's account, and then transmits an appropriate SMS message to

the customer concerning the status of the deposit. *Id.* (citing Ex. 1003, 41:17–42:5; Ex. 1002, Noble Decl. ¶¶ 126–127). Petitioner also cites Acharya as disclosing a BOFD system that initiates and carries out steps to complete the check deposit. *See id.* at 43. We note that the purpose behind Garcia and Acharya is to obtain an image of a check and execute an appropriate deposit.

Other than its argument concerning reasons to combine the teachings of Garcia, Acharya, and Richardson, which we find unavailing, Patent Owner does not dispute Petitioner's contentions concerning this limitation. Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that the combined teachings of the references would have disclosed or suggested claim limitation 1[f] to an ordinarily skilled artisan.

g) Conclusion as to claim 1

Having reviewed all the evidence and arguments of record, we find that Petitioner has demonstrated a person of ordinary skill would have had reason to combine the teachings of Garcia, Acharya, and Richardson and that their combined teachings would have disclosed or suggested all of the limitations of independent claim 1 to an ordinarily skilled artisan.

h) Claim 7

Independent claim 7 is similar in scope to claim 1. Like claim 1, claim 7 recites a "system" (claim limitation 7[pre]). Where claim 1 recites a processor and a memory storing processor executable instructions (claim limitation 1[a], 1[b]), claim 7 recites that the system includes "a plurality of processors, each having a memory associated therewith that execute instructions to" (claim limitation 7[a]). As Petitioner points out, the

remaining limitations of claim 7 (limitations 7[b]–7[e]) parallel those of claims 1[c]–1[f]. *See* Pet. 49–51.

For the same reasons as those discussed in our analysis of claim 1, we find that Petitioner has demonstrated that a person of ordinary skill would have had reason to combine the teachings of Garcia, Acharya, and Richardson and that their combined teachings would have disclosed or suggested all of the limitations of claim 7 to an ordinarily skilled artisan.

2. Claims 2 and 8

Claims 2 and 8 depend from claims 1 and 7, respectively, and recite the additional limitation that "the processor-executable instructions cause the processor to initiate the check deposit by provisionally crediting a financial account associated with the account identification number." As to claims 2 and 8, Petitioner cites Acharya as disclosing that, after reviewing the identity of the paying bank, the BOFD provides immediate provisional credit from the BOFD to the customer, makes a decision about how to clear the check through another bank, and transfers data to a local bank or a clearinghouse for ultimate credit by the paying bank. Pet. 44 (citing Ex. 1004, 3:15–17, 5:1–3, 6:18–20, 7:1–12; Ex. 1002, Noble Decl. ¶ 132). According to Petitioner, a person of ordinary skill in the art "would have understood that Acharya's provisional crediting technique is independent of, and consistent with, Richardson's routing number determination and validation techniques, and, therefore, would have reasonably expected that Garcia, Acharya, and Richardson could be combined in a single system." *Id.* at 46 (citing Ex. 1002, Noble Decl. ¶ 136).

Other than its argument concerning reasons to combine the teachings of Garcia, Acharya, and Richardson, which we find unavailing, Patent Owner does not dispute Petitioner's contentions concerning this limitation.

Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that the combined teachings of the references would have disclosed or suggested the limitations of claims 2 and 8 to an ordinarily skilled artisan.

3. Claims 3 and 9

Claims 3 and 9 depend from claims 1, and 7, respectively, and recite the additional limitation that "the processor-executable instructions further cause the processor to forward the check image to a payor bank." Petitioner cites Acharya as disclosing that the automated system executes a data transfer to a local paying bank, and that a person of ordinary skill in the art would have understood such a data transfer refers to the check image and other data. Pet. 46–49 (citing Ex. 1004, 3:15–17, 6:11–16, 7:1–4, 7:22–25; Ex. 1002, Noble Decl. ¶¶ 138–139).

Other than its argument concerning reasons to combine the teachings of Garcia, Acharya, and Richardson, which we find unavailing, Patent Owner does not dispute Petitioner's contentions concerning this limitation. Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that the combined teachings of the references would have disclosed or suggested the limitations of claim 3 and 9 to an ordinarily skilled artisan.

G. Claims 5, 11, and 13 as Obvious Over Garcia, Acharya, Richardson, and Randle

1. Combination with Randle

Randle "relates generally to end to end electronic transaction processing, particularly involving financial instruments, such as checks, from the capture of transaction data associated with a check and its image at a point of sale or point of presentment . . . to the ultimate settlement and

clearing of the check and transfer of funds." Ex. 1008 ¶ 2. Petitioner cites Randle as disclosing a check verification controller that initiates, controls and monitors sub-functions associated with verification of the check being presented. Pet. 53. Petitioner contends that a person of ordinary skill would have had reason to combine Randle's teachings with those of Garcia, Acharya, and Richardson as an implementation detail, e.g. fraud detection, based on OCR. *Id.* (citing Ex. 1008 ¶¶ 54, 61). Petitioner notes that a person of ordinary skill would have had a reasonable expectation of success in achieving the combination because such a person would have understood that back-end check processing techniques are largely independent of where the check image originated and because Randle specifically teaches the check processing engine could receive a check image from an image scanning device at the customer's location. *Id.* at 54.

Patent Owner mentions Randle in its arguments contending that a person of ordinary skill would not have had reason to combine Randle's teachings with those of Garcia, Acharya, and Richardson. *See, e.g.,* PO Resp. 47–49 (arguments concerning the "usual means" of check processing or truncation), 52 , 55–56 (arguments concerning image quality). Patent Owner sole argument directed to Randle is that "Randle [ ] contemplates only processing check images from check scanners at a variety of different locations." *Id.* at 55. As Petitioner notes, Randle discloses check verification operations in the same circumstances as those of Garcia, Acharya, and Richardson. Pet. 54. In the absence of further evidence and argument from Patent Owner concerning Randle, for the same reasons as those discussed above in the context of Garcia, Acharya, and Richardson, we find that a person of ordinary skill would have had reason to combine the teachings of Randle with the teachings of those references.

2. Claims 5, 11, and 13

Claims 5, 11, and 13 depend from claims 1 and 7, respectively, and recite the additional limitation that "the processor-executable instructions cause the plurality of processors to determine whether the check shown in the check image was previously deposited." Claims 11 and 13, which both depend from claim 7, appear to be identical except for the recitation "a check shown in the check image" (claim 11) and "the check shown in the check image" (claim 13). Petitioner cites Randle as disclosing duplicate check detection based on whether the check image is associated with a duplicate check number. Pet. 53 (citing Ex. 1008 ¶¶ 54, 61; Ex. 1002, Noble Decl. ¶ 157). Petitioner's expert, Dr. Noble, testifies that Randle teaches applying OCR to the check to determine the check number and that, "[i]n Randle, whether a check deposit is a duplicate is based on if the check image is associated with a '**duplicate check number**'". Ex. 1002 ¶ 157 (citing Ex. 1002 ¶¶ 36, 74, Figs. 2, 9B). Randle states that, among other items, check verification is performed on "valid or not a duplicate check number." Ex. 1008 ¶ 36.

Other than its argument concerning reasons to combine the teachings of Garcia, Acharya, Richardson, and Randle, which we find unavailing, Patent Owner does not dispute Petitioner's contentions concerning the limitations recited in claims 5, 11, and 13. Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that the combined teachings of the references would have disclosed or suggested the limitations of claims 5, 11, and 13 to an ordinarily skilled artisan.

H. Claims 6 and 12 as Obvious Over Garcia, Acharya, Richardson, and Slater

1. Claims 6 and 12

Claims 6 and 12 depend from claims 1 and 7, respectively, and recite the additional limitation that "the processor-executable instructions [ ] cause the processor to determine a check amount from the check image; and compare the check amount determined from the check image with the received check amount indication."

2. Combination with Slater (Ex. 1006)

Petitioner cites Slater as disclosing that a system can be programmed to validate check items through MICR code line and OCR software and that, when there is a match between the scanned amount of the check and the amount entered by the customer, the transactions proceeds. Pet. 57 (citing Ex. 1006 ¶¶ 23, 28, claim 19). Petitioner argues that a person of ordinary skill would have had reason to combine Slater's check amount matching teaching with the those of Garcia, Acharya, and Richardson because an ordinarily skilled artisan would have understood a discrepancy is indicative of a transaction error resulting from an error in either the image from which the check amount was read or the user's input. *Id.* at 58 (citing Ex. 1002, Noble Decl. ¶ 165). According to Petitioner, an ordinarily skilled artisan would have had a reasonable expectation of success in combining these teachings, as they involve only combining prior art elements in known ways. *Id.* at 58–59. According to Petitioner, that Slater's technique was implemented in a Customer Access Terminal would not have discouraged an ordinarily skilled artisan from combining the teachings of Garcia, Acharya, and Richardson with those of Slater because "[t]he financial institution computer equipment of Garcia/Acharya/Richardson would perform the

amount comparison and such a comparison of two numbers was a routine operation for financial institution computers." *Id.* at 59.

The Patent Owner Response does not address Slater or claims 6 and 12 directly. Other than its argument concerning reasons to combine the teachings of Garcia, Acharya, and Richardson, which we find unavailing, Patent Owner does not dispute Petitioner's contentions concerning claims 6 and 12. Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that the combined teachings of the references would have disclosed or suggested the limitations of claims 6 and 12 to an ordinarily skilled artisan.

I. Claims 4 and 10 as Obvious Over Garcia, Acharya, Richardson, and Pintsov

1. Claims 4 and 10

Claims 4 and 10 depend from claims 1 and 7, respectively, and recite the additional limitation that "the processor-executable instructions cause the processor to overlay a bank stamp image on the check image."

2. Combination with Pintsov (Ex. 1007)

Petitioner cites Pintsov as teaching that a bank uses a check processing device that includes a processing unit and a memory to apply an endorsement data element, i.e., a bank stamp, to an image of a check generated from a paper check. Pet. 60–62 (citing Ex. 1007 ¶¶ 4, 6, 12–15, 19–20; Ex. 1002, Noble Decl. ¶¶ 171–172). Petitioner contends that a person of ordinary skill would have had reason to combine the teachings of Garcia, Acharya, Richardson with those of Pintsov as a well-known implementation specific detail, given Pintsov's discussion of replicating audit, investigative, and dispute resolution functionality in the environment where check images, rather than paper checks, are used for clearing and

processing checks. *Id.* at 61–62. Petitioner further notes that, although Garcia states the receiving institution processes documents by the usual means, Garcia does not expressly describe such usual means, prompting an ordinarily skilled artisan to identify check processing steps that can be applied in a routine manner with a reasonable expectation of success. *Id.* at 62–63.

The Patent Owner Response does not address Slater or claims 4 and 10 directly. Other than its argument concerning reasons to combine the teachings of Garcia, Acharya, and Richardson, which we find unavailing, Patent Owner does not dispute Petitioner's contentions concerning claims 4 and 10. Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that the combined teachings of the references would have disclosed or suggested the limitations of claims 4 and 10 to an ordinarily skilled artisan.

J. Claims 14–16 as Obvious Over Garcia, Acharya, Richardson, Randle, and Davis

1. Combination with Davis

Petitioner cites Davis as disclosing generating a digital masterfile that contains a record of check deposit information, including a digital image of the check and other check data (e.g., check amount, ABA number, account number, check number). Pet. 74–75 (citing Ex. 1009 ¶ 22, Fig. 8; Ex. 1002 ¶¶ 208–209). Petitioner contends that a person of ordinary skill would have had reason to maintain and organize records using Davis's digital masterfile in a system as taught by Garcia, Acharya, Richardson, and Randle to provide organization and consistency. *Id.* at 75. Noting Garcia's explanation that information from the check image is stored and processed by the receiving institution, Petitioner further cites Randle's disclosure that maintaining

thorough and accurate records is a critical feature of a financial processing system, and argues that Davis provides a data structure for a digital masterfile amenable for electronic check processing. *Id.* (citing Ex. 1008 ¶ 57; Ex. 1003, 5:1–9; Ex. 1002, Noble Decl. ¶ 210).

The Patent Owner Response does not address the reasons to combine of Garcia, Acharya, Richardson, Randle, and Davis. Other than its argument concerning reasons to combine the teachings of Garcia, Acharya, and Richardson, which we find unavailing, Patent Owner does not dispute Petitioner's contentions concerning the reasons to combine the teachings of Randle and Davis with those of Garcia, Acharya, and Richardson. Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that a person of ordinary skill would have had reason to combine the teachings of Garcia, Acharya, Richardson, Randle, and Davis.

2. Independent Claim 14

a) Preamble and claim limitation 14[a]

Petitioner identifies the preamble of claim 14 as reciting "[a] system for processing a check deposit" and claim limitation 1[a] as reciting "a plurality of processors, each having a memory associated therewith, configured to execute instructions." Pet. 64–65. Petitioner cites its previous discussion of the subject matter disclosed by Garcia and Acharya as disclosing the preamble of claim 14 and claim limitation 14[a]. *Id.* Patent Owner does not explicitly dispute Petitioner's contentions concerning this limitation. Having considered the arguments and evidence of record, we find that Petitioner has demonstrated the combinations of Garcia, Acharya, Richardson, Randle, and Davis teaches the preamble and limitation 14[a].

b) Claim limitation 14[b]

Petitioner identifies as claim limitation 14[b] the step that recites "receive a customer identification number." *Id.* at 65. Petitioner notes that Garcia discloses the user enters recognition data specific to the receiving institution and Acharya discloses that the customer may respond to prompts for each items of data needed to deposit the check. *Id.* at 65-66 (citing Ex. 1003, 5:9–17; Ex. 1004, 6:8–17; Ex. 1002, Noble Decl. ¶¶ 182–183).

Patent Owner does not explicitly dispute Petitioner's contentions concerning this limitation. Having considered the arguments and evidence of record, we find that Petitioner has demonstrated the combinations of Garcia, Acharya, Richardson, Randle, and Davis teaches limitation 14[b].

c) Claim limitation 14[c[

Petitioner identifies as claim limitation 14[c] the step that recites "receive an image of a front side of a check captured by a camera, wherein the image of the front side of the check is received from a remote device." Pet. 66. Petitioner cites Garcia as disclosing a mobile phone with a camera that captures the digital image of the obverse (front) side of a document, i.e. a check, and transmits the digital image to an institution that must accept the document, such that the image is received from the remote device. *Id.* at 66–67 (citing, e.g., Ex. 1003, 10:10–18; Ex. 1002, Noble Decl. ¶¶ 185–186). Patent Owner does not explicitly dispute Petitioner's contentions concerning this limitation. Having considered the arguments and evidence of record, we find that Petitioner has demonstrated the combinations of Garcia, Acharya, Richardson, Randle, and Davis teaches limitation 14[c].

d) Claim limitation 14[d]

Petitioner identifies as claim limitation 14[d] the step that recites "receive an image of a back side of the check captured by the camera from

the remote device." Similar to its discussion of claim limitation 14[c] Petitioner notes that Garcia discloses capturing a digital image of a reverse side of a document, such as a check, and transmitting the digital image to a receiving institution such that the image is received from the remote device. Pet. 67–68.

Patent Owner does not explicitly dispute Petitioner's contentions concerning this limitation. Having considered the arguments and evidence of record, we find that Petitioner has demonstrated the combinations of Garcia, Acharya, Richardson, Randle, and Davis teaches limitation 14[d].

e) Claim limitation 14[e]

Petitioner identifies as claim limitation 14[e] the step that recites "process the image of the front side of the check to obtain deposit information for the checks." Pet. 69. Petitioner cites Richardson in combination with Garcia's OCR and Acharya as disclosing using OCR to perform character recognition functions to examine the check's image and determine a check's routing number. *Id.* at 69.

Patent Owner does not explicitly dispute Petitioner's contentions concerning this limitation. Having considered the arguments and evidence of record, we find that Petitioner has demonstrated the combinations of Garcia, Acharya, Richardson, Randle, and Davis teaches limitation 14[e].

f) Claim limitations 14[f] and 14[g]

Petitioner identifies as claim limitations 14[f] and 14[g] the steps that recite (14[f]) "process the image of the back side of the check to determine whether a mark is present on the image of the back side of the check by" and (14[g]) "determining whether a mark is present at an endorsement location in the image of the back side of the check without further performing a signature identification procedure." Pet. 70. As to limitation 14[f], the

Petition cites Randle as teaching a quality assurance (QA) process that searches for an endorsement in a check image as critical information in the check image. *Id.* at 70–72. Randle's QA procedure exists to establish certain requirements have been met and allow data reduction for further check processing. Ex. 1009 ¶¶ 42–43.

As to the negative limitation 14[g], "determining whether a mark is present at an endorsement location . . . without further performing a signature identification procedure," Petitioner notes that Figure 9B of Randle teaches a QA process that determines whether the endorsement is present. Pet. 70–71 (citing Ex. 1008, Fig. 9B, ¶ 42). Petitioner notes that Randle's QA process includes a separate and distinct step, i.e., signature validation. *Id.* at 71–72. Petitioner notes that Randle's signature validation can be performed without identifying the signature by comparing the signature to one on file. *Id.* As to endorsement, the Petition states "[a] POSITA would have understood that Randle's lack of a QA function for an endorsement similar to 'signature validation (Compare to that on file)' meant the Randle did not perform a signature identification procedure [i]n the endorsement location." *Id.* at 72.

Noting that Randle identifies both signature line (where the person who drafted the check signs on the front of the check) and the endorsement on the back of the check as critical information, Patent Owner argues that the Petitioner's analysis based on not comparing a check to a signature on file fails because Petitioner Randle still looks for the presence of a signature. PO Resp. 68. Patent Owner also argues that we should reject Petitioner's further explanation in the Reply because the Petition applied the wrong claim interpretation. Sur-reply 1–4.

We construed the language of this limitation to mean that the presence of mark is determined by any suitable means without further performing a procedure (1) to determine the presence of a signature on the check or (2) to determine that a signature on the check matches a particular known signature. *See* Section VI.D *supra*.

Petitioner's argument in the Reply is not substantially different from that in the Petition. Petitioner points out that Patent Owner conflates the terms "endorsement" and "signature." Reply 24. Although Randle teaches verifying a "signature" on the front of the check, Randle has no such procedure for verifying an "endorsement" on the endorsement area on the back of the check. *See id.* Petitioner emphasizes Randle's determination of whether an endorsement is present (Ex. 1008, Fig 9B-box 124 "Endorsement is it there?") and notes that Randle makes no mention of determining whether the endorsement is a signature or looks like a signature. *Id.* at 23 (citing Ex. 1025, Decl. of Dr. Brian Noble in Support of Petitioner's Reply ("Noble Reply Decl.") ¶ 46).

Dr. Noble explains three relevant elements of Figure 9B are: box 122 - Signature check, is it there?; box 123 - Signature Compare to that on file; and box 124 - Endorsement, is it there? Ex. 1025, Noble Reply Decl. ¶ 46. As Dr. Noble points out, although Randle discloses verifying the signature on front of the check, Randle discloses checking only for the presence of the endorsement on the back of the check, i.e., unlike the box for verifying the signature on the check, Randle does not include a box for verifying the endorsement signature. *Id.*; *see also*, Ex. 1008 Fig. 9B.

Although Randle notes that a payee endorses a check, Randle does not discuss the form of the endorsement. Ex. 1008 ¶ 19. Randle explicitly distinguishes determining the presence of the check writer's signature on the

front of the check and verifying that signature from merely checking for the presence of the payee's endorsement on the back of the check. Ex. 1008 ¶¶ 42–43, Fig. 9B. A payee endorses a check by placing some mark on the back of the check, e.g., a stamp or a signature. Randle does not describe any particular procedure for checking for the presence of the endorsement. As we discussed in our claim construction analysis, the court notes that "mark" is broader than "signature." Ex. 2019, 17. A signature is a type of mark. Excluding endorsement "marks" that happen to be signatures from the scope of the claim would be render the claim inoperable for most non-commercial purposes. Even if the endorsement mark is a signature, merely checking that the endorsement is there, as disclosed by Randle, is not the same as further performing a procedure (1) to determine the presence of a signature on the check or (2) to determine that a signature on the check matches a particular known signature. Thus, we find that Petitioner has demonstrated that the Randle teaches claim limitation 14[g].

g) Claim limitation 14[h]

Petitioner identifies as claim limitation 14[h] the step that recites "generate a log file, the log file comprising at least a portion of the deposit information for the check." Pet. 74. Petitioner cites Davis's digital masterfile, which contains a record for the check that includes a digital image of the check and other check data, as teaching the claimed "log file." *Id.* at 74–75 (citing Ex. 1009 ¶ 22, Fig. 8; Ex. 1002, Noble Decl. ¶ 208).

Patent Owner does not explicitly dispute Petitioner's contentions concerning this limitation. Having considered the arguments and evidence of record, we find that Petitioner has demonstrated the combinations of Garcia, Acharya, Richardson, Randle, and Davis teaches limitation 14[h].

h) Claim 14 conclusion

Having considered all the arguments and evidence of record, we find that Petitioner has demonstrated that a person of ordinary skill would have had reason to combine the teachings of Garcia, Acharya, Richardson, Randle, and Davis and that their combined teachings would have disclosed or suggested all the limitations of claim 14 to an ordinarily skilled artisan.

3. Claim 15

Claim 15 depends from claim 14 and recites that "the processor executable instructions cause the plurality of processors to initiate the check deposit by provisionally crediting a financial account associated with the account identification number." The additional limitations recited in claim 15, which depends from claim 14, are similar to the additional limitations recited in claim 2, which depends from claim 1. Petitioner contends that the combination of Garcia and Acharya teaches the additional limitations of claim 15 for the same reasons it identifies above for claim 2. Pet. 76

Patent Owner does not explicitly dispute Petitioner's contentions concerning claim 15. Having considered the arguments and evidence of record, we find that Petitioner has demonstrated that a person of ordinary skill would have had reason to combine the teachings of Garcia, Acharya, Richardson, Randle, and Davis and that their combined teachings would have disclosed or suggest the limitations of claim 15 to an ordinarily skilled artisan.

4. Claim 16

Claim 16 depends from claim 14 and recites that "the processor-executable instructions cause the plurality of processors to forward the check image to a payor bank." The additional limitations recited in claim 16, which depends from claim 14, are similar to the additional limitations

recited in claim 3, which depends from claim 1. Petitioner contends that the combination of Garcia and Acharya teaches the additional limitations of claim 16 for the same reasons it identifies above for claim 3. Pet. 76–77.

Patent Owner does not explicitly dispute Petitioner's contentions concerning claim 16. Having considered the arguments and evidence of record, we find that Petitioner has demonstrated that a person of ordinary skill would have had reason to combine the teachings of Garcia, Acharya, Richardson, Randle, and Davis and that their combined teachings would have disclosed or suggest the limitations of claim 16 to an ordinarily skilled artisan.

K. Claim 17 as Obvious Over Garcia, Acharya, Richardson, Randle, Davis, and Pintsov

Claim 17 depends from claim 14 and recites the additional limitation that "the processor-executable instructions further cause the plurality of processors to overlay a bank stamp on the check image." The additional limitations recited in claim 17, which depends from claim 14, are similar to the additional limitations recited in claim 4, which depends from claim 1. Petitioner cites Pintsov as teaching overlaying a bank stamp, as recited in claim 17, in a manner similar to Petitioner's assertions concerning the additional limitations recited in claim 4. Pet. 77. Petitioner notes that the teachings of Randle and Davis are independent and compatible with those of Pintsov because Pintsov's bank stamp overlay is independent of Randle's teachings of detecting duplicate deposits and an endorsement mark, and Davis's teaching of generating a log file. *Id.*

Patent Owner does not explicitly dispute Petitioner's contentions concerning claim 17. Having considered the arguments and evidence of record, we find that Petitioner has demonstrated that a person of ordinary

skill would have had reason to combine the teachings of Garcia, Acharya, Richardson, Randle, Davis, and Pintsov and that their combined teachings would have disclosed or suggest the limitations of claim 17 to an ordinarily skilled artisan.

L. Claim 18 as Obvious Over Garcia, Acharya, Richardson, Randle, Davis, and Slater

Claim 18 depends from claim 14 and recites that "the processor-executable instructions [ ] cause the plurality of processors to: determine a check amount from the check image; and compare the check amount determined from the check image with the received check amount indication." The additional limitations recited in claim 18, which depends from claim 14, are similar to the additional limitations recited in claim 6, which depends from claim 1. Petitioner cites Slater as disclosing determining the check amount from a check image and comparing the check amount with the received check amount indication. Pet. 78. Petitioner notes that the teachings of Randle and Davis are independent and compatible with those of Slater because Slater's amount comparison would not have affected whether duplicate deposits or an endorsement mark could be detected, as these features do not involve the check amount. *Id.* at 79.

Patent Owner does not explicitly dispute Petitioner's contentions concerning claim 18. Having considered the arguments and evidence of record, we find that Petitioner has demonstrated that a person of ordinary skill would have had reason to combine the teachings of Garcia, Acharya, Richardson, Randle, Davis, and Slater and that their combined teachings would have disclosed or suggest the limitations of claim 18 to an ordinarily skilled artisan.

VII. CONCLUSION[13]

Having considered all the arguments and evidence of record, we conclude that Petitioner has demonstrated by a preponderance of the evidence all the challenged claims are unpatentable.

[13] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

In summary:

Claims	35 U.S.C. §	Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–3, 7–9	103	Garcia, Acharya, Richardson	1–3, 7–9	
5, 11, 13	103	Garcia, Acharya, Richardson, Randle	5, 11, 13	
6, 12	103	Garcia, Acharya, Richardson, Slater	6, 12	
4, 10	103	Garcia, Acharya, Richardson, Pintsov	4, 10	
14–16	103	Garcia, Acharya, Richardson, Randle, Davis	14–16	
17	103	Garcia, Acharya, Richardson, Randle, Davis, Pintsov	17	
18	103	Garcia, Acharya, Richardson, Randle, Davis, Slater	18	
Overall Outcome	103		1–18	

VIII. ORDER

In consideration of the above it is:

ORDERED that claims 1–18 of the ’136 patent are unpatentable,

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.

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