specification uses the permissive word "may." Specifically, the specification states that the "monitoring criteria *may* be based on one or more . . ." Ex. 1001, 4:3–8 (emphasis added). Thus, under the broadest reasonable interpretation, the '571 patent specification identifies representative "monitoring criteria" such as "light contrast on the image, light brightness of the image, positioning of the image, dimensions, tolerances, character spacing, skewing, warping, corner detection, and MICR (magnetic ink character recognition) line detection," "proper lighting and/or framing of the check 108," "positioning of the check 108," and "[e]dge detection and/or corner detection." Ex. 1001, 4:3–8, 3:58–60, 7:29–30, 7:48–52, 8:40–41 ("whether the MICR line can be detected and/or read"). We, however, disagree that Petitioner's proposed "one or more standards" is informative to the construction of the claim term because, as Patent Owner argues (Ex. 2052, 16), "'one or more standards' is simply a synonym for 'one or more criteria'; it does not actually explain what 'monitoring criteria' means in the context of the patented inventions."

Moreover, we decline to adopt Petitioner's proposed "perceptible to the human eye" as part of the construction of a "monitoring criteria." As discussed above with respect to the claim term "passes the monitoring criteria," the type of check image features that the specification contemplates monitoring are those, when within acceptable thresholds, that will ensure that check data can be electronically obtained from the check image without error. The specification provides check rotation as an example of a check image feature that can affect whether check data can be electronically obtained from the check. Specifically, the specification states that "if the check is rotated 45 degrees clockwise when captured, the check processing

module **454** or a software object operated on the server **322** [at the financial institution] may be unable to optically detect information on the check." Ex. 1001, 13:7–10, 13:38–44. Moreover, the specification contrasts a human's perception of a check image feature with how a machine or computer can programmatically perceive the feature. For example, the specification explains that "[w]hile 'flat' is a fairly well known term to users, each user's appreciation of flat with respect to the camera lens of the camera **207** associated with the mobile device 106 may result in a problem with needing to align the check image programmatically or risk rejecting a large number of check images." *Id.* at 14:11–16. In addition, the specification expressly states that the monitoring is performed by a computing device, and not a human—"[t]he monitoring may be performed by the camera, the mobile device 106, and/or a financial institution that is in communication with the mobile device 106." *Id.* at 1:40–43, 4:12–14; *see id.* at 15:37–40 ("[t]he monitoring may be performed by the camera, the mobile device, and/or a computing device associated with the depository, for example"), 15:40–43 ("[t]he monitoring may be performed pursuant to instruction received at the camera or mobile device from the deposit system operated by a depository, the server **322**, or the server apparatus **570**, for example"). In short, the specification contemplates electronically monitoring a criteria that can affect whether check data can be electronically obtained from the check. Furthermore, as discussed above, we determine that the preamble of claim 1 is limiting and it requires the "processor" to perform the monitoring of the image and the claim itself requires "using an image monitoring and capture module of the mobile device." In view of the

specification and claim language, we decline to adopt Petitioner's proposed "perceptible to a human eye."

Thus, for purposes of this decision, we determine that "a monitoring criterion" can include "one or more" features of an image of a check that can affect whether check data can be electronically obtained from the check, such as "light contrast on the image, light brightness of the image, positioning of the image, dimensions, tolerances, character spacing, skewing, warping, corner detection, and MICR (magnetic ink character recognition) line detection," "proper lighting and/or framing of the check," "positioning of the check," and/or "[e]dge detection and/or corner detection."

B. Covered Business Method Patent

Section 18 of the AIA provides for the creation of a transitional program for reviewing covered business method patents. A "covered business method patent" is a patent that "claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service, except that the term does not include patents for technological inventions." AIA § 18(d)(1); *see* 37 C.F.R. § 42.301(a). A patent need have only one claim directed to a covered business method to be eligible for review. *See* Transitional Program for Covered Business Method Patents—Definitions of Covered Business Method Patent and Technological Invention; Final Rule, 77 Fed. Reg. 48,734, 48,736 (Aug. 14, 2012) ("CBM Rules") (Comment 8). Petitioner has the burden to "demonstrate that the patent for which review is sought is a covered business method patent" by a "preponderance of the evidence." *Trial Practice Guide*, 37 C.F.R. § 42.304, 37 C.F.R. § 42.1(d).

Petitioner relies on claim 1 to argue that the '571 patent is eligible for a covered business method patent review.[7] Pet. 13 ("[a]t least claim 1 of the '571 patent is covered business method claim.").

1. Technological Invention

The AIA excludes from covered business method patent review patents for a "technological invention." AIA § 18(d)(1). To determine whether a patent is for a "technological invention," we consider "whether the claimed subject matter as a whole recites a technological feature that is novel and unobvious over the prior art; and solves a technical problem using a technical solution." 37 C.F.R. § 42.301(b).

Petitioner argues that the '571 patent is not directed to a technical problem. Petitioner contends that the problem addressed by the '571 patent is "that using a phone to create an image of a check 'requires the efficient and accurate detection and extraction of information pertaining to a check in the digital image.'" Pet. 14 (citing Ex. 1001, 1:26–33). Petitioner concludes that "the problem addressed by claim 1 of the '571 patent is how to take a good picture of a check using computer instructions 'for depositing a check' (thus complying with legal requirements—namely the *Check 21 Act*)." *Id.* at 15. Petitioner asserts that "[t]he problem of taking a well-composed picture is not a technical one." *Id.*

Petitioner further argues that the '571 patent claims do not solve a technical problem with a technical solution. *Id.* at 15. Petitioner contends that "[c]laim 1 helps users operate their mobile phones to take good pictures of checks by 'monitor[ing] an image of the check . . . with respect to a

[7] Patent Owner has statutorily disclaimed claims 14–20. Prelim. Resp. 27; Ex. 2042.

monitoring criterion' and 'captur[ing] the image of the check . . . when the image of the check passes the monitoring criterion.'" *Id.* (citing Ex. 1001, 21:9–14, 1:38–46). Petitioner concludes "[t]he solution [provided by the '571 patent] is to help users take pictures of checks that meet criteria for processing the check (i.e., the monitoring criterion)." *Id.* Petitioner asserts "[t]hat is not a technical solution to a technical problem." *Id.*

Lastly, Petitioner argues that the '571 patent discloses generic and conventional components and "does not purport to advance any computer technology." *Id.* at 15–17. Specifically, Petitioner asserts, "[t]hat the claims recite 'a processor,' 'a camera,' 'a mobile device,' an 'image monitoring and capture modules' and a 'communication pathway' is of no consequence; these components are described generically in the patent." *Id.*

Patent Owner responds that "[u]sing a mobile device to capture a check that will subsequently be deposited is a technological problem requiring a technological solution" and "[o]ne reason is because human perception cannot distinguish when an image is of sufficient quality for 'automated recognition' or 'Reco' systems." Prelim. Resp. 11 (citing Ex. 2024, 4). Patent Owner points out that "[t]he combination of non-standardized environments, devices and users introduce a host of technological challenges even beyond those present in traditional [Remote Deposit Capture]."[8] *Id.* at 13. Patent Owner further avers that "Petitioner offers no evidence supporting its assertion that (a) accurately capturing images of checks for deposit is not a technical problem and (b) using a computer processor and camera to actively monitor the quality of an image

[8] According to Patent Owner, "[d]eposit of checks using electronic images is known in the industry as remote deposit capture or RDC." Prelim. Resp. 7.

and automatically capture the image at the optimal time is not a technical solution." Prelim. Resp. 51–52.

Patent Owner also argues that "[t]he '571 Patent claims employ a technical solution to solve the technical problems facing mobile check deposit." *Id.* at 58. Specifically, Patent Owner argues that the '571 patent "creates a system that allows the processor to monitor a set of technical criteria that are relevant to check image acceptance and controlling capture of the image when the selected criteria are satisfied." *Id.* For example, alleges Patent Owner, "[c]laim 1 recites that the software causes the processor to:" "'monitor an image of the check in a field of view of a camera of a mobile device with respect to a monitoring criterion using an image monitoring and capture module of the mobile device;'" and "'capture the image of the check with the camera ***when the image of the check passes the monitoring criterion***.'" *Id.* at 58–59. For the reasons discussed below, Petitioner has not sufficiently established that the "technological invention" exception to a covered business method patent review does not apply to the '571 patent.

Petitioner misidentifies the disclosed problem by oversimplifying it. Petitioner asserts that the '571 patent address the problem of "tak[ing] a good picture of a check using computer instructions 'for depositing a check.'" Pet. 15. However, the '571 patent addresses the problem of taking a sufficiently good image of a check such that a machine can read the data of the original check. The '571 patent discloses that depositing a check electronically "requires the efficient and accurate detection and extraction of the information pertaining to a check in the digital image," and that "[c]apturing a digital image at a mobile device that allows for subsequent

detection and extraction of the information from a digital image is difficult." Ex. 1001, 1:26–35. As Patent Owner asserts (Prelim. Resp. 16), "in order for a check image to be [electronically] depositable, the image must conform to the criteria required by machines." Petitioner's witness, Dr. Alexander, testified in the DCT litigation that there are "***technical challenges*** associated with capturing sufficient quality images such that they could recognized by a machine." Ex. 2012, 9:23–10:3 (emphasis added). Dr. Alexander testified that "the environment in which the image is taken can change dramatically based on the user," "for example, the user can try to take the image in a dark room, the user can try to take the image in a light room, the user can try to take the image on a white table, . . . [or] [t]he phone itself may have different resolutions . . . ." *Id.* at 30:11–25. In his declaration, Dr. Alexander explains that "[t]o satisfy [the] Check 21 [Act], the image had to accurately represent all information on the check" and that "if the image was skewed, it would have been impossible to extract information from the check." Ex. 1002 ¶ 134 (citing Ex. 1036, 6; Ex. 1035, H9292; Ex. 1004, 28:50–52); *id.* ¶ 138 (Dr. Alexander states that a skilled artisan would have recognized that "inadequate imaging of checks (such as described above with respect to image quality and/or skewing) would result in errors in electronic checking transactions"). Thus, using an image of a check to deposit the check presents technical difficulties.

In addition, electronic deposit of a check, as required by claim 1, for example, requires compliance of certain technical specifications, further demonstrating that the '571 patent is directed to a technical problem. Petitioner admits that "[a]ccurately imaging checks is a key legal requirement of the *Check 21 Act*, since images of checks are used to create

substitute checks, which in turn must include replicas of an original check." Pet. 15 (citing Ex. 1042, 33). The "standard" cited by Petitioner "provides the financial industry with a specification for an Image Replacement Document (IRD) that provides for a machine readable substitute document created from the image that is made the front and back of the original check." Ex. 1042, 5. Furthermore, "[t]his standard establishes the construction, layout, data elements, data content, and printing specifications for [an IRD]" "that includes a machine readable MICR line." *Id.* at 9. "An IRD conforming to these specifications may be used as a Substitute Check in conformance with the [Check 21 Act]." *Id.* Thus, these are technical specifications for a substitute check ("IRD") that is created from the image of an original check. That an image of a check must satisfy the Check 21 Act's technical specification for "depositing a check" electronically (i.e., via "computer-readable instructions"), prior to capturing the image of the check with the camera, as recited in claim 1, further contradicts Petitioner's assertion that the '571 patent is not directed to a technical problem. Accordingly, we determine the disclosed method addresses a "technical problem."

We further determine that the disclosed method's solution to address the technical problem is technical. Petitioner argues that "[t]he solution [provided by the '571 patent] is to help users take pictures of checks that meet criteria for processing the check (i.e., the monitoring criterion)." Pet. 15. Petitioner mischaracterizes the solution provided by the '571 patent by oversimplifying it. Patent Owner's characterization of the '571 patent's solution to the technical problem, however, is consistent with the claim language and the disclosure in the specification. Patent Owner contends that

the '571 patent is directed to "an autonomous system [that puts] the image evaluation process in the hands of the mobile device processor, not in the hands of the user," wherein the processor monitors the image with respect to monitoring criteria, such as "skewing" or "warping," and determines whether those criteria are satisfied or not. Prelim. Resp. 17. Once the monitoring criteria are satisfied, asserts Patent Owner, the processor will allow the camera to capture the image of the check in view—removing user judgment from the process. *Id.* at 17–18.

Patent Owner's characterization of the '571 patent as providing a technical solution is consistent with the scope of claim 1. As we discussed above with respect to the claim construction of claim 1, the preamble requires a "processor" to perform the claimed limitations, including "monitor[ing] an image of the check . . . with respect to a monitoring criterion" and "captur[ing] the image . . . when the image of the check passes the monitoring criterion," for the purpose of "depositing a check," the image of which check is monitored with respect to a monitoring criterion and captured when the image passes the monitoring criterion.

The parties dispute the meaning of "depositing a check." In its DCT claim construction briefing, Patent Owner argues that "depositing a check" does not need to be construed, but alternatively means "provide a check image to a depository for presentment and clearing in order for money to be credited to an account." Ex. 2052, 8; Ex. 2055, 9–10. Petitioner also argues that "depositing a check" does not need to be construed, but alternatively means "provide a check image and/or check information to a depository (such as a bank) for money to be credited to an account." Ex. 1049, 8. Petitioner disagrees that "deposit" includes "check presentment and check

clearing." *Id.* at 9. For the purposes of this decision, all that matters is that the parties agree that the check image must be provided to a depository, such as a financial institution.

As noted above, claim 1 further requires that the processor "monitor an image of the check . . . with respect a monitoring criteria." As discussed above with respect to the claim construction of claim 1, "a monitoring criterion" can include "one or more" features of an image of a check that can affect whether check data can be electronically obtained from the check, such as "light contrast on the image, light brightness of the image, positioning of the image, dimensions, tolerances, character spacing, skewing, warping, corner detection, and MICR (magnetic ink character recognition) line detection," "proper lighting and/or framing of the check," "positioning of the check," and/or "[e]dge detection and/or corner detection." Furthermore, the processor determines "when the image of the check passes the monitoring criteria." As discussed above with respect to the claim construction of claim 1, "passes the monitoring criterion" means determining that the quality of the monitored image feature is within acceptable thresholds so that check data can be electronically obtained from the image without error during electronic processing and clearing. In sum, the solution provided by the '571 patent is a processor, as opposed to a human, monitoring one or more technical criterion of the image of the check to determine whether the quality of the image is within acceptable thresholds, prior to the image being captured, so that check data can be electronically obtained from the image without error during electronic processing and clearing. In other words, the '571 patent uses a machine to ensure that the quality of the check image is sufficiently high, prior to

capturing the image, so that subsequently a machine will be able to read data from the check image. The 571 patent thus improves prior computer systems and methods by solving the problem associated with those automated processes. *See* Ex. 1001, 1:31–35 ("such a technique requires the efficient and accurate detection and extraction of the information pertaining to a check in the digital image. Capturing a digital image at a mobile device that allows for subsequent detection and extraction of the information from the digital image is difficult.").

Therefore, even accepting Petitioner's claim construction in District Court that "deposit[ing]" does not require check presentment and check clearing (Ex.1029, 9), claim 1 requires "depositing a check" by providing an image of the check to a depository, such as a financial institution. Furthermore, the processor must monitor one or more technical criteria to determine that the quality of the monitored image feature is within acceptable thresholds prior to capturing the image, so that check data can be electronically obtained from the image without error during electronic processing and clearing. The '571 patent specification confirms that the processor determining that the check image passes monitoring criteria is the solution. Specifically, the '571 patent specification states that "[b]y ensuring that the image of the check passes monitoring criteria *during pre-image capturing monitoring*, the number of non-conforrming images of checks is reduced during presentment of the images to a financial institution for processing and clearing." Ex. 1001, 4:18–22 (emphasis added).

Therefore, the '571 patent's solution to the addressed problem is rooted in technology, and thus, is a "technical solution."

Lastly, Petitioner has not sufficiently persuaded us that the '571 patent recites a technological solution that is *not* novel and nonobvious for purposes of satisfying the "technological invention" exception in § 42.301(b). The entirety of Petitioner's argument that claim 1 does not recite a novel and unobvious technical feature is the following:

> Claim 1 of the '571 patent does not recite a novel and unobvious technical feature either. It instead recites known combinations of prior art structures to achieve predictable results. [Recitation of claim 1] Any arguably technical component in this claim—*e.g.* mobile device with a camera and processor—are admittedly common. *See* § II.D (page 5).[9] And, using these features to take photos of checks and send them to a bank was old hat by August 2009, as exemplified by the teachings of Ramachandran. *See* § VII.B.1 (page 41). Additionally, monitoring an image of a document to be photographed by a camera on a mobile device was similarly old and obvious based on Yoon. *See* § VII.B.1 (page 41).[10]

Pet. 17–18. Petitioner does not demonstrate that claim 1 does not recite a novel and unobvious technical feature for the following reasons.

As an initial matter, Petitioner's contentions are conclusory. For example, as Patent Owner argues (Prelim. Resp. 34, 45), Petitioner does not provide sufficient analysis as to why there would have been a reason or motivation to combine Ramachandran and Yoon to achieve the claimed invention, much less with any reasonable expectation of success. Petitioner

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[9] Page 5 of the Petition discusses alleged mobile technology advances, such as 3G wireless technology, and includes the beginning of Petitioner's discussion of the Check 21 Act. Pet. 5.

[10] Page 41 of the Petition summarily identifies Petitioner's contentions under Ground 2 and provides the beginning of a summary of the asserted prior art reference Ramachandran. Pet. 41.

does provide an analysis supporting its assertion that Ramachandran and Yoon render the challenged claims obvious. Pet. 41–79. However, Petitioner's analysis with respect to its asserted obviousness ground cannot take the place of a proper covered business method patent eligibility analysis. *See Emnos USA Corp. v. Dunnhumby Ltd.*, Case CBM2015-00162, slip op. at 10 (PTAB Dec. 30, 2015) (Paper 7) (denying institution based on technological invention exclusion); *see also Motorola Mobility, LLC v. Intellectual Ventures I, LLC*, Case CBM2014-00084, slip op. at 4–5 (PTAB Sept. 23, 2014) (Paper 21) (denying request for rehearing of decision denying institution because "[t]he only portion of the Petition addressing whether a claim as a whole recites a technological feature was addressed in our Decision. The portion of the Petition that Petitioner contends the Board overlooked or misapprehended addresses only whether the challenged claims are novel and unobvious over the prior art, and does not address whether the claimed subject matter as a whole recites a technological feature.") (internal citations omitted); *see also Bloomberg L.P. v. Quest Licensing Corp.*, Case CBM2014-00205, slip op. at 7, 9 (PTAB June 17, 2015) (Paper 18) (denying request for rehearing of decision denying institution because petitioner did not carry burden on technological invention inquiry, and finding unpersuasive petitioner's arguments that focused on portions of the petition other than the section addressing the technological invention inquiry).

Moreover, Petitioner's argument that claim 1 does not recite a novel and unobvious technical feature refers to the individual elements of the claims without considering the claims as a whole, as required by § 42.301(b). *See* Pet. 17–18. Petitioner refers to the following elements of

claim 1—mobile device with a camera and processor—to argue that claim 1 does not recite a novel and unobvious technical feature. *See HTC Corp. v. Ancora Techs. Inc.*, Case CBM2017-00054, slip op. at 9–11 (PTAB Dec. 1, 2017) (Paper 7) (applying the exclusion for a "technological invention" to a patent claim even if the individual hardware components of the system were known technology). Petitioner, however, does not address claim 1's requirement that a processor, and not a human, monitor one or more technical criteria of the check image to determine that the quality of the image is within acceptable thresholds, prior to capturing the image, so that check data can be electronically obtained from the image without error during electronic processing and clearing. Indeed, Patent Owner notes that "[t]he Petition fails to point to any mobile device that has ever existed that combines these features for the capture of checks." Prelim. Resp. 33. Petitioner's argument is, thus, unavailing.

We are persuaded, therefore, that the exclusion for a "technological invention" applies in this case. Accordingly, we conclude that, based on the evidence of record, the '571 patent is not a covered business method patent eligible for review.

C. CONCLUSION

In view of the foregoing, we conclude that the '571 patent is not a covered business method patent under AIA § 18(d)(1), and thus, is not eligible for review using the transitional covered business method patent review program.

III. ORDER

For the reasons given, it is,

ORDERED that a covered business method patent review is *denied*.

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IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

UNITED SERVICES AUTOMOBILE ASSOCIATION,	§	
	§	
Plaintiff,	§	
	§	
v.	§	**CIVIL ACTION NO. 2:18-CV-00245-JRG**
	§	
WELLS FARGO BANK, N.A.,	§	
	§	
Defendant.	§	

MEMORANDUM OPINION AND ORDER

Before the Court is Defendant Wells Fargo Bank N.A.'s ("Wells Fargo") Motion for Summary Judgment Under 35 U.S.C. § 101 (the "Motion"). (Dkt. No. 131.) The Court heard argument on this Motion at the pretrial conference held in the above-captioned case on October 17, 2019. (Dkt. No. 263.) As announced at that hearing and for the reasons set forth herein, the Court is of the opinion that the Motion should be and hereby is **DENIED**.[1] (*Id.* at 228:3–229:5.)

I. Factual Background

A. Procedural History

United Services Automobile Association ("USAA") brought suit against Wells Fargo alleging infringement of U.S. Patent Nos. 8,977,571 (the "'571 Patent") and 9,818,090 (the "'090 Patent") (collectively, the "Asserted Patents" or "Patents-in-Suit").[2] Shortly thereafter, Wells

[1] As to any claims narrowed from the list of claims prior to the Court's ruling (*see* Dkt. No. 231), the Motion is **DENIED-AS-MOOT**.

[2] USAA also asserted U.S. Patent Nos. 8,699,779 (the "'779 Patent") and 9,336,517 (the "'517 Patent"). Between the Court's ruling from the bench on the Motion and the issuance of this Memorandum Opinion and Order, the then-asserted claims of the '779 and '517 Patents have been dropped from the list of claims to be asserted at trial. (Dkt. No. 268.) While the Court's ruling is effective as to those prior asserted claims, which were pending when the ruling was made from

Fargo filed a Motion for Judgment on the Pleadings that the Asserted Patents are ineligible under 35 U.S.C. § 101. (Dkt. No. 28.) The Court denied Well Fargo's motion as moot in light of USAA's subsequently filed First Amended Complaint and granted leave to refile a similar motion directed at the First Amended Complaint. (Dkt. No. 61.) Wells Fargo declined to refile under Federal Rule of Civil Procedure 12.

However, Wells Fargo did file Petitions for Covered Business Method ("CBM") Review with the United States Patent Trial and Appeal Board ("PTAB") challenging each of the Asserted Patents, inter alia, as claiming patent-ineligible subject matter under § 101. Petition, *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass'n*, CBM2019-00004, Paper No. 2 (P.T.A.B. Nov. 8, 2018) (hereinafter, "'571 CBM Petition"); Petition, *Wells Fargo Bank, N.A. v. United Servs. Auto. Ass'n*, CBM2019-00002, Paper No. 2 (P.T.A.B. Nov. 8, 2018). The PTAB declined to institute CBM review as to the '571 Patent because it found that the patent claimed a "technological invention"; that is, it claimed a technological feature that is novel and nonobvious and "solves a technical problem using a technical solution." Decision, *Wells Fargo Bank, N.A. v. United Servs. Auto. Assoc'n*, CBM2019-00004, Paper No. 22 at 22–32 (P.T.A.B. May 15, 2019) (hereinafter, "'571 CBM Decision"); *see also* 37 C.F.R. § 42.301 (defining the scope of CBM review). Wells Fargo sought, and the PTAB granted, dismissal of its CBM petition as to the '090 Patent. Decision, *Wells Fargo Bank, N.A. v. United Services Automobile Association*, CBM2019-00002, Paper No. 16 (P.T.A.B. Aug. 26, 2019). The PTAB also denied initiation as to Wells Fargo's related Petition for *Inter Partes* Review of the '090 Patent. Decision, *Wells Fargo Bank, N.A. v. United Services Automobile Association*, IPR2019-00815, Paper No. 17 (P.T.A.B. Aug. 26, 2019).

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the bench, the Court confines its analysis in this Memorandum Opinion and Order to the remaining Asserted Patents.

Wells Fargo now brings the instant Motion under Federal Rule of Civil Procedure 56 that the claims of the Patents-in-Suit are directed at patent-ineligible subject matter.

B. The Asserted Patents and Claims

USAA asserts that Wells Fargo infringes Claims 1–10 and 12–13 of the '571 Patent and Claims 1–10 of the '090 Patent (collectively, the "Asserted Claims"). (Dkt. No. 268.) By this Motion, Wells Fargo seeks summary judgment that each of these Asserted Claims is directed at patent-ineligible subject matter. The '571 Patent and the '090 Patent share the same priority date and specification.

The Asserted Claims generally relate to the automated capture of a digital image of a check for deposit using a mobile device. The '571 Patent and '090 Patent generally claim systems and methods for capturing check images by monitoring images for conformance with certain monitoring criteria. Claim 1 of the '571 Patent is illustrative:

> 1. A non-transitory computer-readable medium comprising computer-readable instructions for depositing a check that, when executed by a processor, cause the processor to:
>
> monitor an image of the check in a field of view of a camera of a mobile device with respect to a monitoring criterion using an image monitoring and capture module of the mobile device;
>
> capture the image of the check with the camera when the image of the check passes the monitoring criterion; and
>
> provide the image of the check from the camera to a depository via a communication pathway between the mobile device and the depository.

'571 Patent, Claim 1.

Wells Fargo asserts that Claim 1 of the '090 Patent is representative for purposes of the Court's analysis. The Court is not convinced that Wells Fargo has met its initial burden of showing representativeness. *See PPS Data, LLC v. Jack Henry & Assocs., Inc.*, ___ F. Supp. 3d ____, No. 2:18-cv-00007-JRG, 2019 WL 4745122, at *3–6 (E.D. Tex. Sept. 6, 2019) ("[W]hen a defendant

seeks to invalidate multiple claims based only on allegations relating to a subset of those claims, the defendant must justify treating that subset as representative of the other claims.") (citing *Aqua Prod., Inc. v. Matal*, 872 F.3d 1290, 1305 (Fed. Cir. 2017); 35 U.S.C. § 282(a)); *id.* at 5 ("Since different patents must generally contain patentably distinct inventions, it follows that the claims in one patent will not usually represent all of the inventive concepts embodied in the claims of another patent.") (citing *Novartis Pharm. Corp. v. Breckenridge Pharm. Inc.*, 909 F.3d 1355, 1362 (Fed. Cir. 2018)). Accordingly, the Court looks to each independent Asserted Claim in each Asserted Patent. '571 Patent, Claims 1, 9; '090 Patent, Claim 1. The Court also looks to the individual limitations of particular dependent Asserted Claims to the extent relevant to its analysis.

II. Legal Standard

A. Summary Judgment

Summary judgment should be granted "if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a). Any evidence must be viewed in the light most favorable to the nonmovant. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986) (citing *Adickes v. S.H. Kress & Co.*, 398 U.S. 144, 158–59 (1970)). Summary judgment is proper when there is no genuine dispute of material fact. *Celotex v. Catrett*, 477 U.S. 317, 322 (1986). "By its very terms, this standard provides that the mere existence of some alleged factual dispute between the parties will not defeat an otherwise properly supported motion for summary judgment; the requirement is that there be no genuine [dispute] of material fact." *Anderson*, 477 U.S. at 247–48. The substantive law identifies the material facts, and disputes over facts that are irrelevant or unnecessary will not defeat a motion for summary judgment. *Id.* at 248. A dispute about a material fact is "genuine" when the evidence is "such that a reasonable jury could return a verdict for the nonmoving party." *Id.*

The moving party must identify the basis for granting summary judgment and evidence demonstrating the absence of a genuine dispute of material fact. *Celotex*, 477 U.S. at 323. If the movant bears the burden of proof on an issue at trial, then the movant "must establish beyond peradventure all of the essential elements of the claim or defense to warrant [summary] judgment in [its] favor." *Fontenot v. Upjohn Co.*, 780 F.2d 1190, 1194 (5th Cir. 1986). "If the moving party does not have the ultimate burden of persuasion at trial, the party 'must either produce evidence negating an essential element of the nonmoving party's claim or defense or show that the nonmoving party does not have enough evidence of an essential element to carry its ultimate burden of persuasion at trial.'" *Intellectual Ventures I LLC v. T Mobile USA, Inc.*, No. 2:17-CV-00577-JRG, 2018 WL 5809267, at *1 (E.D. Tex. Nov. 6, 2018) (quoting *Nissan Fire & Marine Ins. Co., Ltd. v. Fritz Cos., Inc.*, 210 F.3d 1099, 1102 (9th Cir. 2000)).

B. Patent-Eligible Subject Matter

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of [the Patent Act]." 35 U.S.C. § 101. Since patent protection does not extend to claims that monopolize the "building blocks of human ingenuity," claims directed to laws of nature, natural phenomena, and abstract ideas are not patent eligible. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). The Supreme Court instructs courts to distinguish between claims that set forth patent-ineligible subject matter and those that "integrate the building blocks into something more." *Id.* at 217. In doing so, courts apply a two-step test.

First, the court "determine[s] whether the claims at issue are directed to a patent-ineligible concept." *Id.* at 218. This "step of the inquiry calls upon us to look at the 'focus of the claimed advance over the prior art' to determine if the claim's 'character as a whole' is directed to excluded subject matter." *Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir.

2016). The court must "tread carefully in construing this exclusionary principle" because "[a]t some level, 'all inventions . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.'" *Alice*, 573 U.S. at 217 (omission in original) (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 556 U.S. 66, 71 (2012)). The court must distinguish "ineligible abstract-idea-based solutions implemented with generic technical components in a conventional way from the eligible technology-based solution and software-based invention that improves the performance of the computer system itself." *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1299 (Fed. Cir. 2016) (internal quotations omitted) . In doing so, the Court's analysis must be "directly tethered to the claim language" and should avoid recasting specific limitations "at a high level of abstraction." *Solutran, Inc. v. Elavon, Inc.*, 931 F.3d 1161, 1168 (Fed. Cir. 2019).

Second, if the challenged claims are directed towards a patent-ineligible concept, the court then "consider[s] the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent eligible application." *Alice*, 573 U.S. at 217 (quoting *Mayo*, 566 U.S. 66, 78–79 (2012)). This step is satisfied when the claim limitations contain an inventive concept that "involve[s] more than performance of 'well-understood, routine, [and] conventional activities previously known to the industry.'" *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1347–48 (Fed. Cir. 2014) (quoting *Alice*, 573 U.S. at 225). The Federal Circuit has explained that "[w]hile the ultimate determination of eligibility under § 101 is a question of law, like many legal questions, there can be subsidiary fact questions which must be resolved en route to the ultimate legal determination." *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1128 (Fed. Cir. 2018). As such, "[t]he question of whether a claim element or combination of

elements is well-understood, routine, and conventional to a skilled artisan in the relevant field is a question of fact" that must be "proven by clear and convincing evidence." *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018).

Something is not necessarily well-understood, routine, and conventional simply because it is disclosed in a prior art reference. *Exergen Corp. v. KAZ USA, Inc.*, 725 F. App'x 959, 965–66 (Fed. Cir. 2018). There are many obscure references that may qualify as prior art but are insufficient to establish something is a "well-understood, routine, and conventional activity previously engaged in by scientists who work in the field." *Mayo*, 566 U.S. at 79. Accordingly, determining "[w]hether a particular technology is well-understood, routine, and conventional goes beyond" simply examining "what was simply known in the prior art." *Berkheimer*, 881 F.3d at 1369.

Additionally, specific improvements described in a patent specification, "to the extent they are captured in the claims, create a factual dispute regarding whether the invention describes well-understood, routine, and conventional activities." *Berkheimer*, 881 F.3d at 1369. However, "[w]hen there is no genuine issue of material fact regarding whether the claim element or claimed combination is well-understood, routine, conventional to a skilled artisan in the relevant field, [patent eligibility] can be decided on summary judgment as a matter of law." *Berkheimer*, 881 F.3d at 1368.

III. Discussion

The Court agrees with the PTAB that the Asserted Claims are directed at a "[technical] solution to address [a] technical problem." '571 CBM Decision at 26. The Asserted Claims "focus on a specific means or method that improves the relevant technology" and not, as Wells Fargo contends, on an abstract concept such as taking a picture. *McRO, Inc. v. Bandai Namco Games*

Am. Inc., 837 F.3d 1299, 1314 (Fed. Cir. 2016). The Court, therefore, concludes that the Asserted Claims are eligible for patent protection under step one of *Alice*.

Alternatively and independently, the Court finds that even if the Asserted Claims were directed at an abstract concept, a genuine dispute of fact would exist as to whether the claim elements individually or as an ordered combination were "well-understood, routine, and conventional to a skilled artisan in the relevant field." *Berkheimer*, 881 F.3d at 1368. Such a factual dispute precludes summary judgment.

A. *Alice* Step One

Under step one of the *Alice* inquiry, the court "determine[s] whether the claims at issue are directed to a patent-ineligible concept," such as an abstract idea. *Alice*, 573 U.S. at 217–18. Here, the Court determines that they are not.

Wells Fargo argues that the Asserted Claims are directed to an abstract idea—"[c]apturing a photograph," which "is a mental process." (Dkt. No. 131 at 1.) The Asserted Claims, Wells Fargo asserts, "do nothing more than apply this abstract concept using standard computer technology." (*Id.*) "[T]he Asserted Patents are all directed to the same mental process of monitoring an image for a certain criterion, determining whether that criterion is met, and when it is, capturing the image." (*Id.* at 9.) These steps, "performed by the claimed computer elements described in" the Asserted Claims, "are functional in nature and are performed by a human as part of evaluating an image when taking a photo." (*Id.*) Therefore, according to Wells Fargo, the Asserted Claims recite simply "a mental process performed by a human any time an image is evaluated as part of taking a photo, and thus" are directed to "an ineligible abstract idea." (*Id.* at 9–10.)

USAA counters that the Asserted Claims "engage the unique challenges associate[d] with imaging with a mobile device, imaging and image recognition using machine systems, and imaging involving check deposit." (Dkt. No. 158 at 15.) "The claimed inventions recite autonomous mobile

camera systems with specific technical features allowing the systems to compete with specialized, dedicated machines, that have to satisfy very particularized image quality requirements." (*Id.*) Therefore, USAA argues, the Asserted Claims recite "inventions with specific applications or improvement to technologies in the marketplace," and thus are not abstract. (*Id.* at 15–16 (quoting *Research Corp. Techs. Inc. v. Microsoft Corp.*, 627 F.3d 859, 869 (Fed. Cir. 2010).)

The Court disagrees with Wells Fargo that the Asserted Claims are directed at the abstract idea of taking a picture rather than an improvement to technology. Wells Fargo made a similar argument before the PTAB in arguing that the Asserted Claims were eligible for CBM review: "The problem of taking a well-composed picture is not a technical one." '571 CBM Petition at 15. The PTAB disagreed, noting that Wells Fargo "misidentifies the disclosed problem by oversimplifying it." '571 CBM Decision at 24. Wells Fargo's argument falls short in the § 101 context for similar reasons. "[D]escribing the claims at such a high level of abstraction . . . all but ensures that the exceptions to § 101 swallow the rule." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1337 (Fed. Cir. 2016).

1. The Asserted Claims recite systems and methods for improving the capture of images in a quality sufficient to be processed.

"As the specification confirms, the claimed improvement here is" not simply taking a picture but capturing a quality image of a check such that a machine can read the data of the original check. *McRO*, 837 F.3d at 1313; *see also, e.g.*, '571 CBM Decision at 24. The common specification of the '571 and '090 Patents discloses that to reduce the burdens of having to physically present a check for deposit, existing "systems and methods have been developed to enable the remote deposit of checks." '571 Patent at 1:24–26. However, depositing a check electronically "requires the efficient and accurate detection and extraction of the information pertaining to a check in the digital image." *Id.* at 1:31–33. "Capturing a digital image at a mobile

device that allows for subsequent detection and extraction of the information from the digital image is difficult." *Id.* at 1:33–35.

To overcome this problem identified in their common specification, the Asserted Claims of the '571 Patent and the '090 Patent each recite a processor configured to or caused to monitor an image of a check or other document with respect to a "monitoring criterion" and capture an image thereof when the monitoring criterion is satisfied. *E.g.*, '571 Patent, Claims 1, 9; '090 Patent, Claim 1. As noted in the Claim Construction Order:

> The "monitoring criteria" of the patents are features of an image that are used as part of the quality-control process. "To increase the likelihood of capturing a digital image of the check 108 that may be readable and processed such that the check 108 can be cleared, the image is monitored for compliance with one or more monitoring criteria, prior to the image of the check 108 being captured."

(Dkt. No. 100 at 25 (quoting '571 Patent at 3:54–58).) "The monitoring of the monitoring criteria is repeatedly described and claimed as performed by a device rather than a human." (*Id.* at 26 (citing '571 Patent at 1:40–43, 8:40–45); *see also id.* at 27 ("There is nothing in the patents that suggests that a human may perform the monitoring and the Court does not here hold that human monitoring is encompassed by any claim.").)

Indeed, it is the machine monitoring of these criteria, rather than human monitoring, that "increase[s] the likelihood of capturing a digital image . . . that may be readable and processed" by a machine to extract relevant, necessary information. '571 Patent at 3:54–55.

> In other words, the '571 [P]atent [and the '090 Patent] use[] a machine to ensure that the quality of the check image is sufficiently high, prior to capturing the image, so that subsequently a machine will be able to read data from the check image. [These patents] thus improve[] prior computer systems and methods by solving the problem associated with those automated processes.

'571 CBM Decision at 28–29.

The types of monitoring criteria disclosed in the specification are not akin to human photo evaluation because they do not involve the kind of information that could be readily assessed in

real-time by a human user looking at the image on a mobile device screen. For example, the specification discloses such monitoring criteria as (1) monitoring skew by "measuring the distance from the edge(s) of the check 208 in the image to an alignment guide or the edge of the field of view" ('571 Patent at 8:10–13); (2) measuring the spacing of the MICR line to determine if "the spacing is outside of a certain range corresponding to valid spacing between number[s] in a MICR line" (*Id.* at 8:62–63); or (3) generating "one or more histograms" to be "used in the determination of light contrast and/or light brightness monitoring criteria" (*Id.* at 9:25–28.)

Though they may seek to accomplish the same ends as the manual processes they replace, these types of tasks cannot be readily done by a human user with the precision required to satisfy the claims. For example, while the human mind can appreciate the level of brightness or contrast in an image, it cannot readily generate a histogram charting "where all of the brightness levels contained in the image are found, from the darkest to the brightest." (*Id.* at 9:29–30.) The purpose of the claimed invention is not to generate a digital image not that is aesthetically pleasing to the human eye but rather to generate a digital image from which a machine can efficiently and accurately detect and extract relevant information. '571 Patent at 1:31–33. This requires a high degree of precision, not a human subjective determination.

Further, strict adherence to these monitoring criteria directly impacts to the ability of such an image to be fit for its intended purpose: to serve as a substitute check. "The Check Clearing for the 21st Century Act (or Check 21 Act) is a United States federal law that allows the recipient of a paper check to create a digital version, thereby eliminating the need for further handling of the physical document." '571 Patent at 12:19–23. Specifically, the Check 21 Act allows a substitute check to serve as "the legal equivalent of the original check" if it "accurately represents all the information on the front and back of the original check." 12 U.S.C. § 5003(b). The requirements

of a substitute check are precisely defined. *Id.* § 5002(16). As the specification discloses, "[b]y ensuring that the image of the check passes monitoring criteria during preimage capturing monitoring, the number of non-conforming images of checks is reduced during presentment of the images to a financial institution for processing and clearing." '571 Patent at 4:17–22.

The specification further discloses that the "Check 21 standard for electronic exchange is defined in the standard DSTU X9.37-2003 ('X9.37'). It is a binary interchange format." *Id.* at 12:23–25; *see also* '571 CBM Decision at 4 n.2 (noting that "DTSU X9.37–2003 has been replaced by ANS X9.100-80-2006" though the "technical content . . . is identical"). "This standard establishes the construction, layout, data elements, data content, and printing specifications for an [Image Replacement Document] that includes a *machine readable* MICR line." '571 CBM Decision at 26 (emphasis added) (alterations and internal quotations omitted). Thus, to comply with the Check 21 standard, such that "the number of non-conforming images of checks is reduced," the images of the checks must be of sufficient quality to be machine-readable.[3] '571 Patent at 4:19–20.

[3] At oral argument, Wells Fargo asserted, "It's not the Court's claim construction that the check has to meet . . . Check 21 standards or be of sufficient ability to be processed by a computer." (Dkt. No. 263 at 220:13–16.) Rather Wells Fargo asserted, "[I]f it is passing a monitoring criterion, singular, . . . then it will be in a form sufficient" under the Court's construction of "depositing a check." (*Id.* at 219:13–15.) Wells Fargo presented this same argument at the claim construction hearing before Judge Payne, who expressed skepticism. (Dkt. No. 96 at 19:14–17 ("So you want the Court to construe 'depositing a check' to mean that an image of the check is transmitted to the bank? A Polaroid, a -- whatever, a cartoon, just -- it doesn't matter, just an image?").) To the contrary, the Claim Construction Order makes clear "that depositing a check is more than just providing it to the institution, it involves providing it in a form to enable actual crediting of funds to the deposit account." (Dkt. No. 100 at 16.) Under the Court's construction, the check must meet technical conformity with industry standards in order to be "in a form sufficient to allow money to be credited to an account." (*Id.* at 18.) In the United States, those standards are the Check 21 standard.

While the Asserted Claims of the '571 Patent recite monitoring and capturing "the image of a check," the Asserted Claims of the '090 Patent instead recite monitoring and capturing "a target document." *Compare* '571 Patent, Claim 1 *with* '090 Patent, Claim 1. Although the '090 Patent claims an invention that is not limited to the capturing and processing of checks, the specification makes clear that the same objective—capturing an image sufficient for a machine to detect and extract relevant information—remains the same:

> It is noted that although examples and implementations described herein may refer to a check image and check data, the term "check image" may refer to any foreground image in a digital image (as opposed to the background image) and the term "check data" may refer to any foreground data in a digital image (as opposed to background data). Thus, the "check image" and the "check data" may refer to the foreground image and foreground data in implementations involving any negotiable instrument, form, or document.

'090 Patent at 7:4–13. While the '090 Patent claims are not limited to the "check image" context, the goal of machine-readable quality images remains the same.

2. The Asserted Claims are not directed to an abstract idea.

The Asserted Claims, which each require a "processor" to "determine" when an image meets certain requirements, are directed to a machine-implemented solution to a machine-specific problem: the difficulty of machines detecting and extracting information from a digital image. "In other words, we are not faced with a situation where general-purpose computer components are added post-hoc to" the simple act of taking a picture. *Enfish*, 822 F.3d at 1339. "Rather, the claims are directed to a specific implementation of a solution to a problem in the software arts." *Id.* Accordingly, the Court finds "the claims at issue are not direct to an abstract idea." *Id.*

As an initial matter, and despite Wells Fargo's arguments to the contrary, the Court doubts whether the act of taking a picture is itself an abstract idea. Taking a picture is not a fundamentally abstract concept or uniquely human action, such as "a fundamental economic practice or mathematical equation." *Id.* Moreover, "the human mind is not equipped" to capture photographs

on its own. *See SRI Int'l, Inc. v. Cisco Sys., Inc.*, 930 F.3d 1295, 1304 (Fed. Cir. 2019). To the contrary, the act of taking a picture requires the intervention of mechanical and technical devices and processes both before, during, and after the human user's selecting and capturing of the image. Said another way, a claim directed to allowing a machine to select and capture an appropriate picture is not adding a generic computer component to a fundamentally human process. Rather, it is removing the once-necessary human intervention from a fundamentally mechanical process. Such an "improvement in the functioning of a" mobile device is not directed to an abstract concept. *Enfish*, 822 F.3d at 1338; *see also Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, 880 F.3d 1356, 1362 (Fed. Cir. 2018) ("We previously have held claims focused on various improvements of systems directed to patent eligible subject matter under § 101.").

Finding that an invention is directed to an abstract idea simply because it removes the need for human intervention in a process is precisely the type of "high level of abstraction" that "all but ensures that the exceptions to § 101 swallow the rule." *Enfish*, 822 F.3d at 1337. Taken to its logical conclusion, inventions directed to everything from self-opening doors to self-driving cars would become ineligible for patent protection. Accordingly, even granting Wells Fargo's description of the subject matter to which the claims are directed, *Alice* step one does not pose a bar to patentability.

To be clear, the Court does not determine that the Asserted Claims are directed merely to taking a picture. Instead, the Court finds that they are directed to a machine-implemented process for detecting and capturing an image of sufficient quality to detect and extract relevant information from the image by a machine. Such claims are not directed to an abstract idea, even if the claimed invention replaces a prior human process. This is true because the claims improve that prior process in a technologically inventive way. The Federal Circuit's decision in *McRO* is instructive.

The claimed improvement at issue in *McRO* allowed "computers to produce 'accurate and realistic lip synchronization and facial expressions in animated characters' that previously could only be produced by human animators." 837 F.3d at 1313 (quoting U.S. Patent No. 6, 307,576 at 2:49–50). This improvement was realized through "the use of rules, rather than artists." *Id.* The Federal Circuit rejected the argument that "the claims simply use a computer as a tool to automate conventional activity." *Id.* at 1314. There was no indication that "the process previously used by animators is the same as the process required by the claims." *Id.* To the contrary, "an animator's process was driven by subjective determinations rather than specific, limited mathematical rules." *Id.* "It is the incorporation of the claimed rules, not the use of the computer, that 'improved [the] existing technological process' by allowing the automation of further tasks. *Id.* (alteration in original) (quoting *Alice*, 573 U.S. at 223).

Like the claims at issue in *McRO*, the Asserted Claims employ a processor "to perform a distinct process to automate a task previously performed by humans." *Id.* at 1314. Also like the claims in *McRO*, there is no indication that the Asserted Claims' reliance on one or more "monitoring criterion" mirror the process previously used by human photographers. To the contrary, the very improvement being claimed is the use of objective monitoring criteria to improve the acceptability of the check image relative to an image captured in reliance on the subjective determinations of a user. '571 Patent at 4:17–20 ("By ensuring that the image of the check passes monitoring criteria during preimage capturing monitoring, the number of non-conforming images of checks is reduced . . . ."). It is the use of these objective monitoring criteria, not the use of a generic computer, that "improved [the] existing technological process." *Alice*, 573 U.S. at 223.

Wells Fargo points to several cases for the proposition that claims that recite phrases such as "monitoring" and "determining" are directed to an abstract idea. (Dkt. No. 131 at 11–12.) These cases neither espouse nor impose such a bright line rule. For example, in *Electric Power Group, LLC v. Alstom S.A.*, the Federal Circuit affirmed the district court's determination that the claims at issue were directed to "the abstract idea of monitoring and analyzing data from disparate sources." 830 F.3d 1350, 1353 (Fed. Cir. 2016). However, the Federal Circuit did not take issue with "monitoring" *per se*. Rather, the Federal Circuit distinguished those claims from the claims in *Enfish* because it found "the focus of the claims is not on such an *improvement* in computers as tools, but on certain independently abstract ideas that *use* computers as tools." *Id.* at 1354 (emphasis added).

Here, as Wells Fargo itself has asserted, "[i]t is undisputed the Asserted Patents claim a single, narrow feature of mobile remote deposit capture: a specific type of autocapture," which is a claimed improvement over the prior manual mobile remote deposit capture system. (Dkt. No. 172 at 1.) "The specification confirms" as much. *Core Wireless*, 880 F.3d at 1363; '571 Patent at 1:33–35 ("Capturing a digital image at a mobile device that allows for subsequent detection and extraction of the information from the digital image is difficult."); *id.* at 3:54–57 ("To increase the likelihood of capturing a digital image of the check 108 that may be readable and processed such that the check 108 can be cleared, the image is monitored for compliance with one or more monitoring criteria . . . ."). Unlike the claims at issue in *Electric Power*, the Asserted Claims do not *use* the mobile device as a tool, but rather they *improve* the mobile device as a tool.

Similarly, in *Bancorp Services LLC v. Sun Life Assurance Co.*, the Federal Circuit found ineligible claims that involved calculating the value of insurance policies in part by "determining an investment value and a value of the underlying securities." 687 F.3d 1266, 1271, 1277 (Fed.

Cir. 2012). The patent owner argued that "because its claims are limited to being performed on a computer, they cannot claim only an abstract idea." *Id.* However, the Federal Circuit found that the claims involved the abstract idea of using well-known calculations and noted "the fact that the required calculations could be performed more efficiently via a computer" did not render the claims eligible. *Id.* at 1278. Instead, "[t]o salvage an otherwise patent-ineligible process, a computer must be integral to the claimed invention, facilitating the process in a way that a person making calculations or computations could not." *Id.* The Federal Circuit distinguished claims where "the computer simply performs more efficiently what could otherwise be accomplished manually," from claims like those at issue in *Research Corp. Technologies, Inc. v. Microsoft*, 627 F.3d 859 (Fed. Cir. 2010), which "represented improvements to computer technologies in the marketplace" and claim methods that "could not, as a practical matter, be performed entirely in a human's mind." *Bancorp*, 687 F.3d at 1279. Similarly, here, the claimed invention, which involves performing real-time calculations to ensure a digital image meets objective criteria, cannot practically be performed in a human's mind.

The claims in these cases were not found ineligible *per se* for reciting a step such as "monitoring," "determining," "capturing," or "instruction." (*See* Dkt. No. 131 at 12.) Rather, the relevant inquiry is whether the claims are directed to an improvement in computer technologies or simply a use of computers as tools to enhance the efficiency of fundamental human tasks.

In *SRI International, Inc. v. Cisco Systems, Inc.*, the defendant argued that claims that involved "monitoring . . . an enterprise network" by "detecting . . . suspicious network activity" were directed to an abstract concept because "the asserted claims are so general that they encompass steps that people can go through in their minds." 930 F.3d 1295, 1301, 1304 (Fed. Cir. 2019) (internal quotations omitted). The Federal Circuit was not convinced:

> We disagree. This is not the type of human activity that § 101 is meant to exclude. Indeed, we tend to agree with [the patentee] that the human mind is not equipped to detect suspicious activity by using network monitors and analyzing network packets as recited by the claims.

Id. at 1304. Similarly, while the human mind may judge a digital image for subjective, aesthetic criteria, it is not equipped, particularly in real-time while looking at the image on a mobile device screen, to judge objective, technological criteria within the digital image that make the image acceptable for subsequent machine recognition.

In sum, the Court finds that the Asserted Claims are directed to an "improvement in computer capabilities" rather than "an 'abstract idea' for which computers are invoked merely as a tool." *Enfish*, 822 F.3d at 1336. Accordingly, the Asserted Claims are eligible under step one of the *Alice* inquiry.

While this ends the *Alice* inquiry, the Court, out of an abundance of caution, will proceed to analyze the claims under step two of *Alice*.

B. *Alice* Step Two

At step two, the Court "consider[s] the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent eligible application." *Berkheimer*, 881 F.3d at 1367 (quoting *Alice*, 573 U.S. at 217). "The second step of the Alice test is satisfied when the claim limitations 'involve more than performance of well-understood, routine, and conventional activities previously known to the industry.'" *Id.* (quoting *Content Extraction*, 776 F.3d at 1347–48) (internal quotations omitted). "The question of whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field is a question of fact." *Id.* Here the Court finds that Wells Fargo has failed to meet its burden to show the absence of a genuine dispute as to this material fact question such that summary judgment is inappropriate.

Wells Fargo asserts that all of the limitations of the Asserted Claims recite either an abstract concept, generic computer components, or other elements that were well known in the art. (Dkt. No. 131 at 13–16.) For example, Wells Fargo argues that the examples of monitoring criteria disclosed in the specification are described as well known. (*Id.* at 15–16.) Even assuming *arguendo* Wells Fargo is correct that each claim limitation recites well-understood, routine, and conventional activities, this is not sufficient under *Alice* to meet its burden.

Rather, the Court must look to whether "the elements of each claim both individually and '*as an ordered combination*'" were well-understood, routine, and conventional in the industry. *Berkheimer*, 881 F.3d at 1367 (emphasis added). Wells Fargo has provided no evidence that the claim elements as an ordered combination were well-understood, routine, and conventional. To the contrary, the specification discloses that the need satisfied by this ordered combination was long felt in the industry: "Capturing a digital image at a mobile device that allows for subsequent detection and extraction of the information from the digital image is difficult." '571 Patent at 1:33–35. The Asserted Patents disclose an ordered combination to alleviate this need: "To increase the likelihood of capturing a digital image of the check 108 that may be readable and processed such that the check 108 can be cleared, the image is monitored for compliance with one or more monitoring criteria, *prior to* the image of the check 108 being captured." '571 Patent at 3:54–58; *see also* '571 Patent, Claims 1, 9; '090 Patent, Claim1. Regardless of whether the individual elements of the claims were known in the art, Wells Fargo proffers no evidence that the elements as an ordered combination were well-understood, routine, and conventional.

Moreover, USAA has proffered expert testimony that this type of autonomous decision making recited by the Asserted Claims was not disclosed in the prior art. (Dkt. No. 158 at 20; Dkt. No. 158-17 ¶¶ 245–249, 262–268, 276–279, 284–286, 287–290.) Since "the scope and content of

the prior art" is a factual question, the factual dispute as to whether the limitations in such an ordered combination were disclosed in the prior art is not amenable to resolution on summary judgment. *See Neptune Generics, LLC v. Eli Lilly & Co.*, 921 F.3d 1372, 1377 (Fed. Cir. 2019).

Bearing in mind that Wells Fargo has the burden to prove ineligibility by clear and convincing evidence, the Court concludes that the intrinsic evidence in the specification and USAA's expert testimony suffice to show that summary judgment is improper. Specifically, the Court concludes that such evidence makes clear that there is a genuine dispute of material fact as to whether the ordered combination of elements were well-understood, routine, and conventional at the time of patenting.

Finally, the Court finds that Wells Fargo has failed to proffer evidence that the individual limitations of the dependent claims of the Asserted Patents were well-understood, routine, and conventional. For example, Wells Fargo proffers no evidence that the limitations providing corrective feedback to the user to assist in satisfying the monitoring criteria were well known in the industry. *See* '571 Patent, claims 2–5, 10–11; '090 Patent, Claims 1–10.

As such, and in light of Wells Fargo's failure to advance affirmative evidence as to the lack of inventiveness of the ordered combination, the Court finds that Wells Fargo has failed to meet its summary judgment burden under *Alice* step two.

IV. Conclusion

For the reasons set forth herein, the Court determines that the Asserted Claims are eligible for patent protection under 35 U.S.C. § 101. Accordingly, Wells Fargo's Motion for Summary Judgment under 35 U.S.C. § 101 (Dkt. No. 131) is **DENIED**.

So ORDERED and SIGNED this 28th day of October, 2019.

RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE

Electronic Acknowledgement Receipt	
EFS ID:	38211941
Application Number:	16025701
International Application Number:	
Confirmation Number:	8845
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM
First Named Inventor/Applicant Name:	Charles Lee Oakes
Customer Number:	16530
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		14538_649_ResponseFiling_010620.pdf	1471869 f4951d6c6016df0342a4728912f466d49c350408	yes	21

	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Applicant Arguments/Remarks Made in an Amendment		9	21	
	Claims		3	8	
	Amendment/Req. Reconsideration-After Non-Final Reject		2	2	
	Miscellaneous Incoming Letter		1	1	
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	Exhibit_A_NYT_2009Article_Bank_Will_Let_Customers_Deposit_Checks_by_iPhone.pdf	106941 e9a792ed95d05a563ebca71c3627e865883ba37e	no	3
Warnings:					
Information:					
3	Miscellaneous Incoming Letter	Exhibit_B_AdAge_article.pdf	169928 d966957b8ca72c6e5614824f20ea5ab9e88241d9	no	3
Warnings:					
Information:					
4	Miscellaneous Incoming Letter	Exhibit_C_Celent_USAAs_Mobile_Remote_Deposit_Capture_Initiative_2009-06-26_clean.pdf	166889 e7666be5223a6877e085ce85fd6302b5cdaa6ac5	no	3
Warnings:					
Information:					
5	Miscellaneous Incoming Letter	Exhibit_D_Celent_Mobile_RDC_Self_Service_for_the_Masses_2009_10_22.pdf	71434 bb901b7ac5a21599d563479ca410ee05752e874f	no	3
Warnings:					
Information:					
6	Miscellaneous Incoming Letter	Exhibit_E_WellsFargo_v_USAA_PTAB_May_15_2019.pdf	308174 c3692d02caf5b1a47d3408a4ff09cf7b91491d5e	no	33
Warnings:					
Information:					

7	Miscellaneous Incoming Letter	Exhibit_F-USAAvWF_MemoDecision_10-28-2019.pdf	294399 218580020e5d0a36490417f94ac4e8a6b7ac27fe	no	21
Warnings:					
Information:					
			Total Files Size (in bytes):	2589634	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

REMARKS

Rejection under 35 U.S.C. § 101

The only outstanding rejection is for allegedly claiming patent ineligible subject matter under 35 U.S.C. § 101. Such rejections are governed by the PTO's *2019 Revised Patent Subject Matter Eligibility Guidance*[1] issued on January 7, 2019 (hereinafter "2019 Revised Guidance"), the PTO's *Berkheimer Memo*[2], and the law of 35 U.S.C. 101. Under those standards, the rejection should be withdrawn.

Mayo/Alice First Step

Mayo/Alice First Step (revised Step 2A, Prong One): Claims Do Not Recite Matter that Falls Within the Enumerated Groupings of Subject Matter

The claims are eligible at Prong One of revised Step 2A because the claims do not recite matter that falls within the enumerated groupings of abstract ideas in Section I of the *2019 Revised Guidance*.

The Office action contends "the claim recites the limitation of facilitating mobile check deposit, a concept performed in the human mind, which is one of the mental processes identified in the 2019 Revised Guidance to process mobile checks, a fundamental economic practice, which is one of certain method of organizing human activity." Office action at 3-4. Applicant respectfully disagrees.

First, Applicant disagrees "the claim recites the limitation of facilitating mobile check deposit." There is no recitation of "facilitating mobile check deposit" in any pending claim.

Second, Applicant disagrees that the claims recite "a concept performed in the human mind" or a "mental process." The Office action provides no support or reason to believe mobile check deposit can be "performed in the human mind." In any event, the claims recite features that can only be performed by electronic systems, not in the human mind. The claims are generally directed to systems and methods wherein a computer system, not a human mind,

[1] "2019 Revised Patent Subject Matter Eligibility Guidance", 84 Fed. Reg. 4 (Jan. 7, 2019).
[2] Memorandum - Revising 101 Eligibility Procedure in view of Berkheimer v. HP, Inc. (issued April 19, 2018).

is configured to receive a copy of a captured image of a check transmitted from a computing device configured to use a display screen of the user's computing device to assist in having a digital camera capture the image and either authenticate a user based on a biometric measurement obtained corresponding to the user or assist as to an orientation for capturing the image.

Third, Applicant disagrees that the claims recite "a fundamental economic practice, which is one of certain method of organizing human activity." The claimed invention organizes electronic actions taken by computer systems, not humans. The claims are directed to computer activity, not human activity. The Office action points to nothing recited in the claims that organizes human activity.

Indeed, the PTAB confirmed Applicant's check capture/deposit invention in another application constituted a technical solution to a technical problem. *Wells Fargo Bank v. USAA*, CBM2019-00004, Paper No. 22 at 25 ("using an image of a check to deposit the check presents technical difficulties"); Id. at 29 ("the '571 patent's solution to the addressed problem is rooted in technology, and thus, is a 'technical solution.'"). A copy of the PTAB decision is attached hereto as Exhibit E.

Similarly to Applicant's patent in the *Wells Fargo Bank v. USAA* CBM decision, the present invention provides technical solutions to technical problems associated with electronic check capture and deposit. For example, paragraph [0056] of the instant application notes that "[i]n order to automate check deposits, it is desirable to configure server 500 to recognize that ... the received check image can be used to further process the transaction." The specification mentions numerous components or subsystems that provide technical solutions to the technical problems such as image quality determination 502, image usability determination 503, OCR 504, and error processing 506, just to name a few. See, e.g., Fig. 5 and corresponding description at paragraphs [0051]-[0069]. The claims specifically recite systems and methods configured to receive a copy of a captured image of a check transmitted from a computing device configured to use a display screen of the user's computing device to assist the user in having a digital camera capture the image and either authenticate a user based on a biometric measurement obtained corresponding to the user or assist the user as to an orientation for capturing the image.

Further, in related patent litigation, the U.S. District Court for the Eastern District of Texas noted: "the Court doubts whether the act of taking a picture is itself an abstract idea. Taking a picture is not a fundamentally abstract concept or uniquely human action, such as 'a fundamental economic practice or mathematical equation." Id. Moreover, "the human mind is not equipped" to capture photographs on its own." *USAA v. Wells Fargo Bank*, U.S. Dist. Ct. E.D. Texas, Civ. Action No. 2:18-CV-00245-JRG, Memorandum Opinion and Order on Wells Fargo Bank N.A.'s Motion for Summary Judgment Under 35 U.S.C. § 101, pp. 13-14. ("*USAA v. Wells Fargo Bank Memorandum Opinion*").

The Court further found that "[t]he Asserted Claims, which each require a 'processor' to 'determine' when an image meets certain requirements, are directed to a machine-implemented solution to **a machine-specific problem: the difficulty of machines detecting and extracting information from a digital image**. 'In other words, we are not faced with a situation where general-purpose computer components are added post-hoc to' the simple act of taking a picture. Enfish, 822 F.3d at 1339. 'Rather, the claims are directed to a specific implementation of a solution to a problem in the software arts.' Id. Accordingly, the Court finds 'the claims at issue are not direct to an abstract idea.' Id." *USAA v. Wells Fargo Bank Memorandum Opinion*, p. 13 (emphasis added). A copy of the Court decision is attached hereto as Exhibit F.

Similarly to the PTAB findings and Court findings discussed above, the claimed subject matter of the instant application is directed to a machine-implemented solution to the machine-specific problem of the difficulty of machines detecting and extracting information from a digital image by assisting a user in capturing a digital image that can be processed by a machine. The claimed solution includes a computer system using a display screen of the user's computing device to assist the user in having a digital camera capture the image and either authenticate a user based on a biometric measurement or assist the user as to an orientation for capturing the image. For at least the above reasons, Applicant submits that the present invention as claimed provides a technical solution to a technical problem and is not an abstract idea at all.

Mayo/Alice First Step (revised Step 2A, Prong Two): Claims Recite Additional Elements that Integrate the Asserted Abstract Idea into a Practical Application thereof

Assuming, *arguendo*, that the asserted abstract idea of "facilitating mobile check deposit" could somehow be seen to fall within the *2019 Revised Guidance*'s enumerated groupings of abstract ideas, the claims recite additional elements that integrate any such idea into a practical application thereof.

The *2019 Revised Guidance* Explains: "A claim that integrates a judicial exception into a practical application will apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." *2019 Revised Guidance* at 54. Even if a claim recites a judicial exception, it is patent eligible if the claim provides a practical application of the judicial exception. *Le Roy v. Tatham*, 55 U.S. 156, 175 (1852) ("a new property discovered in matter, when practically applied in the construction of a useful article of commerce or manufacture, is patentable").

The pending claims all provide a practical application of, and meaningful limits on, the alleged concept of "facilitating mobile check deposit," such that each claim is more than a drafting effort designed to monopolize the judicial exception.

Rejected Claim 53, for example, includes at least the following additional elements beyond the alleged concept of "facilitating mobile check deposit":

- *"wherein the copy of the captured image is transmitted from a user's computing device configured to implement...":*
  - *"instructing, through a user's computing device, the user to capture an image of a check",*
  - *"using a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check", and*
  - *"assisting the user as to an orientation for capturing the image of the check"; and*
- *"updating a balance of an account based on an amount depicted in the check".*

The other independent claims also include additional elements beyond the alleged concept of "facilitating mobile check deposit." These additional elements provide a practical application of, and meaningful limits on, the alleged concept of "facilitating mobile check deposit," such that the claim is more than a drafting effort designed to monopolize the judicial exception.

Such "additional elements" of Claim 25 include at least:

- "a user's computing device configured to execute instructions of a downloadable program ..., the instructions configured to, when executed, cause a processor of the user's computing device to":
  - "instruct the user to capture the image of the check",
  - "use a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check", and
  - "assist the user as to an orientation for capturing the image of the check"; and
- "a computer system configured to ... update a balance of an account based on an amount depicted in the check".

Such "additional elements" of Claim 49 include at least:

- "system configured to authenticate the user using data representing a biometric measurement";
- "a user's computing device configured to execute instructions of a downloadable program ..., the instructions configured to, when executed, cause a processor of the user's computing device to":
  - "authenticate a user based on the biometric measurement obtained corresponding to the user",
  - "instruct the user to capture an image of a check", and

- "use a display screen of the user's computing device to assist the user in capturing the image of the check"; and
- "a computer system configured to ... update a balance of an account based on an amount depicted in the check".

Such "additional elements" of Claim 54 include at least:

- "a user's computing device configured to implement":
  - "authenticating a user based on a biometric measurement obtained corresponding to the user",
  - "instructing the user to capture an image of a check", and
  - "using a display screen of the user's computing device to assist the user in capturing the image of the check"; and
- "updating a balance of an account based on an amount depicted in the check".

Those "additional elements" integrate the asserted abstract idea of "facilitating mobile check deposit" into a practical application when combined as recited in the claims at least because the claimed arrangements of the "additional elements" "reflect[] an improvement in the functioning of a computer, or an improvement to other technology or technical field." *2019 Revised Guidance* § III(A)(2).

The claimed arrangement recited in Claim 53, wherein the copy of the captured image is transmitted from a user's computing device configured to use a display screen of a user's computing device to assist the user in capturing an image of a check for mobile check deposit and assist the user as to an orientation for capturing the image of the check, provides a technical approach to a technical concern. Independent claim 25 recites features and arrangements comparable to those of claim 53. Independent claims 49 and 54 recite other features and arrangements, such as "authenticate a user based on the biometric measurement obtained corresponding to the user" and "using a display screen of the user's computing device to assist the user in capturing the image of the check." Each claimed arrangement of claims 25, 49, 53,

and 54 improves technology related to digital cameras with a display screen. Each also improves the technology of imaging paper checks for deposit.

Indeed, as discussed above, the PTAB has confirmed that Applicant's check capture/deposit invention in another application constituted a technical solution to a technical problem, and each claimed arrangement in the present application provides technological improvements comparable to those previously recognized by the PTAB. Wells Fargo Bank v. USAA, CBM2019-00004 (Paper No. 22 at 25) ("using an image of a check to deposit the check presents technical difficulties"); Id. at 29 ("the '571 patent's solution to the addressed problem is rooted in technology, and thus, is a 'technical solution.'").

Various patent publications confirm that the invention of Claims 25, 49, 53, and 54 involves a technical improvement to a technical problem. For example, U.S. Patent No. 7,419,093 (Blackson) identified orientation ("skew") as a technical issue in imaging checks: "As represented in FIG. 27 document 158 may be **skewed relative to the transport section** through which it passes." *Id.* at col. 28, ll. 50-52 (emphasis added). Blackson's "solution" included "deskew the data corresponding to the image." *Blackson* at col. 29, ll. 27-39.

Thus, at least the above-identified "additional elements" provide a technical approach to a technical problem and result in a practical application.

Furthermore, the Office action does not even allege the claims are merely a drafting effort designed to monopolize the alleged abstract idea, as would be required to sustain a rejection under the *2019 Revised Guidance*.

The Office action does not discuss any particular claim. Even if the rejection were proper as to some as-of-now unidentified claim, the dependent claims provide further additional elements providing a practical application.

For example, Claim 26 recites the system of claim 25, wherein the system is configured to confirm that the mobile check deposit can go forward after optical character recognition is performed on the check depicted in the captured image. The Office action does not allege this is part of an abstract idea, that it fails to provide a practical application, or that it fails to provide a meaningful limitation on facilitating mobile check deposit. Without that, the rejection cannot be sustained.

Claim 35 recites the system of claim 25, wherein the system is configured to convert the image of the check into a bi-tonal TIFF. The Office action does not allege this is part of an abstract idea, that it fails to provide a practical application, or that it fails to provide a meaningful limitation on facilitating mobile check deposit. Without that, the rejection cannot be sustained.

Claim 37 claims the system of claim 25, wherein the user's computing device further includes camera software that controls the digital camera, the camera software being separate from the downloadable program, the downloadable program at least partially controlling the camera software. The Office action does not allege these addition limitations are part of an abstract idea, that they fail to provide a practical application, or that they fail to provide a meaningful limitation on facilitating mobile check deposit. Without that, the rejection cannot be sustained.

Claim 38 recites the system of claim 25, wherein the downloadable program manages capturing the image of the check. The Office action does not allege this is part of an abstract idea, that it fails to provide a practical application, or that it fails to provide a meaningful limitation on facilitating mobile check deposit. Without that, the rejection cannot be sustained.

Claim 40 adds to claim 25 the limitation that the downloadable program causes the user's computing device to receive input from the user indicating an amount of the check. The Office action does not allege this is part of an abstract idea, that it fails to provide a practical application, or that it fails to provide a meaningful limitation on facilitating mobile check deposit. Without that, the rejection cannot be sustained.

Claim 41 further limits claim 40, specifying the instructions are displayed after receiving the input from the user. The Office action does not allege this is part of an abstract idea, that it fails to provide a practical application, or that it fails to provide a meaningful limitation on facilitating mobile check deposit. Without that, the rejection cannot be sustained.

Dependent claim 42 recites the system of claim 25, wherein the copy of the captured image is transmitted after the user is authenticated. The Office action does not allege this is part of an abstract idea, that it fails to provide a practical application, or that it fails to

provide a meaningful limitation on facilitating mobile check deposit. Without that, the rejection cannot be sustained.

Claims 43 and 44 together further limit the system of claim 25, wherein the computer system is configured to generate a log file for the mobile check deposit and the log file includes an image of the check processed for mobile check deposit. The Office action does not allege this is part of an abstract idea, that it fails to provide a practical application, or that it fails to provide a meaningful limitation on facilitating mobile check deposit. Without that, the rejection cannot be sustained.

Claim 46 specifically recites the system of claim 25, wherein the copy of the captured image is a modified version of the image of the check. Among other things, this refutes the Office action's assertion that "the claims do not affect the transformation of the check image." Office action at 4. That assertion is further refuted by claim 47, wherein the copy of the captured image is in a different format than the image of the check.

The Office action does not satisfy revised Step 2A, Prong Two, under the *Revised 2019 Guidance*, and the rejection should not be maintained.

Mayo/Alice Second Step (Step 2B)

Assuming, *arguendo*, that the claims could somehow be seen to be directed to an abstract idea, the Office action fails to comply with the PTO's *Berkheimer Memo*[3] with respect to the second step of the Mayo/Alice analysis (Step 2B). The claims recite elements, such as the "additional elements" discussed above, that amount to significantly more.

Mayo/Alice Second Step: Additional Elements Not Well-Understood, Routine, and Conventional as of the *Priority Date: October 31, 2006*

Evidence concerning what was not well-understood, routine, and conventional by the time of the priority date in 2006 includes the articles attached hereto as Exhibits A, B, C, and D. They are all from 2009, almost three years *after* the present priority date.

[3] Memorandum - Revising 101 Eligibility Procedure in view of Berkheimer v. HP, Inc. (issued April 19, 2018).

First, Exhibit A is an article published by the New York Times on August 9, 2009, entitled "*Bank Will Allow Customers to Deposit Checks by iPhone.*" The article describes how Applicant (USAA), in 2009, was innovating in the mobile banking industry by making available a downloadable app for a mobile device to permit mobile deposit of paper checks. For example, it opined "[t]he deposit feature, which USAA previewed in an online video, puts the bank in the vanguard of the effort to turn cellphones into portable branches."

Second, Exhibit B is a piece from AdAge published September 21, 2009. It observed at the time of Applicant's first-generation system that Applicant (USAA) "***represents the bleeding edge of mobile banking technology***" and described its first-generation system as a "technological development [ ] that allow[s] for deposits by iPhone and mobile payments." This is a real, technological invention pioneered by Applicant USAA.

Third, Exhibit C is a Celent publication dated June 26, 2009, stating "we think most banks will pass on the idea. Why? Because mobile RDC is disruptive. It may delight millions of consumers but it also would challenge the status quo. . . forcing rapid change. . . ."

Fourth, Exhibit D is an article published by Celent on October 22, 2009. It said "[o]nly a small minority of US financial institutions currently plan to offer mobile RDC (remote deposit capture)...." The article included a graph showing 72% had no such plans, and less than 2% had mobile RDC in production. Indeed, the article reported that Applicant itself (USAA) was then the source of "the industry's first broad based mobile RDC deployment."

In other words, even entering the second half of 2009, a computer system configured to receive a copy of a captured image of a check and process the check by mobile check deposit—especially where the copy of the captured image is transmitted from a user's computing device configured to use a display screen of the user's computing device to assist the user in having a digital camera capture the image and either authenticate a user based on a biometric measurement or assist the user as to an orientation for capturing the image, together with the other "additional elements"—was not well-understood, routine, and conventional. All the more so in 2006, the priority date of the present invention.

As such, the result of the "additional elements" is that the claims as a whole provide a practical application amounting to significantly more than the asserted abstract idea. Withdrawal of the rejection under § 101 is respectfully requested for this additional reason.

Mayo/Alice Second Step: Under *Bascom*, an Inventive Concept is found in the Non-Conventional and Non-Generic Arrangement of "additional elements"

Even assuming, *arguendo*, that the "additional elements" do not amount to significantly more than the Office action's asserted abstract idea when considered individually, those elements still amount to significantly more when combined because the combination provides an inventive concept in the non-conventional and non-generic arrangement of those elements. See *BASCOM Global Internet Services v. AT&T Mobility LLC*, 827 F .3d 1341 (Fed. Cir. 2016).

In *Bascom*, the Court found an inventive concept in the distribution of functionality within a network. *See BASCOM* at 1350 (finding sufficient inventive concept in "the installation of a filtering tool at a specific location, remote from the end users, with customizable filtering features specific to each end user.").

Claim 25

The "additional elements" of Claim 25 provide an inventive concept when combined as claimed at least because the arrangement of "a computer system configured to receive a copy of a captured image of a check and for processing the check by mobile check deposit" and a "downloadable program" to cause a user's computing device to "use a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check" and "assist the user as to an orientation for capturing the image of the check" was not a conventional, generic arrangement as of 2006, the priority date of the present application.

Further, the recited downloadable program, with its role in causing a user's computing device to use a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check and to assist the user as to an orientation for capturing the image of the check, provides a technical approach to a technical concern. It improves technology related to digital cameras with a downloadable program. It also improves the technology of imaging paper checks for deposit.

Claim 49

The "additional elements" of Claim 49 provide an inventive concept when combined as claimed at least because the arrangement of "a computer system configured to receive a

copy of a captured image of a check and for processing the check by mobile check deposit" and a "downloadable program" to cause a processor of a user's computing device to "authenticate a user based on the biometric measurement obtained corresponding to the user" and to "use a display screen of the user's computing device to assist the user in capturing the image of the check" was not a conventional, generic arrangement as of 2006, the priority date of the present application.

Further, the recited downloadable program, with its role in causing a user's computing device to "authenticate a user based on the biometric measurement obtained corresponding to the user" and to "use a display screen of the user's computing device to assist the user in capturing the image of the check", provides a technical approach to a technical concern. It improves technology related to biometric authentication and imaging paper checks for deposit.

Claim 53

The "additional elements" of Claim 53 provide an inventive concept when combined as claimed at least because the arrangement of a computer system receiving a copy of a captured image of a check and processing the check by mobile check deposit, from a user's computing device configured for "using a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check" and "assisting the user as to an orientation for capturing the image of the check" was not a conventional, generic arrangement as of 2006, the priority date of the present application.

Further, the recited use of a user's computing device, configured for using a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check and assisting the user as to an orientation for capturing the image of the check, provides a technical approach to a technical concern. It improves technology related to digital cameras and imaging paper checks for deposit.

Claim 54

The "additional elements" of Claim 54 provide an inventive concept when combined as claimed at least because the use of a user's computing device configured to implement "authenticating a user based on a biometric measurement obtained corresponding to the user" and "using a display screen of the user's computing device to assist the user in capturing the

image of the check" was not a conventional, generic use as of 2006, the priority date of the present application.

Further, the recited use of a user's computing device, configured for authenticating a user based on a biometric measurement obtained corresponding to the user and using a display screen of the user's computing device to assist the user in capturing the image of the check provides a technical approach to a technical concern. It improves technology related to biometric authentication and imaging paper checks for deposit.

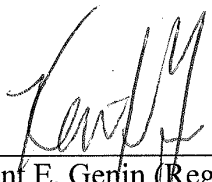
Accordingly, even assuming, *arguendo*, that the "additional elements" do not amount to significantly more than the Office's asserted abstract idea when considered individually, those elements still amount to significantly more when combined because the combinations provide inventive concepts in the arrangement of those elements and improve various technologies.

Therefore, withdrawal of the rejection under § 101 is respectfully requested.

CONCLUSION

In view of the above, the pending claims are submitted to be in condition for allowance. Applicant respectfully requests that the Examiner grant allowance of this application. The Examiner is invited to contact the undersigned attorneys for the Applicant via telephone if such communication would expedite this application.

Respectfully submitted,



January 6, 2020
Date

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AMENDMENTS TO THE CLAIMS

1. – 24. (Cancelled)

25. (Previously Presented) A system comprising:

a computer system configured to receive a copy of a captured image of a check, process the check by mobile check deposit in a bank, and update a balance of an account based on an amount depicted in the check;

wherein the copy of the captured image is transmitted from a user's computing device configured to execute instructions of a downloadable program stored on a machine-readable medium, the instructions configured to, when executed, cause a processor of the user's computing device to:

instruct the user to capture the image of the check;

use a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check;

assist the user as to an orientation for capturing the image of the check;

present the image of the check to the user after the image is captured; and

use a wireless network to transmit the copy of the captured image over a wireless communication link from the user's computing device and to the computer system.

26. (Previously Presented) The system of claim 25, wherein the system is configured to confirm that the mobile check deposit can go forward after optical character recognition is performed on the check depicted in the captured image.

27. (Previously Presented) The system of claim 26, wherein the system is configured to initiate the mobile deposit after confirming the mobile check deposit.

28. (Previously Presented) The system of claim 26, wherein the optical character recognition includes determining an amount of the check and comparing the determined amount to an amount indicated by a user input.

29. (Previously Presented) The system of claim 26, wherein the optical character recognition includes reading a MICR line included in the image of the check.

30. (Previously Presented) The system of claim 26, wherein the system is configured to confirm that the mobile check deposit can go forward after duplicate detection is performed on the check.

31. (Previously Presented) The system of claim 25, wherein displayed instructions include assistance for the user to have the digital camera capture an image of a front side of the check and capture an image of a back side of the check.

32. (Previously Presented) The system of claim 31, wherein the system is configured to update the account after it is determined that some mark or signature is present in an endorsement location in the image of the back side of the check.

33. (Previously Presented) The system of claim 25, wherein the digital camera is separate from the user's computing device.

34. (Previously Presented) The system of claim 25, wherein the user's computing device is a PDA.

35. (Previously Presented) The system of claim 25, wherein the system is configured to convert the image of the check into a bi-tonal TIFF.

36. (Previously Presented) The system of claim 25, wherein the wireless network is a cellular network.

37. (Previously Presented) The system of claim 25, wherein the user's computing device further includes camera software that controls the digital camera, the camera software being

separate from the downloadable program, the downloadable program at least partially controlling the camera software.

38. (Previously Presented) The system of claim 25, wherein the downloadable program manages capturing the image of the check.

39. (Previously Presented) The system of claim 25, wherein the downloadable program instructs the user to place the check in front of the digital camera before capturing the image of the check.

40. (Previously Presented) The system of claim 25, wherein the downloadable program further causes the user's computing device to:

receive input from the user indicating an amount of the check.

41. (Previously Presented) The system of claim 40, wherein the instructions are displayed after receiving the input from the user.

42. (Previously Presented) The system of claim 25, wherein the copy of the captured image is transmitted after the user is authenticated.

43. (Previously Presented) The system of claim 25, wherein the computer system is configured to generate a log file for the mobile check deposit.

44. (Previously Presented) The system of claim 43, wherein the log file includes an image of the check processed for mobile check deposit.

45. (Previously Presented) The system of claim 44, wherein the image is a bi-tonal TIFF.

46. (Previously Presented) The system of claim 25, wherein the copy of the captured image is a modified version of the image of the check.

47. (Previously Presented) The system of claim 46, wherein the copy of the captured image is in a different format than the image of the check.

48. (Previously Presented) The system of claim 25, further comprising a third-party vendor computer.

49. (Previously Presented) A system for allowing a user to deposit a check using the user's computing device, the system configured to authenticate the user using data representing a biometric measurement, the system including:

a computer system configured to receive a copy of a captured image of a check, process the check by mobile check deposit in a bank, and update a balance of an account based on an amount depicted in the check;

wherein the copy of the captured image is transmitted from a user's computing device configured to execute instructions of a downloadable program stored on a machine-readable medium, the instructions configured to, when executed, cause a processor of the user's computing device to:

authenticate a user based on the biometric measurement obtained corresponding to the user;

instruct the user to capture an image of a check;

use a display screen of the user's computing device to assist the user in capturing the image of the check; and

use a wireless network to transmit a copy of the captured image from the user's computing device to the computer system.

50. (Previously Presented) The system of claim 49, wherein a digital camera configured to capture the image of the check is separate from the user's computing device.

51. (Previously Presented) The system of claim 49, wherein the user's computing device is a PDA.

52. (Previously Presented) The system of claim 49, wherein the biometric measurement is representative of a fingerprint.

53. (Previously Presented) A method comprising:

receiving, by a computer system, a copy of a captured image of a check; and

processing, by the computer system, the check by mobile check deposit in a bank and updating a balance of an account based on an amount depicted in the check;

wherein the copy of the captured image is transmitted from a user's computing device configured to implement the following method:

instructing, through a user's computing device, the user to capture an image of a check;

using a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check;

assisting the user as to an orientation for capturing the image of the check;

presenting the image of the check to the user after the image is captured; and

using a wireless network to transmit a copy of the captured image over a wireless communication link from the user's computing device and to the computer system.

54. (Previously Presented) A method for allowing a user to deposit a check using the user's computing device, the method comprising:

receiving, by a computer system, a copy of a captured image of a check; and

processing, by the computer system, the check for mobile check deposit in a bank and updating a balance of an account based on an amount depicted in the check;

wherein the copy of the captured image is transmitted from a user's computing device configured to implement the following method:

authenticating a user based on a biometric measurement obtained corresponding to the user;

instructing the user to capture an image of a check;

using a display screen of the user's computing device to assist the user in capturing the image of the check; and

using a wireless network to transmit a copy of the captured image from the user's computing device to the computer system.

PTO/SB/06 (09-11)
Approved for use through 10/31/2011. OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/025,701	Filing Date	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 = *			x $20 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 = *			x $105 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT 1/6/20	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 30	Minus	** 30	=		x $0 =	
Independent (37 CFR 1.16(h))	* 4	Minus	*** 4	=		x $0 =	
☐ Application Size Fee (37 CFR 1.16(s))							
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
						TOTAL ADD'L FEE	

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
☐ Application Size Fee (37 CFR 1.16(s))							
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	UMP/LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/JULIE FUERTH/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: December 23, 2019 Name: Patricia Chiovari Signature: /Patricia Chiovari/

BRINKS GILSON & LIONE 100 YEARS OF IP LAW

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16/025,701
Filing Date	July 2, 2018
First Named Inventor	Charles Lee Oakes
Art Unit	3697
Confirmation Number	8845
Examiner Name	Ojo Oyebisi
Attorney Docket No.	US-0152.09| 14538-649

In accordance with the duty of disclosure, Applicant(s) hereby cites the following references:

PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	NAME
	H1	US 2003/0177448 A1	09/18/2003	Levine et al.
	H2	US 6,922,487 B2	07/26/2005	Dance et al.
	H3	US 7,207,478 B1	04/24/2007	Blackson et al.
	H4	US 7,987,231 B2	07/26/2011	Karkanias

FOREIGN PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	COUNTRY	TRANSLATION YES OR NO

OTHER ART – NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIAL		Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	H5	Herley, Cormac, "Recursive Method To Extract Rectangular Objects From Scans", *Microsoft Research*, October 2003, 4 pgs.
	H6	Panini My Vision X Operator Manual, Panini, 2004, (cited in IPR2020-00093, US Patent No. 9,892,454), 51 pgs.
	H7	Yeo, L.H. et al., "Submission of transaction from mobile workstations in a cooperative multidatabase environment", *IEEE*, 1994, (cited in IPR2020-00097, US Patent No. 7,885,880), 10 pgs.

1. PRIORITY INFORMATION:

☐ This application claims priority under 35 USC §120 to the following United States patent application(s):_____. In accordance with 37 CFR §1.98(d), copies of the references cited herein which were submitted to, or cited by, the office, in compliance with 37 CFR §1.98(a)-(c) in the earlier application are not provided herewith. The Examiner is directed to those references cited in all Information Disclosure Statements filed in the priority United States patent application(s) cited above in addition to the references cited herein.

Examiner Signature		Date Considered	

2. CERTIFICATIONS: (CHECK ALL THAT APPLY)

A. Certifications For 37 CFR §1.97(c) or 37 CFR §1.97(d):

☐ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(1) that each item of information in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

☒ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(2) that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated in 37 CFR §1.56(c), more than three months prior to the filing of this Information Disclosure Statement.

B. For Patent Term Adjustment Purposes:

☐ For purposes of 37 CFR §1.704(d)(i) or 37 CFR §1.704(d)(ii), Applicant is hereby submitting concurrently with this Information Disclosure Statement a completed Form PTO/SB/133 that certifies that each item of information contained in this Information Disclosure Statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office or is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and that this communication was not received by any individual designated in 37 CFR §1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement.

3. FEE INFORMATION: (CHECK IF FEE REQUIRED)

☐ Applicant has calculated a processing fee in the amount of _____ to be due under 37 CFR §1.17(p) in connection with the filing of this Information Disclosure Statement. Applicant authorizes charging the fee to Deposit Account 50-4184.

☐ The Director is hereby authorized to charge any fee deficiency associated with the filing of this Information Disclosure Statement to Deposit Account 50-4184.

Pursuant to the undersigned attorney's obligation and duties under 37 CFR §§ 1.56 and 1.98(a)(3) and (c), either English language abstracts, partial translations, or full translations are included for patent documents which are not in English for the express purpose of providing a concise explanation of the references to the Patent and Trademark Office with the opportunity to evaluate the same. Applicant respectfully requests the Examiner's consideration of the above reference(s) and entry thereof into the record of this application.

By submitting this Statement, Applicant is attempting to fully comply with the duty of candor and good faith mandated by 37 CFR §1.56. As such, this Statement is not intended to constitute an admission that any of the enclosed references, or other information referred to therein, constitutes "prior art" or is otherwise "material to patentability," as that phrase is defined in 37 CFR §1.56(a).

Respectfully submitted,

December 23, 2019
Date

Kent E. Genin (Reg. No. 37,834)

Examiner Signature		Date Considered	

Electronic Acknowledgement Receipt

EFS ID:	38119137
Application Number:	16025701
International Application Number:	
Confirmation Number:	8845
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM
First Named Inventor/Applicant Name:	Charles Lee Oakes
Customer Number:	16530
Filer:	Kent E. Genin/Juan Garibay
Filer Authorized By:	Kent E. Genin
Attorney Docket Number:	US-0152.09 (14538-649)
Receipt Date:	23-DEC-2019
Filing Date:	02-JUL-2018
Time Stamp:	13:23:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		14538_649_IDS_H_122319.pdf	400200 491a8693f8c9ab2ef66a94dc4c4a63a6edd265d4	yes	3

	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Miscellaneous Incoming Letter		1	1	
	Information Disclosure Statement (IDS) Form (SB08)		2	3	
Warnings:					
Information:					
2	Non Patent Literature	Herley-RecursiveMethodExtract-c.pdf	588798 44086db81e70d4dfac3c2422716df3e80fec05a2	no	4
Warnings:					
Information:					
3	Non Patent Literature	PaniniMyVisionManual.pdf	2182635 0853186ee44ce44b8832243306dab7307cea82ab	no	51
Warnings:					
Information:					
4	Non Patent Literature	Yeo-SubmissionTransactions-c.pdf	2247440 7fb87cf7f7eaaf61a90f8eaa303df9f2c1285cb6	no	10
Warnings:					
Information:					
		Total Files Size (in bytes):	5419073		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: December 23, 2019 Name: Patricia Chiovari Signature: /Patricia Chiovari/

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of:	Charles Lee Oakes et al.		
Appln. No.:	16/025,701	Examiner:	Ojo O. Oyebisi et al.
Filed:	July 2, 2018	Art Unit:	3697
For:	DIGITAL CAMERA PROCESSING SYSTEM	Conf. No.:	8845

Attorney Docket No.: US-0152.09 | 14538-649

TRANSMITTAL

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Attached is/are:

☒ Supplemental Information Disclosure Statement; and References H5-H7.

Fee calculation:

☒ No additional fee is required.

☐ Per 37 CFR §1.27, ☐ Applicant is small entity ☐ Applicant is micro entity.

☐ An extension fee in an amount of $_____ for a _____-month extension of time under 37 CFR § 1.136(a).

☐ A petition or processing fee in an amount of $_____ under 37 CFR § 1.1_____(_____).

☐ An additional filing fee has been calculated as shown below:

					Fee		Small Entity Fee		Micro Entity Fee	
	Claims Remaining After Amendment		Highest No. Previously Paid	Present Extra	Rate	Add'l Fee	Rate	Add'l Fee	Rate	Add'l Fee
Total		Minus			x $100 =	$	x $ 50 =	$	x $25 =	$
Independent		Minus			x $460 =	$	x $230 =	$	x $115 =	$
First Presentation of Multiple Dep. Claim					+ $820 =	$	+ $410 =	$	+ $205 =	$
					Total	$	Total	$	Total	$

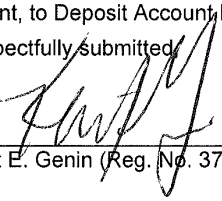
Fee payment:

☐ Please charge Deposit Account No. 50-4184 in the amount of $_____ for _____.

☐ Payment by credit card in the amount of $_____ (Form PTO-2038 is attached).
WARNING: Information on this form may become public. **Credit card information should not be included on this form.**

☐ The Director is hereby authorized to charge payment of any additional filing fees required under 37 CFR § 1.16 and any patent application processing fees under 37 CFR § 1.17 (including any extension fee required to ensure that this paper is timely filed), or to credit any overpayment, to Deposit Account No. 50-4184.

Respectfully submitted,



December 23, 2019
Date

Kent E. Genin (Reg. No. 37,834)

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: October 16, 2019 Name: Patricia Chiovari Signature: /Patricia Chiovari/

BRINKS GILSON & LIONE 100 YEARS OF IP LAW

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16/025,701
	Filing Date	July 2, 2018
	First Named Inventor	Charles Lee Oakes
	Art Unit	3697
	Confirmation Number	8845
	Examiner Name	Ojo O. Oyebisi
	Attorney Docket No.	US-0152.09 | 14538-649

In accordance with the duty of disclosure, Applicant(s) hereby cites the following references:

PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	NAME
	G1	4,896,363	01/23/1990	Taylor et al.
	G2	6,064,753	05/16/2000	Bolle et al.
	G3	7,240,336	07/03/2007	Baker
	G4	8,000,514	08/16/2011	Nepomniachtchi et al.
	G5	10,402,638	09/03/2019	Oaks, III et al.

FOREIGN PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	COUNTRY	TRANSLATION YES OR NO
	G6	CN 1897644 A	01/17/2007	China	Abstract
	G7	WO 2004/008350 A1	01/22/2004	WIPO	

OTHER ART – NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIAL		Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	G8	Defendant Wells Fargo Bank, N.A.'s Second Amended Answer, Affirmative Defenses, and Counterclaims To Plaintiff's Amended Complaint, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-245, dated August 1, 2019, 72 pgs.
	G9	Claim Construction Memorandum Opinion and Order, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-366, dated July 29, 2019, 36 pgs.
	G10	Wells Fargo's Objections To Magistrate Judge Payne's Claim Construction Memorandum Opinion and Order, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-366, dated August 12, 2019, 7 pgs.

Examiner Signature		Date Considered	

EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	G11	USAA's Objections To Magistrate Judge Payne's Claim Construction Memorandum Opinion and Order, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-366, dated August 12, 2019, 10 pgs.
	G12	IPR2019-00815 Patent No. 9,818,090, Petitioner's Reply Brief to Patent Owner Preliminary Response Pursuant To Authorization Provided In Paper No. 13, dated August 1, 2019, 9 pgs.
	G13	IPR2019-00815 Patent No. 9,818,090, Petitioner's Supplemental Exhibit List, dated August 1, 2019, 5 pgs.
	G14	IPR2019-00815 Patent No. 9,818,090, United Services Automobile Association ('USAA")'s Sur-Reply In Support of Patent Owner Preliminary Response, dated August 8, 2019, 8 pgs.
	G15	IPR2019-00815 Patent No. 9,818,090, Decision Denying Institution of Inter *Parties* Review, dated August 26, 2019, 28 pgs.

1. PRIORITY INFORMATION:

☐ This application claims priority under 35 USC §120 to the following United States patent application(s):_____. In accordance with 37 CFR §1.98(d), copies of the references cited herein which were submitted to, or cited by, the office, in compliance with 37 CFR §1.98(a)-(c) in the earlier application are not provided herewith. The Examiner is directed to those references cited in all Information Disclosure Statements filed in the priority United States patent application(s) cited above in addition to the references cited herein.

2. CERTIFICATIONS: (CHECK ALL THAT APPLY)

A. Certifications For 37 CFR §1.97(c) or 37 CFR §1.97(d):

☐ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(1) that each item of information in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

☒ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(2) that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated in 37 CFR §1.56(c), more than three months prior to the filing of this Information Disclosure Statement.

B. For Patent Term Adjustment Purposes:

☐ For purposes of 37 CFR §1.704(d)(i) or 37 CFR §1.704(d)(ii), Applicant is hereby submitting concurrently with this Information Disclosure Statement a completed Form PTO/SB/133 that certifies that each item of information contained in this Information Disclosure Statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office or is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and that this communication was not received by any individual designated in 37 CFR §1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement.

3. FEE INFORMATION: (CHECK IF FEE REQUIRED)

☐ Applicant has calculated a processing fee in the amount of _____ to be due under 37 CFR §1.17(p) in connection with the filing of this Information Disclosure Statement. Applicant authorizes charging the fee to Deposit Account 50-4184.

Examiner Signature		Date Considered	

☒ The Director is hereby authorized to charge any fee deficiency associated with the filing of this Information Disclosure Statement to Deposit Account 50-4184.

Pursuant to the undersigned attorney's obligation and duties under 37 CFR §§ 1.56 and 1.98(a)(3) and (c), either English language abstracts, partial translations, or full translations are included for patent documents which are not in English for the express purpose of providing a concise explanation of the references to the Patent and Trademark Office with the opportunity to evaluate the same. Applicant respectfully requests the Examiner's consideration of the above reference(s) and entry thereof into the record of this application.

By submitting this Statement, Applicant is attempting to fully comply with the duty of candor and good faith mandated by 37 CFR §1.56. As such, this Statement is not intended to constitute an admission that any of the enclosed references, or other information referred to therein, constitutes "prior art" or is otherwise "material to patentability," as that phrase is defined in 37 CFR §1.56(a).

Respectfully submitted,

October 16, 2019
Date

Kent E. Genin (Reg. No. 37,834)

Examiner Signature		Date Considered	

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

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Date: October 16, 2019 Name: Patricia Chiovari Signature: /Patricia Chiovari/

BRINKS GILSON & LIONE 100 YEARS OF IP LAW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of:	Charles Lee Oakes et al.		
Appln. No.:	16/025,701	Examiner:	Ojo O. Oyebisi et al.
Filed:	July 2, 2018	Art Unit:	3697
For:	DIGITAL CAMERA PROCESSING SYSTEM	Conf. No.:	8845

Attorney Docket No.: US-0152.09 | 14538-649

TRANSMITTAL

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Attached is/are:

☒ Supplemental Information Disclosure Statement; and References G6-G15.

Fee calculation:

☒ No additional fee is required.

☐ Per 37 CFR §1.27, ☐ Applicant is small entity ☐ Applicant is micro entity.

☐ An extension fee in an amount of $_____ for a _____-month extension of time under 37 CFR § 1.136(a).

☐ A petition or processing fee in an amount of $_____ under 37 CFR § 1.1_____(_____).

☐ An additional filing fee has been calculated as shown below:

	Claims Remaining After Amendment		Highest No. Previously Paid	Present Extra	Fee Rate	Fee Add'l Fee	Small Entity Fee Rate	Small Entity Fee Add'l Fee	Micro Entity Fee Rate	Micro Entity Fee Add'l Fee
Total		Minus			x $100 =	$	x $ 50 =	$	x $25 =	$
Independent		Minus			x $460 =	$	x $230 =	$	x $115 =	$
First Presentation of Multiple Dep. Claim					+ $820 =	$	+ $410 =	$	+ $205 =	$
					Total	$	Total	$	Total	$

Fee payment:

☐ Please charge Deposit Account No. 50-4184 in the amount of $_____ for _____.

☐ Payment by credit card in the amount of $_____ (Form PTO-2038 is attached).
WARNING: Information on this form may become public. **Credit card information should not be included on this form.**

☒ The Director is hereby authorized to charge payment of any additional filing fees required under 37 CFR § 1.16 and any patent application processing fees under 37 CFR § 1.17 (including any extension fee required to ensure that this paper is timely filed), or to credit any overpayment, to Deposit Account No. 50-4184.

Respectfully submitted,

October 16, 2019
Date

Kent E. Genin (Reg. No. 37,834)

Electronic Acknowledgement Receipt

EFS ID:	37471994
Application Number:	16025701
International Application Number:	
Confirmation Number:	8845
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM
First Named Inventor/Applicant Name:	Charles Lee Oakes
Customer Number:	16530
Filer:	Kent E. Genin/Claudia Cisneros
Filer Authorized By:	Kent E. Genin
Attorney Docket Number:	US-0152.09 (14538-649)
Receipt Date:	16-OCT-2019
Filing Date:	02-JUL-2018
Time Stamp:	17:03:46
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Foreign Reference	6-CN-1897644-A-c.pdf	4543719 6e3aad246373861c168b58ebaa0fbaf3356e5cbf	no	22

Warnings:

Information:					
2	Foreign Reference	7-WO-2004008350A1-c.pdf	5650738 8091a9dedaedc10109fc7ec82716b54e167e4009	no	48
Warnings:					
Information:					
3	Non Patent Literature	8-CV245-WellsFargoSecondAmendedAnswer-c.pdf	4224432 7a92ebf72ed76fbce61b7f5ef7ff29a1a84e4696	no	72
Warnings:					
Information:					
4	Non Patent Literature	9-CV366-ClaimConstructionMemorandumOpinionOrder-c.pdf	408812 8e8fac6a514144fe3fb25095607927824ef785fc	no	36
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Information:					
5	Non Patent Literature	10-CV366-WellsFargoObjectionsToMemoOpinion-c.pdf	160606 f14f464cab4cc3a69adbf5130ecb295b4626b156	no	7
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6	Non Patent Literature	11-CV366-USAAsObjectionClaimConstruction-c.pdf	195199 7348471829ced031086b05421e0fd65eca90aa63	no	10
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7	Non Patent Literature	12-IPR2019-00815-PetitionerReplyBrief-POPR-c.pdf	126556 b70249ceb85922d6aacac5fac547b958e2d6ac8c	no	9
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8	Non Patent Literature	13-IPR2019-00815_PetitionersSuppl-ExhibitList-c.pdf	100975 79c4179d9cf74bc83ccc7eaf099ff0757e4903af	no	5
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9	Non Patent Literature	14-IPR2019-00815-USAA_PatentOwners-Sur-Reply-c.pdf	149737 bebc6d2f5631bd890afdbadd6df4b83a7a2b5ec0	no	8
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Information:					
11		14538_649_SuppIDS_G_101619.pdf	462714 4743bc4d8572c72ee80e61713fa35d19ee810bbb	yes	4

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Patent Record Full View Friday, August 30 2019 **Derwent Innovation**

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INPADOC Family: Alive

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Optimized Assignee: MOTOROLA MOBILE CO. LTD.

Ultimate Parent: MOTOROLA MOBILE CO. LTD.

Publication Date: 2007-01-17

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Remaining Life: 2146 days (5 year(s), 10 month(s))

Bibliography

DWPI Title

Method and system for catching pictures to reduce the projection distortion comprises the image sensor of camera receives the preview image that describes the edge of straight line and having at least two reference lines

Original Title

The method and the system for the image catching *(Translation from Clarivate Analytics)*

English Title

Method and system for catching pictures

Assignee/Applicant

Standardized: **MOTOROLA CORP**

Original: Motorola Inc., US

DWPI Assignee/Applicant

MOTOROLA CORP (MOTI-C); MOTOROLA INC (MOTI-C)

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2007-728008 / 200769

Application Number / Date

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Abstract

DWPI Abstract

(CN1897644A_)

Novelty

The method is used to reduce the projection distortion in the image and comprises: the image sensor of camera receives the preview image that describes the edge of straight line; the image describingthe edge of straight line and having at least two reference lines is displayed in the preview window of the camera; each reference line corresponds to an edge of straight line; the camera captures theimage, only in case of the edge of straight line being parallel with the reference line.

Abstract

A kind of method system for catching the stuff front face image with at least two basic upside straight margins(205), it is helpful for the reducing projection transformation in the image. This method comprises at the camera(100) image sensor receive the preview image, wherein, the preview image described the straight line margin(205). And then described the straight line margin(205) and the existing preview image of at least two benchmark line(135) displayed at the preview windows(125) relative with the camera system(100), wherein, each reference line (135) is corresponding to a straight line margin(205). Only when the straight line margin(205) displayed at the preview windows(125) is basically parallel with the relative benchmark line(135), it catch the image of the stuff.

(Translation from Clarivate Analytics)

Classes/Indexing

IPC

Current IPC	Invention	Version	Additional	Version

Full	H04N 5/225	20060101	-	-
Main Group	-	-	-	-
Subclass	-	-	-	-

Original IPC	Invention	Version	Additional	Version
Advanced/Full	H04N 5/225	20060101	-	-
Core/Main Group	-	-	-	-
Subclass	-	-	-	-

DWPI Class

W04

DWPI Manual Codes

Expand DWPI Manual Codes

DWPI Chemistry Resource Numbers

Expand DWPI Chemistry Resource Numbers

DWPI Registry Numbers

Expand DWPI Registry Numbers

Plasdoc Punch Codes

Expand Plasdoc Punch Codes

Plasdoc Key Serial Codes

Expand Plasdoc Key Serial Codes

Enhanced Polymer Indexing

Expand Enhanced Polymer Indexing

Chemical Fragment Codes

Expand Chemical Fragment Codes

Legal Status

INPADOC Legal Status

Gazette Date	Code	Description
2016-04-06	C56	CHANGE IN THE NAME OR ADDRESS OF THE PATENTEE
2016-04-06	C41	TRANSFER OF PATENT APPLICATION OR PATENT RIGHT OR UTILITY MODEL
2011-03-09	C41	TRANSFER OF PATENT APPLICATION OR PATENT RIGHT OR UTILITY MODEL
2011-03-09	ASS	SUCCESSION OR ASSIGNMENT OF PATENT RIGHT MOTOROLA MOBILE CO., LTD FORMER OWNER: MOTOROLA INC. 2011-01-17
2010-05-12	C14 +	GRANT OF PATENT OR UTILITY MODEL
2007-03-14	C10	ENTRY INTO SUBSTANTIVE EXAMINATION
2007-01-17	C06 +	PUBLICATION

Get Family Legal Status

Family

Family

Expand INPADOC Family (2) **INPADOC Family:** Alive

Expand DWPI Family (2); Countries/Regions (1) **DWPI Family:** Alive

Claims

Claims

All Claims (14)

Claims (English)

1. A kind of method system for catching the stuff front face image with at least two basic upside straight margins, this method comprises: At the camera image sensor receive the preview image, wherein, the preview image described the straight line margin; And then described the straight line margin and the existing preview image of at least two benchmark linedisplayed at the preview windows relative with the camera system, wherein, each reference line is corresponding to a straight line margin; and Only when the straight line margin displayed at the preview windows is basically parallel with the relative benchmark line, it catches the image of the stuff.

2. The method according to the claims1, wherein, there is at least three benchmark line displayed in the aforementioned preview windows.

3. The method according to the claims1, wherein, when the straight line margin displayed at the preview windows is basically parallel with the relative benchmark line, it catch the image of the stuff.

4. The method according to the claims1, wherein, Only when the straight line margin displayed at the preview windows is basically has same length, and when each straight line margin is basically parallel with the relative benchmark line, it catch the image of the stuff.

5. The method according to the claims1, also comprises: before catching the stuff image, when the straight line margin displayed at the preview windows is basically parallel with the relative benchmark line, provide the instruction for the clients.

6. The method according to the claims1, also comprises: operate the optic bit identification to the caught stuff image.

7. The method according to the claims1, wherein, the aforementioned benchmark line is permanently printed on the aforementioned preview windows.

8. A kind of camera system for catching the stuff front face image with at least two basic upside straight margin, the camera comprises: The image sensor, for receiving the preview image described the straight line margin; and the preview windows is connected with the aforementioned image sensor, and apply for the display the aforementioned preview image, the aforementioned preview image described the straight line margin and existing at least two benchmark line wherein, each benchmark line is corresponding to a straight line margin. Wherein, only when the straight line margin displayed at the preview windows is basically parallel with the relative benchmark line, it catches the image of the stuff.

9. The system according to the claims1, wherein, there is at least three benchmark line displayed in the aforementioned preview windows.

10. The system according to the claims8, wherein, when the aforementioned straight line margin displayed at the preview windows is basically parallel with the relative benchmark line, it catch the image of the stuff.

11. The system according to the claims8, wherein, when the aforementioned straight line margin displayed at the preview windows is basically parallel with the relative benchmark line, it catch the image of the stuff.

12. The system a according to the claims8, wherein, Only when the straight line margin displayed at the preview windows is basically has same length, and when each straight line margin is basically parallel with the relative benchmark line, it catch the image of the stuff.

13. The system a according to the claims11, wherein, the aforementioned stuff is name card, and the aforementioned instruction comprises: sound generator, ray or the instructor displayed on the aforementioned windows.

14. The system a according to the claims11, wherein, the aforementioned benchmark line is permanently printed on the aforementioned preview windows.

(Translation from Clarivate Analytics)

Description

Background/ Summary

Expand Background/Summary

Drawing Description

Expand Drawing Description

Description

Expand Description

Citations

Citation *Record level*

Expand Citing Patents (3)

Expand Cited Patents (3)

Cited Non-patents (0)

DPCI Citation *Patent family level*

Expand DPCI Citing Patents (3)

Expand DPCI Cited Patents (3)

DPCI Cited Non-patents (0)

Expand DPCI Citation Counts

DPCI Field of Search

-

DPCI Citing Patents Country/Region

CN

DPCI Cited Patents Country/Region

JP; US

Other

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DWPI Title Terms

METHOD SYSTEM CATCH PICTURE REDUCE PROJECT DISTORT COMPRISE IMAGE SENSE CAMERA RECEIVE PREVIEW DESCRIBE EDGE STRAIGHT LINE TWO REFERENCE

DWPI Related Accession Numbers

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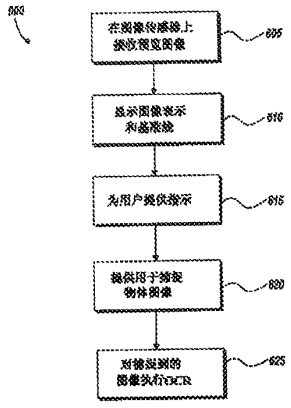
权利要求书 2 页 说明书 8 页 附图 4 页

[54] 发明名称

用于捕捉图像的方法和系统

[57] 摘要

一种用于捕捉至少具有两条基本上直的边缘(205)的物体正面图像的方法系统，有助于减少图像中的射影变形。该方法包括在相机(100)的图像传感器(115)上接收预览图像，其中该预览图像描绘了直线边缘(205)。随后描绘了直线边缘(205)和同时存在的至少两条基准线(135)的预览图像显示在与相机系统(100)相关的预览视窗(125)中，其中每条参考线(135)对应于一条直线边缘(205)。仅仅当预览视窗(125)中所显示的直线边缘(205)基本上平行于相应的基准线(135)时，才捕捉物体的图像。



1. 一种用于捕捉至少具有两条基本上直的边缘的物体正面图像的方法，该方法包括：

在照相机的图像传感器上接收预览图像，所述预览图像描绘了直线边缘；

在与照相机相关的预览视窗中显示预览图像的表示，所述预览图像描绘了直线边缘和同时存在的至少两条基准线，其中每一条基准线对应于一条直线边缘；及

仅仅当预览视窗中所显示的直线边缘基本上平行于相应的基准线时，才提供用于捕捉物体图像。

2. 根据权利要求 1 所述的方法，其中至少有三条基准线显示在所述预览视窗中。

3. 根据权利要求 1 所述的方法，其中，当所述预览视窗中所显示的直线边缘基本上平行于相应的基准线时，自动地捕捉图像。

4. 根据权利要求 1 所述的方法，其中，仅仅当所述预览视窗中所显示的平行直线边缘基本上具有相同的长度，并且每条直线边缘基本上平行于相应的基准线时，才捕捉图像。

5. 根据权利要求 1 所述的方法，进一步包括：在捕捉物体图像前，当预览视窗中所显示的直线边缘基本上平行于相应的基准线时，为用户提供指示。

6. 根据权利要求 1 所述的方法，进一步包括对捕捉到的物体图像执行光学字符识别。

7. 根据权利要求 1 所述的方法，其中，所述基准线被永久地叠印

在所述预览视窗上。

8. 一种用于捕捉物体正面图像的照相机系统，所述物体具有至少两条基本上平行的直线边缘，该照相机系统包括：

图像传感器，适合于接收描绘了直线边缘的预览图像；及

预览视窗，可操作地连接到所述图像传感器，并且适合于显示所述预览图像的表示，所述预览图像描绘了直线边缘和同时存在的至少两条基准线，其中每条基准线对应于一条直线边缘；

其中，仅仅当所述预览视窗中所显示的直线边缘基本上平行于相应的基准线时，才能捕捉物体图像。

9. 根据权利要求 8 所述的系统，其中至少有三条基准线显示在所述预览视窗中。

10. 根据权利要求 8 所述的系统，其中，当所述预览视窗中所显示的直线边缘基本上平行于相应的基准线时，自动地捕捉图像。

11. 根据权利要求 8 所述的系统，其中，在捕捉物体图像前，当所述预览视窗中所显示的直线边缘基本上平行于相应的基准线时，为用户提供指示。

12. 根据权利要求 8 所述的系统，其中，仅仅当所述预览视窗中所显示的平行直线边缘基本上具有相同的长度，并且每一条直线边缘基本上平行于相应的基准线时，才能捕捉物体的图像。

13. 根据权利要求 11 所述的系统，其中，所述物体是名片，并且所述指示包括声音发生器、光线或显示在所述预览视窗上的指示器。

14. 根据权利要求 8 所述的系统，其中所述基准线被永久地叠印在所述预览视窗上。

用于捕捉图像的方法和系统

技术领域

本发明总体上涉及使用数码相机来捕捉图像的方法和系统。尤其（但非排他地）涉及一种捕捉例如名片等文档的图像的方法和系统。

背景技术

增强的小型化数码相机技术导致了数码相机在各种手持电子装置中广泛使用。例如，现今数码相机通常结合到移动电话、个人数字助理（PDA）以及膝上型电脑中。数码相机的这种普遍存在的可用性产生了许多新颖的用于数字图像的商业应用。例如，商业人员能够使用结合到移动电话中的数码相机来快速、便利地捕捉名片中的数字图像。然后，对名片的数字图像执行光学字符识别（OCR），并将印刷在名片上的姓名、地址及其它信息自动存储在电话的联系文件（contact file）中。

OCR 可定义为将文本图像数据转换成字符代码格式的处理过程，所述字符代码格式例如文字处理应用软件可读取的 ASCII 码。在原始的文本图像数据中，文本字符和例如图形或线条的其它类型的图像数据一样是由各个像素组成。在转换为字符代码格式后，文本字符的原始图像常常不再可用来对转换结果进行编辑和纠错。因此，为了将图像转换成特殊的字符代码，OCR 处理过程需要质量相当高的单个字符图像。

然而，现在使用数码相机的许多环境，对于捕捉高质量的图像并不理想。例如，试图捕捉名片图像的数码相机的用户只是用一只手随意地拿住名片放在相机镜头前，同时用另一只手拿住相机，然后拍照。在那种情况下，诸如镜头到名片的距离，及相机的图像平面相对于名

片正面的角度这样的可变因素是不理想的。因此，最后所得到的图像可能包含象射影变形这样的缺陷。

附图说明

为了使本发明易于理解，并有效地付诸实践，参考附图所示的示范实施例，其中在遍及各个视图中，相同的数字表示同样的或功能类似的元件。结合下面详细描述并且组成说明书一部分的附图，有助于进一步说明依据本发明的实施例并且解释依据本发明的各种原理和优点，其中：

图 1 示出了依据本发明实施例的相机系统的正面示意图。

图 2 示出了依据本发明实施例的相机系统的背面示意图。

图 3 示出了图像射影变形原理的示意图。

图 4 示出了通过相机系统的预览视窗所观察到的显著射影变形的名片图像。

图 5 是依据本发明实施例用于描绘名片预览图像的预览视窗示意图。

图 6 示出了依据本发明一个实施例的捕捉物体正面图像方法的步骤流程图，该物体具有至少两个基本上直的边缘。

熟练的技术人员应当理解到为了简单清晰地说明附图中的元件，无需按照一定比例绘图。例如，为了增进理解本发明的实施例，附图中的一些元件尺寸可以相对于其它元件放大些。

具体实施方式

在详细描述依据本发明的实施例之前，应当注意到，实施例主要在于涉及用于捕捉图像的方法和系统的方法步骤和装置的组件。因此，装置件件和方法步骤通过常用符号适当的表示在附图中，这里仅仅示出了那些和理解本发明实施例有关的具体细节，以免对于受益于这里描述的本领域普通技术人员来说是容易理解的细节使得本公开难懂。

在该文件中，相关术语如左和右、上和下等等仅用来区别一实体或动作和其他的实体或动作，无需要求或暗示这种实体或动作之间的任何实际的这种关系或次序。术语“包括”、“包含”或其任何其它的变体规定为覆盖一个非专有包括，使得包括元件列表的过程、方法、项目（article）或装置并不仅仅包括那些已述元件，而且还包括其它未特别列出的元件或这种过程、方法、项目或装置固有的元件。无需更多的约束条件，为一个元件加上前言“包含一……”并不排除在包括该元件的过程、方法、项目或装置中出现另外完全相同的元件。

参考图 1 所示，示出了依据本发明实施例的相机系统 100 的示意图。和大多数相机一样，系统 100 包括结合一正面 110 的相机外壳 105。正面 110 包括一适合于接收图像的图像传感器 115。图像传感器 115 可以包括常规的透镜和光学器件，以及数字图像传感器，例如电荷耦合装置（CCD）传感器、CMOS 传感器，等等。

参考图 2，示出了相机系统 100 的背面 120 的示意图。背面 120 包括一预览视窗 125，该预览视窗适合于显示图像传感器 115 接收到的图像表示。和许多数码相机一样，本领域的技术人员应当认识到，预览视窗 125 可充当常规相机的取景器，并且实时显示位于图像传感器 115 前的场景的任何移动图像。典型地，在预览视窗 125 中所显示的这种实时图像仅仅是瞬时的，并且只有当用户启动快门按扭（未示出）、定时器或其它图像捕捉触发机构时，该实时图像才能被捕捉到系统 100 的内存中。本发明的一个实施例进一步包括模式选择开关 130，该模式选择开关可以用来将相机系统 100 设置成各种照相模式。例如，和许多现有技术的设备一样，模式选择开关 130 可以用来将系统 100 设置成标准静态图像模式、视频模式、低光线模式、高速模式，等等。依据本发明，模式选择开关 130 还可以用来将系统 100 设置成文档捕捉模式。当模式选择开关 130 被设置成文档捕捉模式时，基准线 135 显示在预览视窗 125 中。本领域的技术人员应当认识到，模式

选择开关 130 可以是位于相机外壳 105 上的物理开关或触发按扭，或例如可以是使预览视窗 125 启动的软件开关。外壳 105 的内部还包括处理器 140，该处理器可操作地连接到图像传感器 115、预览视窗 125 以及模式选择开关 130，有助于控制那些元件之间的交互作用，并且用于处理图像数据。

依据本发明不同的实施例，基准线 135 可包括各种尺寸、形状、颜色及格式，并且可以是半透明或不透明的。在使用基准线 135 期间，基准线 135 用来指导系统 100 的用户使图像传感器 115 位于相对于例如名片物体的适当方位上。因此，在使用基准线 135 定位期间，基准线 135 通常相对于预览视窗 125 固定。依据本发明的另一个实施例，基准线 135 可以被印刷在预览视窗 125 上，或以别的方式永久地叠印在预览视窗 125 上。

如图 2 所示，在实施本发明一个实施例的操作期间，用户常常通过如下确定基准线 135 的位置来试图确定文档的框架：使基准线 135 基本上平行的紧邻预览视窗 125 中所显示的文档表示的直线边缘 205 或基本上平行的位于直线边缘 205 之上。在这样的定位中，系统 100 被设计来捕捉良好聚焦并且清晰的文档图像，该系统具有适当的分辨率，以使得印刷在文档上的任何文本的光学字符识别有效并且可靠。

参考图 3，示出了图像射影变形原理的示意图，如本领域技术人员所了解的。所示的光线 305 通过透镜 315 从物体平面 310 传播到图像平面 320 上。至于本发明，物体平面 310 相当于将要映像的物体表面，例如名片的表面，透镜 315 相当于相机系统 100 的图像传感器 115 的元件，图像平面 320 相当于接收到的图像，例如在系统 100 的预览视窗 125 中所显示的预览图像。在物体平面 310 和图像平面 320 不能达到基本平行的情况下，透镜 315 使得印刷在物体平面 310 上的图像描绘按照已知的射影变形方式在图像平面 320 上发生变形。例如，在物体平面上的区域“P”的形状可以通过透镜 315 放大，并且通过射

影变形扭曲成图像平面上不同形状的区域“Q”。

参考图 4，示出了通过相机系统 100 的预览视窗 125 所观察到的显著射影变形的名片图像。尽管名片左侧上的印刷文本保持清晰并且易读，但由于名片的表面倾斜于系统 100 的图像平面 320，因此显示出的名片右侧上的印刷文本是模糊的并且不易读取。正如本领域技术人员所知的，相机系统 100 的有限景深和射影变形使得图像右侧变得模糊不清。

本发明能够通过确保被映像的物体的正面基本上平行于相机系统 100 的图像平面 320 来减少图像的射影变形。例如，当系统 100 处于文档捕捉模式时，仅仅当名片的直线边缘 205 基本上平行于预览视窗 125 中所显示的相应的基准线 135 时，系统 100 才为用户提供捕捉物体的图像，例如名片。

参考图 5，是依据本发明具体实施例用于描绘名片预览图像的预览视窗 125 的示意图。为了达到说明的目的，所示名片倾斜于系统 100 的图像平面 320，使得卡片的顶部直线边缘 205 不能达到基本平行于相应的顶部基准线 135。在这样的定位中，当系统 100 在上述文档捕捉模式中操作时，系统 100 显示出物体平面 310 和图像平面 320 达不到基本平行，因此不能捕捉到最终的名片图像。正如本领域中众所周知的，可使用图像边缘检测技术来可靠地计算出具体的基准线 135 和文档预览图像中相应的直线边缘 205 之间的角度。在图 5 中，示出了 3 条基准线 135；然而，根据本发明公开的内容，本领域技术人员应当认识到，依据本发明不同的实施例可以使用不同数量的基准线 135，例如二条、三条、四条或更多的基准线 135。此外，所有的基准线 135 不必是直交的。因此，例如相机系统 100 可以使用三角形排列的三条基准线 135 来校准三角形状的文档。

可以使用各种技术来向用户指示适当数量的基准线 135 基本上平

行于预览视窗 125 中所描绘的物体的相应直线边缘 205。例如，可以提供由声音组成的警报，象从相机系统 100 输出的哔哔声。同样，还可以是在预览视窗 125 上照亮的光线或在相机系统 100 其它别的地方上照亮的光线。此外，图象指示器可以显示在预览视窗 125 上，例如，其中当每一条基准线 135 基本上平行于相应的直线边缘 205 时，该基准线 135 可以单独地改变颜色或闪烁。作为替换，当预览视窗 125 上所显示的直线边缘 205 基本上平行于相应的基准线 135 时，系统 100 能够自动捕捉所选择的图像，为用户提供或不提供指示。

依据本发明的另一个实施例，可使用附加的几何校准技术来测量物体平面 310 是否和图像平面 320 对齐。例如，依据本领域技术人员已知的标准图像分析技术来测量在预览视窗 125 中所描绘的不同直线边缘 205 的长度。基于“没影点（vanishing point）”的效应，当边 205 之一离图像传感器 115 更远时，按照二维图像的显示，矩形文档的两条相对平行的直线边缘 205 具有不同的长度。因而在图 5 中，离相机系统 100 较远的名片右侧的垂直直线边缘 205 比名片左侧的垂直直线边缘 205 短。因此，在本发明的实施例中增加了额外的灵敏度，其中仅仅当预览视窗 125 中所显示的物体的两平行直线边缘 205 基本上具有相同的长度并且基本上与相应的基准线 135 平行时，才可以捕捉到图像。

本领域技术人员应当认识到，小型化数码相机技术使得相机外壳 105、图像传感器 115 及预览视窗 125 几乎可以是任意尺寸的，因而本发明的实施例可以结合到各种电子装置中，例如移动电话、个人数字助理及膝上型电脑。此外，基准线 135 可以被设计成与不同类型物体的直线边缘 205 一致。例如这种物体可以包括矩形、三角形或其它形状的纸件，如名片，或其它具有直线边缘 205 和一表面的物体，其中将该表面定位在平行于相机系统 100 的图像平面 320 的方向上有助于减少射影变形。

参考图 6，示出了依据本发明一个实施例的捕捉物体正面图像方法的步骤流程图，该物体具有至少两个基本上直的边缘 205。首先，在步骤 605，系统 100 的图像传感器 115 接收预览图像。预览图像描绘了物体的直线边缘 205。如上所述，该预览图像通常是瞬时图像，用于适当地确定或校准相机系统 100 相对于物体平面的方向。接下来，在步骤 610，显示出预览图像表示，其描绘了与相机系统 100 相关的预览视窗 125 中的直线边缘 205 和同时存在的至少两条基准线 135，其中每一条基准线 135 对应于一条直线边缘 205。依据本发明的一个实施例，在用户选择一种文档捕捉模式之后，基准线 135 才显示在相机系统 100 中；作为替换，基准线可以被永久地叠印到预览视窗 125 上。接下来，在步骤 615，当预览视窗 125 中所显示的直线边缘 205 基本上与相应的基准线 135 平行时，为用户提供一个指示。在步骤 620，仅仅当预览视窗 125 中所显示的直线边缘 205 基本上与相应的基准线 135 平行时，才提供用于捕捉物体图像。最后，在步骤 625，对捕捉到的物体图像执行光学字符识别。

方法 600 中的步骤 625 可以使用存储在相机系统 100 中的软件来执行，或作为替换在远程位置执行步骤 625。例如，相机系统 100 可以仅用来捕捉精确、清晰的文本数据图像，在执行任何光学字符识别之前，可将该图像下载到另一个位置。

总之，本发明是用于捕捉至少具有两条基本上直的边缘 205 的物体正面图像的改进方法和系统。本发明的实施例采用象模式选择开关 130 和预览视窗 125 这种相机系统 100 常见的特征使得用户在使用中友好并且直观。因而本发明有助于用户精确、可靠地捕捉物体正面的图像，其中物体平面 310 基本上平行于图像平面 320。因此，减少了图像中的射影变形，使图像更加清楚、精确。在减少射影变形的情况下，更有可能高精确度地执行加速图像捕捉处理过程，例如对文本图像所执行的光学字符识别处理过程。

上面的详细描述仅仅提供了示范实施例，并不意味着限制本发明的范围、适用性或构造。相反地，示范实施例的详细描述为本领域的技术人员提供了用于实施本发明示范实施例的可执行描述。应该理解，在不脱离所附权利要求所阐述的本发明的精神和范围内，能够作出对元件的功能和配置及步骤进行的各种变化。应当理解这里所描述的实施例可由一个或多个常规处理器和控制一个或多个处理器运行的唯一存储的程序指令组成，结合特定的非处理器电路，这里所描述的用于捕捉物体正面图像的一些、大多数或所有功能。该非处理器电路可以包括（但不限于）无线电接收机，无线电发射机，信号驱动器，时钟脉冲电路，电源电路，以及用户输入设备。同样地，这些功能可以被解释为执行捕获物体正面图像方法的步骤。作为替换，一些或全部的功能可以通过不具有存储程序指令的状态机来实现，或在一个或多个特定用途集成电路（ASIC）中实现，其中每一项功能或某些特定功能的结合作为常规逻辑电路来实现。当然，也可以结合两种方法来使用。因而，这里描述了执行这些功能的方法和装置。此外，希望普通技术人员在这里所公开的原理和原则的指导下，使用最小限度的实验就能够容易地生成这类软件指令和程序以及 IC，尽管可能付出巨大努力，以及基于如可利用的时间、当前技术和经济上的考虑激发出多种设计选择。

在前述的说明中，描述了本发明的具体实施例。然而，本领域的普通技术人员应当理解，在不脱离如权利要求所阐述的本发明范围内，对本发明可作出各种修改和变化。因此，说明书及附图应当认为是对本发明的解释而非限定，以及所有这样的修改都意味着包括在本发明的范围内。该利益、优点、问题的解决方法以及可产生任何利益、优点、或发生或变得更为显著的解决方法的任意成份，都不能解释为任一或全部权利要求的重要、必需或基本的特征或成份。本发明由所附权利要求单独定义，在该申请未决期间所作出的任何修改以及那些权利要求的所有等价物都包含在其内。

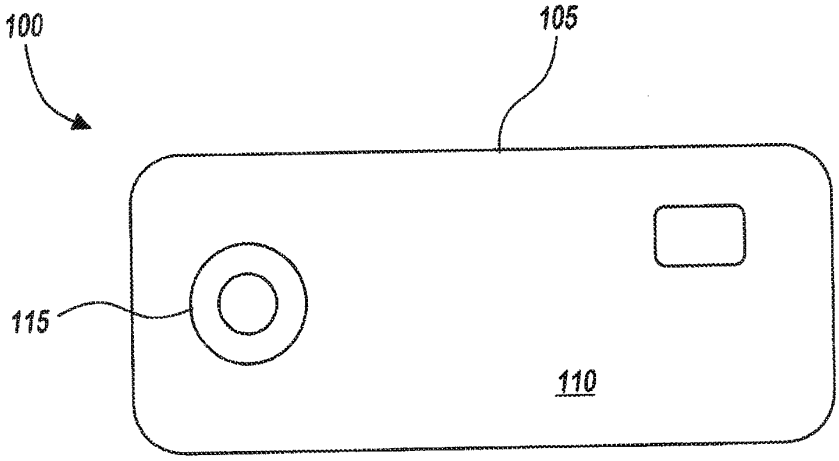


图1

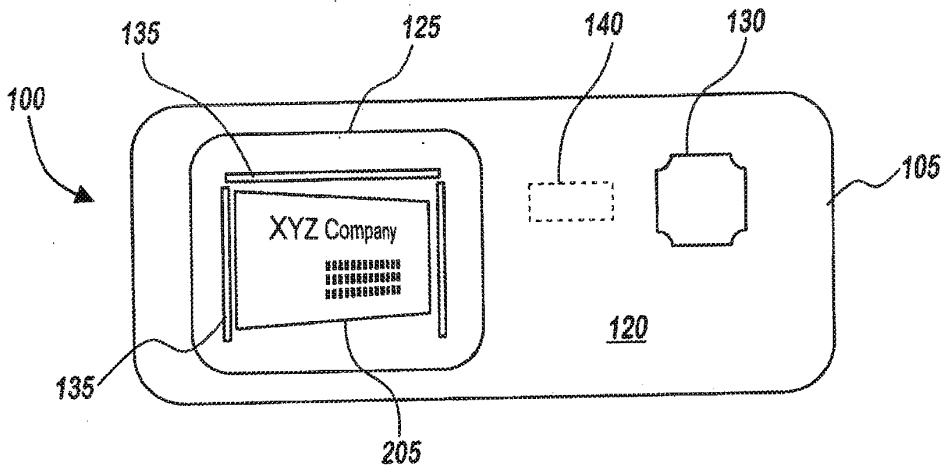


图2

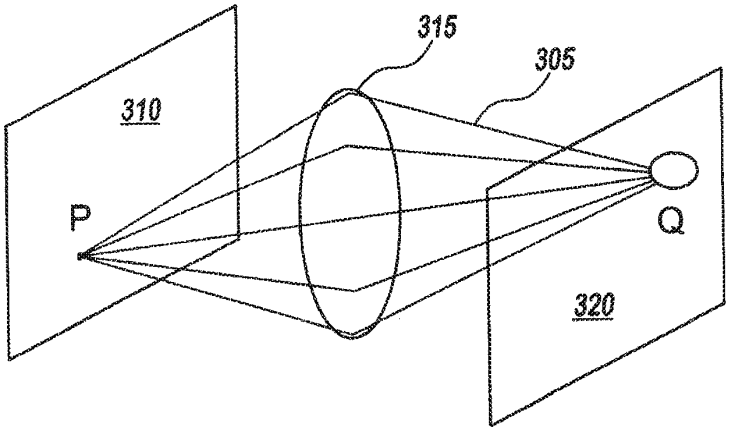


图3

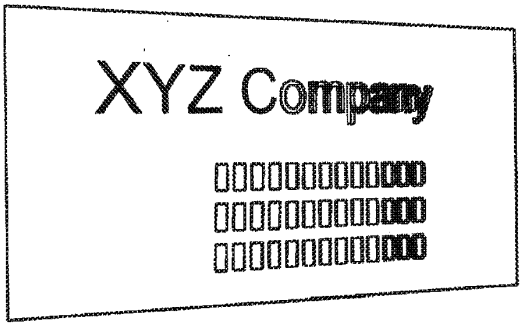


图4

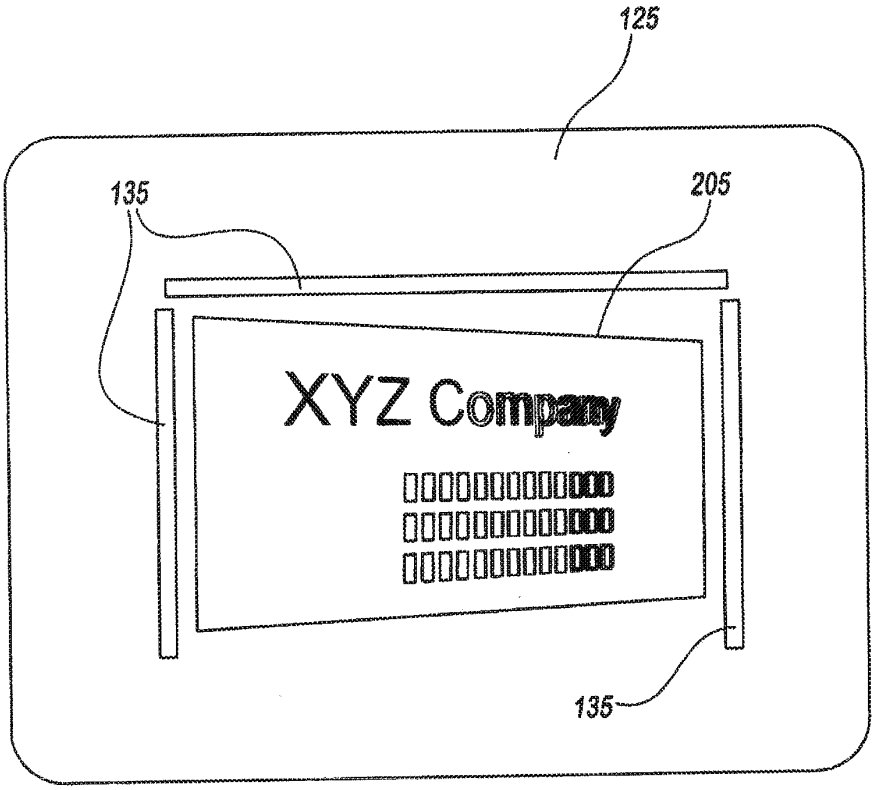


图5

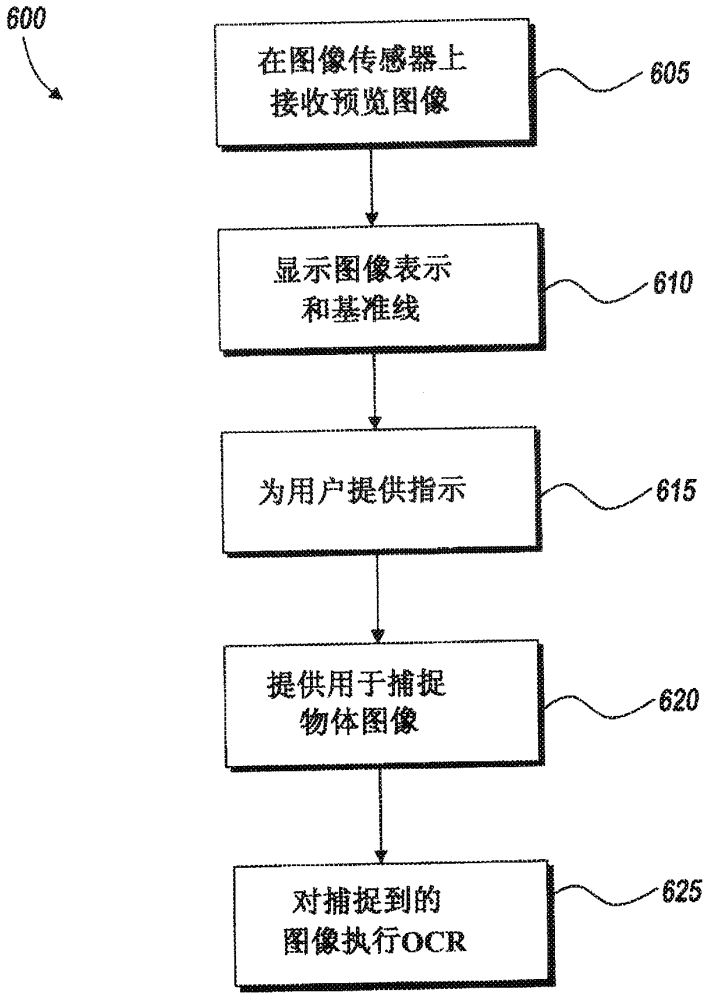

600
在图像传感器上
接收预览图像
605
显示图像表示
和基准线
610
为用户提供指示
615
提供用于捕捉
物体图像
620
对捕捉到的
图像执行OCR
625

图6

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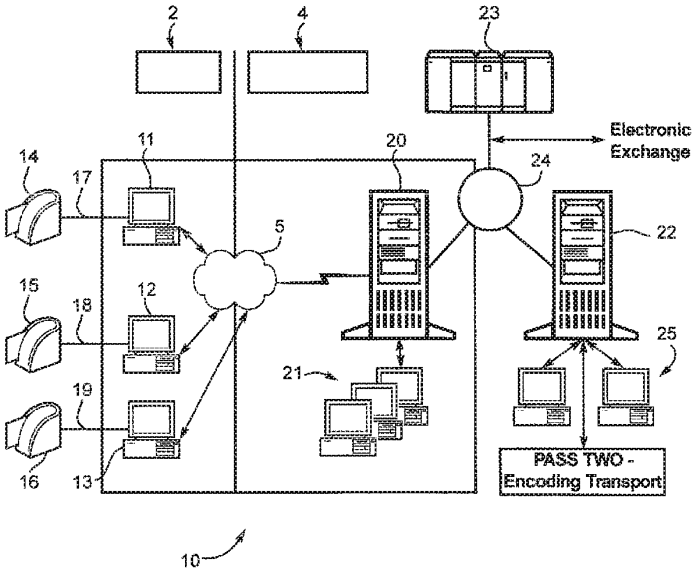
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(54) Title: FINANCIAL DOCUMENT PROCESSING METHOD AND SYSTEM



(57) Abstract: A method for processing financial documents, including the steps of: (a) receiving a batch of one or more financial documents (1) at a customer premises (2); (b) processing the financial documents in a customer system (3; 11-19) to create document images files and associated document data files; (c) transmitting the document image files and document data files from the customer system (3; 11-19) to a bank operations system (20-25); (d) forwarding the financial documents to a bank operations centre (4), and (e) matching the financial documents to the document image files and document data files in the operations system to enable final processing of the financial documents.

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FINANCIAL DOCUMENT PROCESSING METHOD AND SYSTEM

The present invention relates generally to the processing of financial documents by financial institutions, and in particular to the electronic capture and use of image and data files created from the financial documents by customers of financial institutions. The present invention has particular application in the electronic processing of cheques by banks and like financial institutions, and it will be convenient to describe the invention hereafter in relation to that exemplary, application. It will be understood however that the invention is not limited to that application only, and may be used in conjunction with, the processing of deposit slips, withdrawal slips or other financial documents.

Currently, information that is contained on cheques is processed three times, twice by bank customers and the third time by the bank itself. The first time that the information is used is when bank customers enter relevant cheque information into their own accounts receivable system. The second time the information is used is when bank customers manually record the cheque amounts and balances to credit. This process is used to prepare a transaction summary sheet for deposit, together with the physical cheques, at a bank branch or with an authorised bank agent.

After the customer has taken the cheques to a bank branch, the cheques are couriered to a bank operations centre. At this location, the cheques are processed a third time by the bank's voucher image processing system. Bank operations staff use this system to capture images of the cheques and enter the information contained on the cheque, balance and encode the cheque transaction data, and then store the physical cheque and credit document transactions. Once the transactions are captured and balanced by the bank, other subsequent processes are carried out including for example verification of credit, electronic exchange of "clean items" and updating of the bank's demand deposit account system.

This procedure is cumbersome and inconvenient for both bank customers and the banks themselves. Bank customers would prefer to avoid having to enter cheque information more than once and being required to visit a bank branch to make deposits. On the other hand, banks would prefer a procedure where the data processing steps required to be performed at their bank operations centre are minimised.

It would be desirable to provide a method and system for processing financial documents that alleviates or overcomes one or more problems of known financial document processing systems and methods.

It would also be desirable to provide a method and system for processing financial documents that is simple and convenient for both banks and their customers.

It would also be desirable to provide a method and system of processing financial documents that is simple to install, use and/or maintain by banks and their customers.

With this in mind, one aspect of the invention includes a method for processing financial documents, including the steps of:

(a) receiving a batch of one or more financial documents at a customer premises,

(b) processing the financial documents in a customer system to create document images files and associated document data files,

(c) transmitting the document image files and document data files from the customer system to a bank operations system,

(d) forwarding the financial documents to a bank operations centre, and

(e) matching the financial documents to the document image files and document data files in the operations system to enable final processing of the financial documents.

Advantageously, bank customers are thus able to create and send images of cheques, deposit slips, withdrawal slips or other financial documents, and

associated document data, for submission to an appropriate bank operations centre. Upon subsequent receipt of the physical financial documents at the bank operations centre, the documents are matched with the document images and data to enable final processing of the documents to occur, without the need for bank branch and operations personnel to handle and/or without the need to enter transaction details a third time.

Step (b) may include:

capturing document data from a header document,

capturing document data contained on financial documents in the batch,

entering transaction data indicative of a financial transaction associated with the financial documents, and

capturing document images from financial documents in the batch.

The header document may contain machine-readable indicia, such as magnetic ink characters.

The machine-readable characters on the header document may be indicative of the customer.

The financial documents may contain machine-readable indicia.

The machine-readable characters on the financial document may be indicative of a financial transaction.

Step (b) may also include:

validating and repairing document data.

Step (b) may also include:

validating an authenticating marking, such as a signature, on the financial documents.

Step (e) includes:

selectively editing the transmitted document data and image files prior to matching and final processing.

The financial documents may be cheques, deposit slips, withdrawal slips or like documents.

The operations centre and operations system may be associated with a

financial institution, such as a bank.

The customer premises and customer system may be associated with a customer of the financial institution.

Step (d) may include depositing the financial documents to a branch of the financial institution for forwarding to the operations centre.

The customer system may include a document reading device operatively connected to a computing apparatus.

The computing apparatus may include a processing unit and associated memory device storing program instructions for causing the computing apparatus to carry out steps (b) and (c).

The operations system may include a bank receiving server.

The bank receiving server be operatively connected to a voucher image processing system for performing final processing of the financial documents.

The bank receiving server may include a processing unit and associated memory device storing program instructions for receiving the document image files and document data files from the customer system and for causing the bank receiving server to carry out step (e).

Another aspect of the invention provides a method for processing financial documents, wherein a batch of one or more financial documents are received at a customer premises, the method including the steps of:

(a) processing the financial documents in a customer system to create document images files and associated document data files, and

(b) transmitting the document image files and document data files from the customer system to an operations system for matching with the financial documents.

A further aspect of the invention provides a method for processing financial documents, wherein a batch of one or more financial documents is received at a customer premises, the financial documents are processed in a customer system to create document images files and associated document data files, the document image files and document data files are transmitted from the

customer system to an operations system, and the financial documents forwarded to an operations centre, the method including the step of:

(a) matching the financial documents to the document image files and document data files in the operations system to enable final processing of the financial documents.

Yet another aspect of the invention provides a system for processing financial documents, the system including:

a customer system acting to process financial documents to create document images files and associated document data files, and to transmit the document image files and document data files from the customer system to an operations system, and

an operations system acting to match the financial documents to the document image files and document data files to enable final processing of the financial documents.

A still further aspect of the invention provides a customer system including a document reading device operatively connected to a computing apparatus, wherein the computing apparatus includes a processing unit and associated memory device storing program instructions for causing the computing apparatus to carry out steps (b) and (c).

Another aspect of the invention provides a bank receiving server including a processing unit and associated memory device storing program instructions for receiving the document image files and document data files from the customer system and for causing the bank receiving server to carry out step (e).

A still further aspect of the invention provides a computer program including program instructions for causing the computing apparatus to carry out the above-described functionality.

A computer program including program instructions for causing the bank receiving server to carry out the above-described functionality.

The following description refers in more detail to the various features of

the processing of financial documents according to the present invention. To facilitate an understanding of the invention, reference is made in the description to the accompanying drawings where the financial document processing is illustrated in a preferred embodiment. It is to be understood, however, that the present invention is not limited to the preferred embodiment illustrated in the drawings.

In the drawings:

Figure 1 is a schematic diagram illustrating the entities involved in the processing of financial documents according to one embodiment of the present invention;

Figure 2 is a schematic diagram showing a financial document processing system;

Figure 3 is a flow chart showing the operation of the financial document processing system shown in Figure 2;

Figure 4 is a schematic diagram of an exemplary header document for use in the financial document processing system of Figure 2;

Figures 5 to 8, 10, 11 and 15 to 23 are representative displays presented to a user of a computing device at a customer's premises forming part of the financial document processing system of Figure 2;

Figure 9 is a flow chart illustrating the operation of an editing process carried out by the computing apparatus of the financial document processing system shown in Figure 2; and

Figure 12 is a flow chart showing the functional steps involved in the entry of transaction data into the computing apparatus forming part of the financial document processing system of Figure 2.

Referring now to Figure 1, there is shown generally a schematic diagram of the entities involved in the processing of financial documents according to one embodiment of the present invention. Initially, cheques 1 arrive by mail or other forms of submission, such as personal presentation, at the premises 2 of a bank customer. At these premises, the mail containing the cheques is opened,

and the cheques moved to a cheque processing department. Within that department, a customer system including cheque processing equipment 3 is used to read information printed on a batch of cheques, and to capture images of the front and back of each cheque. Bank customer staff then perform manual data entry, error correction and other related actions to the captured images and data. Document image files and associated document data files resulting from the processing of the cheques 1 are then transmitted to a bank operations centre 4 via a telecommunications network 5, such as the Internet or a bank's own intranet.

Each batch 6 of cheques received at the bank customer premises 2 are grouped, together with a client header document, and deposited in the night safe of a bank branch 7. The next day, a courier collects the batches 6 of cheques and client header documents, and forwards the cheque batches and header documents to the bank operations centre 4. Alternatively, the batches of cheques and client header documents may be mailed to the bank operations centre 4. The cheques received are then matched with the document data files and document image files previously transmitted from the bank customer premises, in order for the processing of the cheques to be finalised.

The electronic capture of the document image files and associated document data files, as well as the subsequent transmission and processing of these files, is facilitated by the financial document processing system 10 shown in Figure 2. This figure shows representative computing apparatus 11 to 13, such as personal computers or servers, installed at the premises of one or more separate bank customers. Document reading devices 14 to 16 are respectively connected to the computing apparatus 11 to 13. The document reading devices 14 to 16 act to drive individual cheques past Magnetic Ink Character Recognition (MICR) devices to read magnetic ink characters printed on the cheques. The document reading devices 14 to 16 additionally scan the front and back surfaces of the cheque in order to generate an image of each surface of the cheque. The captured MICR data and document image data are transmitted to

the computing apparatus 11 to 13 via RS-232 communications links 17 to 19 or other forms of connection, such as a USB connection. In other embodiments of the invention, machine readable indicia other than magnetic ink characters may be contained on the documents processed.

Data captured by the computing apparatus 11 to 13 is used to generate document image files and associated document data files. These files are transmitted to the bank operations centre 4, typically via the Internet, the bank's own intranet or another communications network. The elements 11 to 19 of the financial document processing system 10 form the bank customer system.

The document image files and document data files are received at the bank operations centre 4 by a bank receiving server 20. Image terminals 21 are connected to the bank receiving server 20 to enable visualisation and manipulation of the received files. The bank receiving server 20 is connected to the bank's conventional voucher image processing system 22 and a bank host Demand Deposit Accounting (DDA) system 23 via a token ring network 24 or other local area network. Image terminals 25 are connected to the voucher image processing system 22 in order to enable visualisation and manipulation of the files received by and stored in the voucher image processing system. It will be appreciated that computing apparatus 11 to 13 and the bank receiving server 20 include data processing units and associated memory devices storing program instructions to enable the computing apparatus and bank receiving server to carry out functionality described below. The elements 20 to 25 of the financial document processing system 10 form a bank operations system for matching the cheques or other financial documents and the document image files and document data files to enable final processing of the financial documents.

Following initialisation of the financial document processing system 10, a password logon screen is displayed to users of computing apparatus 11 to 13. Once logon has been completed and the identity of each user authenticated, the

cheques 1 received at the bank customer premises 2 are processed to capture images of the front and back of the cheque, and to read information contained on the cheque. The logon process may optionally include "finger print recognition" to authenticate a user. The recognition and authentication of a user's finger print adds an extra level of security to the logon process.

As seen in Figure 3, once the computing apparatus in question has been initialised at step 30, the user is prompted to enter today's date at step 31. Once the date has been entered at step 32, and verified by a system clock at step 33, a header record is created to contain notably a location number, and user ID. Blank fields are established by the computing apparatus notably to record the number of cheques processed in a batch, beginning and ending primary transaction numbers, total number of records and the total dollar value of cheques processed. Once the header record and fields have been opened, and the corresponding file name created, the computing apparatus enables the first part of the process to capture document images and document data from the cheques. This process includes the capture of a header document provided by a bank to each bank customer, and of one or more cheques to be processed by each bank customer. The process continues until data from the header document and all cheques are captured by the document reading device.

An exemplary header document 60 is shown in Figure 4. The header document includes magnetic ink characters able to be recognised by the document reading devices 14 to 16. The font structure of the magnetic ink characters includes 4 characters used by the banking industry to generate field separation. Each of these characters are alpha characters, and are used to separate strings of numeric fields containing information desired to be captured.

The header document 60, which is supplied to a customer by a bank, includes sufficient information in the Magnetic Ink Character Recognition (MICR) line 61 to ensure that the correct document is being used, and to create a unique record that can be used by the bank operations centre to access a customer's data file when the cheques 1 arrive at the bank operations centre 4.

The header document 60 plays a role in linking the physical cheques 1 to the document image files and associated document data files derived from the cheques 1. For Australian cheques, the MICR line 61 includes an "Extra Aux Dom" field 62, and "Aux Dom" field 63, a "BSB" field 64, "Account Number" field 65, and "Tran Code" field 66. The Extra Aux Dom field includes a string of numbers representing a customer unit serial number together with a cheque digit, separated by 2 alpha characters.

The Aux Dom field 63 includes 6 characters representing a header document serial number supplied by the bank. These numbers are used by the bank to keep track of header document usage, and to provide a header document replenishment system similar to that provided for cheque books.

The BSB field 64 represents the bank branch where the customer will place their deposit of physical cheques in the overnight safe.

The Account Number field 65 includes 9 characters representative of a customer primary account number. The Tran Code field 66 includes 2 characters used by the bank operations centre 4 to confirm that this document is a header document for an electronic image cheque deposit. The combination of the numbers encoded in the fields 62 to 66 creates a unique record to enable the document image files and document data files from the cheques scanned at the bank customer premises to be matched with the physical cheques subsequently received by the bank operation centre 4.

Data in one or more of the fields 62 to 66 may have been embedded in software loaded on the customer computing apparatus during installation, and used to validate the data read from the header document.

The Header document mirrors the MICR band structure when used with non Australian cheques such as cheques drawn on US banks which have a Federal Reserve Bank/American Bankers Association MICR band structure.

Returning again to Figure 3, the user is prompted at step 34 to feed the header document into the document reading device. The software resident in the computing apparatus of the bank customer will not allow any other item to

be captured until the header document 60 has been accepted. During capture of the header document, the user is presented with a display 70, as shown in Figure 5. This display provides the user with a visual indication of the step being performed in window 72. The display 70 also presents a captured image of the header document in a window 73 for verification by the user. The computing apparatus then acts to authenticate the captured header details against data embedded in the software loaded in the computing device apparatus, before enabling cheque capture by the document reading device.

The display 70 may also present specific business advertising content to the user. The bank receiving server 20 may maintain or access business advertising content for transmission and display to the user via any of the graphic user interfaces presented during operation of the financial document processing system.

At step 35, cheques are individually fed into the credit document reading device. During cheque capture, images of both the front and back of the cheque are captured, as well as the data included in the MICR line on each cheque. During this process, the user is presented with a display 74 shown in Figure 6. This display provides the user with a visual prompt in a window 75 to feed in the cheques to be processed, as well as displaying an image in a window 76 of the front of each cheque as it is being processed. During the cheque capture process, a file of the data included in the MICR line of the processed cheque, is stored within the computing apparatus. As each new cheque is captured, the data from the MICR line is compared to the data in that temporary file. Any matches indicate that a user has attempted to capture the same cheque twice. If this happens, the computing apparatus will suspend the cheque capture process. Supervisor intervention will subsequently be required to restart the process.

During the cheque capture process, a suspend button 77 provided on the display 74 enables users to temporarily suspend cheque processing. Once this button has been activated, the user is presented with an option to temporarily shut down the computing apparatus or leave it in a suspended state. In order to

restart, the user is required to re-enter a password via the window 78, shown on the display 79 of Figure 7. Following re-entry of the password, the user is required to activate a restart button 80 in order to resume cheque capture 80. Once all cheques have been captured, the user terminates the capturing process at step 36 by selecting a "stop transport" button 81 on the display 79.

Once the capture cheques process 37 has been concluded, image data entry is carried out by the user. The purpose of this step is to correct any misreads of the MICR line data and to manually enter the amount of each cheque. During the cheque capture process, the MICR line data and document image files are stored on the hard drive of the computing device in question. A series of simple edits are also performed on the MICR line data. For example, a field size check is performed on the BSB field, a range check performed on the Aux Dom field, calculation of characters between MICR line special characters is performed, and areas where rejected characters have been identified are edited. Using this information, which will have resulted in identifier flags being inserted into a record created for each cheque, the user will be presented with one or more "electronic scissored" areas of the MICR line.

Figure 8 shows an example of the "electronically scissored" areas presented to a user by the computing apparatus at the bank customer premises. In this example, the MICR line 90 of a cheque 91 is dissected by the software resident in the computing apparatus into three MICR line segments 92 to 94 for display to the user. The manner in which these MICR line segments are used for data validation, repair and editing is illustrated in the flow chart 100 shown in Figure 9. Following cheque processing, the captured MICR line data will either be complete, or will have reject characters embedded or failed some basic editing tasks due to character substitution. In the last two cases, a flag is set by the software resident in the computing apparatus to "electronically scissor" the MICR line, as described in relation to Figure 8, from the front image of the cheque. Selected image portions of the MICR line, together with the data captured from the cheque processing, are then displayed to a user during a

MICR line repair process.

At step 101, the MICR line of each cheque is read. If no MICR band is detected at step 102, the user is advised at step 103 to alert the bank to a possible fraud. If the cheque in question has been read only once, the cheque is re-fed in a different orientation. If it is detected at step 102 that the cheque has been fed in two different orientations, a determination is made at step 104 as to whether the MICR line data has been completely captured or not. If the data has been completely captured, a bank logical test is performed at step 105 to verify the format and range of data within each of the fields 62 to 66 of the MICR line 61.

However, if the MICR line data has not been completely read, the "electronically scissored" MICR line segments retrieved at step 106 are displayed to the user together with the captured MICR line data. Figure 10 provides exemplary displays 120 and 121 of two manners in which the incomplete MICR line data may be edited. The first, as exemplified by display 120, is to re-key the entire field, whilst the second, as shown in display 121, is to key only missing characters. The software resident in the computing apparatus in the bank customer premises makes this determination based upon the number of errors detected in the field in question. Operational usage has determined that where there are more than three errors, it is quicker and more accurate to re-key the entire field.

Once the missing characters have been input at step 107, the bank logical test is performed at step 105. If it is determined at step 108 that the bank logical test was failed, steps 106 and 107 are repeated. If a second time failure is detected at step 108, the cheque capture process is discontinued at step 109. However, if as a result of editing the bank logical test was passed, a determination is made as to whether the item is a master control file at step 110. If so, the MICR line data validation, repair and editing process is discontinued at step 109. If the item is not on a master control file, the MICR data record is moved to a disc storage master control file, together with associated control

data, at step 111. Figure 11 represents a display 130 presented to a user during the operation of the afore-mentioned MICR line data correction.

Following the capture of the MICR line data, and images of the front and back of each cheque, the user is then prompted to manually enter transition data indicative of the amount of each cheque. The process for amount data entry is represented in the flow chart 140 shown in Figure 12. At step 141, the amount field 95 is electronically scissored from the image of the front of each cheque and displayed to the user, as shown in Figure 13, of the computing device at the bank customer premises. At step 142, and as shown in Figure 14, the amount field 95 cut from the cheque image 91 is displayed to the user on a display 150 together with an amount entry window 151.

Once the amount has been keyed by the user, a determination is made at step 143 as to whether the amount is below a threshold value. If so, the amount field for that cheque is updated at step 144. However, if it determined at step 143 that the cheque amount exceeds a predetermined threshold, the user is prompted at step 145 to re-key amount backwards. Accordingly, a display 152 is presented to the user, including the amount field from the cheque image and a reverse amount data entry window 153. If it is determined at step 146 that the correct amount has been keyed, then the amount field is updated. If differing amounts have been entered forwards and backwards, the user is once again presented with the display 150 and the amount keyed in the forward direction again.

At step 148, the software determines whether the amount keyed in step 147 corresponds to either of the two previously keyed amounts. If so, the amount field is updated, otherwise the amount data entry process is discontinued at step 149. An exemplary amount data entry screen 160 is shown in Figure 16.

In order to ensure that cheques being presented have been signed, application software resident in the computing apparatus at the bank customer

premises electronically scissors out an area of each cheque in the signature panel to perform a "pixel or byte count" test. A minimum pixel or byte level will be set in the software so that a range check can be performed. In exemplary cheque 91, shown in Figure 17, the signature panel 161 is determined to include 2,250 bytes, whereas the signature panel 162 is determined to have only 1,400 bytes. If the image byte counter is calculated to be below a set minimum value of 2,000 bytes, then a display 163 is presented to the user inviting the user to validate the signature. If a "no" button is selected, a flag is set to prevent the item from being captured again in error. This flag will also be used to prevent data for this cheque being included in the document data and image files transmitted to the bank operations centre 4.

At the end of this process, the computing apparatus in the bank customer premises is ready to generate document image files and associated transaction data files for transmission to the bank receiving server 20. As part of the completion of the cheque capture process, the resident software causes a summary of capture screen 170 to be presented to the user. This display presents to the user the total number of items that have been successfully captured (electronic items) and the value of those electronic items, together with the total number of items that have failed a critical edit during data capture (non electronic items) and a total value of those non-electronic items. The user is also able to select whether a single account or multiple accounts are to be credited or not. The user is also able to select one or more cheques which will be processed through an Automated Clearing House (ACH).

If a user choses to credit one or more bank accounts with the values of the captured cheques, the user is presented with a display 180, shown in Figure 19. This display shows to the user an account allocation table 181 summarising the values of scanned cheques to be applied to a selected account, as well as identifying un-allocated cheques. A location identifier indicating which account the cheques are to be credited to is displayed to the user. If the location identifier is "U", the user is alerted that the cheque has failed a critical edit

during data capture.

Where a customer has only one account, the user is presented with a display 190, as shown in Figure 20. The account allocation table 191 indicates the value of all cheques scanned and sums the value of those cheques. In addition, the location indicator identifies the account to which the cheques have been credited.

Similarly, where a user has multiple accounts, a display 200, as shown in Figure 21, is presented to the user. In this example, an account allocation table 201 displays the values of cheques allocated to various accounts, and sums the value of the cheques allocated to each separate account. Location identifiers are again provided to indicate which account each cheque was allocated to, as well as which cheques failed critical edit during data capture.

Once all items have been allocated to an account, the user is presented with a display 210 inviting them to transmit the document image files and associated document data files to the bank operations centre 4 for subsequent matching to the physical cheques at a later time.

Returning again to Figure 3, it will be appreciated from the foregoing that during the cheque capture process 37 the MICR line is read at step 38, and the MICR line data then augmented by manual entry of the amount of each cheque or other transaction data at step 39. Images of both sides of each cheque are captured at step 40. Moreover, a data control record, including the status of various flags and other control information either entered by the user or generated by the software resident in the computing apparatus in question, is created at step 41.

The process described in relation to steps 30 to 41 results in the creation of a header record for each batch of cheques processed, and an MICR data record, trace line record, and image front and back files for each cheque within the batch. In the example shown in Figure 3, the header record MICR data record, trace line record and image front and back files for a first cheque are

referenced 50 to 54 respectively, whereas the MICR data record, trace line record and image front and back files for a second cheque are respectively referenced 55 to 58.

Once the document image files and transaction data files for a cheque batch have been transmitted to the bank operations centre 4, the final processes required to be performed by the user is preparing a physical cheque batch deposit to be dropped off at a branch night safe or mailed to the bank operations centre. A fast deposit or similar envelope, designed for the express purpose of depositing non-cash deposits, may be used. A user may place in the fast deposit envelope the header document, following by all cheques that have been processed by the computing apparatus and associated document reading device at a bank customer premises. The cheques are placed in the envelope in the sequence that they were processed, and oriented with the MICR data line facing forward and in line with the header.

The bank receiving server 20 located at the bank operations centre 4 acts as the primary interface between the bank customer system and the conventional bank voucher image processing system 22. During daily cheque processing, the bank operations centre 4 will receive the document image files and associated document data files at the bank receiving server 20. Computing apparatus 11 to 13 initially establish a connection via the telecommunications network 5 to the bank receiving server 20. As part of a connection process, the inbound document reading device and computing apparatus specific information is checked at the bank receiving server to ensure that the transmitting computing apparatus is registered as an authorised user. Upon validation, the information captured by the document reading device and computing apparatus is accepted by the bank receiving server and stored for editing.

Each batch of files is initially processed by an edit program forming part of the software resident on the bank receiving server. Conveniently, this edit program may replicate much of the functionality of the edit program forming part of the voucher image processing system 22.

During editing, the bank receiver system editing program reviews specifically data indicators associated with each of the records transmitted by the computing apparatus 11 to 13. Each data record is checked for validation in accordance with the Australian Payments Clearing Association (or its equivalent) rules and/or bank – bank by lateral agreements. Software to enable the performance of this process specifically installed by the bank where the bank receiving server 20 is installed. The processing review establishes the authenticity of the cheques scanned, for example a "no MICR indicator set" would identify a potential fraudulent cheque, and also establishes the accuracy of the value of the cheque by performing both the review of the data indicators, setting internal "high dollar" review levels and random checking. Data that fails to pass any of the above prescribed edits are flagged for further processing by the bank at which the cheque was initially received.

The edit program acts firstly to verify the data captured from the MICR line on each cheque within the batch processed by the computing apparatus. A cheque digit routine is implemented and an exception item file created. This file is presented to proof operators via the image terminals 25. At these terminals, bank operation staff review both the cheque image and associated data that are flagged by the editing process, and take appropriate corrective action. This may include the re-entering of the amount of the cheque, the rekeying of the MICR information, checking and rebalancing the credit, signature checking and denying the transaction. Statistics related to both the data checked, typically information of a critical nature such as potential fraud or continuous misreading of MICR, are collected by the bank receiving server 20 for user feedback. As a result of this first edit, a percentage of cheques will remain as "not for value" items. The balance, known as "for value" or alternatively "dirty paper" items, will have a flag set so that when the physical cheques arrive subsequently from the bank branch 7, they will be out-sorted during subsequent processing for inter-bank exchange. The exception item file is also used with the document image files for MICR line data correction.

The edit program also enables bank operation staff to perform random checking of the received document image/data files. For example, a flag may be set in the received data where there has been duel keying of high value cheques. Bank operations staff may decide to view these cheques, and if appropriate verify these amounts.

The document image file may be used as a temporary tool on the bank receiving server prior to image truncation. When the physical cheques arrive for encoding and sorting, the received document image files may be permanently stored for archiving purposes.

The received document image files are stored in a temporary data storage on the bank receiving server 20 until all files within a batch have been received. Analysis of flags transmitted as part of the data files to the bank receiving server 20 create exception item processing, which is accomplished using the image terminals 25 of the voucher image processing system 22. Edits performed on the MICR line data will also be performed on the bank receiving server, and any required correction performed in conjunction with the appropriate document image file.

It will be appreciated that a variety of edit programs may be used in conjunction with the bank receiving server, and that the software resident in the computing apparatus will be required to provide document image files, and associated document data files including pointers to the document image files, in a format suitable for use by the edit program in use on the bank receiving server.

When the batch of physical cheques arrives at the bank operation centre 4, the envelope or other package in which the cheques and header document are transported will be opened, and the contents checked to ensure that the first document is the header document and that all cheques are correctly oriented. This batch of cheques is then forwarded to the bank operations centre transport room for matching with the previously received document image files and associated document data file to enable final processing of the cheques.

Alternatively, instead of matching the cheque for encoding after the Bank Receiving Server has performed its described editing functions, the cheque may be reformatted for electronic transmission to facilitate the cheque clearing process.

It will be appreciated from the foregoing that the present invention provides an image based electronic deposit system that automates the compilation of customer created cheque image and associated data file without requiring a customer's presence at a bank branch. The automated compilation may also result in files that are directly useable by a customer's accounts receivable system. The cheques are in effect deposited at a bank's operation centre by means of electronic file transfer. Upon receipt of the physical cheques by the bank operation centre, minimal activity is required by bank operations staff in order to finalise processing of the cheques.

Those skilled in the art will appreciate that there may be many variations and modifications of the above described system and method which are within the scope of the present invention.

CLAIMS:

1. A method for processing financial documents, including the steps of:

(a) receiving a batch of one or more financial documents at a customer premises;

(b) processing the financial documents in a customer system to create document images files and associated document data files;

(c) transmitting the document image files and document data files from the customer system to a bank operations system;

(d) forwarding the financial documents to a bank operations centre, and

(e) matching the financial documents to the document image files and document data files in the operations system to enable final processing of the financial documents.

2. A method according to claim 1, wherein step (b) may include:

capturing document data from a header document;

capturing document data contained on financial documents in the batch;

entering transaction data indicative of a financial transaction associated with the financial documents; and

capturing document images from financial documents in the batch.

3. A method according to claim 2, wherein the header document contains machine-readable indicia.

4. A method according to claim 3, wherein the machine-readable indicia are magnetic ink characters.

5. A method according to either claim 3 or claim 4 wherein the machine-readable indicia on the header document are indicative of the customer.

6. A method according to any one of the preceding claims, wherein the financial documents contains machine-readable indicia.

7. A method according to claim 6, wherein the machine-readable characters on the financial document indicative of a financial transaction.

8. A method according to any one of the preceding claims, wherein step (b) further includes:

validating and repairing document data.

9. A method according to any one of the preceding claims, wherein step (b) further includes:

validating an authenticating marking on the financial documents.

10. A method according to claim 9, wherein the authenticating marking is a signature.

11. A method according to any one of the preceding claims, wherein step (e) includes:

selectively editing the transmitted document data and image files prior to matching and final processing.

12. A method according to any one of the preceding claims, wherein the financial documents include any one or more of cheques, deposit slips or withdrawal slips.

13. A method according to any one of the preceding claims, wherein the operations centre and operations system are associated with a financial institution.

14. A method according to claim 13, wherein the financial institution is a bank.

15. A method according to any one of the preceding claims, wherein the customer premises and customer system are associated with a customer of the financial institution.

16. A method according to any one of the preceding claims, wherein step (d) includes depositing the financial documents to a branch of the financial institution for forwarding to the operations centre.

17. A method according to any one of the preceding claims, wherein the customer system includes a document reading device operatively connected to a computing apparatus.

18. A method according to claim 17, wherein the computing apparatus includes a processing unit and associated memory device storing program instructions for causing the computing apparatus to carry out steps (b) and (c).

19. A method according to any one of the preceding claims, wherein the operations system includes a bank receiving server.

20. A method according to claim 19, wherein the bank receiving server is operatively connected to a voucher image processing system for performing final processing of the financial documents.

21. A method according to claim 20, wherein the bank receiving server includes a processing unit and associated memory device storing program instructions for receiving the document image files and document data files from the customer system and for causing the bank receiving server to carry out step (e).

22. A method for processing financial documents, wherein a batch of one or more financial documents are received at a customer premises, the method including the steps of:

(a) processing the financial documents in a customer system to create document images files and associated document data files, and

(b) transmitting the document image files and document data files from the customer system to an operations system for matching with the financial documents.

23. A method for processing financial documents, wherein a batch of one or more financial documents is received at a customer premises, the financial documents are processed in a customer system to create document images files and associated document data files, the document image files and document data files are transmitted from the customer system to an operations system, and the financial documents forwarded to an operations centre, the method including the step of:

(a) matching the financial documents to the document image files and document data files in the operations system to enable final processing of the financial documents.

24. A system for processing financial documents, the system including:

a customer system acting to process financial documents to create document images files and associated document data files, and to transmit the document image files and document data files from the customer system to an operations system, and

an operations system acting to match the financial documents to the document image files and document data files to enable final processing of the financial documents.

25. A customer system including a document reading device operatively connected to a computing apparatus, wherein the computing apparatus includes a processing unit and associated memory device storing program instructions for causing the computing apparatus to carry out steps (b) and (c) as defined in any one of claims 1 to 17.

26. A bank receiving server including a processing unit and associated memory device storing program instructions for receiving the document image files and document data files from a customer system and for causing the bank receiving server to carry out step (e) as defined in any one of claims 1 to 17.

27. A computer program including program instructions for causing the computing apparatus of claim 22 to carry out steps (b) and (c) as defined in any one of claims 1 to 17.

28. A computer program including program instructions for causing the bank receiving server of claim 23 to carry out step (3) as defined in any one of claims 1 to 17.

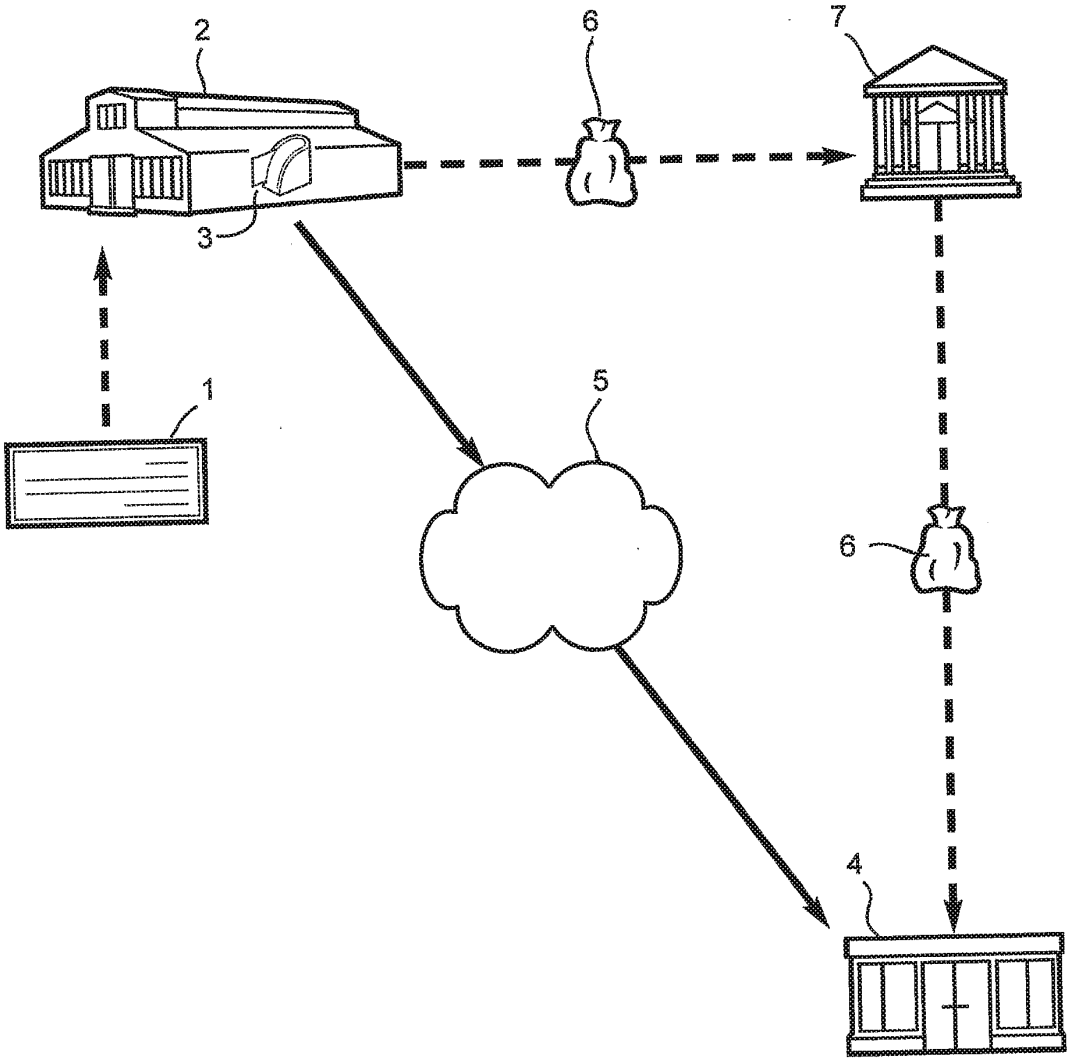


Fig. 1

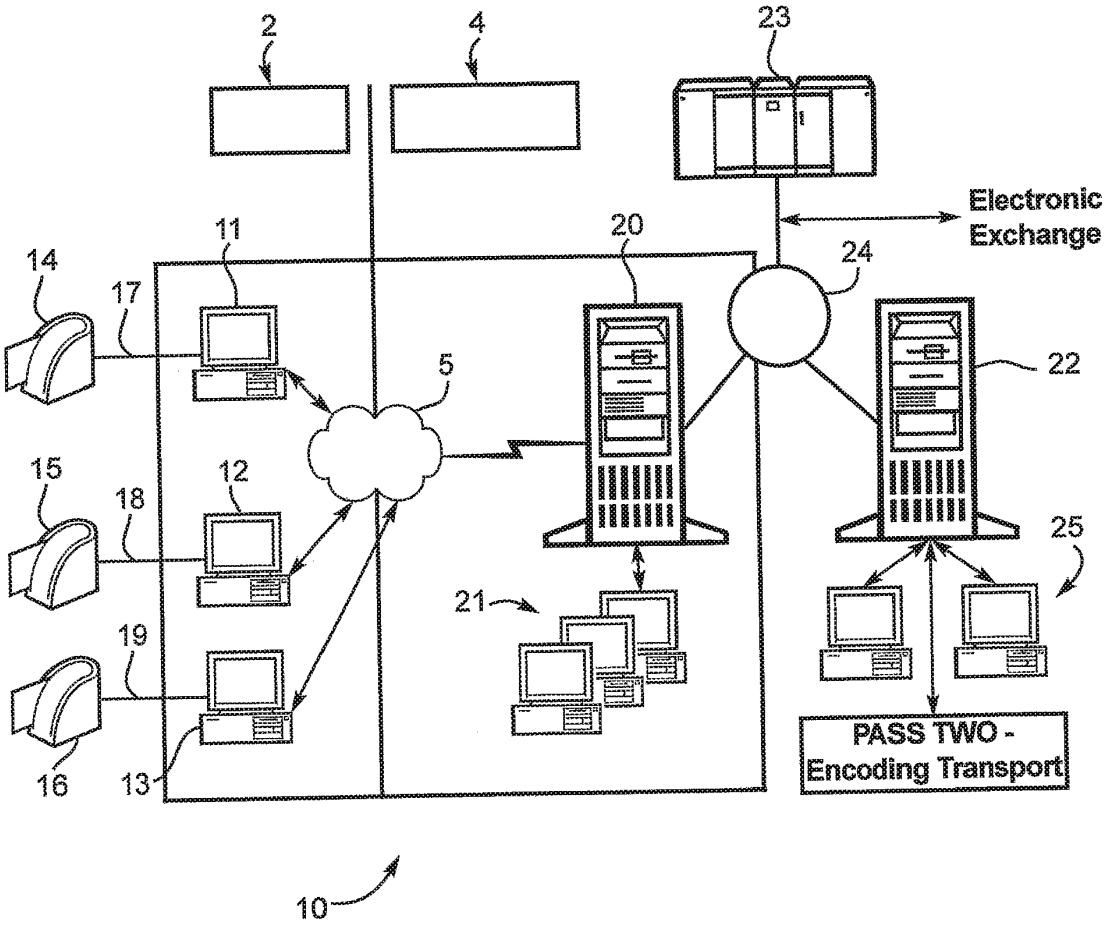

2
4
23
Electronic Exchange
11
20
24
14
17
5
22
15
18
12
25
21
19
PASS TWO - Encoding Transport
16
13
10

Fig. 2

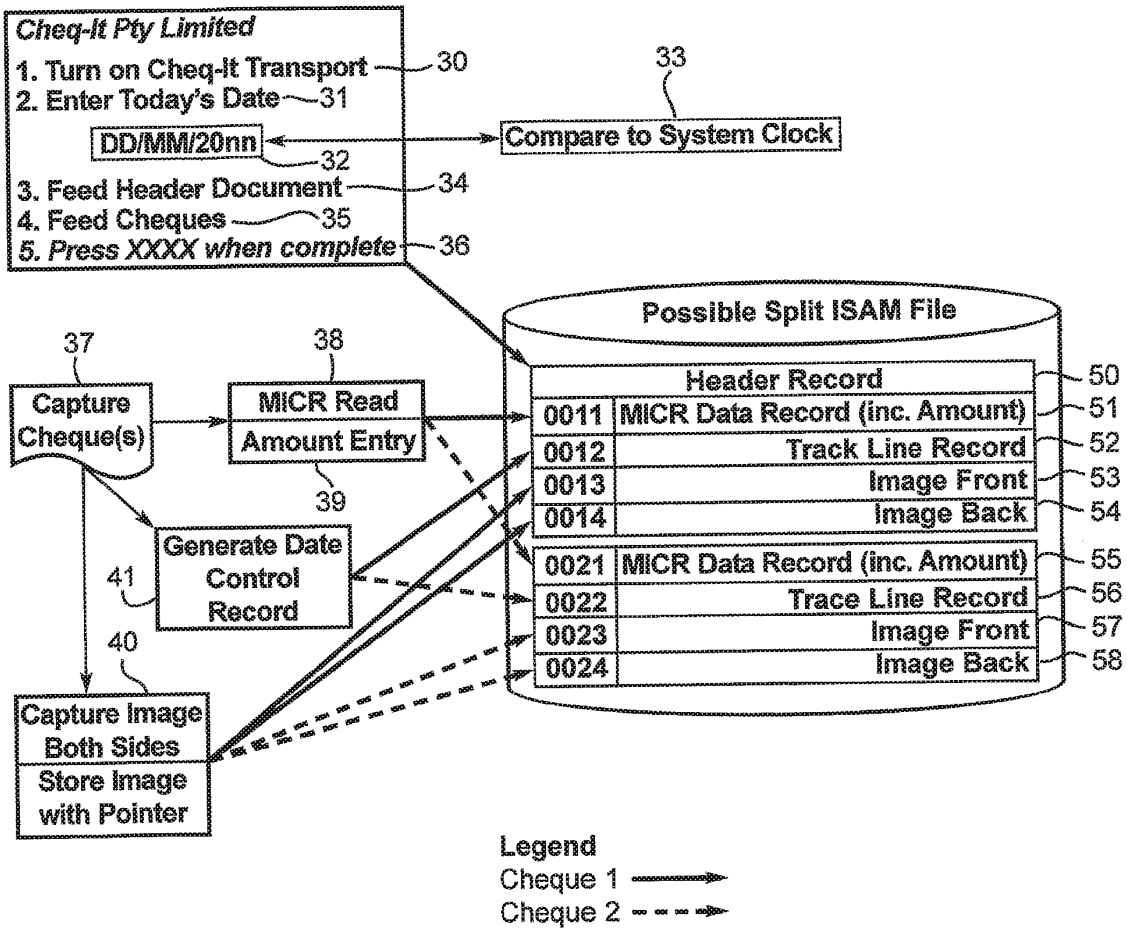

Cheq-It Pty Limited
1. Turn on Cheq-It Transport
2. Enter Today's Date
DD/MM/20nn
3. Feed Header Document
4. Feed Cheques
5. Press XXXX when complete
30
31
32
33
34
35
36
Compare to System Clock
Possible Split ISAM File
Header Record
0011 MICR Data Record (inc. Amount)
0012 Track Line Record
0013 Image Front
0014 Image Back
0021 MICR Data Record (inc. Amount)
0022 Trace Line Record
0023 Image Front
0024 Image Back
50
51
52
53
54
55
56
57
58
37
Capture Cheque(s)
38
MICR Read Amount Entry
39
Generate Date Control Record
41
40
Capture Image Both Sides
Store Image with Pointer
Legend
Cheque 1
Cheque 2

Fig. 3

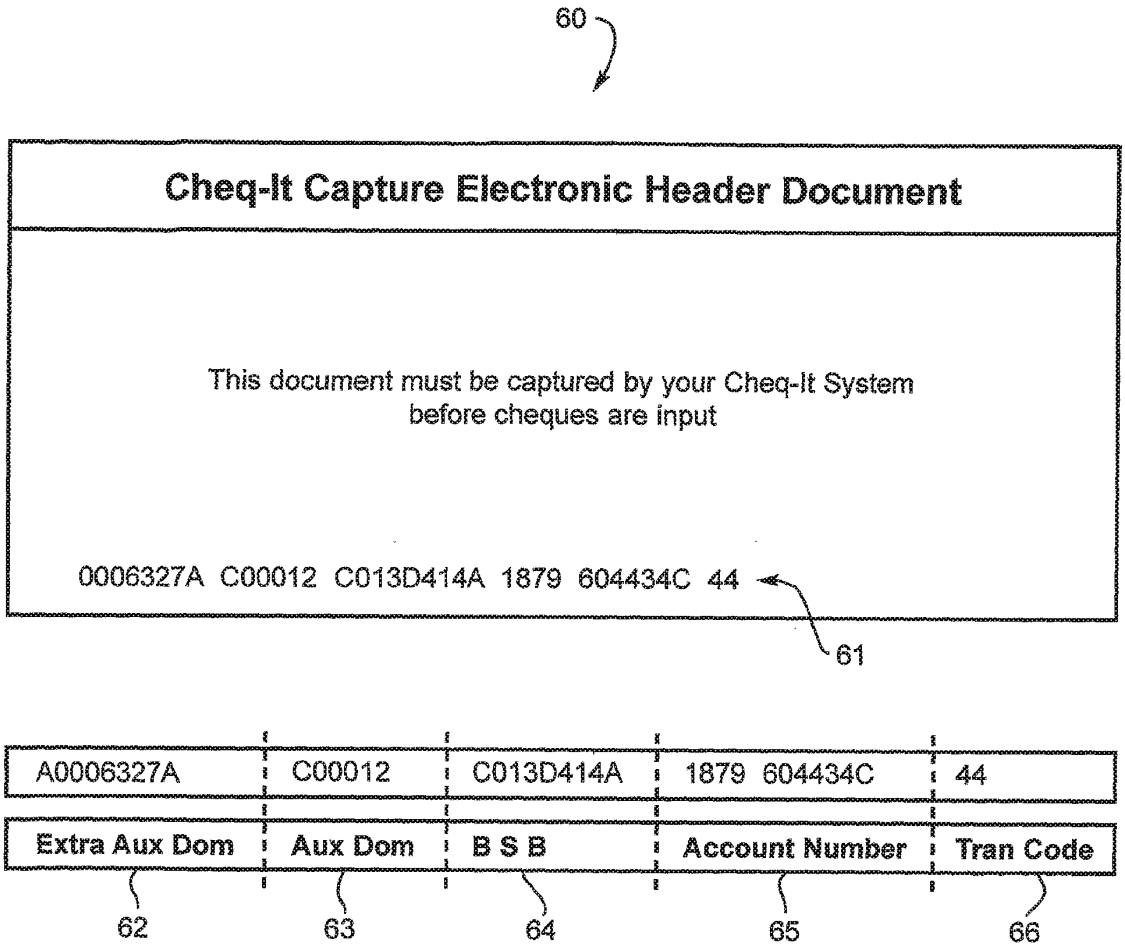

60
Cheq-It Capture Electronic Header Document
This document must be captured by your Cheq-It System
before cheques are input
0006327A C00012 C013D414A 1879 604434C 44
61
A0006327A
C00012
C013D414A
1879 604434C
44
Extra Aux Dom
Aux Dom
B S B
Account Number
Tran Code
62
63
64
65
66

Fig. 4

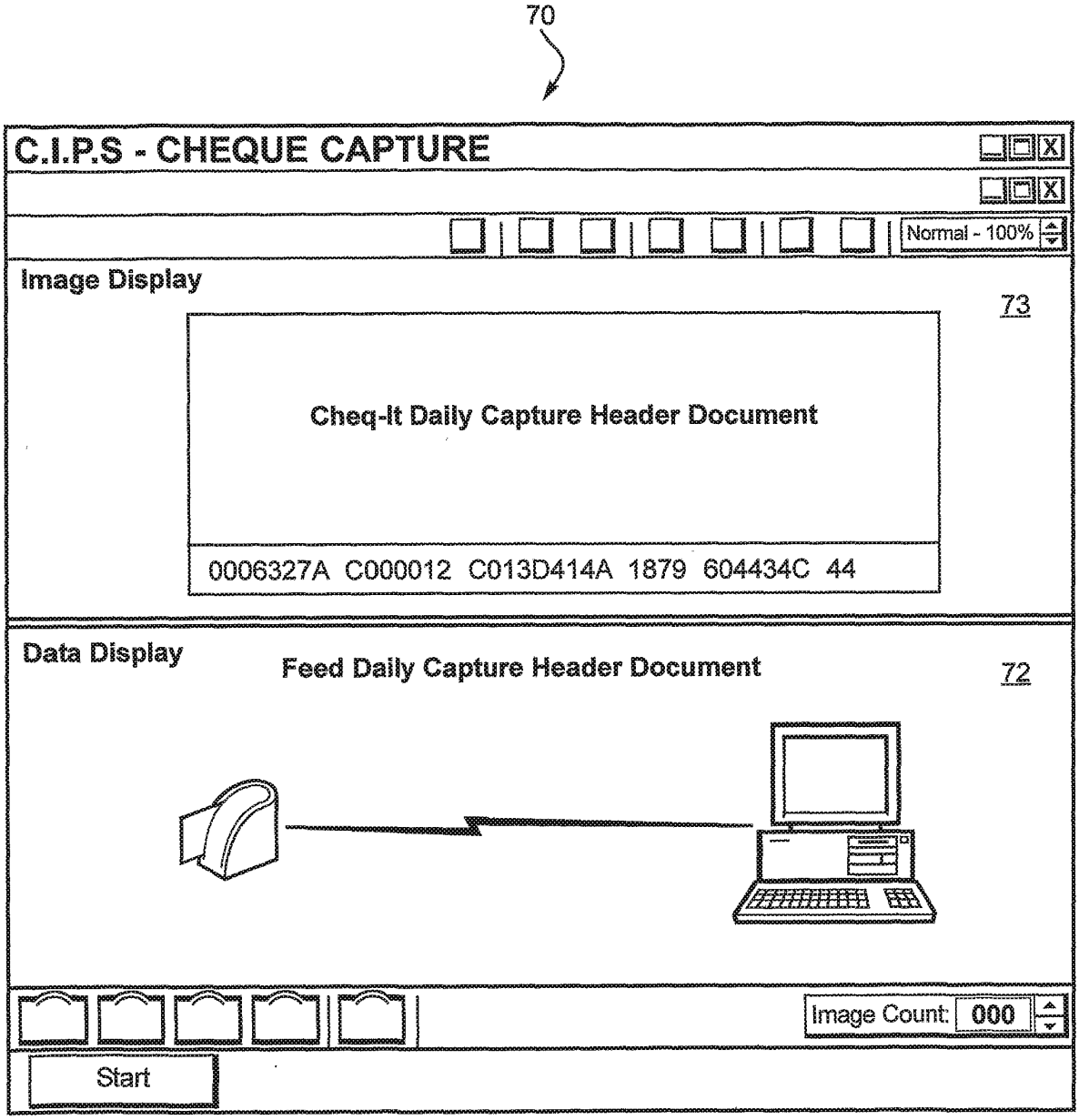

70
C.I.P.S - CHEQUE CAPTURE
Normal - 100%
Image Display
73
Cheq-It Daily Capture Header Document
0006327A C000012 C013D414A 1879 604434C 44
Data Display
Feed Daily Capture Header Document
72
Image Count: 000
Start

Fig. 5

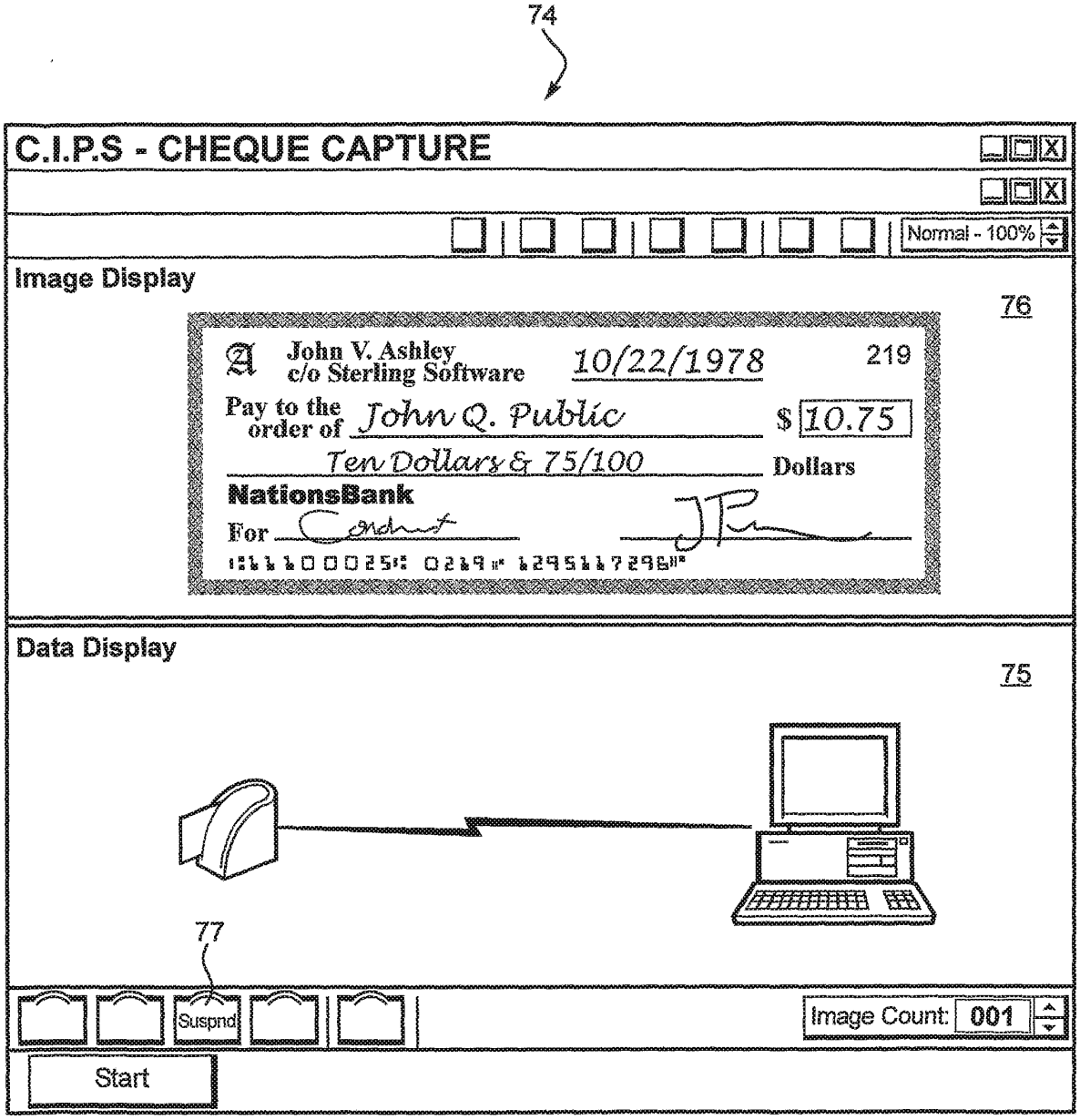

74
C.I.P.S - CHEQUE CAPTURE
Normal - 100%
Image Display
76
John V. Ashley
c/o Sterling Software
10/22/1978
219
Pay to the order of John Q. Public
$ 10.75
Ten Dollars & 75/100 Dollars
NationsBank
For Condmt
Data Display
75
77
Suspnd
Image Count: 001
Start

Fig. 6

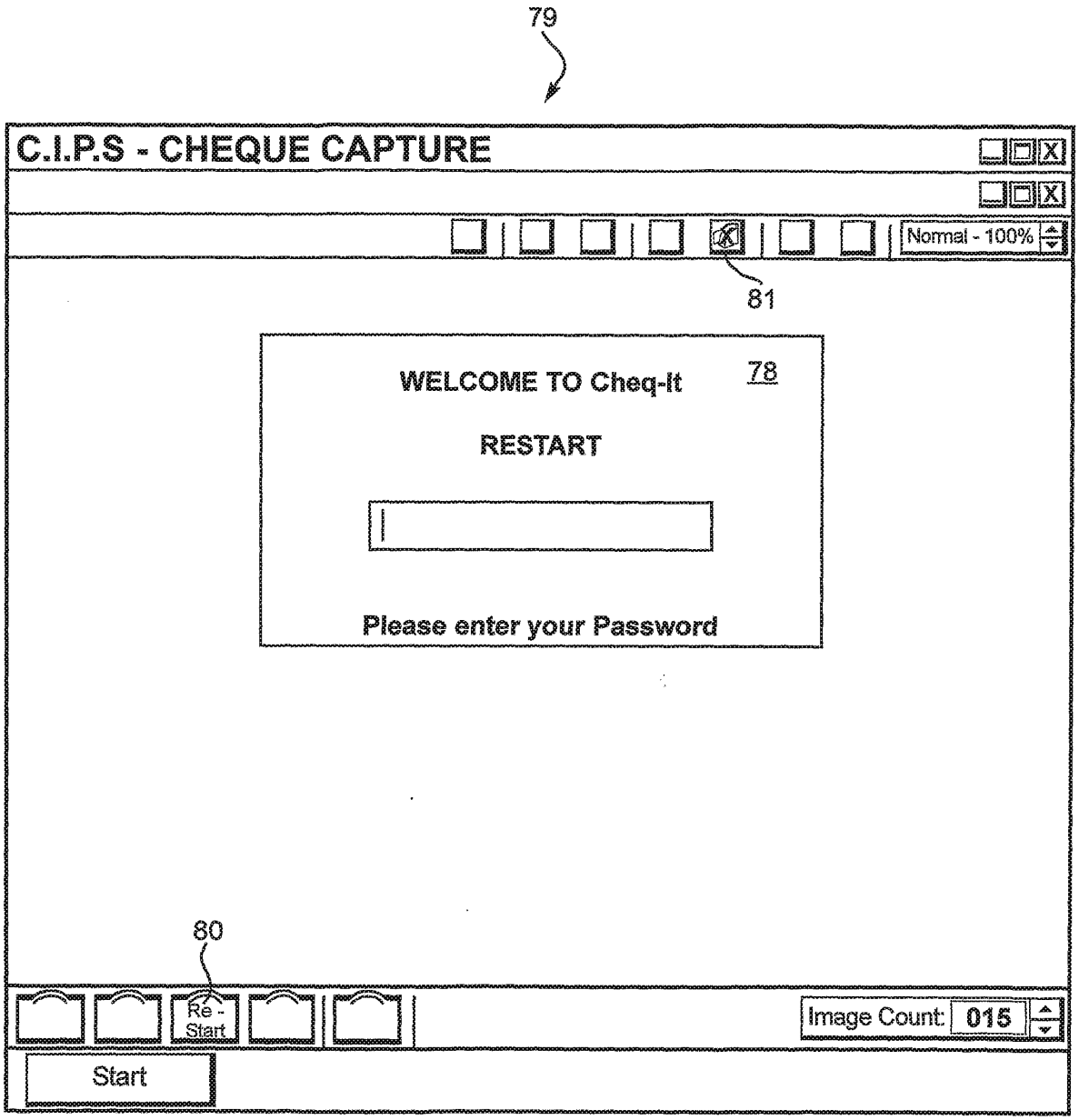

79
C.I.P.S - CHEQUE CAPTURE
Normal - 100%
81
WELCOME TO Cheq-It
78
RESTART
Please enter your Password
80
Re - Start
Image Count: 015
Start

Fig. 7

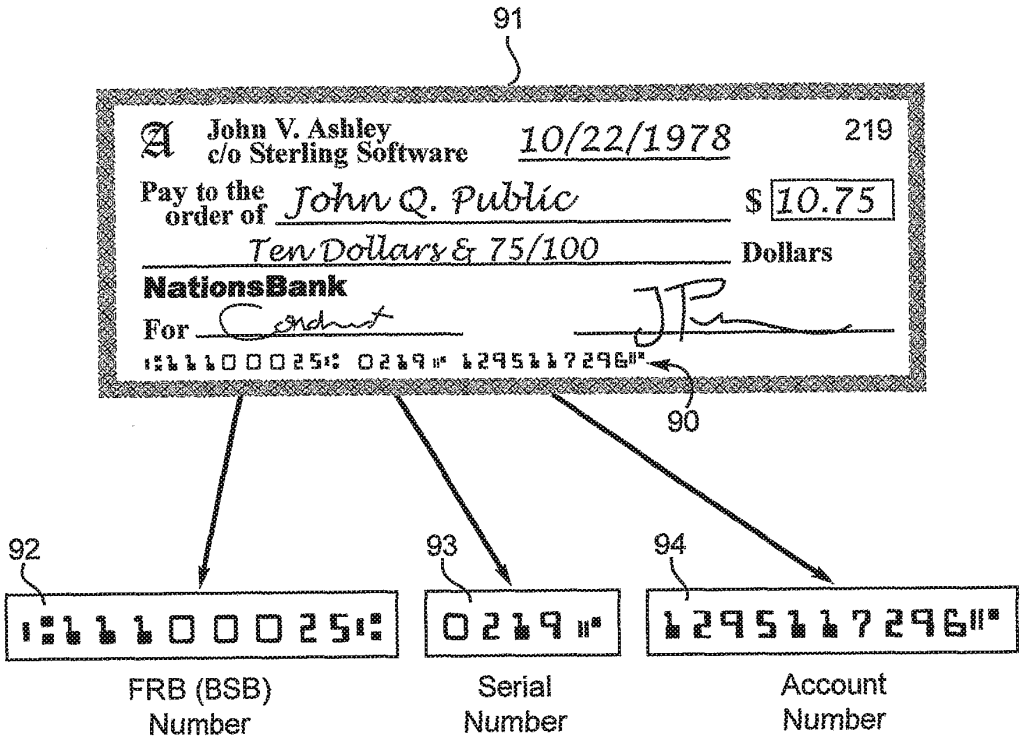

91
John V. Ashley
c/o Sterling Software
10/22/1978
219
Pay to the order of John Q. Public
$ 10.75
Ten Dollars & 75/100
Dollars
NationsBank
For Conduct
90
92
93
94
FRB (BSB) Number
Serial Number
Account Number

Fig. 8

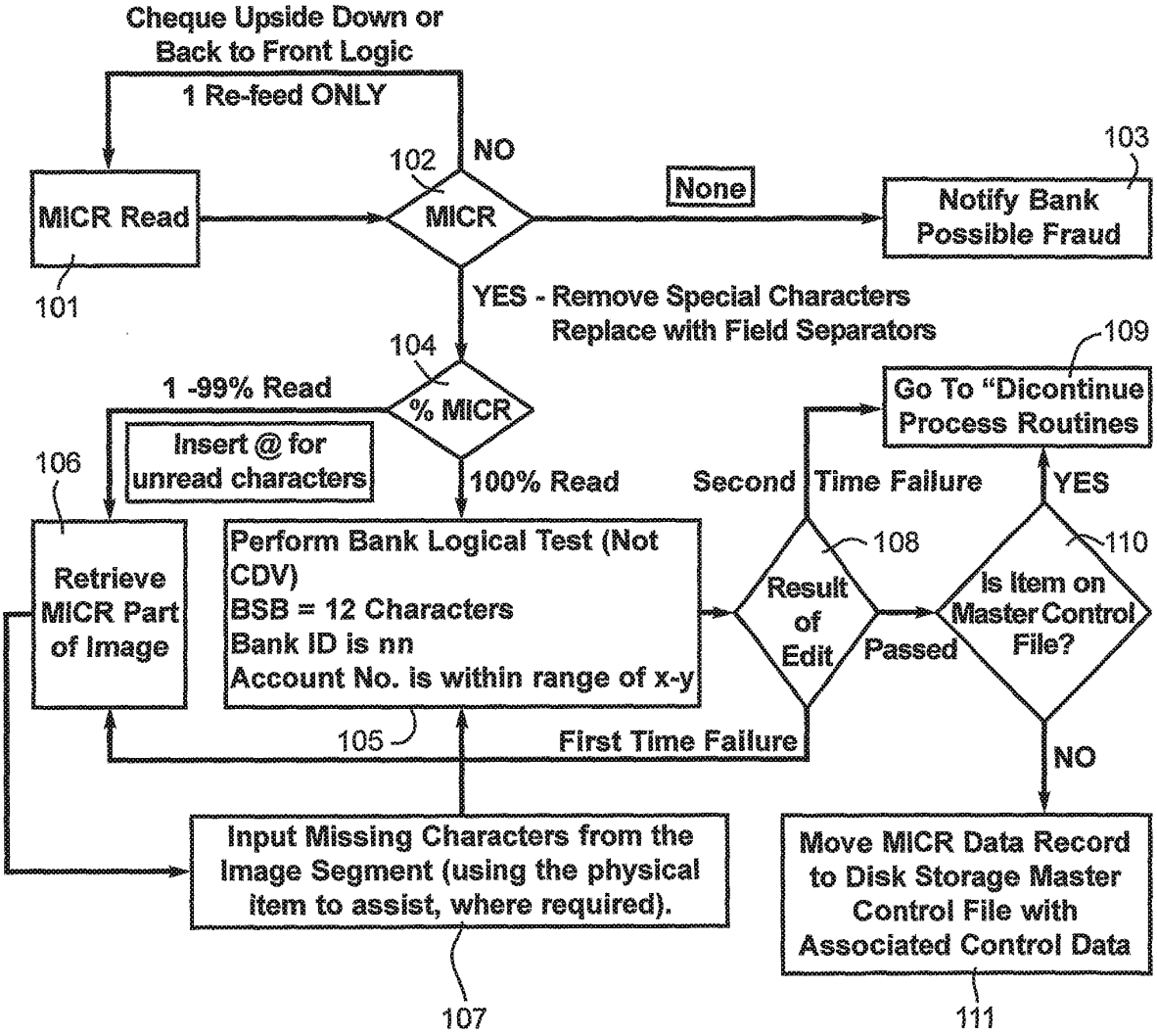

Cheque Upside Down or Back to Front Logic
1 Re-feed ONLY
MICR Read
101
102
MICR
NO
None
103
Notify Bank Possible Fraud
YES - Remove Special Characters Replace with Field Separators
104
% MICR
1 -99% Read
Insert @ for unread characters
106
100% Read
Retrieve MICR Part of Image
Perform Bank Logical Test (Not CDV)
BSB = 12 Characters
Bank ID is nn
Account No. is within range of x-y
105
Result of Edit
108
Second Time Failure
109
Go To "Dicontinue Process Routines
Passed
Is Item on Master Control File?
110
YES
First Time Failure
NO
Input Missing Characters from the Image Segment (using the physical item to assist, where required).
107
Move MICR Data Record to Disk Storage Master Control File with Associated Control Data
111

Fig. 9

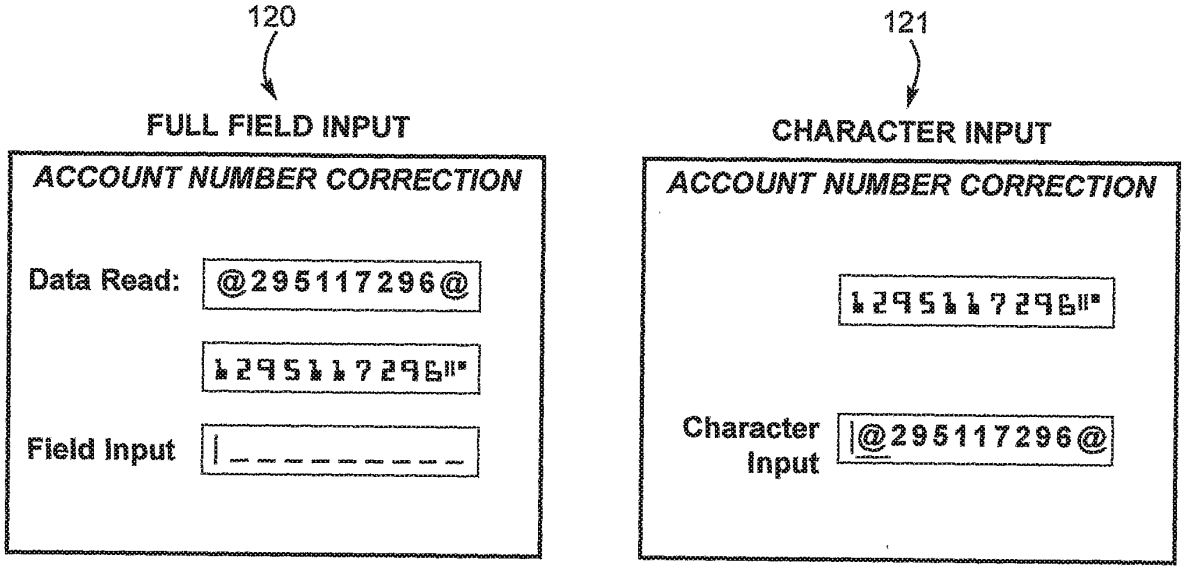

120
FULL FIELD INPUT
ACCOUNT NUMBER CORRECTION
Data Read:
@295117296@
Field Input
121
CHARACTER INPUT
ACCOUNT NUMBER CORRECTION
Character Input
@295117296@

Fig. 10

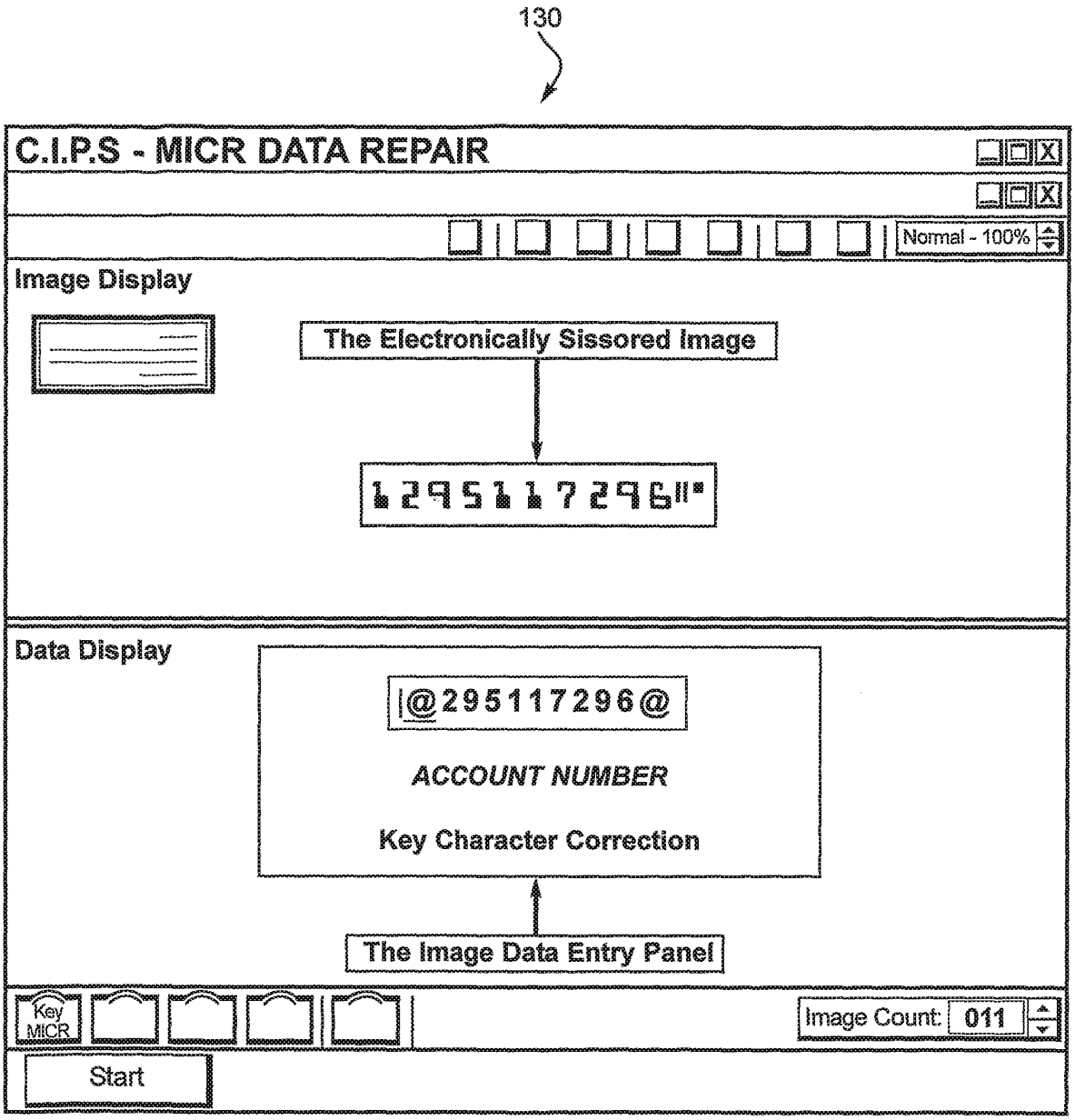

130
C.I.P.S - MICR DATA REPAIR
Normal - 100%
Image Display
The Electronically Sissored Image
⑆295⑆7296⑈
Data Display
|@295117296@
ACCOUNT NUMBER
Key Character Correction
The Image Data Entry Panel
Key MICR
Image Count: 011
Start

Fig. 11

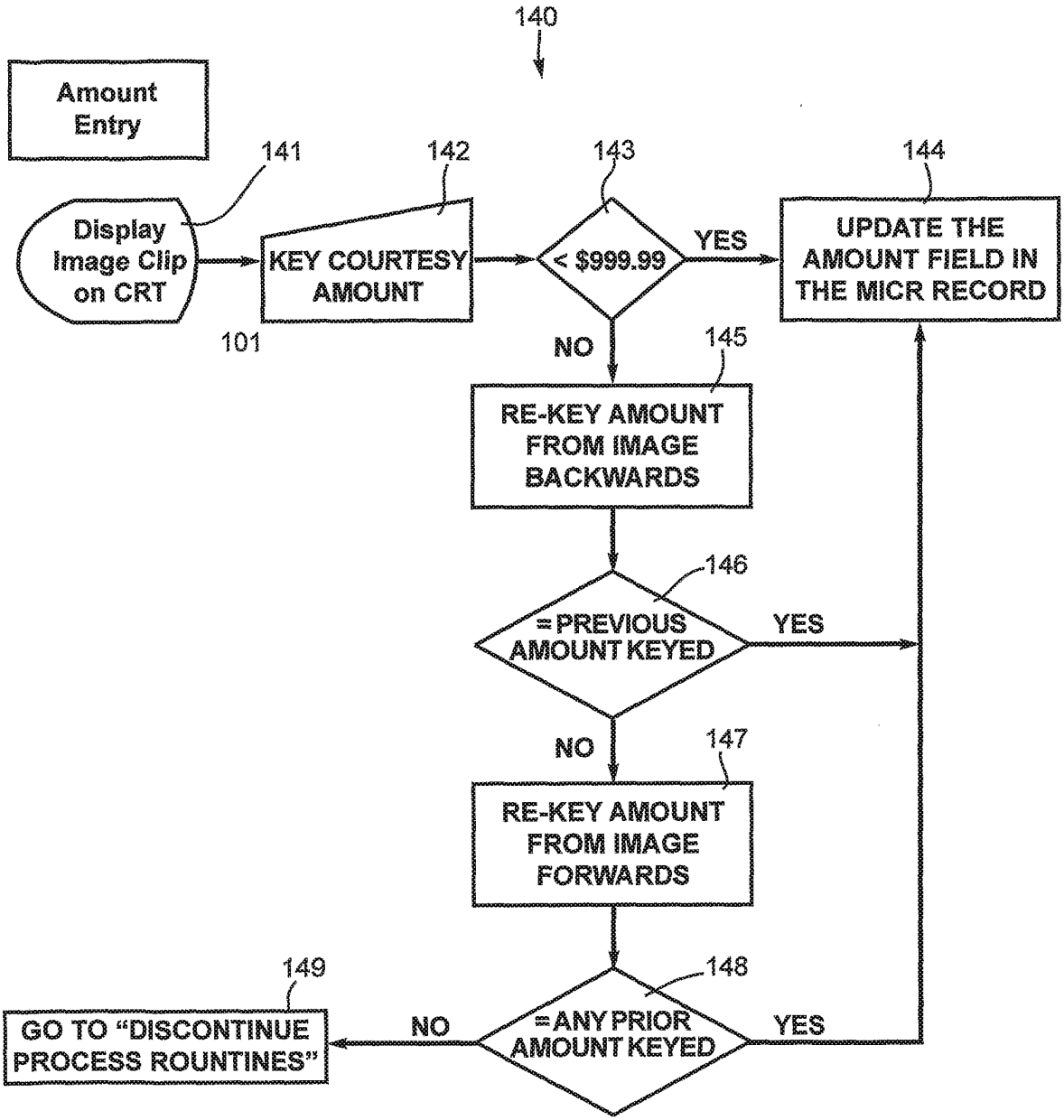

140
Amount Entry
141
142
143
144
Display Image Clip on CRT
KEY COURTESY AMOUNT
< $999.99
YES
UPDATE THE AMOUNT FIELD IN THE MICR RECORD
101
NO
145
RE-KEY AMOUNT FROM IMAGE BACKWARDS
146
= PREVIOUS AMOUNT KEYED
YES
NO
147
RE-KEY AMOUNT FROM IMAGE FORWARDS
149
148
GO TO "DISCONTINUE PROCESS ROUNTINES"
NO
= ANY PRIOR AMOUNT KEYED
YES

Fig. 12

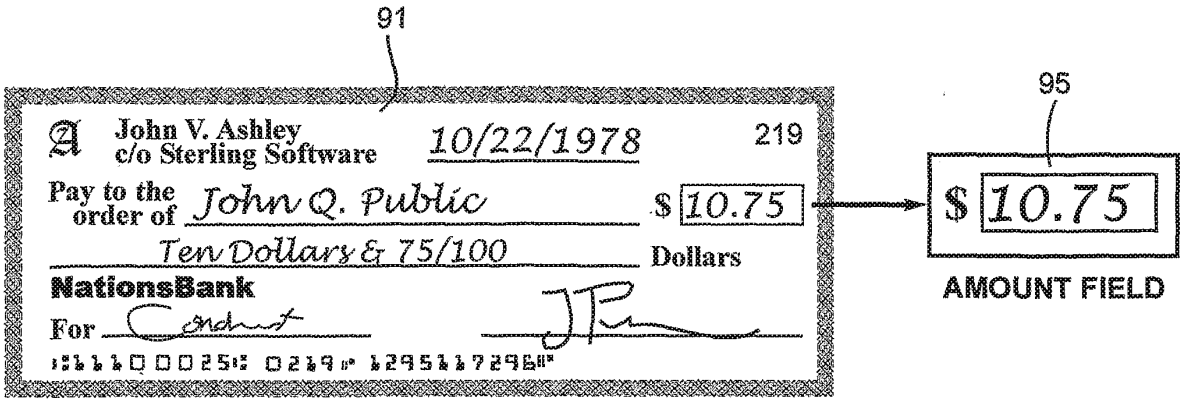


Fig. 13

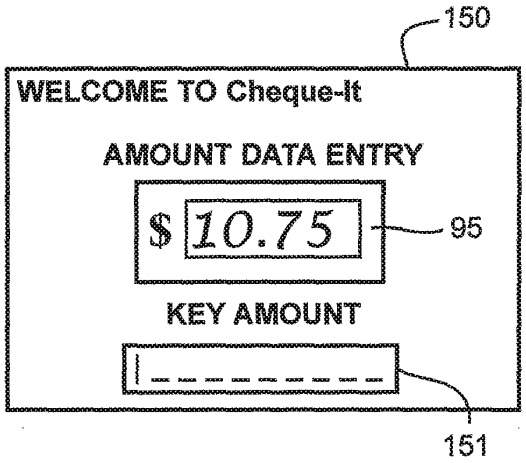


Fig. 14

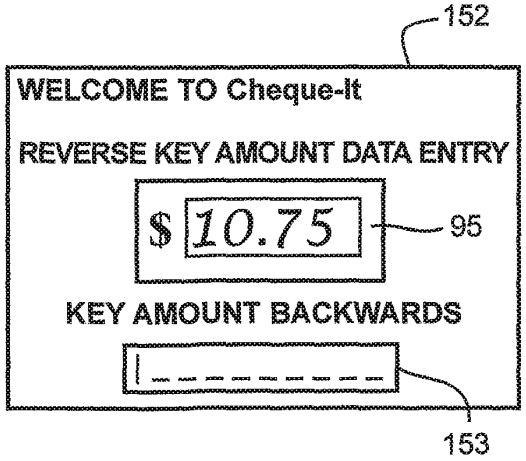


Fig. 15

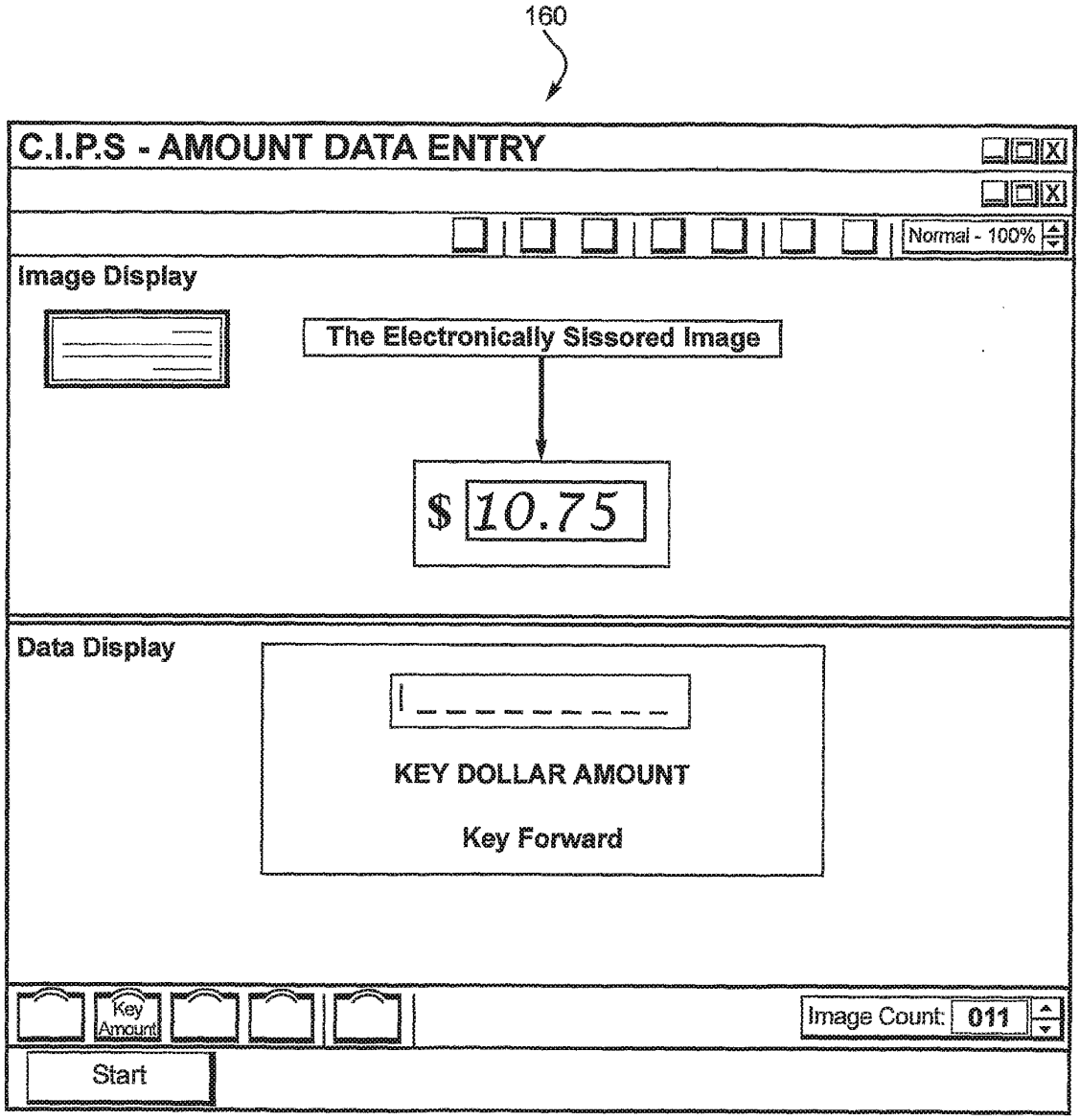

160
C.I.P.S - AMOUNT DATA ENTRY
Normal - 100%
Image Display
The Electronically Sissored Image
$ 10.75
Data Display
KEY DOLLAR AMOUNT
Key Forward
Key Amount
Image Count: 011
Start

Fig. 16

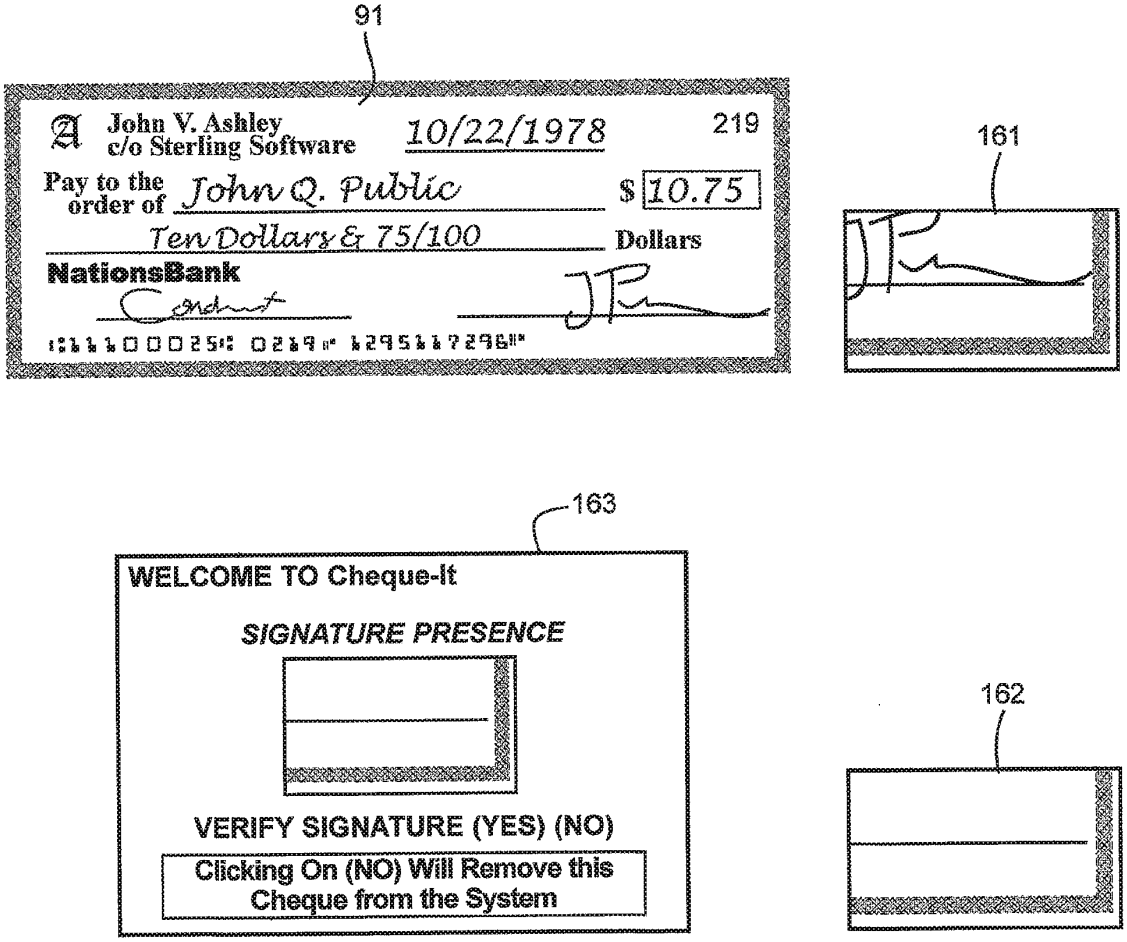

91
John V. Ashley
c/o Sterling Software
10/22/1978
219
Pay to the order of John Q. Public
$ 10.75
Ten Dollars & 75/100 Dollars
NationsBank
161
163
WELCOME TO Cheque-It
SIGNATURE PRESENCE
VERIFY SIGNATURE (YES) (NO)
Clicking On (NO) Will Remove this Cheque from the System
162

Fig. 17

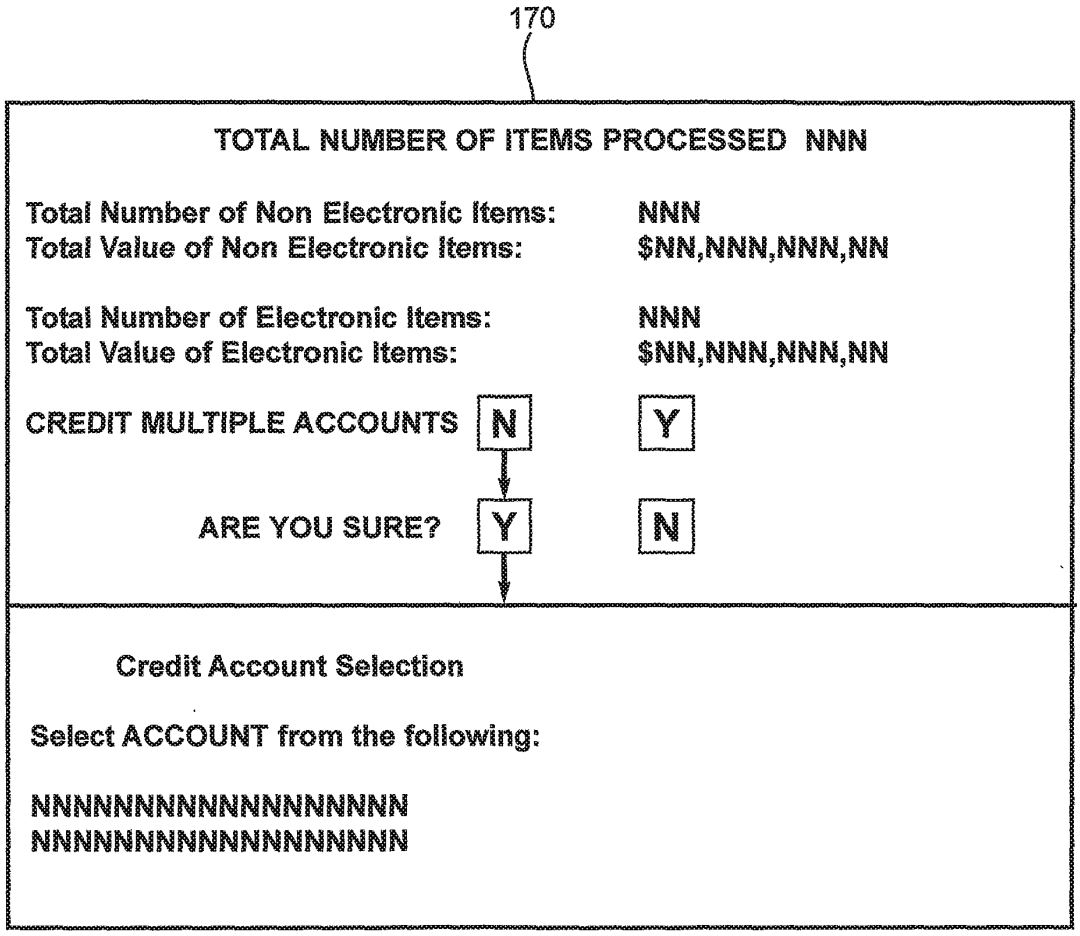

170
TOTAL NUMBER OF ITEMS PROCESSED NNN
Total Number of Non Electronic Items: NNN
Total Value of Non Electronic Items: $NN,NNN,NNN,NN
Total Number of Electronic Items: NNN
Total Value of Electronic Items: $NN,NNN,NNN,NN
CREDIT MULTIPLE ACCOUNTS N Y
ARE YOU SURE? Y N
Credit Account Selection
Select ACCOUNT from the following:
NNNNNNNNNNNNNNNNN
NNNNNNNNNNNNNNNNN

Fig. 18

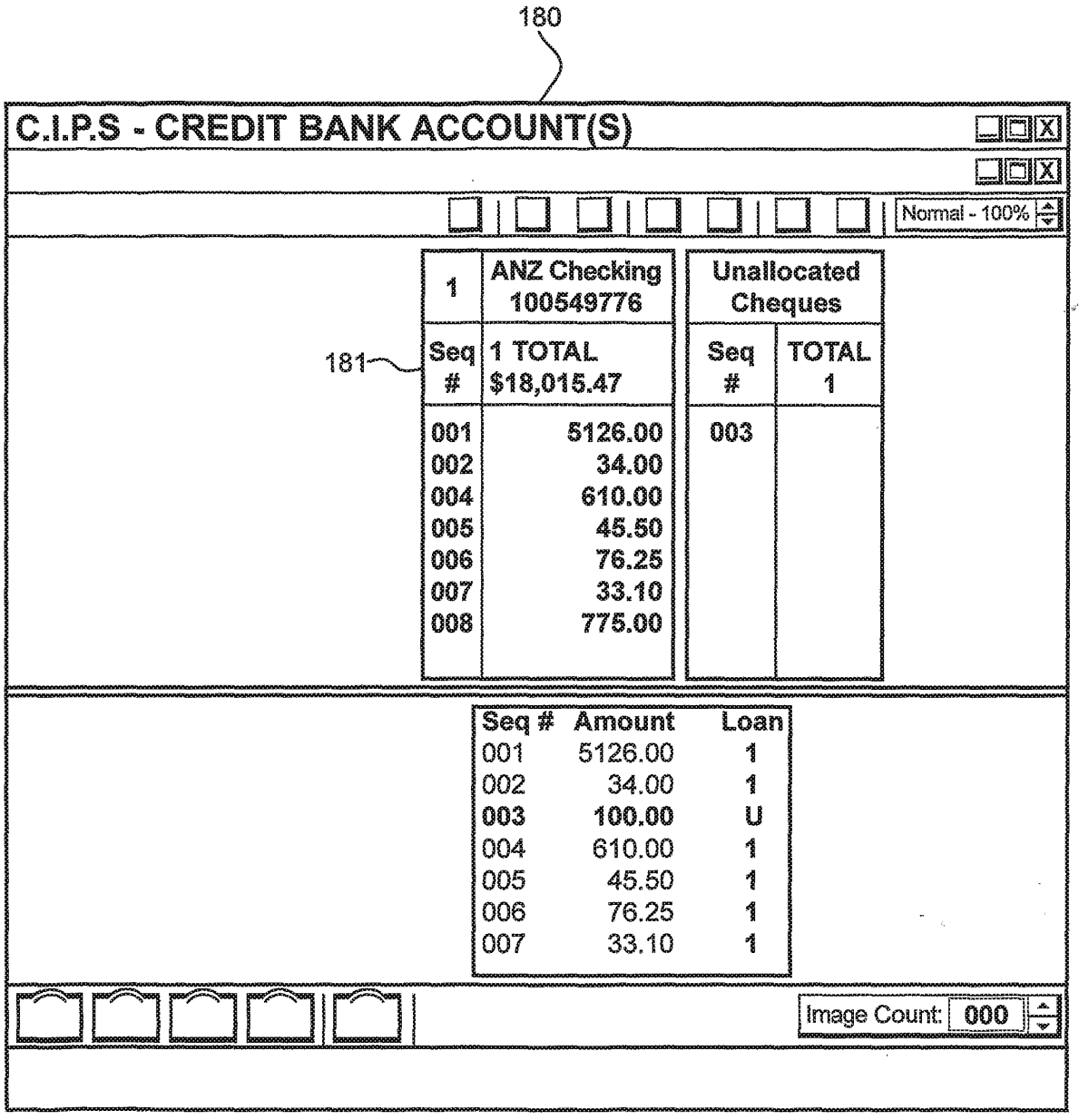

180
C.I.P.S - CREDIT BANK ACCOUNT(S)
Normal - 100%
181
1
ANZ Checking 100549776
Unallocated Cheques
Seq #
1 TOTAL $18,015.47
Seq #
TOTAL 1
001 5126.00
002 34.00
004 610.00
005 45.50
006 76.25
007 33.10
008 775.00
003
Seq # Amount Loan
001 5126.00 1
002 34.00 1
003 100.00 U
004 610.00 1
005 45.50 1
006 76.25 1
007 33.10 1
Image Count: 000

Fig. 19

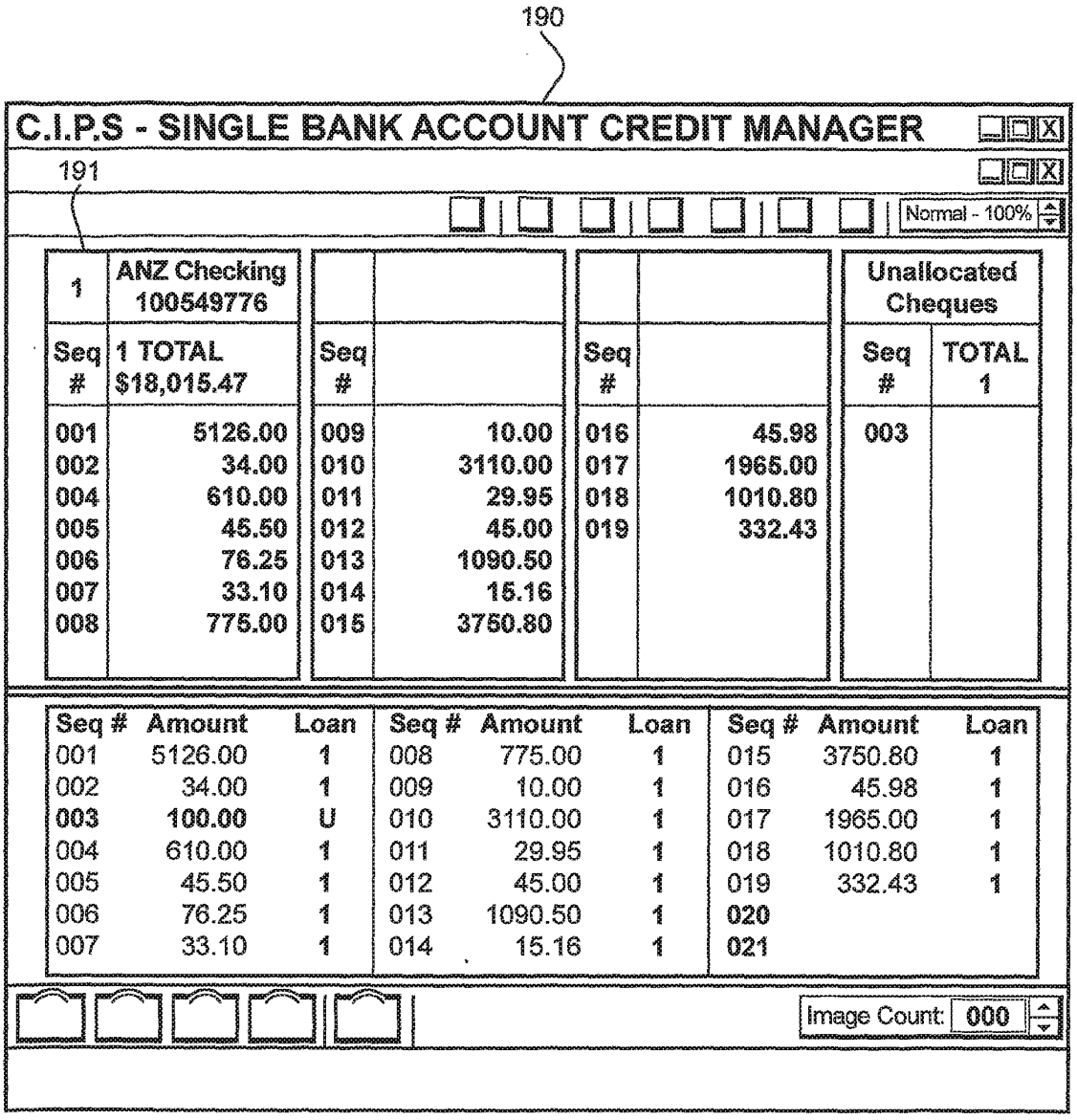

190
C.I.P.S - SINGLE BANK ACCOUNT CREDIT MANAGER
191
Normal - 100%
1
ANZ Checking 100549776
Seq # 1 TOTAL $18,015.47
001 5126.00
002 34.00
004 610.00
005 45.50
006 76.25
007 33.10
008 775.00
Seq #
009 10.00
010 3110.00
011 29.95
012 45.00
013 1090.50
014 15.16
015 3750.80
Seq #
016 45.98
017 1965.00
018 1010.80
019 332.43
Unallocated Cheques
Seq # TOTAL 1
003
Seq # Amount Loan
001 5126.00 1
002 34.00 1
003 100.00 U
004 610.00 1
005 45.50 1
006 76.25 1
007 33.10 1
Seq # Amount Loan
008 775.00 1
009 10.00 1
010 3110.00 1
011 29.95 1
012 45.00 1
013 1090.50 1
014 15.16 1
Seq # Amount Loan
015 3750.80 1
016 45.98 1
017 1965.00 1
018 1010.80 1
019 332.43 1
020
021
Image Count: 000

Fig. 20

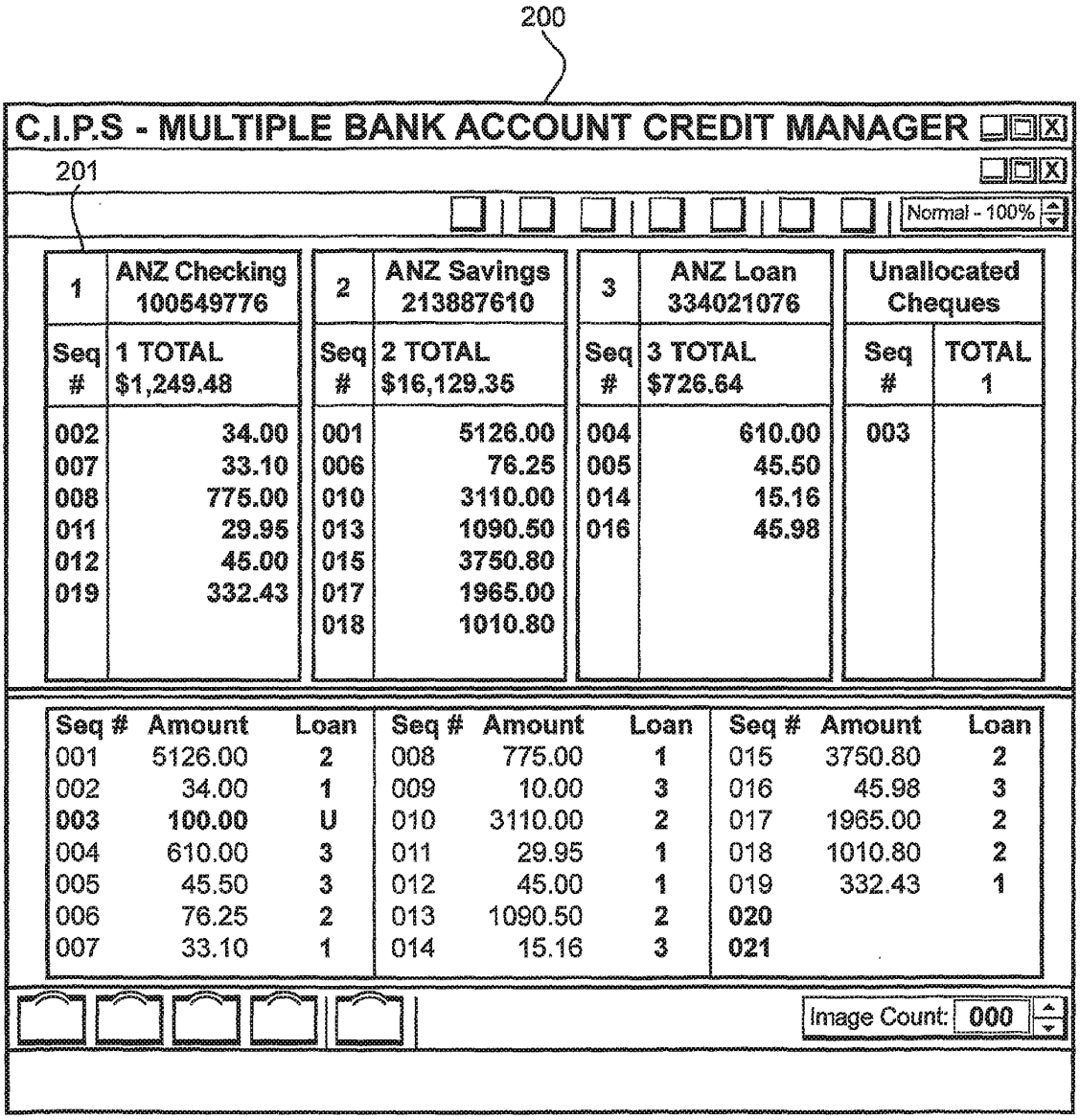

200
C.I.P.S - MULTIPLE BANK ACCOUNT CREDIT MANAGER
201
Normal - 100%
1 ANZ Checking 100549776
Seq # 1 TOTAL $1,249.48
002 34.00
007 33.10
008 775.00
011 29.95
012 45.00
019 332.43
2 ANZ Savings 213887610
Seq # 2 TOTAL $16,129.35
001 5126.00
006 76.25
010 3110.00
013 1090.50
015 3750.80
017 1965.00
018 1010.80
3 ANZ Loan 334021076
Seq # 3 TOTAL $726.64
004 610.00
005 45.50
014 15.16
016 45.98
Unallocated Cheques
Seq # TOTAL 1
003
Seq # Amount Loan
001 5126.00 2
002 34.00 1
003 100.00 U
004 610.00 3
005 45.50 3
006 76.25 2
007 33.10 1
008 775.00 1
009 10.00 3
010 3110.00 2
011 29.95 1
012 45.00 1
013 1090.50 2
014 15.16 3
015 3750.80 2
016 45.98 3
017 1965.00 2
018 1010.80 2
019 332.43 1
020
021
Image Count: 000

Fig. 21

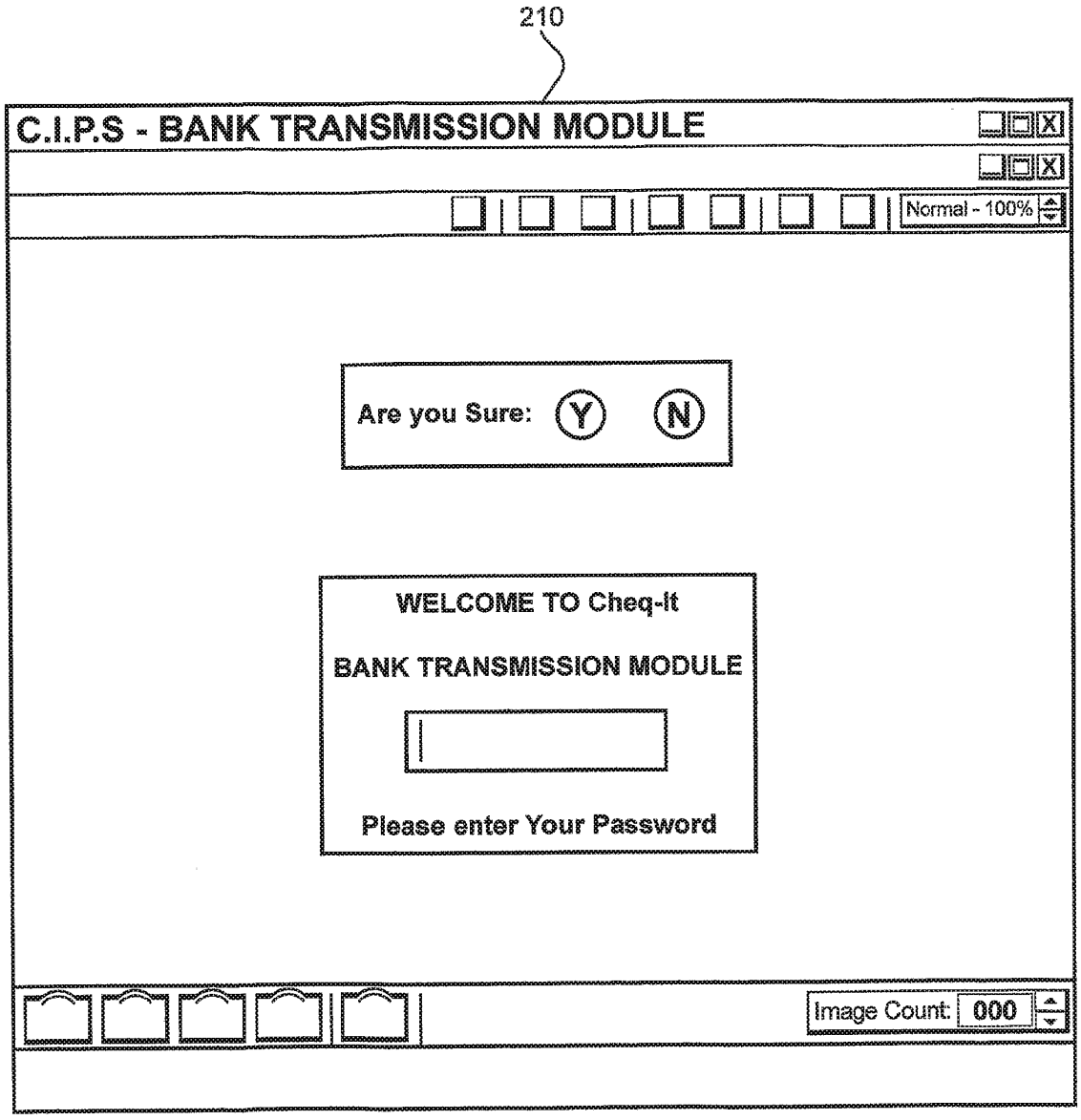

210
C.I.P.S - BANK TRANSMISSION MODULE
Normal - 100%
Are you Sure: Y N
WELCOME TO Cheq-It
BANK TRANSMISSION MODULE
Please enter Your Password
Image Count: 000

Fig. 22

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU03/00858

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: G06F 17/60, 157:00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPAT and Keywords (bank, financ+, match, scan)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1045348 A2 (NCR International Inc.) 18 October 2000 Whole Document	1 to 28
A	US 5895455 A (Bellinger et al.) 20 April 1999 Whole Document	
A	WO 98/57291 A2 (DIRECT EXPRESS) 17 December 1998 Whole Document	

☐ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 July 2003	01 AUG 2003
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer **J.W. THOMSON** Telephone No : (02) 6283 2214

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/AU03/00858

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
EP	1045348	AU	200027735	NZ	503920	US	6585775
WO	9857291	EP	996923	US	6097834		
US	5895455	US	5870725	US	6023705		

END OF ANNEX

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/025,701	07/02/2018	Charles Lee Oakes III	US-0152.09 (14538-649)	8845

16530 7590 10/09/2019

BGL
P.O. Box 10395
Chicago, IL 60610

EXAMINER	
OYEBISI, OJO O	

ART UNIT	PAPER NUMBER
3697	

MAIL DATE	DELIVERY MODE
10/09/2019	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 16/025,701	**Applicant(s)** Oakes et al.	
	Examiner OJO O OYEBISI	**Art Unit** 3697	**AIA (FITF) Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 06/24/19.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 25-54 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 25-54 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date 07/25/19,, 04/30/19, 03/21/19,.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

In view of the 2019 Revised Patent Subject Matter Eligibility Guidance (2019 PEG), PROSECUTION IS HEREBY REOPENED. The new 101 analysis is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Jerry O'Connor/
Supervisory Patent Examiner,
Group Art Unit 3697

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 25-54 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Subject Matter Eligibility Standard

3. The examiner contends that, under the judicial exceptions enumerated in the 2019 PEG, to determine the patent-eligibility of an application, a two- part analysis has to be conducted.

Part 1: it must be determined whether the claim is directed to one of the four statutory categories of invention, i.e., process, machine, manufacture, or composition of matter.

Part 2A: Prong 1: (1) Determine if the claims are directed to an abstract idea or one of the judicial exceptions. Examples of abstract ideas referenced in Alice Corp. include:

1. Certain method of organizing human activity such as fundamental economic concept or commercial and legal interactions.
2. A mental process.
3. Mathematical relationships/formulas.

Part 2A: Prong 2: determine if the claim as a whole integrates the judicial exception into a practical application.

Part 2B: determine if the claim provides an inventive concept.

Analysis

4. In the first analysis, it is found that the claim indeed recites a series of steps and therefore, is a process – one of the statutory categories.

In the second analysis, under step 2A (prong 1), it is determined that the claim recites the limitation of facilitating mobile check deposit, a concept performed in the human mind, which is

one of the mental processes identified in the 2019 Revised Guidance to process mobile checks, a fundamental economic practice, which is one of certain method of organizing human activity.

Under step 2A (prong 2), it is determined that the recited user's mobile computing device and wireless network are recited to simply receive, transmit and process data – that is, the recited mobile computing device and wireless network do not integrate the judicial exception into a practical application. The examiner further contends that the claims do not affect the transformation of the check image. As such, the elements of the claim do not integrate the abstract idea into a practical application because the captured check image remain data and is not transformed into a different state. See Berkheimer v. HP Inc., 881 F.3d 1360, 1367 (Fed. Cir. 2018). Rather, the claims here merely use a general purpose computing device as a tool for capturing, transmitting and processing check images.

And lastly, under step 2B, it is determined that there are no meaningful limitations in the claim that transform the judicial exception into a patent eligible application such that the claim amounts to significantly more than the judicial exception itself. The "display screen" is recited at a high level of generality to simply display data. Thus, taken alone, the additional elements do not amount significantly more than the above-identified judicial exception (the abstract idea). And looking at the limitations as an ordered combination of elements add nothing that is not already present when looking at the elements taken individually. There is no indication that the combination of the elements improves the functioning of a computer or improves any other technology. Accordingly, the claim is ineligible. Note: The analysis above applies to all statutory categories of invention. As such, the independent claims otherwise styled as a computer-readable medium encoded to perform specific tasks, machine or manufacture, for

example, would be subject to the same analysis. Furthermore, the limitations in the dependent claims are thus subject to the same analysis as in claim 25 and are rejected using the same rationale as in claim 25 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OJO O OYEBISI whose telephone number is (571)272-8298. The examiner can normally be reached on Monday-Friday, 9am-7pm. Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry O'Connor can be reached at 571-272-6787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/OJO O OYEBISI/
Primary Examiner, Art Unit 3697

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/025,701	Oakes et al.
	Examiner	Art Unit
	OJO O OYEBISI	3697

CPC - Searched*		
Symbol	Date	Examiner
G06Q 40/00	08/14/2018	O.O.O

CPC Combination Sets - Searched*		
Symbol	Date	Examiner
G06Q20/108; G06Q20/10; G06Q20/042; G06Q20/4014	08/14/2018	O.O.O

US Classification - Searched*			
Class	Subclass	Date	Examiner
705	45	08/14/2018	O.O.O

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
UPDATED EAST TEXT SEARCH	09/25/2019	O.O.O
CLASSIFICATION SEARCH	08/14/2018	O.O.O
CPC SEARCH	08/14/2018	O.O.O

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/OJO O OYEBISI/ Primary Examiner, Art Unit 3697	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	59955	check same image and camera	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/24 22:07
L2	72	check near image near camera	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/24 22:08
L3	133	(check (negotiable instrument)) near image near camera	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/24 22:09
L4	1	("20120177281").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2019/09/24 23:06
S1	706	check near image near processing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/08/14 13:51
S2	40	stinson and check near image near processing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/08/14 13:55
S3	1	("6695204").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2018/08/14 14:08
S4	609	captur$3 same image same check same wireless	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/08/14 16:04
S5	40	captur$3 near image near check same wireless	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/08/14 16:04
S6	44547	optical near character near recognition	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/08/14 23:03
S7	40	present$3 near image near check and S6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/08/14 23:04
S8	21794	authenticat$5 same biometric near (data information)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/08/14 23:05
S9	689	S6 and S8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/08/14 23:05

S10	13	S7 and S9	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/08/14 23:05
S11	1	display$3 near captured near check near image	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/08/14 23:06
S12	15	transmit$4 same copy same captured same check near image	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/08/14 23:11
S13	16	bi-tonal near tiff	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/08/14 23:11
S14	1223	duplicate same detection same check	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/08/14 23:12
S16	99	mobile near check near deposit	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/08/14 23:13
S17	1289	confirm$3 same check same deposit	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/08/14 23:13
S18	7	S9 and S17	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/08/14 23:13
S19	1170	705/45.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/08/14 23:14
S20	17892	705/35.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/08/14 23:14
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S23	2	(("5870725") or ("7571848")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2019/09/23 14:53
S24	125	Foley same check	US-PGPUB; USPAT	OR	ON	2019/09/23 14:59
S25	58	705/$$ and ((check or negotiable) near4 (image or picture) near4 orientation)	US-PGPUB; USPAT	OR	ON	2019/09/23 15:00
S26	1584	foley same image	US-PGPUB; USPAT	OR	ON	2019/09/23 15:15
S27	56	S25 and "16"	US-PGPUB; USPAT	OR	ON	2019/09/23

						15:16
S28	1	("20080288390").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2019/09/23 21:55
S29	2	(("7571848") or ("5895455")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2019/09/24 14:11
S30	7	(("5208869") or ("0544794") or ("5602936") or ("6408094") or ("20050144131") or ("20050252960")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2019/09/24 14:27
S31	0	check near processing same caput$3 same image and camera	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/24 17:45
S32	67	caput$3 same image and camera	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/24 17:46
S33	2	caput$3 same check same image and camera	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/09/24 17:46

9/25/2019 12:01:36 AM
C:\Users\ooyebisi\Documents\EAST\Workspaces\16025701.wsp

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: March 21, 2019 Name: Peter S. Lee (Reg. No. 64,728) Signature: /Peter S. Lee/

THIRDD SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/025,701
	Filing Date	July 2, 2018
	First Named Inventor	Charles Lee Oakes
	Art Unit	3697
	Confirmation Number	8845
	Examiner Name	Ojo O. Oyebisi
	Attorney Docket No.	US-0152.09 (14538-649)

In accordance with the duty of disclosure, Applicant(s) hereby cites the following references:

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Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

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Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

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EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
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	D133	Askey, *Panasonic Lumix DMC-L1 Review (pts.1,3,7)*, Digital Photography Review, April 11, 2007, located on the Internet at: https://www.dpreview.com/reviews/panasonicdmc11, 24 pgs.
	D134	Askey, Nikon D300 In-depth Review *(pts.1,3,9),* Digital Photography Review, March 12, 2008, located on the Internet at: https://www.preview.com/reviews/nikond300, 24 pgs.
	D135	Askey, *Canon EOS 40D Review (pts.1,4,10)*, Digital Photography Review, located on the Internet at:http: www.dpreview.com/reviews/canoneos40d, 24 pgs.
	D136	Joinson et al., *Olympus E-30 Review (pts.1,4,8),* Digital Photography Review, March 24, 2009, located on the Internet at: www.dpreview.com/reviews/olympus30, 6 pgs.
	D137	Quinn and Roberds, *The Evolution of the Check as a Means of Payment: A Historical Survey*, Federal Reserve Bank of Atlanta, Economic Review, 2008, 30 pgs.
	D138	Wausau Financial Systems, *Understanding Image Quality & Usability Within a New Environment*, 2006, 22 pgs,
	D139	*iPhone Store Downloads Top 10 Million in First Weekend,* July 14, 2008, located on the Internet at: http://www.apple.com/newsroom/2008/07/14iPhone-App-Stire-Downloads-Top-10_Million-in-First-Weekend, 3 pgs.
	D140	Knerr et al., *The A2iA Intercheque System: Courtesy Amount and Legal Amount Recognition for French Checks in Automated Bankcheck Processing 43-86,* Impedove et al. eds., 1997, 50 pgs.
	D141	149 Cong. Rec. H9289, October 8, 2003, 6 pgs.
	D142	*Check Clearing for the 21st Century Act*, H. R. Rep. No. 108-132, June 2, 2003, 20 pgs.
	D143	ITU-R-M.1225, *Guides for Evaluation of Radio Transmission Technologies for IMT-2000*, dated 1997, located on the Internet at: https://www.itu.int/dmspubrec/itu-r/rec/m/R-REC-M,1225-0-199702-I!!PDF-E.pdf, 60 pgs.
	D144	E. MacKenzie, *Photography Made Easy*, copyright 1845, 80 pgs.
	D145	12 CFR § 229.51 and Appendix D to Part 229 (1-1-05 edition), 3 pgs.

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ Page 4 of 6

EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	D146	Excerpts from American National Standard for Financial Services, ANS, X9.100-140-2004-Specifications for an Image Replacement Document – IRD, October 1, 2004, 16 pgs.
	D147	Sumits, *Major Mobile Milestones – The Last 15 Years, and the Next Five*, Cisco Blogs, February 3, 2016, located on the Internet at: https://blogs.cisco.com/sp/mobile-vni-major-mobile-milesrones-the-last15-years-and-the-next-five, 12 pgs.
	D148	*Apple Announces the New iPhone 3GS – The Fastest, Most Powerful iPhone Yet*, June 8, 2009, located on the Internet at: http://www.apple.com.rensroom/2009/06/08Apple-Annpounces-the-New-iPhone-3GS-The Fastest-Most-Powerful-iPhone-Yet, 4 pgs.
	D149	MOTOMANUAL, MOTOROKR-E6-GSM-English for wireless phone, copyright 2006, 144 pgs.

1. PRIORITY INFORMATION:

☐ This application claims priority under 35 USC §120 to the following United States patent application(s): _____. In accordance with 37 CFR §1.98(d), copies of the references cited herein which were submitted to, or cited by, the office, in compliance with 37 CFR §1.98(a)-(c) in the earlier application are not provided herewith. The Examiner is directed to those references cited in all Information Disclosure Statements filed in the priority United States patent application(s) cited above in addition to the references cited herein.

2. CERTIFICATIONS: (CHECK ALL THAT APPLY)

A. Certifications For 37 CFR §1.97(c) or 37 CFR §1.97(d):

☐ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(1) that each item of information in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

☐ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(2) that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated in 37 CFR §1.56(c), more than three months prior to the filing of this Information Disclosure Statement.

B. For Patent Term Adjustment Purposes:

☐ For purposes of 37 CFR §1.704(d)(i) or 37 CFR §1.704(d)(ii), Applicant hereby certifies that each item of information contained in this Information Disclosure Statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office or is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and that this communication was not received by any individual designated in 37 CFR §1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement.

3. FEE INFORMATION: (CHECK IF FEE REQUIRED)

☒ Applicant has calculated a processing fee in the amount of $240.00 for large entity to be due under 37 CFR §1.17(p) in connection with the filing of this Information Disclosure Statement. Applicant authorizes charging the fee to Deposit Account. 50-4184.

☒ The Director is hereby authorized to charge any fee deficiency associated with the filing of this Information Disclosure Statement to Deposit Account 50-4184.

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ *Page 5 of 6*

Information Disclosure Statement

Application No. 16/025,701 Attorney Docket No. US-0152.09 (14538-649)

Pursuant to the undersigned attorney's obligation and duties under 37 CFR §§ 1.56 and 1.98(a)(3) and (c), either English language abstracts, partial translations, or full translations are included for patent documents which are not in English for the express purpose of providing a concise explanation of the references to the Patent and Trademark Office with the opportunity to evaluate the same. Applicant respectfully requests the Examiner's consideration of the above reference(s) and entry thereof into the record of this application.

By submitting this Statement, Applicant is attempting to fully comply with the duty of candor and good faith mandated by 37 CFR §1.56. As such, this Statement is not intended to constitute an admission that any of the enclosed references, or other information referred to therein, constitutes "prior art" or is otherwise "material to patentability," as that phrase is defined in 37 CFR §1.56(a).

Respectfully submitted,

March 21, 2019 /Peter S. Lee/

Date Peter S. Lee (Reg. No. 64,728)

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ *Page 6 of 6*

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: July 25,2019 Name: Kent E. Genin (Reg. No. 37,834) Signature: /Kent E. Genin/



SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16/025,701
	Filing Date	July 2, 2018
	First Named Inventor	Charles Lee Oakes
	Art Unit	3697
	Confirmation Number	8845
	Examiner Name	Ojo O. Oyebisi
	Attorney Docket No.	US-0152.09 (14538-649)

In accordance with the duty of disclosure, Applicant(s) hereby cites the following references:

US PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	NAME
	F1	US 7,793,833 B2	09/14/2010	Yoon et al.
	F2	US 10,325,420 B1	06/18/2019	Moon
	F3	US 10,354,235 B1	07/16/2019	Medina
	F4	US 2006/0221198 A1	10/05/2006	Fry et al.

FOREIGN PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	COUNTRY	TRANSLATION YES OR NO
	F5	EP 1 855 459 A2	05/10/2007	Europe	

OTHER ART – NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIAL		Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	F6	CBM2019-00005 Patent No. 8,699,779, Patent Owner's Sur-Reply Brief to Petitioner's Reply Brief to Patent Owner Preliminary Response Pursuant to Authorization Provided in Paper No. 15, dated May 1, 2019, 7 pgs.
	F7	CBM2019-00004 Patent No. 8,977,571, Defendant's Claim Construction Brief, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-245, dated April 25, 2019, 36 pgs.
	F8	CBM2019-00004 Patent No. 8,977,571, Patent Owner's Sur-Reply Brief to Petitioner's Reply Brief to Patent Owner Preliminary Response Pursuant to Authorization Provided in Paper 14, dated April 30, 2019, 7 pgs.
	F9	USAA's Reply to Claim Construction Brief, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-245, dated May 2, 2019, 15 pgs.
	F10	Plaintiff and Counterclaim Defendant's Answer to Defendant and Counterclaims Plaintiff's Amended Answer, Affirmative Defenses, & Counterclaims, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-366, dated April 26, 2019, 18 pgs.
	F11	USAA's Reply Claim Construction Brief, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-245, dated May 2, 2019, 227 pgs.
	F12	Parties' P.R. 4-5(D) Joint Claim Construction Chart, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-245, dated May 9, 2019, 25 pgs.

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ *Page 1 of 5*

	F13	CBM2019-00002 Patent No. 9,818,090, Decision Denying Institution of Covered Business Method Patent Review *37 C.F.R. § 42.208*, dated April 26, 2019, 5 pgs.
	F14	CBM2019-00003 Patent No. 9,336,517, Decision Denying Institution of Covered Business Method Patent Review *37 C.F.R. § 42.208*, dated June 3, 2019, 28 pgs.
	F15	CBM2019-00004 Patent No. 8,977,571, Decision Denying Institution of Covered Business Method Patent Review *37 C.F.R. § 42.208*, dated May 15, 2019, 33 pgs.
	F16	CBM2019-00005 Patent No. 8,699,779, Decision Denying Institution of Covered Business Method Patent Review *37 C.F.R. § 42.208*, dated June 3, 2019, 27 pgs.
	F17	USAA's Opening Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated May 17, 2019, 32 pgs.
	F18	Defendant's Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated May 31, 2019, 111 pgs.
	F19	Plaintiff's Notice of Filing Claim Construction Presentation, filed in Civil Action No. 2:18-CV-245, dated May 23, 2019, 106 pgs.
	F20	IPR2019-01081 Patent No. 9,336,517, Petition for *Inter Partes* Review of Claims 1, 5-10, 12-14, 17-20 of US Patent No. 9,336,517, dated June 5, 2019, 78 pgs.
	F21	IPR2019-01082 Patent No. 8,977,571, Petition for *Inter Partes* Review of Claims 1-13 Patent No. 9,336,517, dated June 5, 2019, 75 pgs.
	F22	IPR2019-01083 Patent No. 8,699,779, Petition for *Inter Partes* Review of Claims 1-18 Patent No. 9,336,517, dated June 5, 2019, 74 pgs.
	F23	Plaintiff's Notice of Decisions Denying Institution of Covered Business Method Patent Review, filed in Civil Action No. 2:18-CV-245, dated June 6, 2019, 61 pgs.
	F24	Claim Construction Memorandum Opinion and Order, filed in Civil Action No. 2:18-CV-245, dated June 13, 2019, 48 pgs.
	F25	Parties' P.R.4-5(D) Joint Claim Construction Chart, filed in Civil Action No. 2:18-CV-245, dated June 14, 2019, 28 pgs.
	F26	Defendant's Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated May 31, 2019, 28 pgs.
	F27	USAA's Reply Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated June 7, 2019, 14 pgs.
	F28	Wells Fargo's Objections to Magistrate Judge Payne's Claim Construction Memorandum Opinion and Order, filed in Civil Action No. 2:18-CV-245, dated June 27, 2019, 7 pgs.
	F29	USAA's Objections to Magistrate Judge Payne's Claim Construction Memorandum Opinion and Order, filed in Civil Action No. 2:18-CV-245, dated June 27, 2019, 6 pgs.
	F30	Parties' P.R. 4-5(D) Joint Claim Construction Chart, filed in Civil Action No. 2:18-CV-366, dated June 18, 2019, 27 pgs.
	F31	IPR2019-00815, Invalidity Chart, uploaded on June 27, 2019, 94 pgs.
	F32	IPR2019-00815, United Services Automobile Association ("USAA")'s Patent Owner Preliminary Response, dated June 27, 2019, 66 pgs.
	F33	IPR2019-00815, Supplemental Invalidity Chart, dated on June 27, 2019, 16 pgs.
	F34	IPR2019-00815, Declaration of Matthew A. Calman in Support of Patent Owner Preliminary Response, dated June 27, 2019, 25 pgs.
	F35	CBM 2019-00027, Declaration of Bharat Prasad, dated July 8, 2019, 32 pgs.
	F36	CBM 2019-00027, Patent Owner Preliminary Response and Exhibits 2001-1042, dated July 8, 2019, 91 pgs.
	F37	CBM 2019-00028, United Services Automobile Association ("USAA")'s Patent Owner Preliminary Response, dated July 8, 2019, 73 pgs.
	F38	CBM2019-00028, Declaration of Matthew A. Calman in Support of Patent Owner Preliminary Response, dated July 8, 28 pgs.
	F39	CBM2019-00028, Malykhina, Elena "Get Smart", Copyright 2006 by ProQuest Information and Learning Company, 6 pgs.
	F40	CBM2019-00028, Palm Treo 700W Smartphone manual, Copyright 2005 by Palm, Inc., 96 pgs.

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ *Page 2 of 5*

	F41	CBM2019-00028, 00000 C720w User Manual for Windows Mobile Smart Phone, Copyright 2006, 352 pgs.
	F42	CBM2019-00028, "Smarter Than Your Average Phone", Copyright 2006 by Factiva, 4 pgs.
	F43	CBM2019-00028, "64 Million Smart Phones Shipped Worldwide in 2006", Canalys Newsroom, 2006, 3 pgs.
	F44	CBM2019-00028, Nokia 9500 Communicator user Guide, Copyright 2006 by Nokia Corporation, 112 pgs.
	F45	CBM2019-00028, Robinson, Daniel, "Client Week – Handsets advance at 3GSM", Copyright 2004 by VNU Business Publications Ltd., 2 pgs.
	F46	CBM2019-00028, Burney, Brett "MacBook Pro with Intel processor is fast, innovative", Copyright 2006 by Plain Dealer Publishing Co., 2 pgs.
	F47	CBM2019-00028, 17-inch MacBook Pro User's Guide, Copyright 2006 by Apple Computer, Inc., 144 pgs.
	F48	CBM2019-00028, Wong, May "HP unveils new mobile computers", Copyright 2006 by The Buffalo News", 2 pgs.
	F49	CBM2019-00028, Jewell, Mark "Cell Phone Shipments Reach Record 208M", Copyright 2005 by Associated Press, 1 pg.
	F50	CBM 2019-00028, Lawler, Ryan "Apple shows Intel-based Macs, surge in revenue", Copyright 2006 by The Yomiuri Shimbun, 2 pgs.
	F51	CBM 2019-00028, Aspire 9800 Series User Guide, Copyright 2006 by Acer International, 122 pgs.
	F52	CBM 2019-00028, Dell XPS M1210 Owner's Manual, Copyright 2006 by Dell Inc., 192 pgs.
	F53	CBM 2019-00028, Estridge, Bonnie "Is your phone smart enough?: The series that cuts through the technobabble to bring you the best advice on the latest gadgets", Coyright 2006 by XPRESS – A1 Nsr Media, 3 pgs.
	F54	CBM 2019-00028, "Motorola, Palm collaborate on smart phone", Copyright 2000 by Crain Communications, Inc., 1 pg.
	F55	CBM 2019-00028, Nasaw, Daniel "Viruses Pose threat to 'Smart' Cellphones – Computer Programs Could Cripple Devices and Shut Down Wireless Networks", Copyright 2004 by Factiva, 2 pgs.
	F56	CBM 2019-00028, Seitz, Patrick "Multifunction Trend Shaking Up The Handheld Device industry; Solid Sales Expected in 2004; PDA, handset, camera – one single, small product can fill a variety of roles", Copyright 2004 Investor's Business Daily, Inc., 3 pgs.
	F57	Microsoft Mobile Devices Buyer's Guide, 2002, 4 pgs.
	F58	Microsoft Mobile Devices Smartphone, 2003, 2 pgs.
	F59	Plaintiff's Notice of Decision Denying Institution of Covered Business Method Patent Review, filed in Civil Action No. 2:18-CV-245, dated May 15, 2019, 36 pgs.
	F60	Defendant's Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated June 24, 2019, 28 pgs.
	F61	CBM2019-00029, United Services Automobile Association (USAA)'s Patent Owner Preliminary Response, dated July 17, 2019, 76 pgs.
	F62	CBM2019-00029, Declaration of Matthew A. Calman in Support of Patent Owner Preliminary Response, dated July 17 2019, 29 pgs.
	F63	CBM2019-00029, Defendant's Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated May 31, 2019, 28 pgs.
	F64	CBM2019-00029, Palenchar, Joseph, "PDA Phone Adds WiFi VoIP, Turn-By-Turn GPS Navigation", Copyright 2006 by Reed Business Information, 2 pgs.
	F65	CBM2019-00029, HP User Guide, Additional Product Information, Copyright 2006 by Hewlett-Packard Development Company, L.P., 204 pgs.
	F66	CBM2019-00029, Pocket PC User Manual, Version 1, dated May 2006 by Microsoft, 225 pgs.

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ *Page 3 of 5*

	F67	CBM2019-00029, "Dynamism.com: Take tomorrow's tech home today with Dynamism.com: Latest gadgets merge next generation technology with high style design", Copyright 2006 Normans Media Limited, 2 pgs.
	F68	IPR2019-00815, Federal Reserve Financial Services Retired: DSTU X9.37-2003, "Specifications for Electronic Exchange of Check and Image Data, Copyright 2006 by Accredited Standards Committee X9, Inc., dated March 31, 2003, 157 pgs.
	F69	IPR2019-01081, Declaration of Peter Alexander, Ph.D, dated June 5, 2019, 135 pgs.

1. PRIORITY INFORMATION:

☐ This application claims priority under 35 USC §120 to the following United States patent application(s):_____. In accordance with 37 CFR §1.98(d), copies of the references cited herein which were submitted to, or cited by, the office, in compliance with 37 CFR §1.98(a)-(c) in the earlier application are not provided herewith. The Examiner is directed to those references cited in all Information Disclosure Statements filed in the priority United States patent application(s) cited above in addition to the references cited herein.

2. CERTIFICATIONS: (CHECK ALL THAT APPLY)

A. Certifications For 37 CFR §1.97(c) or 37 CFR §1.97(d):

☐ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(1) that each item of information in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

☒ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(2) that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated in 37 CFR §1.56(c), more than three months prior to the filing of this Information Disclosure Statement.

B. For Patent Term Adjustment Purposes:

☐ For purposes of 37 CFR §1.704(d)(i) or 37 CFR §1.704(d)(ii), Applicant is hereby submitting concurrently with this Information Disclosure Statement a completed Form PTO/SB/133 that certifies that each item of information contained in this Information Disclosure Statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office or is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and that this communication was not received by any individual designated in 37 CFR §1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement.

3. FEE INFORMATION: (CHECK IF FEE REQUIRED)

☒ Applicant has calculated a processing fee in the amount of $240 (large entity) to be due under 37 CFR §1.17(p) in connection with the filing of this Information Disclosure Statement. Applicant authorizes charging the fee to Deposit Account 50-4184.

☒ The Director is hereby authorized to charge any fee deficiency associated with the filing of this Information Disclosure Statement to Deposit Account 50-4184.

Pursuant to the undersigned attorney's obligation and duties under 37 CFR §§ 1.56 and 1.98(a)(3) and (c), either English language abstracts, partial translations, or full translations are included for patent documents which are not in English for the express purpose of providing a concise explanation of the references to the Patent and Trademark Office with the opportunity to evaluate the same. Applicant respectfully requests the Examiner's consideration of the above reference(s) and entry thereof into the record of this application.

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ *Page 4 of 5*

Information Disclosure Statement

Application No. 16/025,701 Attorney Docket No. US-0152.09 |14538-649

By submitting this Statement, Applicant is attempting to fully comply with the duty of candor and good faith mandated by 37 CFR §1.56. As such, this Statement is not intended to constitute an admission that any of the enclosed references, or other information referred to therein, constitutes "prior art" or is otherwise "material to patentability," as that phrase is defined in 37 CFR §1.56(a).

Respectfully submitted,

July 25, 2019
Date

/Kent E. Genin/
Kent E. Genin (Reg. No. 37,834)

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ *Page 5 of 5*

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8
I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:
Date: April 30, 2019 Name: Peter S. Lee (Reg. No. 64,728) Signature: /Peter S. Lee/

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16/025,701
	Filing Date	July 2, 2018
	First Named Inventor	Charles Lee Oakes
	Art Unit	3697
	Confirmation Number	8845
	Examiner Name	Ojo O. Oyebisi
	Attorney Docket No.	US-0152.09 | 14538-649

In accordance with the duty of disclosure, Applicant(s) hereby cites the following references:

US PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	NAME
	E1	US 4,027,142	05/3/1977	Paup et al.
	E2	US 4,417,136	11/22/1983	Rushby et al.
	E3	US 5,187,750	02/16/1993	Behera
	E4	US 5,237,158	08/17/1993	Kern et al.
	E5	US 5,530,773	06/25/1996	Thompson
	E6	US 6,149,056	11/21/2000	Stinson et al.
	E7	US 6,351,553	02/26/2002	Hayosh
	E8	US 6,574,377 B1	06/03/2003	Cahill et al.
	E9	US 6,760,470 B1	07/06/2004	Bogosian et al.
	E10	US 7,027,171 B1	04/11/206	Watanabe
	E11	US 7,028,886 B1	04/18/2006	Maloney
	E12	US 7,935,441 B2	05/03/2011	Tononishi
	E13	US 10,181,087 B1	01/15/2019	Danko
	E14	US 10,235,660 B1	03/19/2019	Bueche, Jr. et al.
	E15	US 2002/0152170 A1	10/17/2002	Dutta
	E16	US 2003/0018897 A1	01/23/2003	Bellis, Jr. et al.
	E17	US 2003/0200107 A1	10/23/2003	Allen et al.
	E18	US 2004/0017482 A1	01/29/2004	Weitman
	E19	US 2004/0201741 A1	10/14/2004	Ban
	E20	US 2005/0015342 A1	01/20/2005	Murata et al.
	E21	US 2006/0015450 a1	01/19/2006	Guck et al.
	E22	US 2006/0045379 A1	03/02/2006	Heaney, Jr. et al.
	E23	US 2006/0202014 A1	09/14/2006	VanKirk et al.
	E24	US 2008/0065524 A1	03/13/2008	Matthews et al.
	E25	US 2008/0071679 A1	03/20/2008	Foley
	E26	US 2008/0097907 A1	04/24/2008	Till et al.
	E27	US 2013/0198071 A1	08/01/2013	Jurss
	E28	US 2013/0297353 A1	11/07/2013	Strange
	E29	US 2014/0067661 A1	03/06/2014	Elischer
	E30	US 2015/0090782 A1	04/02/2015	Dent

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ *Page 1 of 6*

FOREIGN PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	COUNTRY	TRANSLATION YES OR NO
	E31	WO 01/61436 A2	08/23/2001	WIPO	
	E32	WO 2006/086768 A2	08/17/2006	WIPO	

OTHER ART – NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIAL		Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	E33	Patent Disclaimer for US Patent No, 8,699,779, filed on March 4, 2019, 2 pgs.
	E34	Patent Disclaimer for US Patent No, 8,977,571, filed on February 20, 2019, 2 pgs.
	E35	Patent Disclaimer for US Patent No, 9,336,517, filed on March 4, 2019, 2 pgs.
	E36	Patent Disclaimer for US Patent No, 9,818,090, filed on February 20, 2019, 2 pgs.
	E37	CBM2019-00002 Patent No. 9,818,090, United Services Automobile Association (USAA)'s Patent Owner Preliminary Response, dated February 20, 2019, 75 pgs.
	E38	CBM2019-00002 Patent No. 9,818,090, Declaration of Tim Crews In Support of Patent Owner Preliminary Response, dated February 20, 2019, 8 pgs.
	E39	CBM2019-00002 Patent No. 9,818,090, Declaration of Matthew Calman In Support of Patent Owner Preliminary Response, dated February 20, 2019, 14 pgs.
	E40	CBM2019-00002 Patent No. 9,818,090, Katie Knight Videotape Deposition Transcript, dated February 8, 2019, 27 pgs.
	E41	CBM2019-00002 Patent No. 9,818,090, Peter Alexander, Ph.D., Oral and Videotaped Deposition, dated January 23, 2019, 27 pgs.
	E42	CBM2019-00002 Patent No. 9,818,090, United Services Automobile Association (USAA)'s Updated Exhibit List, dated March 19, 2019, 8 pgs.
	E43	CBM2019-00003 Patent No. 9,336,517, United Services Automobile Association (USAA)'s Patent Owner Preliminary Response, dated March 4, 2019, 91 pgs.
	E44	CBM2019-00003 Patent No. 8,699,779, Declaration of Matthew Calman In Support of Patent Owner Preliminary Response, dated March 4, 2019, 15 pgs.
	E45	CBM2019-00003 Patent No. 9,336,517, Katie Knight Videotape Deposition Transcript, dated February 8, 2019, 27 pgs.
	E46	CBM2019-00003 Patent No. 9,336,517, Peter Alexander, Ph.D., Oral and Videotaped Deposition, dated January 23, 2019, 27 pgs.
	E47	CBM2019-00003 Patent No. 9,336,517, United Services Automobile Association (USAA)'s Updated Exhibit List Pursuant to 37 CFR 42.63(e), dated March 19, 2019, 8 pgs.
	E48	CBM2019-00003 Patent No. 9,336,517, Petitioner's Reply Brief to Patent Owner Preliminary Response Pursuant to Authorization Provided in Paper No. 14, dated April 10, 2019, 10 pgs.
	E49	CBM2019-00004 Patent No. 8,977,571, Declaration of Tim Crews In Support of Patent Owner Preliminary Response, dated February 20, 2019, 8 pgs.
	E50	CBM2019-00004 Patent No. 8,977,571, United Services Automobile Association (USAA)'s Patent Owner Preliminary Response, dated February 20, 2019, 99 pgs.
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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ *Page 2 of 6*

EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
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	E56	CBM2019-00005 Patent No. 8,699,779 Peter Alexander, Ph.D., Oral and Videotaped Deposition, dated January 23, 2019, 27 pgs.
	E57	CBM2019-00027 Patent No. 9,224,136 Declaration of Peter Alexander, Ph.D., dated March 28, 2019, 147 pgs.
	E58	CBM2019-00027 Patent No. 9,224,136 Petition For Covered Business Method Review of Claims 1-3, 5-9, 11-16 and 18 of US Patent No, 9,224,136, dated March 28, 2019, 93 pgs.
	E59	CBM2019-00027 Patent No. 9,224,136 Notice of Filing Date Accorded to Petition and Time for Filing Patent Owner Preliminary Response, dated April 8, 2019, 3 pgs.
	E60	CBM2019-00028 Patent No. 10,013,681, Plaintiff United Services Automobile Association (USAA) Preliminary Claim Constructions And Extrinsic Evidence, dated March 15, 2019, 74 pgs.
	E61	CBM2019-00028 Patent No. 10,013,681, Declaration of Peter Alexander, Ph.D., dated March 28, 2019, 94 pgs.
	E62	CBM2019-00028 Patent No. 10,013,681, Petition For Covered Business Method Review of Claims 1-30 of US Patent No, 10,013,681, dated March 28, 2019, 99 pgs.
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	E65	CBM2019-00029 Patent No. 10,013,605, Declaration of Peter Alexander, Ph.D., dated March 28, 2019, 76 pgs.
	E66	CBM2019-00029 Patent No. 10,013,605, Petition For Covered Business Method Review of Claims 1-3, 5-14, 16-29 of US Patent No, 10,013,605, dated March 28, 2019, 88 pgs.
	E67	CBM2019-00029 Patent No. 10,013,605, Plaintiff United Services Automobile Association (USAA) Preliminary Claim Constructions And Extrinsic Evidence, dated March 15, 2019, 74 pgs.
	E68	IPR2019-00815 Patent No. 9,818,090, Petition For *Inter Parties* Review of Claims 109 of U.S. Patent No. 9,818,090, dated March 20, 2019, 56 pgs.
	E69	IPR2019-00815 Patent No. 9,818,090, Declaration of Peter Alexander, PhD. as filed in the IPR on March 20, 2019, 99 pgs.
	E70	IPR2019-00815 Patent No. 9,818,090, Notice of Filing Date Accorded to Petition and Time for Filing Patent Owner Preliminary Response, dated March 27, 2019, 5 pgs.
	E71	IPR2019-00815 Patent No. 9,818,090, Exhibit B Proposed Claim Constructions for the '571, '090, '779 and '517 Patents, filed on 2/28/19, 10 pgs,
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	E84	Cheq Information Technology White Paper, "Teller Scanner Performance and Scanner Design: Camera Position Relative to the Feeder", dated 2005, 7 pgs.
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	E93	Klein, Robert, Financial Services Technology, "Image Quality and Usability Assurance: Phase 1 Project", dated July 23, 2004, 67 pgs.
	E94	Lange, Bill, "Combining Remote Capture and IRD Printing, A Check 21 Strategy For Community and Regional Banks", dated 2005, 25 pgs.
	E95	Lee, Jeanne, "Mobile Check Deposits: Pro Tips to Ensure They Go Smoothly", dated February 19, 2016, 6 pgs.
	E96	Meara, Bob, "State of Remote Deposit Capture 2015: Mobile is the New Scanner", Dated May 26, 2015, obtained from the Internet at: https://www.celent.com/insights/57842967, 3 pgs.
	E97	Meara, Bob, "State of Remote Deposit Capture 2015 Mobile is the New Scanner", dated May 2015, 56 pgs.
	E98	Meara, Bob,"USAA's Mobile Remote Deposit Capture", Dated June 26, 2009, 2 pgs.
	E99	Mitek's Mobile Deposit Processes More Than Two Billion Checks, $1.5 Trillion in Cumulative Check Value, dated March 18, 2018, 2 pgs.
	E100	Mitek, "Video Release – Mitek MiSnap ™ Mobile Auto Capture Improves Mobile Deposit® User Experience at Ten Financial Institutions", dated July 15, 2014, 2 pgs.
	E101	NCR, "Mobile Remote Deposit Capture (RDC), copyright 2011, 8 pgs.
	E102	Nokia N90 Review Digital Trends, dated February 11, 2019, obtained from the Internet at: https://www.digitaltrends.com/cell-phone-reviews/nokia-n90-review/, 11 pgs.
	E103	Nokia N95 8GB User Guide, copyright 2009, (from the Wells Fargo Bank, N.A. IPR2019-00815, filed on March 20, 2019), Part 1 of 3, 67 pgs.
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	E106	Patel, Kunur, Ad Age, "How Mobile Technology Is Changing Banking's Future", dated September 21, 2009, 3 pgs.

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.O.O/ *Page 4 of 6*

EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	E107	Remote Deposit Capture Basic Requirements, dated August 22, 2009, 1 pg.
	E108	Remote Deposit Capture.com Scanner Matrix, dated October 21, 2011, 3 pgs.
	E109	Rowles, Tony, "USAA-v. Wells Fargo No. 2:16-cv-245-JRGL e-mail correspondence dated January 24, 2019, 2 pgs.
	E110	Sechrest, Stuart et al., "Windows XP Performance", Microsoft, dated 6/1/2001, 20 pgs.
	E111	Spenser, Harvey, "White Paper Check 21 Controlling Image Quality At The Point of Capture", dated 2004, 7 pgs.
	E112	Timothy R. Crews list of Patents, printed from the United States Patent and Trademark Office on Feb. 13, 2019, 7 pgs.
	E113	Van Dyke, Jim, "2017 Mitek Mobile Deposit Benchmark Report", copyright 2017, 50 pgs.
	E114	WAUSAU, "Understanding Image Quality & Usability Within a New Environment", copyright 2019, 1 pg.
	E115	Whitney, Steve et al., "A Framework For Exchanging Image Returns", dated July 2001, 129 pgs.

1. PRIORITY INFORMATION:

☐ This application claims priority under 35 USC §120 to the following United States patent application(s):_____. In accordance with 37 CFR §1.98(d), copies of the references cited herein which were submitted to, or cited by, the office, in compliance with 37 CFR §1.98(a)-(c) in the earlier application are not provided herewith. The Examiner is directed to those references cited in all Information Disclosure Statements filed in the priority United States patent application(s) cited above in addition to the references cited herein.

2. CERTIFICATIONS: (CHECK ALL THAT APPLY)

A. Certifications For 37 CFR §1.97(c) or 37 CFR §1.97(d):

☐ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(1) that each item of information in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

☒ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(2) that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated in 37 CFR §1.56(c), more than three months prior to the filing of this Information Disclosure Statement.

B. For Patent Term Adjustment Purposes:

☐ For purposes of 37 CFR §1.704(d)(i) or 37 CFR §1.704(d)(ii), Applicant hereby certifies that each item of information contained in this Information Disclosure Statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office or is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and that this communication was not received by any individual designated in 37 CFR §1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement.

3. FEE INFORMATION: (CHECK IF FEE REQUIRED)

☒ Applicant has calculated a processing fee in the amount of $ 240.00 (Large entity) to be due under 37 CFR §1.17(p) in connection with the filing of this Information Disclosure Statement. Applicant authorizes charging the fee to Deposit Account. 50-4184.

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

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☒ The Director is hereby authorized to charge any fee deficiency associated with the filing of this Information Disclosure Statement to Deposit Account 50-4184.

Pursuant to the undersigned attorney's obligation and duties under 37 CFR §§ 1.56 and 1.98(a)(3) and (c), either English language abstracts, partial translations, or full translations are included for patent documents which are not in English for the express purpose of providing a concise explanation of the references to the Patent and Trademark Office with the opportunity to evaluate the same. Applicant respectfully requests the Examiner's consideration of the above reference(s) and entry thereof into the record of this application.

By submitting this Statement, Applicant is attempting to fully comply with the duty of candor and good faith mandated by 37 CFR §1.56. As such, this Statement is not intended to constitute an admission that any of the enclosed references, or other information referred to therein, constitutes "prior art" or is otherwise "material to patentability," as that phrase is defined in 37 CFR §1.56(a).

Respectfully submitted,

April 30, 2019
Date

/Peter S. Lee/
Peter S. Lee (Reg. No. 64,728)

Examiner Signature	/OJO O OYEBISI/	Date Considered	09/25/2019

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CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: July 25,2019 Name: Kent E. Genin (Reg. No. 37,834) Signature: /Kent E. Genin/

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/025,701
	Filing Date	July 2, 2018
	First Named Inventor	Charles Lee Oakes
	Art Unit	3697
	Confirmation Number	8845
	Examiner Name	Ojo O. Oyebisi
	Attorney Docket No.	US-0152.09 (14538-649)

In accordance with the duty of disclosure, Applicant(s) hereby cites the following references:

US PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	NAME
	F1	US 7,793,833 B2	09/14/2010	Yoon et al.
	F2	US 10,325,420 B1	06/18/2019	Moon
	F3	US 10,354,235 B1	07/16/2019	Medina
	F4	US 2006/0221198 A1	10/05/2006	Fry et al.

FOREIGN PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	COUNTRY	TRANSLATION YES OR NO
	F5	EP 1 855 459 A2	05/10/2007	Europe	

OTHER ART – NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIAL		Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	F6	CBM2019-00005 Patent No. 8,699,779, Patent Owner's Sur-Reply Brief to Petitioner's Reply Brief to Patent Owner Preliminary Response Pursuant to Authorization Provided in Paper No. 15, dated May 1, 2019, 7 pgs.
	F7	CBM2019-00004 Patent No. 8,977,571, Defendant's Claim Construction Brief, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-245, dated April 25, 2019, 36 pgs.
	F8	CBM2019-00004 Patent No. 8,977,571, Patent Owner's Sur-Reply Brief to Petitioner's Reply Brief to Patent Owner Preliminary Response Pursuant to Authorization Provided in Paper 14, dated April 30, 2019, 7 pgs.
	F9	USAA's Reply to Claim Construction Brief, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-245, dated May 2, 2019, 15 pgs.
	F10	Plaintiff and Counterclaim Defendant's Answer to Defendant and Counterclaims Plaintiff's Amended Answer, Affirmative Defenses, & Counterclaims, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-366, dated April 26, 2019, 18 pgs.
	F11	USAA's Reply Claim Construction Brief, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-245, dated May 2, 2019, 227 pgs.
	F12	Parties' P.R. 4-5(D) Joint Claim Construction Chart, United Services Automobile Association v. Wells Fargo Bank, N.A., Civil Action No. 2:18-cv-245, dated May 9, 2019, 25 pgs.

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	F13	CBM2019-00002 Patent No. 9,818,090, Decision Denying Institution of Covered Business Method Patent Review *37 C.F.R. § 42.208*, dated April 26, 2019, 5 pgs.
	F14	CBM2019-00003 Patent No. 9,336,517, Decision Denying Institution of Covered Business Method Patent Review *37 C.F.R. § 42.208*, dated June 3, 2019, 28 pgs.
	F15	CBM2019-00004 Patent No. 8,977,571, Decision Denying Institution of Covered Business Method Patent Review *37 C.F.R. § 42.208*, dated May 15, 2019, 33 pgs.
	F16	CBM2019-00005 Patent No. 8,699,779, Decision Denying Institution of Covered Business Method Patent Review *37 C.F.R. § 42.208*, dated June 3, 2019, 27 pgs.
	F17	USAA's Opening Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated May 17, 2019, 32 pgs.
	F18	Defendant's Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated May 31, 2019, 111 pgs.
	F19	Plaintiff's Notice of Filing Claim Construction Presentation, filed in Civil Action No. 2:18-CV-245, dated May 23, 2019, 106 pgs.
	F20	IPR2019-01081 Patent No. 9,336,517, Petition for *Inter Partes* Review of Claims 1, 5-10, 12-14, 17-20 of US Patent No. 9,336,517, dated June 5, 2019, 78 pgs.
	F21	IPR2019-01082 Patent No. 8,977,571, Petition for *Inter Partes* Review of Claims 1-13 Patent No. 9,336,517, dated June 5, 2019, 75 pgs.
	F22	IPR2019-01083 Patent No. 8,699,779, Petition for *Inter Partes* Review of Claims 1-18 Patent No. 9,336,517, dated June 5, 2019, 74 pgs.
	F23	Plaintiff's Notice of Decisions Denying Institution of Covered Business Method Patent Review, filed in Civil Action No. 2:18-CV-245, dated June 6, 2019, 61 pgs.
	F24	Claim Construction Memorandum Opinion and Order, filed in Civil Action No. 2:18-CV-245, dated June 13, 2019, 48 pgs.
	F25	Parties' P.R.4-5(D) Joint Claim Construction Chart, filed in Civil Action No. 2:18-CV-245, dated June 14, 2019, 28 pgs.
	F26	Defendant's Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated May 31, 2019, 28 pgs.
	F27	USAA's Reply Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated June 7, 2019, 14 pgs.
	F28	Wells Fargo's Objections to Magistrate Judge Payne's Claim Construction Memorandum Opinion and Order, filed in Civil Action No. 2:18-CV-245, dated June 27, 2019, 7 pgs.
	F29	USAA's Objections to Magistrate Judge Payne's Claim Construction Memorandum Opinion and Order, filed in Civil Action No. 2:18-CV-245, dated June 27, 2019, 6 pgs.
	F30	Parties' P.R. 4-5(D) Joint Claim Construction Chart, filed in Civil Action No. 2:18-CV-366, dated June 18, 2019, 27 pgs.
	F31	IPR2019-00815, Invalidity Chart, uploaded on June 27, 2019, 94 pgs.
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	F33	IPR2019-00815, Supplemental Invalidity Chart, dated on June 27, 2019, 16 pgs.
	F34	IPR2019-00815, Declaration of Matthew A. Calman in Support of Patent Owner Preliminary Response, dated June 27, 2019, 25 pgs.
	F35	CBM 2019-00027, Declaration of Bharat Prasad, dated July 8, 2019, 32 pgs.
	F36	CBM 2019-00027, Patent Owner Preliminary Response and Exhibits 2001-1042, dated July 8, 2019, 91 pgs.
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	F42	CBM2019-00028, "Smarter Than Your Average Phone", Copyright 2006 by Factiva, 4 pgs.
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	F55	CBM 2019-00028, Nasaw, Daniel "Viruses Pose threat to 'Smart' Cellphones – Computer Programs Could Cripple Devices and Shut Down Wireless Networks", Copyright 2004 by Factiva, 2 pgs.
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	F59	Plaintiff's Notice of Decision Denying Institution of Covered Business Method Patent Review, filed in Civil Action No. 2:18-CV-245, dated May 15, 2019, 36 pgs.
	F60	Defendant's Claim Construction Brief, filed in Civil Action No. 2:18-CV-366, dated June 24, 2019, 28 pgs.
	F61	CBM2019-00029, United Services Automobile Association (USAA)'s Patent Owner Preliminary Response, dated July 17, 2019, 76 pgs.
	F62	CBM2019-00029, Declaration of Matthew A. Calman in Support of Patent Owner Preliminary Response, dated July 17 2019, 29 pgs.
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	F65	CBM2019-00029, HP User Guide, Additional Product Information, Copyright 2006 by Hewlett-Packard Development Company, L.P., 204 pgs.
	F66	CBM2019-00029, Pocket PC User Manual, Version 1, dated May 2006 by Microsoft, 225 pgs.

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	F67	CBM2019-00029, "Dynamism.com: Take tomorrow's tech home today with Dynamism.com: Latest gadgets merge next generation technology with high style design", Copyright 2006 Normans Media Limited, 2 pgs.
	F68	IPR2019-00815, Federal Reserve Financial Services Retired: DSTU X9.37-2003, "Specifications for Electronic Exchange of Check and Image Data, Copyright 2006 by Accredited Standards Committee X9, Inc., dated March 31, 2003, 157 pgs.
	F69	IPR2019-01081, Declaration of Peter Alexander, Ph.D, dated June 5, 2019, 135 pgs.

1. PRIORITY INFORMATION:

☐ This application claims priority under 35 USC §120 to the following United States patent application(s):_____. In accordance with 37 CFR §1.98(d), copies of the references cited herein which were submitted to, or cited by, the office, in compliance with 37 CFR §1.98(a)-(c) in the earlier application are not provided herewith. The Examiner is directed to those references cited in all Information Disclosure Statements filed in the priority United States patent application(s) cited above in addition to the references cited herein.

2. CERTIFICATIONS: (CHECK ALL THAT APPLY)

A. Certifications For 37 CFR §1.97(c) or 37 CFR §1.97(d):

☐ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(1) that each item of information in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

☒ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(2) that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated in 37 CFR §1.56(c), more than three months prior to the filing of this Information Disclosure Statement.

B. For Patent Term Adjustment Purposes:

☐ For purposes of 37 CFR §1.704(d)(i) or 37 CFR §1.704(d)(ii), Applicant is hereby submitting concurrently with this Information Disclosure Statement a completed Form PTO/SB/133 that certifies that each item of information contained in this Information Disclosure Statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office or is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and that this communication was not received by any individual designated in 37 CFR §1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement.

3. FEE INFORMATION: (CHECK IF FEE REQUIRED)

☒ Applicant has calculated a processing fee in the amount of $240 (large entity) to be due under 37 CFR §1.17(p) in connection with the filing of this Information Disclosure Statement. Applicant authorizes charging the fee to Deposit Account 50-4184.

☒ The Director is hereby authorized to charge any fee deficiency associated with the filing of this Information Disclosure Statement to Deposit Account 50-4184.

Pursuant to the undersigned attorney's obligation and duties under 37 CFR §§ 1.56 and 1.98(a)(3) and (c), either English language abstracts, partial translations, or full translations are included for patent documents which are not in English for the express purpose of providing a concise explanation of the references to the Patent and Trademark Office with the opportunity to evaluate the same. Applicant respectfully requests the Examiner's consideration of the above reference(s) and entry thereof into the record of this application.

Examiner Signature		Date Considered	

By submitting this Statement, Applicant is attempting to fully comply with the duty of candor and good faith mandated by 37 CFR §1.56. As such, this Statement is not intended to constitute an admission that any of the enclosed references, or other information referred to therein, constitutes "prior art" or is otherwise "material to patentability," as that phrase is defined in 37 CFR §1.56(a).

Respectfully submitted,

July 25, 2019
Date

/Kent E. Genin/
Kent E. Genin (Reg. No. 37,834)

Examiner Signature		Date Considered	

Electronic Patent Application Fee Transmittal					
Application Number:	16025701				
Filing Date:	02-Jul-2018				
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM				
First Named Inventor/Applicant Name:	Charles Lee Oakes				
Filer:	Kent E. Genin				
Attorney Docket Number:	US-0152.09 (14538-649)				
Filed as Large Entity					
Filing Fees for Utility under 35 USC 111(a)					
Description		**Fee Code**	**Quantity**	**Amount**	**Sub-Total in USD($)**
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	240	240
		Total in USD ($)		**240**

Electronic Acknowledgement Receipt	
EFS ID:	36694172
Application Number:	16025701
International Application Number:	
Confirmation Number:	8845
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM
First Named Inventor/Applicant Name:	Charles Lee Oakes
Customer Number:	16530
Filer:	Kent E. Genin
Filer Authorized By:	
Attorney Docket Number:	US-0152.09 (14538-649)
Receipt Date:	25-JUL-2019
Filing Date:	02-JUL-2018
Time Stamp:	20:26:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$240
RAM confirmation Number	072619INTEFSW00005687504184
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	14538-649_Transmittal_07-25-19.pdf	51963 21a11d92b58e3888fe0e0f5906496e75dcd65e7a	no	1
Warnings:					
Information:					
2	Foreign Reference	5-EP1855459A2.pdf	536114 8fd6690fb2af83653f693e90f4a49586165f4efa	no	9
Warnings:					
Information:					
3	Non Patent Literature	6-CBM2019-00005_PatentOwnersSur-ReplyBrief-c.pdf	129857 d7752f8897ea94c4b0139ab81f9e97f32feed72d	no	7
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Information:					
4	Non Patent Literature	7-CBM2019-0004_DefendantsClaimConstructionBrief-c.pdf	462846 5553ec7cf2103c471b2216c4001e40321b795208	no	36
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5	Non Patent Literature	8-CBM2019-00004_PatentOwner__Sur-Reply_Brief-c.pdf	134290 fb940f4b13364425c8cedbf4b3762ec249d0db4f	no	7
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Information:					
6	Non Patent Literature	9-CV-00245_USAAsReplyClaimConstructionBrief-c.pdf	272538 aac54c2a1163bc45348a38f8ed514870ef6c7d02	no	15
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Information:					

7	Non Patent Literature	10-PlaintiffCounterclaimDefendantAnswerCounterclaims-c.pdf	167117 1d62f6fa24dc5604926aa432ba32e5c98503b216	no	18
Warnings:					
Information:					
8	Non Patent Literature	11-USAAsReplyClaimConstructionBrief2-c.pdf	15448222 65eaf6e7466404d6bf4df2596117724f8ffdf682	no	227
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Information:					
9	Non Patent Literature	12-JointClaimConstructionChart2-c.pdf	219087 a169d9c6aa7d87513df79f8a0dc57e23524da977	no	25
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Information:					
10	Non Patent Literature	13-DecisionDenyingCMB-Review-2019-00002-c.pdf	83970 520bbad6cc0018d04a77ff1dcb29ea1c02c55c80	no	5
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11	Non Patent Literature	14-DecisionDenyingCBM-Review-2019-00003-c.pdf	236712 b453c36203f2469550c33b51007d822874bb6e11	no	28
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12	Non Patent Literature	15-DecisionDenyingCBM-Review-2019-00004-c.pdf	305980 398e306071c5490c23f81050759126fbad60dda6	no	33
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13	Non Patent Literature	16-DecisionDenyingCBM-Review-2019-00005-c.pdf	238789 48b05b43a1994364b10fcbbf69bc2150dbdf6695	no	27
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14	Non Patent Literature	18-DefendantsClaimConstBrief-c.pdf	4422337 29c62f8764d4018e39e07fca3b15d4a4156a29cb	no	111
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15	Non Patent Literature	19-PlaintiffsNoticeFileConstBrief-c.pdf	2874118 2261d8de1eb1457688121d0c250ac34402d88c29	no	106
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Information:					
16	Non Patent Literature	20-IPR2019-01081_IPR-Petition517-c.pdf	1085909 fc0c684d2928da0be2a9d6ea4419ba6813988ef9	no	78
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17	Non Patent Literature	21-IPR2019-01082-IPR_Petition571-c.pdf	802254 157298c5ea5f6be0a14d29c48d21c7cd2d43b0de	no	75
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Information:					
18	Non Patent Literature	21-IPR2019-01083_IPR_Petition779-c.pdf	943030 ef75462811be7f14e7705fd6f5c48726bee26f3c	no	74
Warnings:					
Information:					
19	Non Patent Literature	23-Plantiff_NOTICE_DECISIONS_DENYING_CBM-REVIEW-c.pdf	504049 4bdb8f312125fcdea1b9bfc6a38ae8da92d29fab	no	61
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Information:					
20	Non Patent Literature	24-CLAIM_CONSTRUCTION_MEMORANDUM_OPINION-c.pdf	437185 71ec6eb1f2d96dee58ec310d2fdb56fdb56f9049	no	48
Warnings:					
Information:					

21	Non Patent Literature	25-PARTIES_JOINT_CLAIM_CONSTRUCTION_CHART-c.pdf	302412 6cd3d8a88f51c99d5d7310dbdbe709968bc70dee	no	28
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22	Non Patent Literature	26-CLAIM_CONSTRUCTION_BRIEF-WellsFargo-c.pdf	573549 4a69bc149e76c2afb80913e55de78f4e0e4c925c	no	28
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Information:					
23	Non Patent Literature	27-USAA_REPLY_Claim_Construction_Brief_c.pdf	202071 21f834f344bcafee1677e82bdd2250ba0151ba7b	no	14
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24	Non Patent Literature	28-WellsFargoOppsotionClaimConstMemo-c.pdf	137796 7531dd315e92d5e57733a05d96bd96df630b0730	no	7
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26	Non Patent Literature	30-JointClaimConstChart-June-18-2019-c.pdf	225693 bce73d294c404fb62d166e42526e9f7b96c40c1c	no	27
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28	Non Patent Literature	32-IPR2019-00815-PatentOwnerPrelimResp-c.pdf	851095 64c58a9598cb7abc537195c0310263a68761ba31	no	66
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30	Non Patent Literature	34-CalmanDeclaration-June-27-2019.pdf	408902 7c8ffba6924f0e16fcb60eac2dc323145bea597e	no	25
Warnings:					
Information:					
31	Non Patent Literature	35-CBM2019-00027_PrasadDeclaration_July-8-2019-c.pdf	1157092 7a5bba3fa94f91edfaf4a76daf4ed272b2b602c8	no	32
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Information:					
32	Non Patent Literature	36-CBM2019-00027-PatentOwnerResponse_July-8-2019-c.pdf	1799283 eeca8d3aae97dd8f87abe0db13be5a116f3a475b	no	91
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33	Non Patent Literature	37-CBM2019-00028_USAA_PatentOwnerResponse_July-8-2019-c.pdf	1072632 c9986c3b8841566d6b8a7a42339d68c5c6f2940f	no	73
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34	Non Patent Literature	38-CBM2019-00028_DeclarationMatthewCalman_July-8-2019-c.pdf	602473 4999ee05ad54c0334be1f392cbf0c923db83b1ea	no	28
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36	Non Patent Literature	40-CBM2019-00028_PalmTereoManual-c.pdf	3853435 d419e76fe92720e700b6d5297bd19fca46a8b9c4	no	96
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37	Non Patent Literature	41A-CBM2019-00028-C720w-UserMasnual-pg1-200-c.pdf	14696380 80c6d65d9943808d1c85102a6809184e0d3eece6	no	200
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39	Non Patent Literature	42-CBM2019-00028_SmarterThanYourAaveragePhone-c.pdf	129210 85e1cfebb78e5982e7f12688d8ed2f7250bc0fa6	no	4
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40	Non Patent Literature	43-CBM2019-00028_64-MillionSmartPhonesShipped2006-c.pdf	102275 2cb968ee00a59bc6e46b34d63dcbdebeab8ccf7a	no	3
Warnings:					
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41	Non Patent Literature	44-CBM2019-00028_Nokia-9500_Manual-c.pdf	14901150 1cfa3a315944fa323e5aff19765b50e8bf43f9f3	no	112
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42	Non Patent Literature	45-CBM2019-00028_Robinson-ClientWeekHandsets3GSM-c.pdf	97473 3fb89abe55eaa69832bcd415992bdae965678d36	no	2
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45	Non Patent Literature	48-CBM2019-00028_WongHPUnveilsNewMobileComputers-c.pdf	95651 aa0a4ef286af226b50397738098feb32a7361257	no	2
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Information:					
46	Non Patent Literature	49-CBM2019-00028_CellPhoneShipmentsReachRecord208M-c.pdf	97456 d6e593fe96fb64c28880981c3200963cd9b891f7	no	1
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47	Non Patent Literature	50-CBM2019-00028_LawlerAppleShowsIntel-basedMacs-c.pdf	99912 77c5b013772e7239b37ca3d7c10ecab141571722	no	2
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49	Non Patent Literature	52-CBM2019-00028_Dell_xps_m1210_OnwersManual-c.pdf	3987133 65a24e0786870d796fb2c1d3974b82d9fd460a9f	no	192
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51	Non Patent Literature	54-CBM2019-00028Motorola_PalmCollaborateOnSmartPhone-c.pdf	86257 c17db4dcb0e6482aca7fcf7ebd24bbc6615b4a34	no	1
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52	Non Patent Literature	55-CBM2019-00028_Nasaw-VirusesPoseThreatSmarCellphones-c.pdf	118597 02608db159d3eae91539ff038c31d669d7b43254	no	2
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53	Non Patent Literature	56-CBM2019-00028_Seitz-MultifunctionTrendShakingUp-c.pdf	116762 33be1ca72b3b68068ca57c3a53d72f52a0445e38	no	3
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54	Non Patent Literature	57-CBM2019-00028_MicrosoftMobileDevicesBuysGuide-c.pdf	189966 2b2629b066e9aa31750dd57c252a48b5473c12ac	no	4
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55	Non Patent Literature	17-USAA-OpeningClaimConstBrief_1-75-c.pdf	383727 3fc776475f19bdf665f6deff3f083dd35b399b2d	no	32
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56	Information Disclosure Statement (IDS) Form (SB08)	14538-649-IDS.pdf	78036 324f6dde82b8f182733f0e981db634adf6c507a0	no	5
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57	Fee Worksheet (SB06)	fee-info.pdf	30463 a1833e830edc78140529b4c1f6a8c457d20b485d	no	2
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		Total Files Size (in bytes):	99197455		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: July 25, 2019 Name: Kent E. Genin. Reg. No. 37834 Signature: /Kent E. Genin/



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of: Charles Lee Oakes			
Appln. No.:	16/025,701	Examiner:	Ojo O. Oyebisi
Filed:	July 2, 2018	Art Unit:	3697
For:	DIGITAL CAMERA PROCESSING SYSTEM	Conf. No.:	8845
Attorney Docket No.: US-0152.09 | 14538-649			

TRANSMITTAL

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Attached is/are:

☒ Supplemental Information Disclosure Statement; and References F5-F69.

Fee calculation:

☐ No additional fee is required.

☐ Per 37 CFR §1.27, ☐ Applicant is small entity ☐ Applicant is micro entity.

☐ An extension fee in an amount of $_____ for a _____-month extension of time under 37 CFR § 1.136(a).

☒ A petition or processing fee in an amount of $240 under 37 CFR § 1.17(p).

☐ An additional filing fee has been calculated as shown below:

					Fee		Small Entity Fee		Micro Entity Fee	
	Claims Remaining After Amendment		Highest No. Previously Paid	Present Extra	Rate	Add'l Fee	Rate	Add'l Fee	Rate	Add'l Fee
Total		Minus			x $100 =	$	x $ 50 =	$	x $25 =	$
Independent		Minus			x $460 =	$	x $230 =	$	x $115 =	$
First Presentation of Multiple Dep. Claim					+ $820 =	$	+ $410 =	$	+ $205 =	$
					Total	$	Total	$	Total	$

Fee payment:

☒ Please charge Deposit Account No. 50-4184 in the amount of $240 for IDS.

☐ Payment by credit card in the amount of $_____ (Form PTO-2038 is attached).
WARNING: Information on this form may become public. **Credit card information should not be included on this form.**

☒ The Director is hereby authorized to charge payment of any additional filing fees required under 37 CFR § 1.16 and any patent application processing fees under 37 CFR § 1.17 (including any extension fee required to ensure that this paper is timely filed), or to credit any overpayment, to Deposit Account No. 50-4184.

Respectfully submitted,

July 25, 2019
Date

/Kent E. Genin/
Kent E. Genin (Reg. No. 37,834)

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NBC Tower – Suite 3600, 455 N. Cityfront Plaza Drive, Chicago, IL 60611-5599

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 855 459 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
14.11.2007 Bulletin 2007/46

(51) Int Cl.:
H04N 1/00 *(2006.01)* ***H04N 5/232*** *(2006.01)*

(21) Application number: **07107926.3**

(22) Date of filing: **10.05.2007**

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Designated Extension States:
AL BA HR MK YU

(30) Priority: **11.05.2006 KR 20060042440**

(71) Applicant: **Samsung Electronics Co., Ltd.**
Suwon-si
Gyeonggi-do (KR)

(72) Inventors:
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  Seoul (KR)
- **Shin, Eung-Seo**
  Seoul (KR)

(74) Representative: **Grünecker, Kinkeldey,**
Stockmair & Schwanhäusser
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Maximilianstrasse 58
80538 München (DE)

(54) Apparatus and method for photographing a business card in a portable terminal

(57) Provided are an apparatus and method for photographing a business card in a portable terminal. The method includes recognizing boundary lines of the business card from an image received from a camera when a recognition and photographing key for a business card is selected, and allowing the business card to be automatically photographed by using the recognized boundary lines.

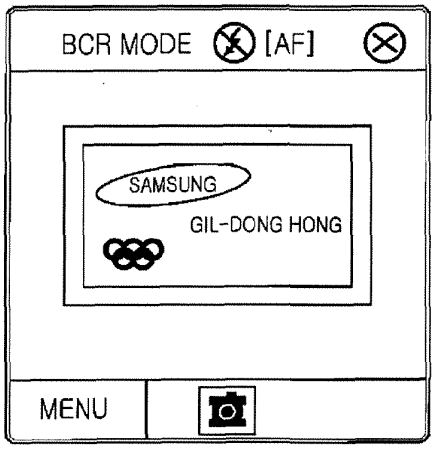


FIG.3A

EP 1 855 459 A2

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(Cont. next page)

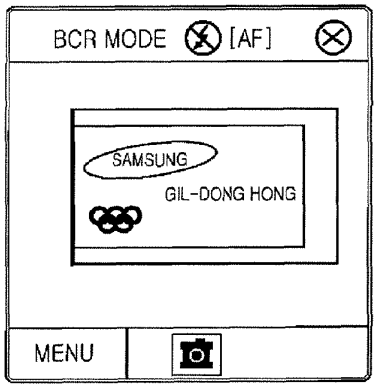


FIG.3B

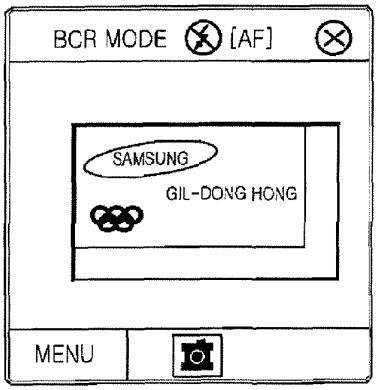


FIG.3C

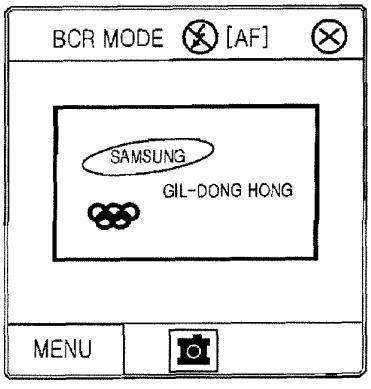


FIG.3D

Description

[0001] The present invention relates generally to a portable terminal, and in particular, to an apparatus and method for allowing a business card to be automatically photographed by detecting the boundary lines of the business card.

[0002] In general, most persons exchange their business cards presenting their simple profiles and contacts when they meet a guest for the first time. In this way, tens of business cards may be exchanged each day. In this case, a person must keep and manage the received business cards in a business card case or a purse by himself/herself, and search all the business cards in order to find the business card of a specific guest.

[0003] Accordingly, portable terminals which have recently been developed are capable of photographing a business card using a camera, and providing a business card recognition function in order to recognize the business card and manage information regarding the owner of the business card. In this case, similarly to a general photographing process, the business card is photographed based on a user's subjective judgment without limiting the size and location of the business card that is to be displayed on a display unit of the portable terminal. In other words, the user photographs the business card by adjusting the size and location of the business card that is to be displayed on the display unit of the portable terminal by manually moving the portable terminal, and selecting a key button or a menu for photographing the business card when the adjusted size and location of the business card are determined to be appropriate for photographing.

[0004] In the business card recognition function, the probability of satisfactorily recognizing the business card in order to obtain the information contained in the business card varies depending on photographing conditions, such as the size, brightness, and image quality of the photographed business card. Thus, as described above, when the user photographs the business card based on his/her subjective judgment, the business card may be photographed to be too large, small or dark, thereby lowering the probability of satisfactorily recognizing the business card. Also, as described above, when the user manually selects a key button or a menu in order to photograph the business card, shaking may occur due to the selecting of the key button or the menu, and thus, shaking noise may be present in an image of the photographed business card, thereby significantly lowering the probability of satisfactorily recognizing the business card.

[0005] The present invention has been designed to substantially solve at least the above problems and/or disadvantages and to provide at least the advantages below. Accordingly, the object of the present invention is to provide an apparatus and method for photographing a business card in a portable terminal.

[0006] This object is solved by the subject matter of the independent claims.

[0007] Preferred embodiments are defined in the dependent claims.

[0008] Another aspect of the present invention is to provide an apparatus and method for allowing a business card to be automatically photographed by recognizing the boundary lines of the business card in a portable terminal.

[0009] A further aspect of the present invention is to provide an apparatus and method for photographing a business card in a portable terminal by providing a user with an environment appropriate for photographing the business card.

[0010] According to one aspect of the present invention, there is provided a method of photographing a business card in a portable terminal, the method including recognizing boundary lines of the business card from an image received from a camera when a key for recognizing and photographing the business card is selected, and allowing the business card to be automatically photographed by using the recognized boundary lines.

[0011] According to another aspect of the present invention, there is provided an apparatus for photographing a business card in a portable terminal, the apparatus including an image processor that recognizes boundary lines of the business card from an image received from a camera when a menu for recognizing and photographing the business card is selected, and a controller that controls the business card to be automatically photographed using the recognized boundary lines.

[0012] The above and other aspects, features and advantages of the present invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings in which:

FIG. 1 is a block diagram of a portable terminal according to the present invention;

FIG. 2 is a flowchart illustrating a method of photographing a business card in a portable terminal, according to the present invention; and

FIG. 3 illustrates screen images illustrating photographing a business card in a portable terminal, according to the present invention.

[0013] Preferred embodiments of the present invention will be described herein below with reference to the accompanying drawings. In the following description, well-known functions or constructions are not described in detail when it is determined that they would obscure the invention in unnecessary detail.

[0014] The present invention provides a user with an environment appropriate for photographing a business card, and an apparatus and method for allowing a business card to be automatically photographed by recognizing the boundary lines of the business card.

[0015] FIG. 1 is a block diagram of a portable terminal according to the present invention. Referring to FIG. 1,

the portable terminal includes a controller 100, a camera unit 102, an image processor 104, and a display unit 106. The controller 100 performs processing or controlling in order to establish a voice/data communications. In particular, in order to photograph a business card, the controller 100 receives brightness data from the camera unit 102, checks a brightness environment under which the business card is to be photographed, and controls whether to perform automatic photographing on the business card. Also, the controller 100 displays on the display unit 106 reference boundary lines, for presenting a size and location, of a business card, which are appropriate for recognizing the business card; and determines whether the boundary lines of the business card received from the image processor 104 coincide with the reference boundary lines. If they coincide with one another, the controller 100 controls automatic photographing to be performed.

[0016] The camera unit 102 includes a camera sensor that converts an optical signal, which is sensed when an image is photographed, into an analog image signal; and a signal processor that converts the analog image signal into a digital data. The camera unit 102 outputs the digital data into which the analog image signal has been converted, to the image processor 104. Also, the camera unit 102 converts the brightness of an image received from the camera sensor into measurable brightness data, and transmits the brightness data to the controller 100. Here, the camera sensor may be embodied as a Charge Coupled Device (CCD) sensor, and the signal processor may be embodied as a Digital Signal Processor (DSP).

[0017] The image processor 104 processes the digital data received from the camera unit 102 in units of frames, and outputs the result of processing to be appropriate for the characteristics and size of the display unit 106. Also, the image processor 104 includes a video codec that codes an image signal in a predetermined format or decodes coded frame image data to the original frame image data. When a business card is photographed, the image processor recognizes the boundary lines of an image received from the camera unit 102, and detects a location where each of the boundary lines of the business card is recognized and provides the result of detecting to the controller 100 when the boundary lines are recognized. Here, the locations of the boundary lines of the business card may be detected by extracting the contour of the business card by using an algorithm, such as Sobel, Prewitt, Robert, or Laplacian algorithms.

[0018] The display unit 106 displays status information and characters (which consist of limited numbers) generated during the operation of the portable terminal. In particular the display unit 106 outputs an image received from the image processor 104, displays the reference boundary lines for the business card under control of the controller 100, and changes and displays the color, shape or thickness of each of the reference boundary lines.

[0019] FIG. 2 is a flowchart illustrating a method of photographing a business card in a portable terminal, according to an embodiment of the present invention.

[0020] Referring to FIGS. 1 and 2, first, the portable terminal determines whether a business card recognition and photographing mode has been selected, in step201. If it is determined that the business card recognition and photographing mode has been selected, the portable terminal outputs an image received from the camera sensor to the display unit 106, and displays on the display unit 106 reference boundary lines for appropriately fixing the size and location of the business card that is to be photographed in step 203. For example, as illustrated in FIG. 3A, boundary lines for presenting a size and location of a business card, which are appropriate for recognizing the business card, are displayed as a rectangular frame in the center of the display unit 106. Here, the reference boundary lines present a location and size, of a business card, for achieving the highest probability of satisfactorily recognizing the business card; and may be obtained through an experiment.

[0021] Next, the portable terminal checks brightness data from the received image in step 205, and determines whether the current brightness of the image is appropriate for photographing the business card, that is, for recognizing the business card, based on the brightness data in step 207. Here, whether the current brightness is appropriate for photographing the business card may be determined by comparing the brightness data with a reference brightness value for recognizing the business card.

[0022] If it is determined that the current brightness is not appropriate for photographing the business card, the portable terminal displays a message indicating this fact on the display unit 106 in step 227, and then returns to operation 205. If it is determined that the current brightness is appropriate for photographing the business card, the portable terminal recognizes the boundary lines of the business card by analyzing an image received from the camera sensor in step 209. Next, the portable terminal proceeds to operation 211, and determines whether at least one of the reference boundary lines (upper, lower, left, and right boundary lines) coincides with the boundary lines of the photographed business card. Here, a predetermined margin of error is allowed when determining whether the reference boundary lines coincide with the boundary lines of the business card. For example, if the predetermined margin of error is 3 mm, the left boundary line of the business card can be determined to coincide with the left reference boundary line when the top (or bottom) of the left boundary line of the business card is 2 mm away from the top (or bottom) of the left reference boundary line in a vertical or horizontal direction.

[0023] If none of the reference boundary lines coincides with the boundary lines of the business card, the portable terminal returns to step 209. If at least one of the reference boundary lines coincides with the boundary lines of the business card, the portable terminal proceeds to step 213, and replaces the color of the coinciding ref-

erence boundary line with a predetermined color. For example, as illustrated in FIG. 3B, when one of the boundary lines of the photographed business card coincides with the left reference boundary line, the color of the left reference boundary line may be replaced with a predetermined, different color. If the boundary lines of the photographed business card coincide with the left and upper reference boundary lines, the colors of the left and upper reference boundary lines may be replaced with a predetermined, different color (FIG. 3C).

[0024] Next, the portable terminal determines whether all the upper, lower, left and right reference boundary lines coincide with the boundary lines of the business card in step 215. If all the reference boundary lines do not coincide with all the boundary lines of the business card, the portable terminal returns to step 209. If all the reference boundary lines completely coincide with the boundary lines of the business card as illustrated in FIG. 3D, the portable terminal proceeds to step 217 and displays a message informing the user of the start of automatic photographing for the business card. Here, it is possible to inform the user of the start of automatic photographing by generating a predetermined alarm sound of automatic photographing or changing the shapes, thicknesses or colors of the reference boundary lines.

[0025] Next, the portable terminal performs auto focusing in order to photograph the business card in step 219. Next, the portable terminal determines whether the reference boundary lines still coincide with the boundary lines of the business card even after performing auto focusing in step 225. If at least one of the reference boundary lines does not coincide with the boundary lines of the business card, the portable terminal changes the current color of the at least one reference boundary line, which does not coincide with the boundary lines of the business card, to a default color, i.e., the original color of the reference boundary line being initially displayed on the display unit 106 in step 221, and then returns to step 209. However, if all the reference boundary lines still coincide with all the boundary lines of the business card, the portable terminal photographs the business card in step 223, and ends the processes of the present invention.

[0026] In the current embodiment of the present invention, if the reference boundary lines coincide with the boundary lines of the business card, the colors of the coinciding reference boundary lines are replaced with a default color. However, the thicknesses or shapes of the coinciding reference boundary lines may be changed.

[0027] Alternate embodiments of the present invention can also comprise computer readable codes on a computer readable medium. The computer readable medium includes any data storage device that can store data that can be read by a computer system. Examples of a computer readable medium include magnetic storage media (such as ROM, floppy disks, and hard disks, among others), optical recording media (such as CD-ROMs or DVDs), and storage mechanisms such as carrier waves (such as transmission through the Internet). The computer readable medium can also be distributed over network coupled computer systems so that the computer readable code is stored and executed in a distributed fashion. Also, functional programs, codes, and code segments for accomplishing the present invention can be construed by programmers of ordinary skill in the art to which the present invention pertains.

[0028] As described above, according to the present invention, it is possible to allow a business card to be automatically photographed in a portable terminal by recognizing the boundary lines of the business card, thereby preventing shaking when a user selects a key button or a menu in order to photograph the business card. Further, it is possible to improve the probability of satisfactorily recognizing the business card by achieving a business card image having a size, location, and brightness that are appropriate for recognizing the business card.

[0029] While the invention has been shown and described with reference to certain preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the scope of the invention as defined by the appended claims.

Claims

1. A method of photographing a business card in a portable terminal, the method comprising:

   recognizing boundary lines of the business card from an image received from a camera when a recognition and photographing key for a business card is selected; and
   allowing the business card to be automatically photographed by using the recognized boundary lines.

2. The method of claim 1, when the recognition and photographing key is selected, further comprising displaying on a display unit predetermined reference boundary lines and the image received from the camera.

3. The method of claim 1 or 2, wherein the allowing of the business card to be automatically photographed comprises:

   determining whether the recognized boundary lines coincide with predetermined reference boundary lines; and
   when the boundary lines of the business card coincide with the reference boundary lines, allowing the business card to be automatically photographed.

4. The method of claim 3, when at least one of the boundary lines of the business card coincides with

the reference boundary lines, further comprising changing the at least one coinciding reference boundary line according to a predetermined method.

5. The method of claim 4, wherein the predetermined method comprises changing at least one of the color, shape, and thickness of the coinciding reference boundary line.

6. The method of claim 3, when the business card boundary lines coincide with the reference boundary lines, further comprising informing a user that automatic photographing of the business card is to be performed.

7. The method of claim 6, wherein the informing of the automatic photographing comprises changing at least one of the shape, thickness, and color of the coinciding reference boundary lines.

8. The method of claim 6, wherein the informing of the automatic photographing comprises at least one of generating an alarm sound and displaying a message.

9. The method of claim 3, wherein the allowing of the business card to be automatically photographed comprises:

performing auto focusing when the boundary lines of the business card coincide with the reference boundary lines;
determining whether the boundary lines of the business card still coincide with the reference boundary lines after performing auto focusing; and
allowing the business card to be automatically photographed when the boundary lines of the business card still coincide with the reference boundary lines.

10. The method of one of claims 1 to 9, further comprising:

when the recognition and photographing key is selected, determining whether the brightness of the image received from the camera satisfies a predetermined condition; and
when it is determined that the brightness of the image does not satisfy the predetermined condition, displaying a message requesting brightness control.

11. An apparatus for photographing a business card in a portable terminal, the apparatus comprising:

an image processor for recognizing boundary lines of the business card from an image received from a camera when a menu for recognizing and photographing the business card is selected; and
a controller for controlling the business card to be automatically photographed using the recognized boundary lines.

12. The apparatus of claim 11, further comprising a display unit for displaying reference boundary lines and the image received from the camera when the menu for recognizing and photographing the business card is selected.

13. The apparatus of claim 12, wherein the controller controls the business card to be automatically photographed when the boundary lines of the business card coincide with the reference boundary lines.

14. The apparatus of claim 12, wherein the controller performs auto focusing when the boundary lines of the business card coincide with the reference boundary lines.

15. The apparatus of claim 12, wherein the display unit for displaying changes at least one coinciding reference boundary line according to a predetermined method when at least one of the boundary lines of the business card coincides with the reference boundary lines.

16. The apparatus of claim 15, wherein the predetermined method comprises changing at least one of the color, shape, and thickness of the coinciding reference boundary line.

17. The apparatus of one of claims 11 to 16, further comprising a camera unit for extracting brightness data from the image received from the camera, and providing the brightness data to the controller,
wherein the controller compares the brightness data with a reference brightness value, and displays a message requesting brightness control on the display unit when the brightness data is less than the reference brightness value.

18. A computer-readable recording medium having recorded thereon a program for photographing a business card in a portable terminal, comprising:

a first code segment, for recognizing boundary lines of the business card from an image received from a camera when a recognition and photographing key for a business card is selected; and
a second code segment, for allowing the business card to be automatically photographed by using the recognized boundary lines.

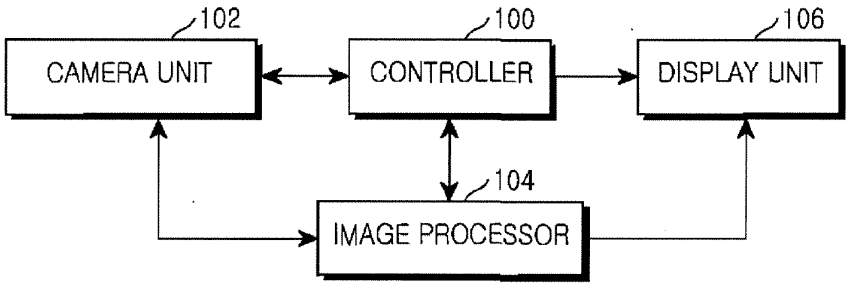

102
CAMERA UNIT
100
CONTROLLER
106
DISPLAY UNIT
104
IMAGE PROCESSOR

FIG. 1

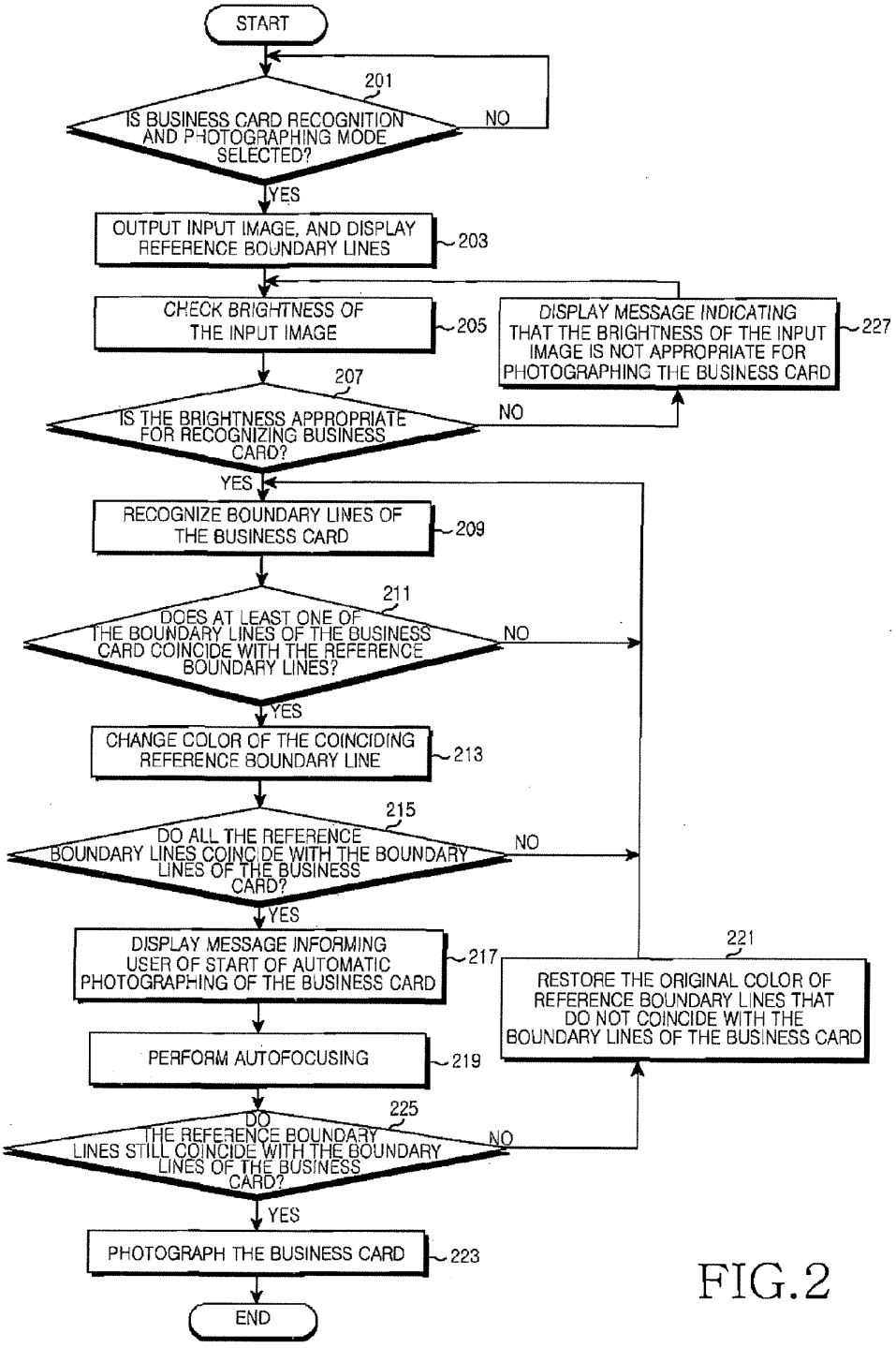

START
201
IS BUSINESS CARD RECOGNITION AND PHOTOGRAPHING MODE SELECTED?
NO
YES
OUTPUT INPUT IMAGE, AND DISPLAY REFERENCE BOUNDARY LINES
203
CHECK BRIGHTNESS OF THE INPUT IMAGE
205
DISPLAY MESSAGE INDICATING THAT THE BRIGHTNESS OF THE INPUT IMAGE IS NOT APPROPRIATE FOR PHOTOGRAPHING THE BUSINESS CARD
227
207
IS THE BRIGHTNESS APPROPRIATE FOR RECOGNIZING BUSINESS CARD?
NO
YES
RECOGNIZE BOUNDARY LINES OF THE BUSINESS CARD
209
211
DOES AT LEAST ONE OF THE BOUNDARY LINES OF THE BUSINESS CARD COINCIDE WITH THE REFERENCE BOUNDARY LINES?
NO
YES
CHANGE COLOR OF THE COINCIDING REFERENCE BOUNDARY LINE
213
215
DO ALL THE REFERENCE BOUNDARY LINES COINCIDE WITH THE BOUNDARY LINES OF THE BUSINESS CARD?
NO
YES
DISPLAY MESSAGE INFORMING USER OF START OF AUTOMATIC PHOTOGRAPHING OF THE BUSINESS CARD
217
221
RESTORE THE ORIGINAL COLOR OF REFERENCE BOUNDARY LINES THAT DO NOT COINCIDE WITH THE BOUNDARY LINES OF THE BUSINESS CARD
PERFORM AUTOFOCUSING
219
225
DO THE REFERENCE BOUNDARY LINES STILL COINCIDE WITH THE BOUNDARY LINES OF THE BUSINESS CARD?
NO
YES
PHOTOGRAPH THE BUSINESS CARD
223
END

FIG.2

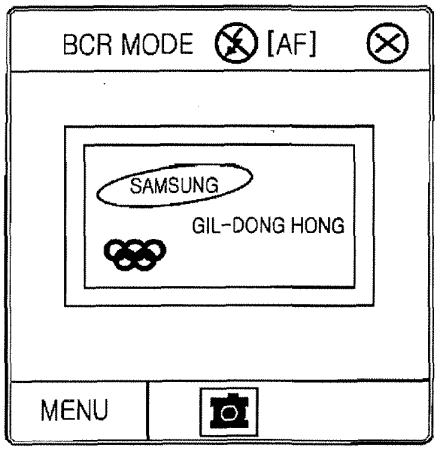


FIG.3A

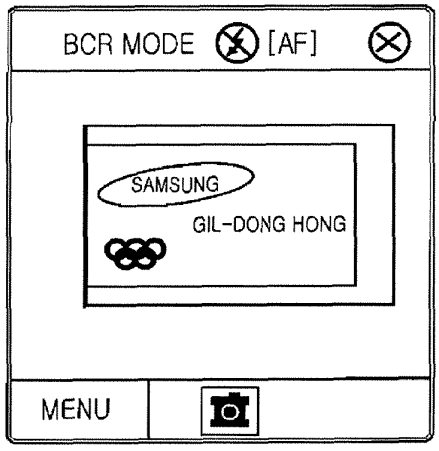


FIG.3B

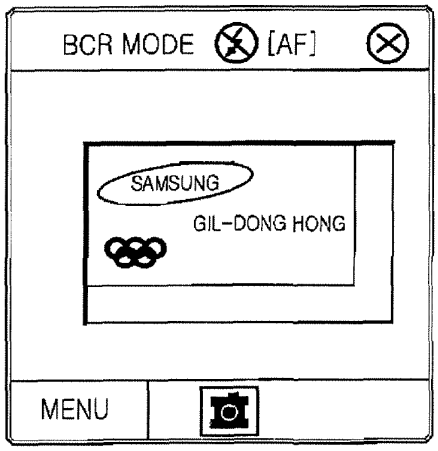


FIG.3C

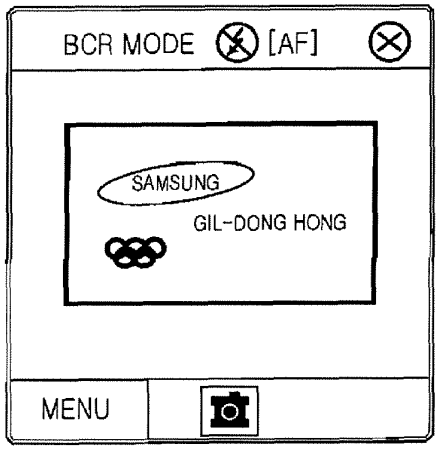


FIG.3D

Electronic Acknowledgement Receipt

EFS ID:	36694372
Application Number:	16025701
International Application Number:	
Confirmation Number:	8845
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM
First Named Inventor/Applicant Name:	Charles Lee Oakes
Customer Number:	16530
Filer:	Kent E. Genin
Filer Authorized By:	
Attorney Docket Number:	US-0152.09 (14538-649)
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Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	58-CBM2019-00028_MicrosoftSmartphone2003-c.pdf	204974 c1e2b56cf6e5d67985fe295ccbae54e2d2bae56f	no	2

Warnings:

Information:					
2	Non Patent Literature	59-PlaintiffsNoticeDecisionDenyingCBMReview-May-15-2019-c.pdf	351664 5283722e3cc091581b9992fc00ab08f1e8e2b9c7	no	36
Warnings:					
Information:					
3	Non Patent Literature	60-CBM2019-00029-DefendantClaimConstructionBriefMay2019-c.pdf	612951 66fdc0876588c13809c8569ca5022ce9bb9635bb	no	28
Warnings:					
Information:					
4	Non Patent Literature	61-CBM2019-00029-USAAPatentOwnerPrelimJuly-17-2019-c.pdf	1089507 f855b5c5ecbf349e871438e59abc8c264e443185	no	76
Warnings:					
Information:					
5	Non Patent Literature	62-CBM2019-00029_CalmanDeclaration-July-17-2019-c.pdf	627336 8630eb7f1284c5832cb50d3fdbca50c7279c9ed4	no	29
Warnings:					
Information:					
6	Non Patent Literature	63-CBM2019-00029-DefendantClaimConstructionBriefMay2019-c.pdf	607217 5a48fac0cd8fe9a27f01d8d9914ff346b319c885	no	28
Warnings:					
Information:					
7	Non Patent Literature	64-CBM2019-00029-Palenchar_PDAPhoneAddsWi-Fi-VoIP-c.pdf	106806 6d40be2be726b0f38de895b9a302f85c10a3ef50	no	2
Warnings:					
Information:					
8	Non Patent Literature	65-CBM2019-00029-HPUserGuide-2006-c.pdf	1269278 f57ec5f7f7a2648c20b7ea137c796e585e356399	no	204
Warnings:					
Information:					

9	Non Patent Literature	66-CBM2019-00029-Dynamism-com_TakeTomorrowsTech-c.pdf	115504 ba8b8965f434dc96a3a280ffaa38462765057cfe	no	2
Warnings:					
Information:					
10	Non Patent Literature	67-CBM2019-00029-PocketPC_UserGuide-c.pdf	7894951 59d6f5443e3d872b2378c410f4ef5e0b895bb143	no	225
Warnings:					
Information:					
11	Non Patent Literature	68-IP2019-00815-Retired-DTSU_X9_37-2003-2003-c.pdf	1211302 5ae2c729c19d93ed5e191a58bce3543dabe0a95e	no	157
Warnings:					
Information:					
12	Non Patent Literature	69-IPR2019-01081-DECLARATION-PETER_ALEXANDER.pdf	2298487 40b6bbdd6e88491572cd4230537324a26a8178d0	no	135
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		Total Files Size (in bytes):	16389977		

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: June 24, 2019 Name: Patricia Chiovari Signature: /Patricia Chiovari/

BRINKS GILSON & LIONE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of:	Charles Lee Oakes et al.		
Appln. No.:	16/025,701	Examiner:	Ojo O. Oyebisi et al.
Filed:	July 2, 2018	Art Unit:	3697
For:	DIGITAL CAMERA PROCESSING SYSTEM	Conf. No.:	8845
Attorney Docket No.:	US-0152.09 | 14538-649		

APPEAL BRIEF

MAIL STOP APPEAL BRIEF – PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

This is an Appeal of the Final Rejection of pending claims 25-54 in the final Office action mailed December 21, 2018 (hereinafter "final Office action") and the Notice of Panel Decision from Pre-Appeal Brief Review mailed April 23, 2019. The only outstanding rejection is for an alleged lack of patentable subject matter under 35 U.S.C. § 101.

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1. Real Party in Interest

The real party in interest is United Services Automobile Association (USAA), the assignee of record, hereinafter referred to as "Applicant."

2. Related Appeals, Interferences, or Judicial Proceedings

A. Related appeals, interferences, or judicial proceedings (in priority chain of current application):

1. Appeal No. 2018-004972 (Application No. 14/225,090);
2. CBM2019-00029; and
3. *USAA v. Wells Fargo*, Eastern District of Texas, case no. 2:18-cv-00366-JRG.

B. Related appeals, interferences, or judicial proceedings (related subject matter with current application):

1. CBM2019-00028;
2. CBM2019-00027;
3. CBM2019-00002 (terminated);
4. CBM2019-00003(terminated);
5. CBM2019-00004(terminated);
6. CBM2019-00005(terminated);
7. IPR2019-00815
8. IPR2019-01081
9. IPR2019-01082
10. IPR2019-01083
11. *USAA v. Wells Fargo*, Eastern District of Texas, case no. 2:18-cv-00245-JRG.

3. Summary of Claimed Subject Matter

The claims on appeal are claims 25-54 as presented in the Response filed November 20, 2018.

Claims 25, 49, 53, and 54 are the independent claims on appeal. Claims 26-48, and 50-52, are the dependent claims on appeal.

The specification is generally directed to, *inter alia*, systems and methods configured to receive a copy of a captured image of a check transmitted from a computing device configured to use a display screen of the user's computing device to assist the user in having a digital camera capture the image and either authenticate a user based on a biometric measurement obtained corresponding to the user or assist the user as to an orientation for capturing the image. The specification describes the application as follows:

> "In another embodiment, a novel system may include, for example, a computer readable medium bearing instructions that can configure a customer's general purpose computer to facilitate a check deposit. Acting under the direction of such instructions, the general purpose computer may instruct a customer, for example via a display coupled [to] such computer, in utilizing an image capture device to generate an electronic image of a front side of a check, such that said electronic image of a front side of a check meets at least one first criterion such as image size, image legibility, image orientation, image quality, and location and/or orientation of the check within the image. Instructions may be further provided for receiving the image of the front side of a check from said image capture device, and optionally instructing the customer to process the image, e.g., by approving the image and/or modifying it to meet at least one second criterion. A second criterion might also be, for example, one or more of image size, image legibility, image orientation, image quality, and location and/or orientation of the check within the image. Finally, the customer

computer, acting under direction of the instructions, may deliver an approved electronic image to financial institution electronics."

Specification, paragraph [0007].

Elements of the independent claims on appeal (claims 25, 49, 53, and 54) are described in the specification and drawings as follows, for example:

Independent claim 25:

- a computer system configured to receive a copy of a captured image of a check and process the check by mobile check deposit in a bank and update a balance of an account based on an amount depicted in the check; (paragraphs [0048]-[0049]; paragraphs [0054]-[0064]; Fig. 1 block 130; Fig. 5 block 500)
- wherein the copy of the captured image is transmitted from a user's computing device configured to execute instructions of a downloadable program stored on a machine-readable medium, the instructions configured to, when executed, cause a processor of the user's computing device to: (paragraphs [0020]-[0032]; Fig. 2 block 200; Fig. 3 block 300)
    - instruct the user to capture the image of the check; (paragraphs [0066] and [0072])
    - use a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check; (paragraphs [0007] and [0072])
    - assist the user as to an orientation for capturing the image of the check; (paragraph [0072])
    - present the image of the check to the user after the image is captured; (paragraph [0074]) and
    - use a wireless network to transmit the copy of the captured image over a wireless communication link from the user's computing device and to the computer system. (paragraphs [0069] and [0078]; Fig. 3 block 308)

Independent claim 49:

- a computer system configured to receive a copy of a captured image of a check and for processing the check by mobile check deposit in a bank and update a balance of an account based on an amount depicted in the check; (paragraphs [0048]-[0049]; paragraphs [0054]-[0064]; Fig. 1 block 130; Fig. 5 block 500)
- wherein the copy of the captured image is transmitted from a user's computing device configured to execute instructions of a downloadable program stored on a machine-readable medium, the instructions configured to, when executed, cause a processor of the user's computing device to: (paragraphs [0020]-[0032]; Fig. 2 block 200; Fig. 3 block 300)
    - authenticate a user based on a biometric measurement obtained corresponding to the user; (paragraph [0053]; Fig. 5 block 500)
    - instruct the user to capture an image of a check; (paragraphs [0066] and [0072])
    - use a display screen of the user's computing device to assist the user in capturing the image of the check; and (paragraph [0072])
    - use a wireless network to transmit a copy of the captured image from the user's computing device to the computer system. (paragraphs [0069] and [0078]; Fig. 3 block 308)

Independent claim 53:

- receiving, by a computer system, a copy of a captured image of a check; (paragraphs [0048]-[0049]; paragraphs [0054]-[0064]; Fig. 1 block 130; Fig. 5 block 500) and
- processing, by the computer system, the check by mobile check deposit in a bank and updating a balance of an account based on an amount depicted in the check; (paragraphs [0048]-[0049]; paragraphs [0054]-[0064]; Fig. 1 block 130; Fig. 5 block 500)
- wherein the copy of the captured image is transmitted from a user's computing device configured to implement the following method: (paragraphs [0020]-[0032]; Fig. 2 block 200; Fig. 3 block 300)
    - instructing, through a user's computing device, the user to capture an image of a check; (paragraphs [0066] and [0072])
    - using a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check; (paragraph [0072])
    - assisting the user as to an orientation for capturing the image of the check; (paragraph [0072])
    - presenting the image of the check to the user after the image is captured; (paragraph [0074]) and
    - using a wireless network to transmit a copy of the captured image over a wireless communication link from the user's computing

device and to the computer system. (paragraphs [0069] and [0078]; Fig. 3 block 308)

Independent claim 54:

- receiving, by a computer system, a copy of a captured image of a check; (paragraphs [0048]-[0049]; paragraphs [0054]-[0064]; Fig. 1 block 130; Fig. 5 block 500)
- processing, by the computer system, the check for mobile check deposit in a bank and updating a balance of an account based on an amount depicted in the check; (paragraphs [0048]-[0049]; paragraphs [0054]-[0064]; Fig. 1 block 130; Fig. 5 block 500)
- wherein the copy of the captured image is transmitted from a user's computing device configured to implement the following method: (paragraphs [0020]-[0032]; Fig. 2 block 200; Fig. 3 block 300)
    - authenticating a user based on a biometric measurement obtained corresponding to the user; (paragraph [0053]; Fig. 5 block 500)
    - instructing the user to capture an image of a check; (paragraphs [0066] and [0072])
    - using a display screen of the user's computing device to assist the user in capturing the image of the check; (paragraph [0072]) and
    - using a wireless network to transmit a copy of the captured image from the user's computing device to the computer system. (paragraphs [0069] and [0078]; Fig. 3 block 308)

4. Argument

4.1 Rejection under 35 U.S.C. § 101

After the final Office action was mailed, the PTO issued *2019 Revised Patent Subject Matter Eligibility Guidance*[1] on January 7, 2019 (hereinafter "2019 Revised Guidance"). The final Office action fails to comply with the *2019 Revised Guidance*, the PTO's *Berkheimer Memo*[2], and the law of 35 U.S.C. 101 for at least the following reasons.

Mayo/Alice First Step

Mayo/Alice First Step (revised Step 2A, Prong One): Claims Do Not Recite Matter that Falls Within the Enumerated Groupings of Subject Matter

The claims are eligible at Prong One of revised Step 2A because the claims do not recite matter that falls within the enumerated groupings of abstract ideas in Section I of the *2019 Revised Guidance*.

The Office, at pages 3 and 4 of the final Office action, appears to assert that the claims are directed to a fundamental economic practice of processing a check image. Applicant disagrees. Even if the claims include processing a check image, they are not *directed* to such a broad concept and do not preempt all check image processing.

[1] "2019 Revised Patent Subject Matter Eligibility Guidance", 84 Fed. Reg. 4 (Jan. 7, 2019).
[2] Memorandum - Revising 101 Eligibility Procedure in view of Berkheimer v. HP, Inc. (issued April 19, 2018).

The independent claims are directed to, *inter alia*, systems and methods configured to receive a copy of a captured image of a check transmitted from a computing device configured to use a display screen of the user's computing device to assist the user in having a digital camera capture the image and either authenticate a user based on a biometric measurement obtained corresponding to the user or assist the user as to an orientation for capturing the image. Clearly, this is not a fundamental economic practice as contemplated by Section I of the *2019 Revised Guidance*.

The PTAB has specifically held, and the court has agreed, that "processing paper checks" is not an abstract idea at all. *U.S. Bancorp v. Solutran, Inc.*, Case CBM2014-00076, slip op. at 13 (P.T.A.B. August 7, 2014) (Paper 16) ("[T]he basic, core concept of independent claim 1 is a method of processing paper checks, which is more akin to a physical process than an abstract idea. Indeed, there is nothing immediately apparent about this basic, core concept that would indicate that it is directed to an abstract idea at all."), *quoted with approval, Solutran, Inc. v. US Bancorp & Elavon, Inc.*, 291 F. Supp. 3d 877, 887 (D. Minn. Nov. 27, 2017).

Indeed, the PTAB recently confirmed Applicant's check capture/deposit invention in another application constituted a technical solution to a technical problem. *Wells Fargo Bank v. USAA*, CBM2019-00004, Paper No. 22 at 25 ("using an image of a check to deposit the check presents technical difficulties"); Id. at 29 ("the '571 patent's solution to the addressed problem is rooted in technology, and thus, is a 'technical solution.'").

Similarly to Applicant's patent in the *Wells Fargo Bank v. USAA* CBM decision, the

present invention provides technical solutions to technical problems associated with electronic check capture and deposit. For example, paragraph [0056] of the instant application notes that "[i]n order to automate check deposits, it is desirable to configure server 500 to recognize that ... the received check image can be used to further process the transaction." The specification mentions numerous components or subsystems that provide technical solutions to the technical problems such as image quality determination 502, image usability determination 503, OCR 504, and error processing 506, just to name a few. See, e.g., Fig. 5 and corresponding description at paragraphs [0051]-[0069]. The claims specifically recite systems and methods configured to receive a copy of a captured image of a check transmitted from a computing device configured to use a display screen of the user's computing device to assist the user in having a digital camera capture the image and either authenticate a user based on a biometric measurement obtained corresponding to the user or assist the user as to an orientation for capturing the image.

For at least the above reasons, the present invention likewise provides technical solutions to a technical problem—not an abstract idea at all.

Mayo/Alice First Step (revised Step 2A, Prong Two): Claims Recite Additional Elements that Integrate the Asserted Abstract Idea into a Practical Application thereof

Assuming, *arguendo*, that the asserted abstract idea of "processing a check image" could somehow be seen to fall within the *2019 Revised Guidance*'s enumerated groupings of abstract

ideas, the claims recite additional elements that integrate any such idea into a practical application thereof.

The *2019 Revised Guidance* Explains: "A claim that integrates a judicial exception into a practical application will apply, rely on, or use the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." *2019 Revised Guidance* at 54. Even if a claim recites a judicial exception, it is patent eligible if the claim provides a practical application of the judicial exception.

The final Office action apparently maintains the identification of "additional elements" from the non-final Office action of August 21, 2018. For example, the non-final Office action identified some limitations of Claim 53 as setting forth the asserted abstract idea, and therefore the apparently identified all other limitations as "additional elements." *Non-final OA* at 3. Thus, Claim 53 includes at least the following "additional elements":

- *"wherein the copy of the captured image is transmitted from a user's computing device configured to implement...":*
  - *"instructing, through a user's computing device, the user to capture an image of a check",*
  - *"using a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check", and*

- *"assisting the user as to an orientation for capturing the image of the check"; and*
- *"updating a balance of an account based on an amount depicted in the check".*

The other independent claims, not specifically addressed in the Office action, also include "additional elements" not included in the limitations identified by the Office as setting forth the identified abstract idea with respect to Claim 53.

Such "additional elements" of Claim 25 include at least:

- "a user's computing device configured to execute instructions of a downloadable program ..., the instructions configured to, when executed, cause a processor of the user's computing device to":
  - "instruct the user to capture the image of the check",
  - "use a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check", and
  - "assist the user as to an orientation for capturing the image of the check"; and
- "a computer system configured to ... update a balance of an account based on an amount depicted in the check".

Such "additional elements" of Claim 49 include at least:

- "system configured to authenticate the user using data representing a biometric measurement";
- "a user's computing device configured to execute instructions of a downloadable program …, the instructions configured to, when executed, cause a processor of the user's computing device to":
    - "authenticate a user based on the biometric measurement obtained corresponding to the user",
    - "instruct the user to capture an image of a check", and
    - "use a display screen of the user's computing device to assist the user in capturing the image of the check"; and
- "a computer system configured to … update a balance of an account based on an amount depicted in the check".

Such "additional elements" of Claim 54 include at least:

- "a user's computing device configured to implement":
    - "authenticating a user based on a biometric measurement obtained corresponding to the user",
    - "instructing the user to capture an image of a check", and
    - "using a display screen of the user's computing device to assist the user in capturing the image of the check"; and
- "updating a balance of an account based on an amount depicted in the check".

Those "additional elements" integrate the asserted abstract idea of "processing [a] check image" into a practical application when combined as recited in the claims at least because the claimed arrangements of the "additional elements" "reflect[] an improvement in the functioning of a computer, or an improvement to other technology or technical field." *2019 Revised Guidance* § III(A)(2).

The claimed arrangement recited in Claim 53, wherein the copy of the captured image is transmitted from a user's computing device configured to use a display screen of a user's computing device to assist the user in capturing an image of a check for mobile check deposit and assist the user as to an orientation for capturing the image of the check, provides a technical approach to a technical concern. Independent claim 25 recites features and arrangements comparable to those of claim 53. Independent claims 49 and 54 recite other features and arrangements, such as "authenticate a user based on the biometric measurement obtained corresponding to the user" and "using a display screen of the user's computing device to assist the user in capturing the image of the check." Each claimed arrangement of claims 25, 49, 53, and 54 improves technology related to digital cameras with a display screen. Each also improves the technology of imaging paper checks for deposit.

Indeed, as discussed above, the PTAB recently confirmed that applicant's check capture/deposit invention in another application constituted a technical solution to a technical problem, and each claimed arrangement in the present application provides technological improvements comparable to those previously recognized by the PTAB. Wells Fargo Bank v.

USAA, CBM2019-00004 (Paper No. 22 at 25) ("using an image of a check to deposit the check presents technical difficulties"); Id. at 29 ("the '571 patent's solution to the addressed problem is rooted in technology, and thus, is a 'technical solution.'").

Various patent publications confirm that the invention of Claims 25, 49, 53, and 54 involves a technical improvement to a technical problem. For example, U.S. Patent No. 7,419,093 (Blackson) identified orientation ("skew") as a technical issue in imaging checks: "As represented in FIG. 27 document 158 may be **skewed relative to the transport section** through which it passes." *Id.* at col. 28, ll. 50-52 (emphasis added). Blackson's "solution" included "deskew the data corresponding to the image." *Blackson* at col. 29, ll. 27-39.

Thus, at least the above-identified "additional elements" provide a technical approach to a technical problem and result in a practical application.

Mayo/Alice Second Step (Step 2B)

Assuming, *arguendo*, that the claims could somehow be seen to be directed to an abstract idea, the Office action fails to comply with the PTO's *Berkheimer Memo*[3] with respect to the second step of the Mayo/Alice analysis (Step 2B). The claims recite elements, such as the "additional elements" discussed above, that amount to significantly more.

[3] Memorandum - Revising 101 Eligibility Procedure in view of Berkheimer v. HP, Inc. (issued April 19, 2018).

Mayo/Alice Second Step: Additional Elements Not Well-Understood, Routine, and Conventional as of the *Priority Date: October 31, 2006*

In applicant's prior submissions, applicant provided evidence concerning what was not well-understood, routine, and conventional by the time of the present application's priority date in 2006. This evidence included the attached article published by the New York Times on August 9, 2009, entitled "*Bank Will Allow Customers to Deposit Checks by iPhone*." The article describes how Applicant (USAA), in 2009, was innovating in the mobile banking industry by making available a downloadable app for a mobile device to permit mobile deposit of paper checks. For example, it opined "[t]he deposit feature, which USAA previewed in an online video, puts the bank in the vanguard of the effort to turn cellphones into portable branches."

In other words, even entering the second half of 2009, using a display screen of a user's computing device to assist the user in capturing an image of a check for mobile check deposit with the other "additional elements" was not well-understood, routine, and conventional, much less in 2006, the priority date of the present invention.

As such, the result of the "additional elements" is that the claim as a whole amounts to significantly more than the asserted abstract idea. Withdrawal of the rejection under § 101 is respectfully requested for this additional reason.

Mayo/Alice Second Step: Under *Bascom*, an Inventive Concept is found in the Non-Conventional and Non-Generic Arrangement of "additional elements"

Even assuming, *arguendo*, that the "additional elements" do not amount to significantly more than the Office action's asserted abstract idea when considered individually, those elements still amount to significantly more when combined because the combination provides an inventive concept in the non-conventional and non-generic arrangement of those elements. See *BASCOM Global Internet Services v. AT&T Mobility LLC*, 827 F .3d 1341 (Fed. Cir. 2016).

In *Bascom*, the Court found an inventive concept in the distribution of functionality within a network. *See BASCOM* at 1350 (finding sufficient inventive concept in "the installation of a filtering tool at a specific location, remote from the end users, with customizable filtering features specific to each end user.").

Claim 25

The "additional elements" of Claim 25 provide an inventive concept when combined as claimed at least because the arrangement of "a computer system configured to receive a copy of a captured image of a check and for processing the check by mobile check deposit" and a "downloadable program" to cause a user's computing device to "use a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check" and "assist the user as to an orientation for capturing the image of the check" was not a conventional, generic arrangement as of 2006, the priority date of the present application.

Further, the recited downloadable program, with its role in causing a user's computing device to use a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check and to assist the user as to an orientation for capturing the image of the check, provides a technical approach to a technical concern. It improves technology related to digital cameras with a downloadable program. It also improves the technology of imaging paper checks for deposit.

Claim 49

The "additional elements" of Claim 49 provide an inventive concept when combined as claimed at least because the arrangement of "a computer system configured to receive a copy of a captured image of a check and for processing the check by mobile check deposit" and a "downloadable program" to cause a processor of a user's computing device to "authenticate a user based on the biometric measurement obtained corresponding to the user" and to "use a display screen of the user's computing device to assist the user in capturing the image of the check" was not a conventional, generic arrangement as of 2006, the priority date of the present application.

Further, the recited downloadable program, with its role in causing a user's computing device to "authenticate a user based on the biometric measurement obtained corresponding to the user" and to "use a display screen of the user's computing device to assist the user in capturing the image of the check", provides a technical approach to a technical concern. It improves technology related to biometric authentication and imaging paper checks for deposit.

Claim 53

The "additional elements" of Claim 53 provide an inventive concept when combined as claimed at least because the arrangement of a computer system receiving a copy of a captured image of a check and processing the check by mobile check deposit, from a user's computing device configured for "using a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check" and "assisting the user as to an orientation for capturing the image of the check" was not a conventional, generic arrangement as of 2006, the newly established priority date of the present application.

Further, the recited use of a user's computing device, configured for using a display screen of the user's computing device to assist the user in having a digital camera capture the image of

the check and assisting the user as to an orientation for capturing the image of the check, provides a technical approach to a technical concern. It improves technology related to digital cameras and imaging paper checks for deposit.

Claim 54

The "additional elements" of Claim 54 provide an inventive concept when combined as claimed at least because the use of a user's computing device configured to implement "authenticating a user based on a biometric measurement obtained corresponding to the user" and "using a display screen of the user's computing device to assist the user in capturing the image of the check" was not a conventional, generic use as of 2006, the newly established priority date of the present application.

Further, the recited use of a user's computing device, configured for authenticating a user based on a biometric measurement obtained corresponding to the user and using a display screen of the user's computing device to assist the user in capturing the image of the check provides a technical approach to a technical concern. It improves technology related to biometric authentication and imaging paper checks for deposit.

Accordingly, even assuming, *arguendo*, that the "additional elements" do not amount to significantly more than the Office's asserted abstract idea when considered individually, those elements still amount to significantly more when combined because the combinations provide inventive concepts in the arrangement of those elements and improve various technologies.

Therefore, withdrawal of the rejection under § 101 is respectfully requested for this additional reason.

6. Conclusion

For at least the foregoing reasons, Applicant respectfully requests that the Board overturn the rejection of claims 25-54.

Respectfully submitted,

Date: June 24, 2019

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7. Claims Appendix

1. – 24. (Cancelled)

25. A system comprising:

a computer system configured to receive a copy of a captured image of a check, process the check by mobile check deposit in a bank, and update a balance of an account based on an amount depicted in the check;

wherein the copy of the captured image is transmitted from a user's computing device configured to execute instructions of a downloadable program stored on a machine-readable medium, the instructions configured to, when executed, cause a processor of the user's computing device to:

instruct the user to capture the image of the check;

use a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check;

assist the user as to an orientation for capturing the image of the check;

present the image of the check to the user after the image is captured; and

use a wireless network to transmit the copy of the captured image over a wireless communication link from the user's computing device and to the computer system.

26. The system of claim 25, wherein the system is configured to confirm that the mobile check deposit can go forward after optical character recognition is performed on the check depicted in the captured image.

27. The system of claim 26, wherein the system is configured to initiate the mobile deposit after confirming the mobile check deposit.

28. The system of claim 26, wherein the optical character recognition includes determining an amount of the check and comparing the determined amount to an amount indicated by a user input.

29. The system of claim 26, wherein the optical character recognition includes reading a MICR line included in the image of the check.

30. The system of claim 26, wherein the system is configured to confirm that the mobile check deposit can go forward after duplicate detection is performed on the check.

31. The system of claim 25, wherein displayed instructions include assistance for the user to have the digital camera capture an image of a front side of the check and capture an image of a back side of the check.

32. The system of claim 31, wherein the system is configured to update the account after it is determined that some mark or signature is present in an endorsement location in the image of the back side of the check.

33. The system of claim 25, wherein the digital camera is separate from the user's computing device.

34. The system of claim 25, wherein the user's computing device is a PDA.

35. The system of claim 25, wherein the system is configured to convert the image of the check into a bi-tonal TIFF.

36. The system of claim 25, wherein the wireless network is a cellular network.

37. The system of claim 25, wherein the user's computing device further includes camera software that controls the digital camera, the camera software being separate from the downloadable program, the downloadable program at least partially controlling the camera software.

38. The system of claim 25, wherein the downloadable program manages capturing the image of the check.

39. The system of claim 25, wherein the downloadable program instructs the user to place the check in front of the digital camera before capturing the image of the check.

40. The system of claim 25, wherein the downloadable program further causes the user's computing device to:

receive input from the user indicating an amount of the check.

41. The system of claim 40, wherein the instructions are displayed after receiving the input from the user.

42. The system of claim 25, wherein the copy of the captured image is transmitted after the user is authenticated.

43. The system of claim 25, wherein the computer system is configured to generate a log file for the mobile check deposit.

44. The system of claim 43, wherein the log file includes an image of the check processed for mobile check deposit.

45. The system of claim 44, wherein the image is a bi-tonal TIFF.

46. The system of claim 25, wherein the copy of the captured image is a modified version of the image of the check.

47. The system of claim 46, wherein the copy of the captured image is in a different format than the image of the check.

48. The system of claim 25, further comprising a third-party vendor computer.

49. A system for allowing a user to deposit a check using the user's computing device, the system configured to authenticate the user using data representing a biometric measurement, the system including:

a computer system configured to receive a copy of a captured image of a check, process the check by mobile check deposit in a bank, and update a balance of an account based on an amount depicted in the check;

wherein the copy of the captured image is transmitted from a user's computing device configured to execute instructions of a downloadable program stored on a machine-readable medium, the instructions configured to, when executed, cause a processor of the user's computing device to:

authenticate a user based on the biometric measurement obtained corresponding to the user;

instruct the user to capture an image of a check;

use a display screen of the user's computing device to assist the user in capturing the image of the check; and

use a wireless network to transmit a copy of the captured image from the user's computing device to the computer system.

50. The system of claim 49, wherein a digital camera configured to capture the image of the check is separate from the user's computing device.

51. The system of claim 49, wherein the user's computing device is a PDA.

52. The system of claim 49, wherein the biometric measurement is representative of a fingerprint.

53. A method comprising:

receiving, by a computer system, a copy of a captured image of a check; and

processing, by the computer system, the check by mobile check deposit in a bank and updating a balance of an account based on an amount depicted in the check;

wherein the copy of the captured image is transmitted from a user's computing device configured to implement the following method:

instructing, through a user's computing device, the user to capture an image of a check;

using a display screen of the user's computing device to assist the user in having a digital camera capture the image of the check;

assisting the user as to an orientation for capturing the image of the check;

presenting the image of the check to the user after the image is captured; and

using a wireless network to transmit a copy of the captured image over a wireless communication link from the user's computing device and to the computer system.

54. A method for allowing a user to deposit a check using the user's computing device, the method comprising:

receiving, by a computer system, a copy of a captured image of a check; and

processing, by the computer system, the check for mobile check deposit in a bank and updating a balance of an account based on an amount depicted in the check;

wherein the copy of the captured image is transmitted from a user's computing device configured to implement the following method:

authenticating a user based on a biometric measurement obtained corresponding to the user;

instructing the user to capture an image of a check;

using a display screen of the user's computing device to assist the user in capturing the image of the check; and

using a wireless network to transmit a copy of the captured image from the user's computing device to the computer system.

Electronic Patent Application Fee Transmittal					
Application Number:	16025701				
Filing Date:	02-Jul-2018				
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM				
First Named Inventor/Applicant Name:	Charles Lee Oakes				
Filer:	Kent E. Genin/Tricia Chiovari				
Attorney Docket Number:	US-0152.09 (14538-649)				
Filed as Large Entity					
Filing Fees for **Utility under 35 USC 111(a)**					
Description		**Fee Code**	**Quantity**	**Amount**	**Sub-Total in USD($)**
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	1251	1	200	200
Miscellaneous:				
		Total in USD ($)		**200**

Electronic Acknowledgement Receipt	
EFS ID:	36393953
Application Number:	16025701
International Application Number:	
Confirmation Number:	8845
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM
First Named Inventor/Applicant Name:	Charles Lee Oakes
Customer Number:	16530
Filer:	Kent E. Genin/Jeffrey Skinner
Filer Authorized By:	Kent E. Genin
Attorney Docket Number:	US-0152.09 (14538-649)
Receipt Date:	24-JUN-2019
Filing Date:	02-JUL-2018
Time Stamp:	17:53:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$200
RAM confirmation Number	062519INTEFSW00006021504184
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The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		14538_649_AppealBrief_062419.pdf	2572980 0640c8f2bb1f216ff568ef5be12243a95b79ef4e	yes	31

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Miscellaneous Incoming Letter	1	1
	Extension of Time	2	2
	Appeal Brief Filed	3	31

Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31078 df47d4f7b5842011402ff6bb06a01972cb251b2a	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2604058		

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: June 24, 2019 Name: Patricia Chiovari Signature: /Patricia Chiovari/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of: Charles Lee Oakes et al.			
Appln. No.:	16/025,701	Examiner:	Ojo O. Oyebisi et al.
Filed:	July 2, 2018	Art Unit:	3697
For:	DIGITAL CAMERA PROCESSING SYSTEM	Conf. No.:	8845

Attorney Docket No.: US-0152.09 | 14538-649

TRANSMITTAL

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Attached is/are:

☒ Petition and Fee for Extension of Time (1 month); and Appeal Brief.

Fee calculation:

☐ No additional fee is required.

☐ Per 37 CFR §1.27, ☐ Applicant is small entity ☐ Applicant is micro entity.

☒ An extension fee in an amount of $200 for a 1-month extension of time under 37 CFR § 1.136(a).

☐ A petition or processing fee in an amount of $_____ under 37 CFR § 1.1_____(_____).

☐ An additional filing fee has been calculated as shown below:

					Fee		Small Entity Fee		Micro Entity Fee	
	Claims Remaining After Amendment		Highest No. Previously Paid	Present Extra	Rate	Add'l Fee	Rate	Add'l Fee	Rate	Add'l Fee
Total		Minus			x $100 =	$	x $ 50 =	$	x $25 =	$
Independent		Minus			x $460 =	$	x $230 =	$	x $115 =	$
First Presentation of Multiple Dep. Claim					+ $820 =	$	+ $410 =	$	+ $205 =	$
					Total	$	Total	$	Total	$

Fee payment:

☒ Please charge Deposit Account No. 50-4184 in the amount of $200 for Extension of Time (1 month).

☐ Payment by credit card in the amount of $_____ (Form PTO-2038 is attached).
WARNING: Information on this form may become public. **Credit card information should not be included on this form.**

☒ The Director is hereby authorized to charge payment of any additional filing fees required under 37 CFR § 1.16 and any patent application processing fees under 37 CFR § 1.17 (including any extension fee required to ensure that this paper is timely filed), or to credit any overpayment, to Deposit Account No. 50-4184.

Respectfully submitted,

June 24, 2019
Date

Kent E. Genin (Reg. No. 37,834)

BRINKS GILSON & LIONE
NBC Tower – Suite 3600, 455 N. Cityfront Plaza Drive, Chicago, IL 60611-5599

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: June 24, 2019 Name: Patricia Chiovari Signature: /Patricia Chiovari/

BRINKS GILSON & LIONE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of:	Charles Lee Oakes et al.		
Appln. No.:	16/025,701	Examiner:	Ojo O. Oyebisi et al.
Filed:	July 2, 2018	Art Unit:	3697
For:	DIGITAL CAMERA PROCESSING SYSTEM	Conf. No.:	8845
Attorney Docket No.:	US-0152.09 | 14538-649		

PETITION AND FEE FOR EXTENSION OF TIME (37 CFR § 1.136(a))

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Dear Sir/Madam:

This is a petition for an extension of the time to respond to the Notice of Panel Decision from Pre-Appeal Brief Review mailed April 23, 2019.

Per 37 CFR §1.27, ☐ Applicant is small entity ☐ Applicant is micro entity.

	Extension Months	Fee	Small Entity Fee	Micro Entity Fee
☒	One Month	$ 200	$ 100	$ 50
☐	Two Months	$ 600	$ 300	$150
☐	Three Months	$1,400	$ 700	$350
☐	Four Months	$2,200	$1,100	$550
☐	Five Months	$3,000	$1,500	$750

Payment Method:

☒ The Commissioner is hereby authorized to charge $200 to cover the fees listed above to Deposit Account No. 50-4184.

☐ Payment by credit card in the amount of $_____ to cover the fees listed above. Form PTO-2038 is enclosed for this purpose.

☒ The Commissioner is hereby authorized to charge any deficiencies in fees or credit overpayment to Deposit Account No. 50-4184.

Respectfully submitted,

June 24, 2019
Date

Kent E. Genin Reg. No. 37,834
Attorney for Applicant(s)

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CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: April 30, 2019 Name: Peter S. Lee (Reg. No. 64,728) Signature: /Peter S. Lee/

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/025,701
	Filing Date	July 2, 2018
	First Named Inventor	Charles Lee Oakes
	Art Unit	3697
	Confirmation Number	8845
	Examiner Name	Ojo O. Oyebisi
	Attorney Docket No.	US-0152.09 | 14538-649

In accordance with the duty of disclosure, Applicant(s) hereby cites the following references:

US PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	NAME
	E1	US 4,027,142	05/3/1977	Paup et al.
	E2	US 4,417,136	11/22/1983	Rushby et al.
	E3	US 5,187,750	02/16/1993	Behera
	E4	US 5,237,158	08/17/1993	Kern et al.
	E5	US 5,530,773	06/25/1996	Thompson
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	E11	US 7,028,886 B1	04/18/2006	Maloney
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	E13	US 10,181,087 B1	01/15/2019	Danko
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	E29	US 2014/0067661 A1	03/06/2014	Elischer
	E30	US 2015/0090782 A1	04/02/2015	Dent

Examiner Signature		Date Considered	

FOREIGN PATENT REFERENCES

EXAMINER INITIAL		DOCUMENT NUMBER Number-Kind Code (if known)	DATE	COUNTRY	TRANSLATION YES OR NO
	E31	WO 01/61436 A2	08/23/2001	WIPO	
	E32	WO 2006/086768 A2	08/17/2006	WIPO	

OTHER ART – NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIAL		Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	E33	Patent Disclaimer for US Patent No, 8,699,779, filed on March 4, 2019, 2 pgs.
	E34	Patent Disclaimer for US Patent No, 8,977,571, filed on February 20, 2019, 2 pgs.
	E35	Patent Disclaimer for US Patent No, 9,336,517, filed on March 4, 2019, 2 pgs.
	E36	Patent Disclaimer for US Patent No, 9,818,090, filed on February 20, 2019, 2 pgs.
	E37	CBM2019-00002 Patent No. 9,818,090, United Services Automobile Association (USAA)'s Patent Owner Preliminary Response, dated February 20, 2019, 75 pgs.
	E38	CBM2019-00002 Patent No. 9,818,090, Declaration of Tim Crews In Support of Patent Owner Preliminary Response, dated February 20, 2019, 8 pgs.
	E39	CBM2019-00002 Patent No. 9,818,090, Declaration of Matthew Calman In Support of Patent Owner Preliminary Response, dated February 20, 2019, 14 pgs.
	E40	CBM2019-00002 Patent No. 9,818,090, Katie Knight Videotape Deposition Transcript, dated February 8, 2019, 27 pgs.
	E41	CBM2019-00002 Patent No. 9,818,090, Peter Alexander, Ph.D., Oral and Videotaped Deposition, dated January 23, 2019, 27 pgs.
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	E43	CBM2019-00003 Patent No. 9,336,517, United Services Automobile Association (USAA)'s Patent Owner Preliminary Response, dated March 4, 2019, 91 pgs.
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	E45	CBM2019-00003 Patent No. 9,336,517, Katie Knight Videotape Deposition Transcript, dated February 8, 2019, 27 pgs.
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	E48	CBM2019-00003 Patent No. 9,336,517, Petitioner's Reply Brief to Patent Owner Preliminary Response Pursuant to Authorization Provided in Paper No. 14, dated April 10, 2019, 10 pgs.
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	E54	CBM2019-00005 Patent No. 8,699,779, Katie Knight Videotape Deposition Transcript, dated February 8, 2019, 27 pgs.

Examiner Signature		Date Considered	

EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	E55	CBM2019-00005 Patent No. 8,699,779 Matthew A. Calman Declaration, dated March 4, 2019, 15 pgs.
	E56	CBM2019-00005 Patent No. 8,699,779 Peter Alexander, Ph.D., Oral and Videotaped Deposition, dated January 23, 2019, 27 pgs.
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Examiner Signature		Date Considered	

EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
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	E91	iPhone Application Programming Guide Device Support, dated April 26, 2009, 7 pgs.
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	E93	Klein, Robert, Financial Services Technology, "Image Quality and Usability Assurance: Phase 1 Project", dated July 23, 2004, 67 pgs.
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	E96	Meara, Bob, "State of Remote Deposit Capture 2015: Mobile is the New Scanner", Dated May 26, 2015, obtained from the Internet at: https://www.celent.com/insights/57842967, 3 pgs.
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	E101	NCR, "Mobile Remote Deposit Capture (RDC), copyright 2011, 8 pgs.
	E102	Nokia N90 Review Digital Trends, dated February 11, 2019, obtained from the Internet at: https://www.digitaltrends.com/cell-phone-reviews/nokia-n90-review/, 11 pgs.
	E103	Nokia N95 8GB User Guide, copyright 2009, (from the Wells Fargo Bank, N.A. IPR2019-00815, filed on March 20, 2019), Part 1 of 3, 67 pgs.
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	E106	Patel, Kunur, Ad Age, "How Mobile Technology Is Changing Banking's Future", dated September 21, 2009, 3 pgs.

Examiner Signature		Date Considered	

EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	E107	Remote Deposit Capture Basic Requirements, dated August 22, 2009, 1 pg.
	E108	Remote Deposit Capture.com Scanner Matrix, dated October 21, 2011, 3 pgs.
	E109	Rowles, Tony, "USAA-v. Wells Fargo No. 2:16-cv-245-JRGL e-mail correspondence dated January 24, 2019, 2 pgs.
	E110	Sechrest, Stuart et al., "Windows XP Performance", Microsoft, dated 6/1/2001, 20 pgs.
	E111	Spenser, Harvey, "White Paper Check 21 Controlling Image Quality At The Point of Capture", dated 2004, 7 pgs.
	E112	Timothy R. Crews list of Patents, printed from the United States Patent and Trademark Office on Feb. 13, 2019, 7 pgs.
	E113	Van Dyke, Jim, "2017 Mitek Mobile Deposit Benchmark Report", copyright 2017, 50 pgs.
	E114	WAUSAU, "Understanding Image Quality & Usability Within a New Environment", copyright 2019, 1 pg.
	E115	Whitney, Steve et al., "A Framework For Exchanging Image Returns", dated July 2001, 129 pgs.

1. PRIORITY INFORMATION:

☐ This application claims priority under 35 USC §120 to the following United States patent application(s):_____. In accordance with 37 CFR §1.98(d), copies of the references cited herein which were submitted to, or cited by, the office, in compliance with 37 CFR §1.98(a)-(c) in the earlier application are not provided herewith. The Examiner is directed to those references cited in all Information Disclosure Statements filed in the priority United States patent application(s) cited above in addition to the references cited herein.

2. CERTIFICATIONS: (CHECK ALL THAT APPLY)

A. Certifications For 37 CFR §1.97(c) or 37 CFR §1.97(d):

☐ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(1) that each item of information in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

☒ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(2) that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated in 37 CFR §1.56(c), more than three months prior to the filing of this Information Disclosure Statement.

B. For Patent Term Adjustment Purposes:

☐ For purposes of 37 CFR §1.704(d)(i) or 37 CFR §1.704(d)(ii), Applicant hereby certifies that each item of information contained in this Information Disclosure Statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office or is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, and that this communication was not received by any individual designated in 37 CFR §1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement.

3. FEE INFORMATION: (CHECK IF FEE REQUIRED)

☒ Applicant has calculated a processing fee in the amount of $ 240.00 (Large entity) to be due under 37 CFR §1.17(p) in connection with the filing of this Information Disclosure Statement. Applicant authorizes charging the fee to Deposit Account. 50-4184.

Examiner Signature		Date Considered	

☒ The Director is hereby authorized to charge any fee deficiency associated with the filing of this Information Disclosure Statement to Deposit Account 50-4184.

Pursuant to the undersigned attorney's obligation and duties under 37 CFR §§ 1.56 and 1.98(a)(3) and (c), either English language abstracts, partial translations, or full translations are included for patent documents which are not in English for the express purpose of providing a concise explanation of the references to the Patent and Trademark Office with the opportunity to evaluate the same. Applicant respectfully requests the Examiner's consideration of the above reference(s) and entry thereof into the record of this application.

By submitting this Statement, Applicant is attempting to fully comply with the duty of candor and good faith mandated by 37 CFR §1.56. As such, this Statement is not intended to constitute an admission that any of the enclosed references, or other information referred to therein, constitutes "prior art" or is otherwise "material to patentability," as that phrase is defined in 37 CFR §1.56(a).

Respectfully submitted,

April 30, 2019
Date

/Peter S. Lee/
Peter S. Lee (Reg. No. 64,728)

Examiner Signature		Date Considered	

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

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23 August 2001 (23.08.2001)

PCT

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09/506,434 18 February 2000 (18.02.2000) US

(71) Applicant: **BANK ONE CORPORATION** [US/US]; 1 Bank One Plaza, Chicago, IL 60670 (US).

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(74) Agents: **BALDERSTON, Scott, D.** et al.; Hunton & Williams, 1900 K Street, N.W., Washington, DC 20006 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 01/61436 A2

(54) Title: SYSTEM AND METHOD FOR ELECTRONIC DEPOSIT OF THIRD-PARTY CHECKS BY NON-COMMERCIAL BANKING CUSTOMERS FROM REMOTE LOCATIONS

(57) Abstract: A system and method for initiating a deposit transaction, where the depositor is a non-commercial banking customer located at a remote location, and where the item to be deposited is a paper check from a third party, payable to the depositor. The enabling system features a Remote Customer Terminal (RCT) with certain input devices, connected to a bank system. The image and/or other data sent from the RCT to the Bank of First Deposit (BOFD) may be processed by conversion to Electronic Funds Transfer (EFT), via Electronic Check Presentment (ECP), or via check reconstruction. The new system and method provide convenience and improved transaction processing speed compared to other transactions that begin with a third party check.

SYSTEM AND METHOD FOR ELECTRONIC DEPOSIT OF THIRD-PARTY CHECKS BY NON-COMMERCIAL BANKING CUSTOMERS FROM REMOTE LOCATIONS

FIELD OF THE INVENTION

The invention 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, and where the item to be deposited is a paper check from a third party (i.e. other than the bank customer or the paying bank), payable to the depositor.

As used herein, a "bank" may be a bank or other financial institution, and a "check" may be a check or other negotiable instrument.

BACKGROUND OF THE INVENTION

Methods and systems for initiating electronic financial transactions from remote locations are increasingly common. Examples are the use of Automated Teller Machines (ATM's) to withdraw cash, and the use of telephonic systems and personal computers to initiate a transfer of funds between a bank customers accounts, or for electronic payment of bills. Such transactions are commonly referred to as Electronic Funds Transfer (EFT).

Two principal advantages of EFT, from the perspective of the customer, are convenience and speed. They are convenient to the extent that they do not require customers to physically visit the bank in order to initiate a financial transaction. Electronic transactions are also completed more quickly than those involving paper instruments and/or documents that must be physically routed to different locations in order to complete the transaction. A significant disadvantage of present EFT systems, however, is that they are not equipped to accept paper checks as part of the transaction. Since it is estimated that paper check volume in the United States exceeds sixty billion annually, this is a significant drawback.

Some approaches have been disclosed for converting paper checks to electronic transactions. Using an approach commonly known as Electronic Check Presentment (ECP), a bank of first deposit (the bank first receiving a paper check for deposit, hereinafter BOFD) will capture an electronic image of the check or otherwise convert the

check to an electronic transaction for processing through a clearing house and the paying bank. The image of the check and/or check data essentially take the place of the paper check for the purposes of payment. For a general description of the process, *see* U.S. Pat. No. 5,237,159. While this method may speed transaction time, it offers no improvement in convenience for the customer who must still initiate the transaction by physically delivering the paper check to the bank.

A related approach allows a customer to write a check for purchases at the point-of-sale, typically a retail store, where the transaction is then converted into either an EFT or ECP transaction. Under this method, however, the bank customer is the payor. No provision is made for the deposit of checks by a payee.

In sum, existing systems that perform electronic banking 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. The resulting lack of convenience, and other drawbacks, limit the utility of such systems for non-commercial bank customers.

SUMMARY OF THE INVENTION

An object of the invention is to overcome these and other drawbacks in existing methods and systems.

Accordingly, it is one object of the invention to provide a system and method for allowing non-commercial bank customers to deposit third-party checks from remote locations.

It is another object of the invention to provide a system and method that would allow bank customers to initiate such transactions at home. Such a method would be a convenience to many bank customers, and provide a new level of independence for customers who are confined to their homes due to poor health, disability, or for other reasons.

It is another object of the invention to provide a method that would allow bank customers to deposit third party checks at ATM machines. Most ATM's simply provide a means for holding paper checks until they are collected for processing. The present invention would make ATM's more useful by providing for electronic deposit of third party checks.

It is another object of the invention to provide alternative methods for the BOFD to process such transactions. By identifying a system and method for deposit that is compatible with ECP, EFT and reconstructed check processing, banks will have practical alternatives in the implementation of this new approach.

To achieve these and other objects of the invention, a payee would deposit a third party paper check using a Remote Customer Terminal (RCT) that can communicate with a BOFD system. In general terms, the RCT is equipped to "accept" paper checks. Images and/or other data from the RCT are sent to the BOFD system. The BOFD can process the transaction in several different fashions.

In the preferred embodiment of the invention, the RCT is located at home, and is a personal computer with an attached image scanner. To initiate the transaction, the customer uses an Internet-based application to access the BOFD system. A pre-assigned Personal Identification Number (PIN) allows the customer to initiate a deposit transaction. When prompted, the customer captures the image of the third-party check on the scanner, and forwards the digital image to the BOFD system. The automated system provides immediate provisional credit from the BOFD to the customer, and forwards the check image and other data to a clearing house in the form of an ECP transaction. Once the transaction has cleared the paying bank, the BOFD issues a permanent credit to the bank customer. Accordingly, the customer has initiated deposit of a third party paper check from the convenience of his/her own home, with the speed of an electronic transaction.

The following drawings and descriptions further describe the invention, including several different embodiments of the major system components and processes. The construction of such a system, implementation of such a process, and advantages will be clear to a person skilled in the art of automated financial transactions.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is schematic diagram of the system, according to one embodiment of the invention.

Figure 2 is a flow diagram from the perspective of a bank customer, according to one embodiment of the invention.

Figure 3 is a flow diagram from the perspective of the BOFD system, according to one embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

As indicated above, the invention is directed to a system and method for the deposit of third party checks at remote locations by non-commercial bank customers.

Overview of the System

Figure 1 is schematic diagram of the system, according to one embodiment of the invention. The key components are a Remote Customer Terminal (RCT) 100 that is connected to a Bank of First Deposit (BOFD) system 110.

The RCT 100 may be a telephone, fax machine, personal computer, ATM, or any other computer, apparatus, or system capable of collecting data and communicating with BOFD system 110.

Additionally, the RCT 100 may comprise certain input devices 101, output devices 102, Central Processing Unit (CPU) 103, and some amount of machine-readable electronic memory 104. The RCT input devices 101 may comprise 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. The RCT output devices 102 may comprise a speaker, a computer display, a paper printer, and any other output device that can communicate a message to a human.

Certain software may also be stored in RCT memory 104 and executed by the CPU 103, for example, to assist in communication and data collection functions. For example, optical character recognition software may be used in conjunction with the DIS to convert machine printed characters to electronic text. Likewise, intelligent character recognition software may be used to convert handwritten characters to electronic text. Additionally, Netscape Navigator™ or Internet Explorer™ may be used as browsers for Internet communications.

The BOFD system 110 may be a telephone, facsimile machine, personal computer, mainframe computer, or any other computer, apparatus, or system capable of receiving data from the RCT, and initiating a deposit transaction. Like the RCT, the BOFD system may be comprised of input devices 111, output devices 112, CPU 113, and electronic memory 114. The BOFD system may further comprise a human operator, or it may be fully automated.

Additionally, the BOFD system is broadly defined to include such network servers or other devices necessary to perform functions such as communication, data collection, and preparation of electronic transactions. Data collection, for example, may be implemented by hosting a World Wide Web site on an Internet server.

The RCT 100 and BOFD system 110 communicate with each other via a communication link 120. The link may operate through a network, such as by direct dial connection to the Internet over a telephone network. It may be accomplished via point-to-point communication, such as with a dedicated line or via a radio frequency or microwave link.

Additionally, the BOFD system 110 may be connected to one or more check clearing systems 130 via a communication link 140. The check clearing systems may comprise for-profit clearing houses 131, Federal Reserve banks 132, and local paying banks 134. The clearing houses 131 and Federal Reserve banks 132 may in turn have means for communication with non-local paying banks 133.

As with link 120, link 140 may be accomplished through any number of schemes for networked or point-to-point communications.

The next two sections provide a description of the new method for depositing third party checks that is provided by the invention.

Overview of the Information Flow From the Customer Perspective

Figure 2 is a diagram illustrating the flow of information from the perspective of a bank customer, according to one embodiment of the present invention.

The process begins when the bank customer receives a check payable to him/her 200. The check may be drawn on the customer's bank, a local bank, a non-local bank in the United States, or a foreign bank.

The customer may then "log on" to the BOFD system 110 from a RCT 100 using a Personal Identification Number (PIN), password, and/or other means of identification 210. The bank customer may then select "check deposit" from a menu of transaction options 220 as presented by the BOFD system 110.

In step 230, the customer may respond to prompts for each item of data needed to deposit the check. In another embodiment, the customer may enter a predetermined set of data all at once, for example where all data input fields are visible on a video display screen. The customer may be prompted to supply missing information in step 240. A complete set of data may comprise customer identification, customer account number, name of payor, name and routing number of payor's bank, the amount of the check, an image of the check, and other information.

The bank customer may then submit the transaction data to the BOFD system for processing 250, and may receive acknowledgement from the BOFD system that the transaction is being processed 260.

The customer may receive a response 270 indicating, for example, that immediate provisional credit has been given, that full credit has been awarded, or that the transaction request has been denied, according to bank procedures.

If credit was issued, the paper check may be subjected to certain check actions 280 in order to prevent re-deposit of the same check. One possible check action is that the check is marked, for example, by human or machine readable ink. Alternatively, the check may be physically captured by the RCT 100, for example, via deposit into an ATM vault.

Overview of the Information Flow From the Bank Perspective

Figure 3 is a diagram illustrating the flow of information from the perspective of the BOFD system, according to one embodiment of the invention.

The process may begin with a logon request 300. A security function 305 may terminate the process for any unauthorized user 310. An authorized user may be promoted to a data collection step, where transaction data is received 315, and an acknowledgement of receipt is sent to the customer 320.

The BOFD system may then review the identity of the paying bank 325. If the BOFD is the paying bank, the BOFD may issue immediate full credit to the account of the payee customer 330. Otherwise, the BOFD may issue "provisional" credit to the customer 335. Regardless of the type of credit issued, the BOFD system may initiate certain check actions 340 to prevent redeposit of the same check (see discussion of step 280 above). This may end the interactive session with the bank customer.

Next, the BOFD may make a decision concerning the method for "clearing" the third party check through another bank 345. If the transaction will be converted to an Electronic Funds Transfer (EFT), the BOFD may have to obtain a payor authorization 350 to support preparation of the EFT transaction 355. Alternatively, the BOFD may format the transaction for Electronic Check Presentment (ECP) 360, according to certain pre-established agreements with the paying bank. If, however, the BOFD has neither the payor's authorization for an EFT, nor an agreement with the paying bank for ECP, then the BOFD may print a reconstructed check 365.

In the case of the reconstructed check 370, the check clearing process 375 is the traditional method for physically routing the paper check to the paying bank for payment. In an EFT or ECP transaction, the check clearing process 375 may be accomplished by automated systems. The BOFD may submit the electronic transactions individually, or in batch. The check clearing process 375 may involve data transfer directly to a local paying bank, of it may involve transfer of data to a clearing house or Federal Reserve bank for ultimate credit by the paying bank.

The paying bank may issue credit for the check 380. If credit is given, the BOFD may change the customer's credit from "provisional" to "full" 385. If however, the paying bank fails to pay the check, the BOFD may retract the "provisional" credit issued earlier 390.

The specification and examples provided above should be considered exemplary only. It is contemplated that the appended claims will cover any other such embodiments or modifications as fall within the true scope of the invention.

What is claimed is:

1. A system comprising:
   (a.) an interface to a remote customer terminal;
   (b.) a bank system; and
   (c.) an interface to a check clearing system;
   (d.) wherein the bank system interfaces with the remote customer terminal and the check clearing system to effectuate deposit of third party checks.
2. The system of claim 1, wherein the remote customer terminal is a telephone.
3. The system of claim 1, wherein the remote customer terminal is a facsimile machine.
4. The system of claim 1, wherein the remote customer terminal is a personal computer.
5. The system of claim 1, wherein the remote customer terminal is an automated teller machine.
6. The system of claim 1, wherein the remote customer terminal includes a keypad for data entry.
7. The system of claim 1, wherein the remote customer terminal includes a keyboard for data entry.
8. The system of claim 1, wherein the remote customer terminal includes a microphone for data entry.
9. The system of claim 1, wherein the remote customer terminal includes a magnetic ink character reader for data entry.
10. The system of claim 1, wherein the remote customer terminal includes a digital image scanner for data entry.
11. The system of claim 10, wherein optical character recognition software is used in conjunction with the digital image scanner to convert machine printed characters to electronic text.
12. The system of claim 10, wherein intelligent character recognition software is used in conjunction with the digital image scanner to convert handwritten characters to electronic text.
13. The system of claim 1, wherein the remote customer terminal includes a printer for printing receipts or marking checks.

14. The system of claim 1, wherein the remote customer terminal includes a vault for storing checks that were electronically deposited.

15. A method for allowing a bank customer to deposit paper checks from a remote location, comprising:

(a.) receiving a check payable to the bank customer;

(b.) remotely logging onto a bank system;

(c.) entering transaction data to make a deposit; and

(d.) receiving a result of the transaction.

16. The method of claim 15 wherein the result of the transaction is a credit to the bank customer's account.

17. The method of claim 15 wherein the result of the transaction is a provisional credit to the bank customer's account.

18. The method of claim 15 wherein the result of the transaction is denial.

19. The method of claim 15 wherein the result of the transaction includes marking a check to prevent redeposit.

20. The method of claim 15 wherein the result of the transaction includes physical capture of the paper check to prevent redeposit.

21. A method for allowing a bank to process check deposit transactions that are initiated by a bank customer at a remote location, comprising:

(a.) receiving a request for authorization to make a transaction on the bank system;

(b.) authorizing a bank customer as a user on the system;

(c.) receiving transaction data related to the deposit of a check payable to the bank customer, where the payor is someone other than the customer; and

(d.) processing the transaction.

22. The method of claim 21 wherein the transaction is processed via electronic funds transfer.

23. The method of claim 21 wherein the transaction is processed via electronic check presentment.

24. The method of claim 21 wherein the transaction is processed by printing a reconstructed check, and physically routing the reconstructed check to the paying bank for payment.

25. The method of claim 21 wherein the transaction is processed individually.

26. The method of claim 21 wherein the transaction is processed in batch.

27. The method of claim 24 wherein the reconstructed check is printed from an image of the check that was received by the bank customer.

28. The method of claim 21 wherein transaction processing includes marking the check to prevent redeposit.

29. The method of claim 21 wherein transaction processing includes physical capture of the check to prevent redeposit.

1/3

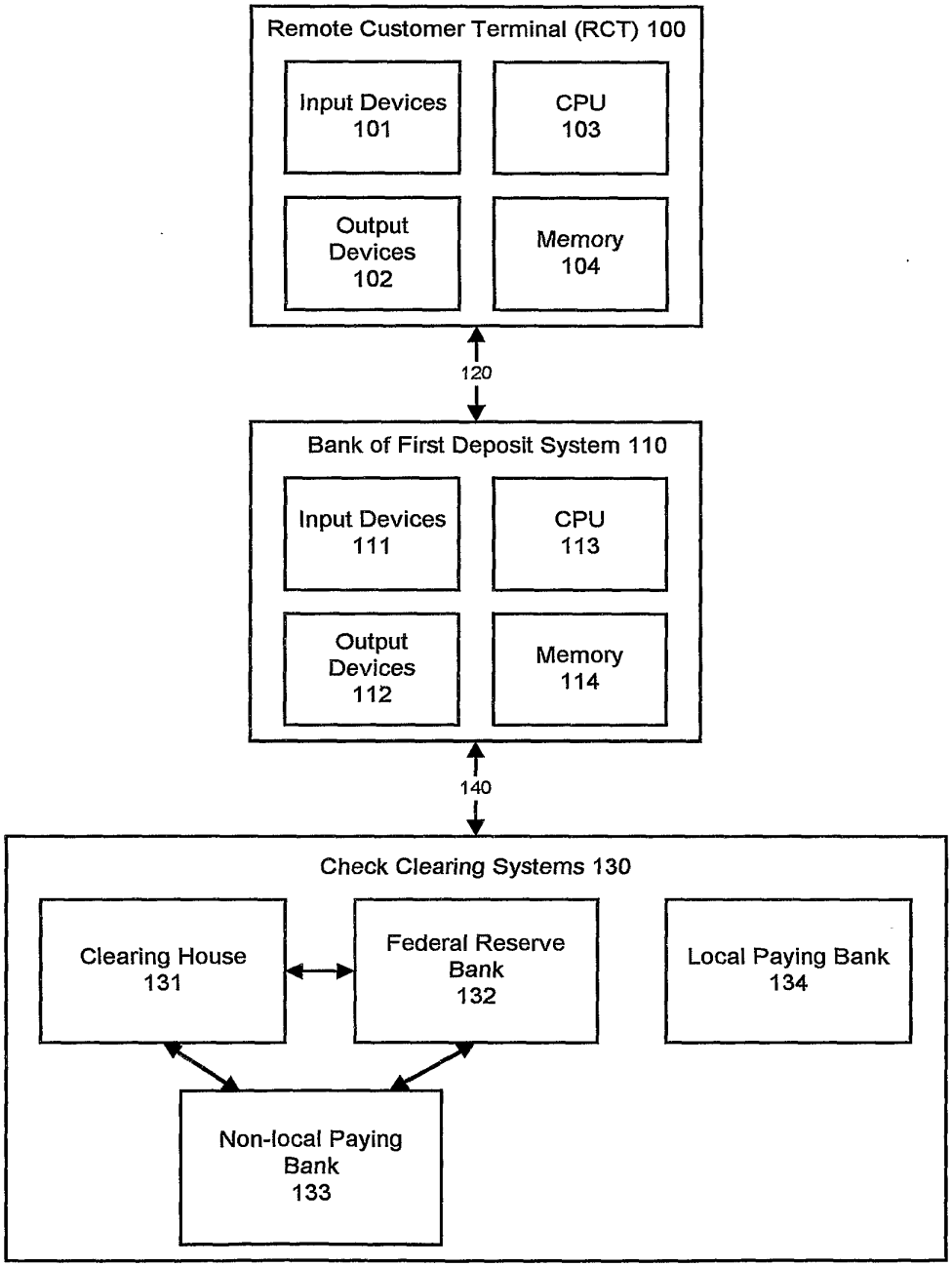

Remote Customer Terminal (RCT) 100
Input Devices 101
CPU 103
Output Devices 102
Memory 104
120
Bank of First Deposit System 110
Input Devices 111
CPU 113
Output Devices 112
Memory 114
140
Check Clearing Systems 130
Clearing House 131
Federal Reserve Bank 132
Local Paying Bank 134
Non-local Paying Bank 133

FIG. 1

2/3

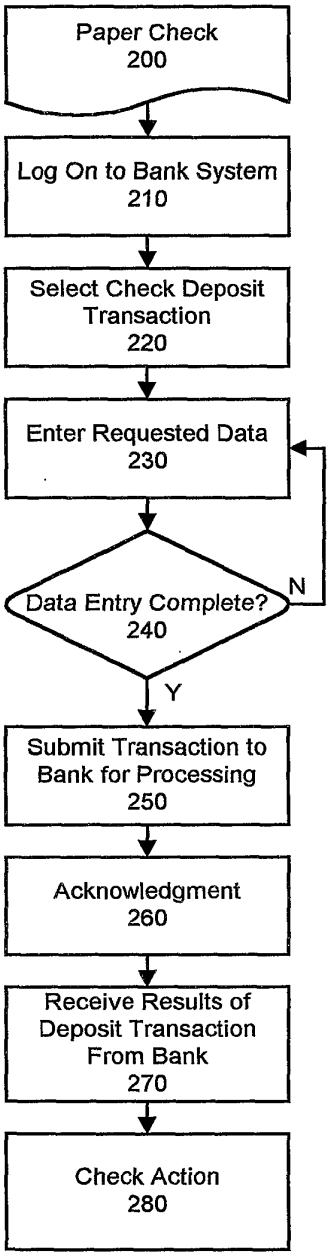

Paper Check
200
Log On to Bank System
210
Select Check Deposit Transaction
220
Enter Requested Data
230
Data Entry Complete?
240
N
Y
Submit Transaction to Bank for Processing
250
Acknowledgment
260
Receive Results of Deposit Transaction From Bank
270
Check Action
280

FIG. 2

3/3

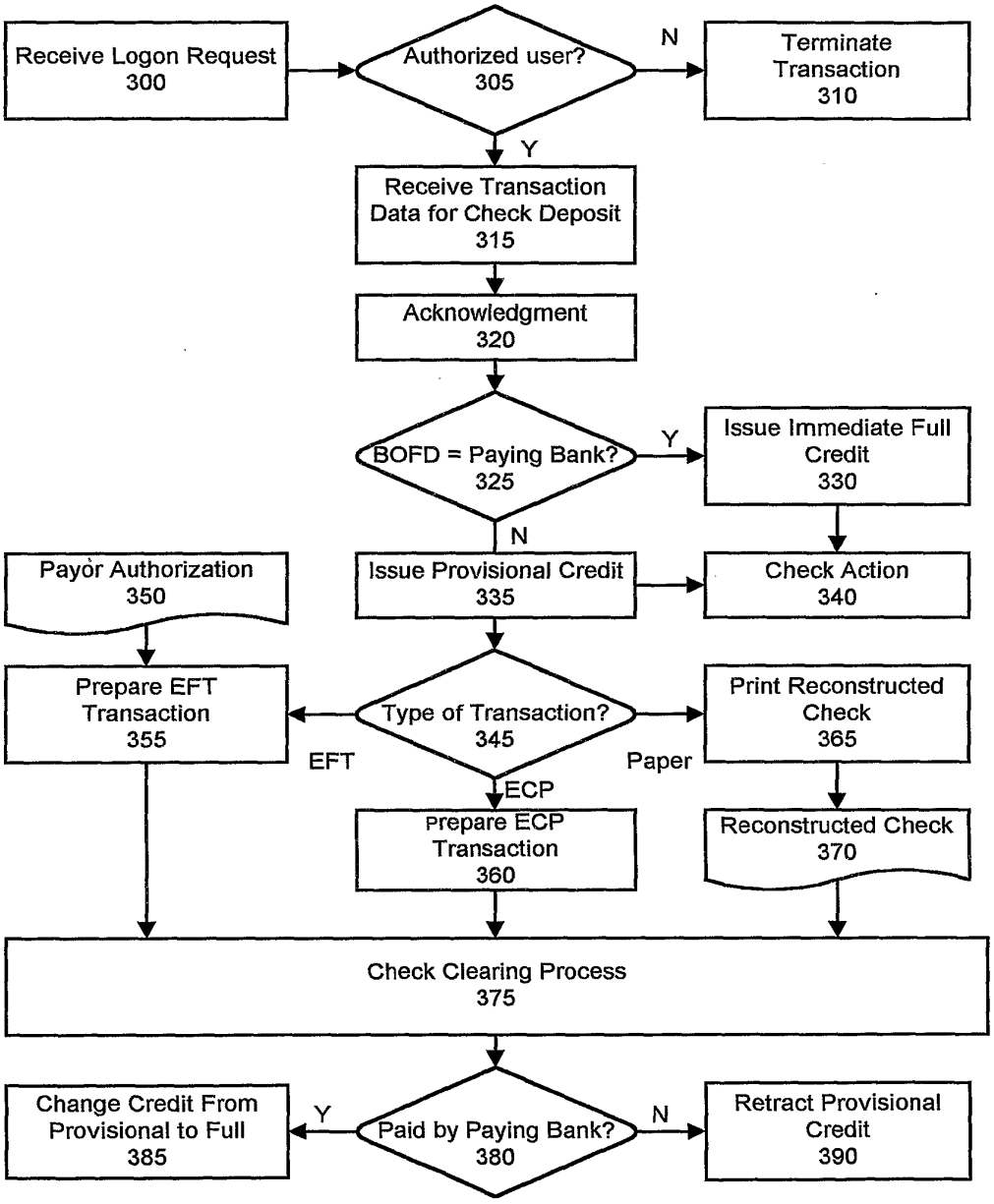

Receive Logon Request
300
Authorized user?
305
N
Terminate Transaction
310
Y
Receive Transaction Data for Check Deposit
315
Acknowledgment
320
BOFD = Paying Bank?
325
Y
Issue Immediate Full Credit
330
N
Payor Authorization
350
Issue Provisional Credit
335
Check Action
340
Prepare EFT Transaction
355
Type of Transaction?
345
Print Reconstructed Check
365
EFT
Paper
ECP
Prepare ECP Transaction
360
Reconstructed Check
370
Check Clearing Process
375
Change Credit From Provisional to Full
385
Y
Paid by Paying Bank?
380
N
Retract Provisional Credit
390

FIG. 3

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(54) Title: METHOD AND APPARATUS FOR ACCEPTING CHECK DEPOSITS VIA THE INTERNET USING BROWSER-BASED TECHNOLOGY

(57) Abstract: A browser plug-in to drive a device for securely transmitting documents in real-time over the Internet into an enterprise's computing environment is provided. Leveraging the Check Clearing for the 21st Century Act, a system and method for providing a browser plug-in that allows a bank customer to scan checks using a personal computer and deposit the checks via the browser to a bank account is provided.

WO 2006/086768 A2

Method and Apparatus for Accepting Check Deposits via the Internet Using Browser-Based Technology

BACKGROUND OF THE INVENTION

TECHNICAL FIELD

The invention relates to providing a plug-in to drive a device for securely transmitting documents in real-time over the Internet into an enterprise's computing environment. More particularly, the invention relates to a system and method for providing a browser plug-in that allows a bank customer to scan checks using a personal computer and deposit the checks via the browser to a bank account.

DESCRIPTION OF THE PRIOR ART

The Check Clearing for the 21st Century Act, better known as Check 21, modernized the U.S. payments system. This new federal legislation, which took effect on October 28, 2004, allows banks to create and present a substitute check or image replacement document (IRD) for payment in place of the original check, accelerating settlement and eliminating many of the costs and risks of physically transporting checks.

Presently, consumers have available to them the traditional banking visit model. Also, mechanisms for allowing banks to create and present a substitute check exist in the market, however, they require the customer to install a non-browser-based software application, referred to as a fat client. Also, known problems with float, fraud, and check processing speed are present in these mechanisms.

Currently, there are systems and methods that relate to check deposit and image processing at locations other than a bank, as follows. M. Martens, C. P. Tresser, R. J. Von Gutfeld, and C. W. Wu, *Method and Apparatus for Depositing Ordinary Checks from Home or Office*, U.S. Patent No. 6,450,403 B1 (September 17, 2002) and M. Martens, C. P. Tresser, R. J. Von Gutfeld, and C. W. Wu, *Method and Apparatus for Depositing Ordinary Checks from Home or Office*, U.S. Patent Application Publication No. US 2002/0084321 A1 (July 4, 2002) discuss an apparatus and method that allow depositing ordinary checks from home or office. A special scanner is used to scan an endorsed check for deposit. The check may have printed thereon encryptions in at least selected locations. Scanning the endorsed check with the scanner generates a digitized version of the check. The scanner virtually partitions the digitized version of the check into a plurality of regions. These regions may be stripes or zones. Each region is successively examined to extract from the digitized version of the check information from that region. The information extracted from a region is encrypted and transmitted to a bank. Upon acknowledgment from the bank, at least some of the regions of the plurality of regions are voided by a form of indelible but non-invasive, *e.g.* allowing reading after voiding, marking, such as punched holes, burned areas, overprinting of a pattern. The processing by the scanner continues until all regions have been processed. This progressively voiding scheme is an important security feature. The scanner is preferably contained in a secure housing with an encryption processor and the housing preferably includes an arrangement for detecting tampering and preventing normal operation if tampering is detected.

J. E. Jones, P. A. Jones, R. M. Gafron, W. J. Jones, and D. U. Mennie, *Image Processing Network*, U.S. Patent Application Publication No. US 2002/0001393 A1 (January 3, 2002) discuss a paperless image processing network where images and other information are exchanged between various financial institutions rather than physical documents. Further discussed is an image processing network where images and other information as well as physical documents are exchanged between various financial institutions. Also discussed is an image processing network where the processing of document images is distributed amongst various locations rather than

concentrated at a single central location. Also discussed is an image processing network which is capable of processing both images and physical documents; an image processing network which is capable of extracting the MICR, CAR, and LAR data from checks and inserting this data into an image file or files; an image processing network where images are sorted between transit and on-us image files; and a data file format that comprises two subparts, containing image data and the other part containing data extracted from the document's image.

M. Martens and C. P. Tresser, *Method and Apparatus for Depositing Paper Checks from Home or Office*, U.S. Patent Application Publication No. US 2002/0065786 (May 30, 2002) discuss a method and apparatus in combination with a special form of paper checks, which allows for the secure deposit of paper checks from home or office; in other words, at a location other than the bank or an ATM. The apparatus can be implemented at the payee's home or office with a Personal Computer (PC) which has a scanner attached to it and connected to the World Wide Web (WWW) on the Internet. The process of depositing paper checks begins by the payee endorsing a check having printed thereon encryptions in at least selected locations where information is written by a payer, the act of writing by the payee obscuring some of the encryptions. The payee then scans the endorsed check with a scanner to generate a digitized version of the check. The computer extracts from the digitized version of the check a concatenated branch number, account number and check number and a corresponding digital signature. The payee then transmits the extracted information together with the digitized version of the check for deposit. The checks are specially designed to prevent fraud such as alterations of the payee, amount and multiple deposits. In addition to the encryptions imprinted on the check, a secret key and a plurality of digital signatures are generated based on the concatenated branch number, account number and check number.

Ravi V. Acharya and J. Kang, *System and Method for Electronic Deposit of Third-Party Checks by Non-Commercial Banking Customers from Remote Locations*, International Publication No. WO 01/61436 A2 (23 August 2001)

discuss a system and method for initiating a deposit transaction, where the depositor is a non-commercial banking customer located at a remote location, and where the item to be deposited is a paper check from a third party, payable to the depositor. Features include a Remote Customer Terminal (RCT) with certain input devices, connected to a bank system. The image and/or other data sent from the RCT to the Bank of First Deposit (BOFD) may be processed by conversion to Electronic Funds Transfer (EFT), via Electronic Check Presentment (ECP), or via check reconstruction.

A. Slater, M. L. Sears, H. P. Rin-Rin, D. C. DO, H. P. McSharry, E. M. R. Dudasik. S. M. Gryte, and R. O. Brooks, *System and Method for Image Depositing, Image Presentment and Deposit Taking in a Commercial Environment*, European Patent Application No. EP 0 984 410 A1 (08 March 2000) discuss a method and system for scanning a check and/or cash to create an electronic image of the front and the back of the check and/or cash. The image is then processed and transmitted electronically to a central location. The image may be recreated into a paper form at the central location, resembling the original paper check or cash. Paperless processing of checks and cash is thus provided, including local voiding and storage of the check without requiring immediate pickup, while still allowing the transaction to be processed.

However, none of the references cited teach or suggest creating efficiencies by providing a browser plug-in that allows a bank customer to scan checks using a personal computer and deposit the checks via the browser to a bank account, while, at the same time, provide a light client vs. heavy client side footprint/solution and provide means for a customer to install software via application-managed download.

It would be advantageous to provide a system and method for capturing data objects from a programmed machine where the configuration is not limited to a fixed location, office, or home personal computer; where a supported capturing device, such as a scanner, is plugged into the programmed machine, *e.g.* a personal computer, at any location that works with

downloadable runtime components, such as plug-in software, and can be used to capture data objects, *e.g.* to scan checks and prepare deposits.

It would be advantageous to improve operating efficiencies by providing faster access to money deposited in a customer's account and providing increased flexibility to invest and direct funds.

It would further be advantageous to provide a system and method that can handle reductions in float as the time to settle transactions between banks decreases.

It further would be advantageous to provide a system and method that displays substitute checks or copies of substitute checks online when a customer requests check copies or view images online.

It further would be advantageous to provide a system and method that allows a bank customer to be able to capture electronic images of the customer's checks and to transmit the checks for processing instead of requiring the customer to physically transport the checks to the bank for deposit.

It further would be advantageous to provide a system and method that attains the following business goals:

provide faster access to funds and information;

reduce transportation time and costs;

leverage Check 21 legislation;

provide alternative to traditional banking visit;

provide low cost entry point to market model; develop, deploy, and manage such; and

enrich customer experience.

It further would be advantageous to provide a system and method that attains the following technical goals:

provide a light client vs. heavy client side footprint/solution;

provide means for a customer to install software via application-managed download;

provide means for a customer to scan checks and upload them to the application;

provide an application that validates checks and creates deposit transactions;

provide an application that sends deposit transactions to an existing downstream item processing;

provide for the customer access to timely information on the status of the customer's deposit or any errors which would prevent an item from being accepted; and

provide a same and/or better than response time.

SUMMARY OF THE INVENTION

A browser plug-in to drive a device for securely transmitting documents in real-time over the Internet into an enterprise's computing environment is provided. Leveraging the Check Clearing for the 21st Century Act, a system and method for providing a browser plug-in that allows a bank customer to scan checks using a personal computer and deposit the checks via the browser to a bank account is provided.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic flow diagram showing a high level flow of a desktop deposit according to the invention;

Figure 2 is a schematic diagram of an interface architecture system according to the invention;

Figure 3 is a schematic diagram of an application component architecture for the DD Application Server according to the invention;

Figure 4 is a schematic context diagram illustrating how the CLASP component is used in the overall Desktop Deposit solution architecture according to the invention;

Figure 5 is a schematic flow diagram depicting the control flow according to the invention;

Figure 6 is a schematic flow diagram showing an exemplary client flow according to the invention; and

Figure 7 is a flow diagram showing the client flow after the client elects to commit uploaded contents according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

A browser software plug-in to provide an interface between the user and an enterprise and drive a device for securely transmitting documents in real-time over the Internet into an enterprise's computing environment is provided. Leveraging the Check Clearing for the 21st Century Act, a system and method for providing a browser plug-in that allows a bank customer to scan checks using a personal computer and deposit the checks via the browser to a bank account is provided.

It should be appreciated that for the purposes of understanding the invention, the discussion herein involves a personal computer, a scanner, scanned image, a deposit post-process, and the like. However, such specific references herein are by way of example only and are not meant to be limiting. The spirit and scope of the invention covers any thin client with respect to any enterprise post processing and any type of capturing device and captured data object, where here an object includes, but is not limited to, any digitized image, portion of an image, data stream, screen, or window.

In one embodiment of the invention, five major components are provided to work in a manner that allows the user to scan, transmit, and deposit checks or documents to the receiving organization electronically. A personal computer type computer (PC), application software provided by the enterprise or third-party supplier (application software), a scanner supported by the application software (scanner) , scanner drivers provided by the scanner manufacturer or third-party (device drivers), and a receiving software application to process the incoming images and data (enterprise application).

Three of the components: PC, scanner, and device drivers can be packaged by any major computer manufacturer. The application software provider can either make special arrangements with the PC provider to include the software or the provider can use other means to distribute the software. The enterprise application is the responsibility of the enterprise.

Application software can be packaged in two basic forms. The first form is normally distributed by media, such as CD-ROM, or electronically downloaded. Once in the hands of the user, the application software is installed on the machine where it stays resident on disk and is loaded into memory when used. The software industry refers this type of application as a fat application, *i.e.* stays on machine. Application software, installed in this manner, also normally has access to the resources such as scanners, disk drives, and other applications available on the machine within the authorization scope of the user. Additionally, software maintenance, changes or new features for fat applications require the software provider to distribute

the software and for the user to install the software. If the maintenance is faulty, additional roll-back steps or software maintenance is required. Because not all users can be expected to install software at the same time, software providers are forced into a position to support multiple, often back-leveled versions of software.

The second form is distributed with each invocation of the application software through the ubiquitous browser interface available on almost every modern personal computer. The software industry refers to this type of application as a thin client. No software is installed on the disk. The application software is the same version for all users because the plug-in is downloaded with each invocation of the application software, *i.e.* automatic maintenance. The plug-in does not automatically have the same level of access to the resources that the user has. This security feature allows the user to give permission to the resource being requested, *e.g.* scanner, not all of the resources available to the user. The combined benefits of security with ease and speed of software maintenance makes the thin-client approach a more beneficial approach to both the customer and the enterprise.

One embodiment of the invention can be described with reference to Figure 1, a schematic flow diagram showing a high level flow of a desktop deposit according to the invention. From a client means, for example, a personal computer type computer (PC), a client/user authenticates with a desktop deposit application 102. In this example, the server related software is referred to as Wells Fargo's Commercial Electronic Office^{sm} Portal (CEO Portal or just CEO) and the desktop deposit application is referred to as C21 App. After authentication, C21 App is launched and the appropriate desktop deposit plug-in(s) is downloaded onto the client PC.

The CEO Portal, C21 app as well as the plug-in are resident on the enterprise servers. The user launches a session for scanning checks from the browser window running the plug-in(s). Scanner interface APIs are called from the browser plug-in(s) for communicating with a scanning device that is communicably connected to the PC 106. The scanner APIs make device

driver calls to the scanner, which in this example is RDM 6000. The user proceeds with scanning one or more checks through the device. Each check can be marked with indelible ink, if the scanner is so equipped, indicating that the check has been electronically processed. Such scanned images are transmitted by the browser window running the plug-in(s) to a check image repository communicably connected to the server desktop deposit application 110. The desktop deposit application, C21 App is used to manage the checks which are launched. Through a viewer and editing application, which in this example is referred to as C21 Viewer/Editor Portlet, which is a part of C21 App, a user can view and edit commands related to images stored on the check image repository that had been previously scanned 112. Likewise, through C21 Viewer/Editor Portlet, a user can perform various functions, such as fetch, edit, and delete on the scanned images 114.

The invention provides flexibility as follows. In one embodiment of the invention, the system and method has the capability to perform version checks and updates. In one embodiment of the invention, the system and method is modular; it employs framework adaptability to support future plug-ins as necessary to work with a wide variety of proprietary check-reader device protocols. In one embodiment of the invention, the system and method provides the capability of the self-detection of installed scanner device and capability to guide the user of related events and detects necessary downloads, upgrades, and patches.

One embodiment of the invention provides a helper application that facilitates the following:

scanning of checks, front and back;

MICR decoding;

compression and encryption;

allowing user to enter check amount and annotation;

single submission and batching of scanned checks; and

uploading one or a batch of checks to a staging repository via database and/or FTP uploads.

System Interface Architecture

An interface architecture system and method according to one embodiment of the invention can be described with reference to Figure 2. A desktop deposit customer, shown here as a CEO customer 202, is authenticated and authorized by applications on the desktop deposit server, shown here as DesktopDeposit (DD) Application Server 204. A second server 206 is shown between two firewalls and serves to provide a secure interface between external applications and those internal to an enterprise, such as Wells Fargo, for example. The customer proceeds to scan one or more checks through the check scanner device 208. The customer uploads the scanned check images to the DD application server for post processing. The uploaded images are stored, could be temporarily, in a database, shown in Figure 2 as Check Image Work in Progress (WIP) 210 for review and disposition. The images are also sent, for example, via an wfXML service, to an Image Inspector Services 211, referred to herein as Automated Image Metrics (AIM). AIM is a placeholder for certain basic services. For example, AIM can perform character recognition on a image, *e.g.* courtesy amount recognition and legal amount recognition (CARLAR) processing. For instance, a customer might write an amount of X in the courtesy box and an amount of Y in the legal amount box resulting in a mismatch. The system and method can respond by sending such information back to the customer, informing the customer of such mismatch. As well, the system and method can provides hints, such as "Okay, the person wrote the check for a hundred dollars. Do you agree? Yes." Then, instead of keying in 100, the customer can simply click the "yes" button. The scanned images are sent to a second database, shown here as Inbound Check Image Gateway (ICING) 212, to be checked again for quality and customer disposition. The DD Application Server 204 requests or sends

a message query to ICING 212 for file validation and response, and possibly in batch mode. DD Application Server sends user profile information, including account information, product profile information, and the like, to enterprise backend servers. One such server is shown in the figure as Envoy 214. Customer billing information is sent to a backend system, shown here as Tandem Billing 216.

In this particular example of one embodiment of the invention, an ActiveX component (VC++) is used for interacting with the device API, referred to herein as Ranger API, for scanning the checks. The Envoy client is used for retrieving the entitlements. The Envoy client uses T3 protocol, which is proprietary to WebLogic Application Server. DD Application Server uses HTTPS/Post for interfacing with AIM. A Wells Fargo standard, WFXML, is followed for making the request/response to AIM service. DD Application Server posts messages in X9.37 format to ICING MQSeries queue. DD Application Server uses standard JDBC implementation to interact with Work In Progress (local) Database. For retrieving Account Name needs to interact with internal system using Xstream Interface. For RTN validation an external system is used. It should be appreciated that the implementation described hereinabove is for illustrative purposes and is not meant to be limiting.

In one embodiment of the invention, the system and method incorporates a detection and notification mechanism. In one embodiment of the invention, the DD Application Server takes certain customer profile information, such as type of scanner, account numbers for which the customer is authorized, etc., and uses the information to detect certain states, such as, if the customer's scanner is plugged in, and appropriately notify the customer. Following is a list of examples of what the detection mechanism can detect: If the scanner is the right version; Was a part of the scanner plugged in the wrong way; if there is a problem with the firmware, *i.e.* the electronically erasable module on the scanner; etc. The invention can provide a link to the customer from where the customer can download the appropriate helpful information or applications.

Also, if a new application feature becomes available and, for example, the user has a particular scanner model that has an old version of their basic drivers, the invention can download or direct the customer to a place where the customer can get the driver sets that are designed for the system or application and can download them. The customer can elect to have a system administrator install the feature and appropriate updates or a LAN administrator, and the like. As well, the enterprise can perform the installation, downloads, and upgrades given permission. A clear advantage the invention provides to the enterprise and to the customer is the efficiency provided by the enterprise not having to ship CDs and the like to customers. The installations and upgrades are performed in real-time. Such makes the customer interaction and experience much better.

Application Component Architecture

An exemplary application component architecture for the DD Application Server according to one embodiment of the invention can be described with reference to Figure 3. Such example is not meant to be exhaustive or limiting. The DD Application Server is also referred to herein simple as Desktop Deposit.

In this example implementation, the Desktop Deposit application applies a Java 2 Enterprise Edition (J2EE) component architecture for developing a flexible, scalable, cross-platform enterprise application. The Desktop Deposit application uses Struts framework for developing applications. A strut is based on Model-View-Controller (MVC) architecture. An MVC design pattern serves as a guideline for building the Desktop Deposit Application. By applying the MVC architecture to a J2EE application, one can separate the core data access functionality from the presentation and control logic that uses this functionality. Such separation allows multiple views to share the same enterprise data model, which makes supporting multiple clients easier to implement, test, and maintain.

Figure 3 shows main components for the following tiers: browser 302; application 304; mid-tier 306, and persistence 308. Descriptions of specific components follow.

Model

Model 310 represents business data, and the business rules that govern access and modification of that data, on which application is based. Models that have been envisaged for Desktop Deposit include:

Business Model classes: these classes encapsulate business objects and business rules from the requirements/use-cases; and

Data Access Object Classes for interface with Desktop Deposit database and other applications.

View

View 312 presents data represented by the model 310 in a way that's targeted at a specific type of client. In Desktop Deposit, view objects include HTML, JSP, Java Script and Style Sheets. Data in JSP 316 s extracted from Action Form 320, which is part of View. These JSPs eventually generate HTML on the web server, which is sent to the client 318. Following are the View 312 components:

Action Form 320: For every screen, there is an individual Action Form 320. JSP 316 extracts data from Action Form 320 and display it to the client via HTML 318.

Controller

The controller 314 maintains the data in the model 310 and ensures that the data presented by the view 312 is consistent with the corresponding model. Following are the controller components:

Action Servlet 322 serves as the front component of controller and all requests come through it.

Request Processor 324 controls the navigation requirement of moving from one screen to another.

For every screen there is an individual Action Class 326. Desktop Deposit controller 314 loads them dynamically and they update databases based on user action with the help of utility classes, described hereinbelow. Action Class loads the data dynamically and sets Action Form 320 for displaying data in the JSP 316.

Utility Classes

Utility classes 328 contain functionality that are frequently used across application components. Following are utility classes as per the example:

Proxy classes to interface with Envoy2 client 330, ICING client 332, Image quality Assessment (IQA) 334, and IVU.

General-purpose classes encapsulating date manipulation functions and primitive validations, etc. Desktop Deposit utility classes are reused where possible.

Classes for converting Data Objects into URLs/Character Streams to be passed to Envoy2 330 and into Data Objects for response received from Envoy2 330.

Interface API

Interface API 340 is a Java API library developed for accessing the external systems like WPR 336 and ICING 338. Code is built in the Desktop Deposit application to provide a wrapper to access this functionality. The Interface

APIs used by Desktop Deposit are Envoy2 Middleware 330, ICING Middleware 332, IVU **[?]**, and Image Quality Analyzer 334.

Interface between Application and ICING

Desktop Deposit Application interfaces with ICING using MQ series.

The images of checks transmitted with the file are retained and archived by the enterprise, *i.e.* in this example, Wells Fargo bank (WFB), for use in research and adjustments and for legal compliance purposes. These images are also made available for customer retrieval, through associated WFB information reporting products. Each incoming item is assigned a unique item sequence number (ISN), based on Wells Fargo standards and including a parameter-driven sender identifier. The ISN is included with the related item record in file and should be printed, if possible, on the paper item by the check transport device to support easy retrieval of the original item from temporary storage when necessary.

This file format is based on the ANSI X9.37 DSTU – 2003 "Specifications for Electronic Exchange of Check and Image Data" draft standard with some modifications to accommodate the processing of credits, such as customer Direct Deposit Account (DDA) deposits and adjustments, and to augment sender source identification and file balancing controls.

To ensure proper processing, it is important that all deposits on a file are transmitted in sequential order, and, for example, deposit credit before associated checks, and that each credit and debit item is assigned a unique, *i.e.* within business day, Item Sequence Number (ISN).

The ISN is 15 digits, with format as follows: 000SSSSDDNNNNNN, and where:

000 = leading zeroes;

SSSS = four-digit numeric Sender ID (Bank-assigned);

DD = two-digit device or location number (00-99 – Sender-assigned); and

NNNNNN = six-digit incrementing item sequence number.

Available file transmission methods include:

Secure File Transport (SFT) via the Internet; and

Direct transmission via T-1 line or other direct connection, utilizing Connect: Direct Network Data Mover (NDM), etc.

Interface between Application and Image Quality Analyzer (AIM)

The interface from Desktop Deposit Application to the IQA system follows WFXML 1.2 standard. Application uses soap over https protocol for communication with IQA.

Interface between Application and Image Scanner API

One embodiment of the invention uses VBScript/JavaScript to communicate with the ActiveX component. The ActiveX component interacts with a customized scanning device API, herein referred to as Ranger API, which in turn interacts with the scanner.

For performance consideration a DDScannerServlet 342 which receives the client images, posts the images to the local queue using a business layer. The possibilities of making the queue cluster aware are typically covered during design.

Image Viewer Utility

Image viewer utility helps the user in viewing the image in an appropriate image size. It provides following functionality to the user:

Ability to lighten an image, default increment should be +25;

Ability to darken the image, default increment should be –25;

Ability to invert an image;

Ability to rotate the image in increments of 90 degrees in both directions;

Ability to zoom in or out on the image; and

Ability to scroll left, right, up or down on an image any time the full image is not visible in the window.

Interface between Application and Image Viewer Utility

The invoking application is able to determine and adjust the following:

How many image viewer windows to display on the page, typically one or two;

What operations to apply to the image before displaying as "default," *i.e.* shrinking, lightening, rotating, etc.;

What the maximum zoom level should be, such as in terms of a percent of the original image size;

What the zoom increment is;

What the lighten/darken increment is; and

What options to display besides Image Print and Download, for example on a bar below the image viewing window and such as showing or hiding the View Full Size link as desired.

Keep Alive Utility

This is a utility, which is useful when on a particular screen and background processes are taking some time for processing. It shows the user a screen displaying information about progress information.

WIP Database

The application uses a database, such as Oracle, for storing information. The images local to the system can be stored in Binary Large Object (BLOB) format.

Configuration Files

The system and method uses properties files that configure the Application Environment.

DDEnv.properties is a file for storing all the application related environment properties:

JDBC Protocol Related Properties;
Logging Related properties;
Audit Related properties;
EPICS Envoy Related Properties; and
ICING Related properties.

DDApp.properties is a file for storing all the application related properties:

Timeout properties; and
URLs of Desktop Deposit Pages.

ActiveX Component

The client side components, herein referred to as CLASP for CEO Lightweight Automated Scanner Process, are developed as ActiveX controls downloadable over the web. The CLASP component provides the interfaces required for the CEO application to interact with a scanner. CLASP provides the abstraction layer required to interact with scanner interface framework, which is Ranger Scanner API.

Figure 4 is a schematic context diagram illustrating how the CLASP component is used in the overall Desktop Deposit solution architecture.

Device abstraction.

The Ranger API 402 provides an abstraction layer to the scanner driver 404 allowing applications to interface with different scanner types.

Accordingly, the CLASP component 406 uses the Ranger API 402 to talk to the underlying scanner drivers 404 with the understanding that there may be additional interface mechanisms required to be supported by the CLASP component in future.

Using the Ranger API 402 alone allows the CLASP component 406 to be lightweight while isolating the CEO application from having to code specifically to the Ranger API.

Automated Updates.

The CLASP component 406 is designed as a signed ActiveX control. The control is deployed as a cab, *i.e.* Windows cabinet, file. This allows the control to be downloaded automatically whenever a new version of the control is posted to the CEO web server.

When the CEO application page references a new control version, the user's browser 408 automatically downloads or prompts for download of the control depending upon the browser security settings.

Security.

The CLASP component 406 depends on the security already built by the CEO application. The CLASP component is only invoked when the CEO application loads a specific resource, which contains a reference to the CLASP control. Moreover, the interaction of the CLASP component with the CEO application is only through http form posts. The CLASP component does not open any socket connections directly to the CEO servers.

The Ranger API 402 is itself packaged as an ActiveX control and hence is used by the CLASP component as an in-process server.

The CLASP component does not store any data locally on the user's computer nor does it use any temporary files outside of the browser's operating system (OS) dependent temporary file requirements.

Browser and OS.

By way of example, in one embodiment of the invention, the CLASP component is designed to work with the IE 5.01 (SP2) or IE 6 browsers. The operating systems supported are Windows XP and Windows 2000.

Supported Scanners.

In one embodiment of the invention, supported scanners are: Omega System of North America's Panini MyVision X30, X60, and X90 and which support the Silver Bullet Ranger API.

Extensibility.

The CLASP component architecture allows for extensibility to support multiple versions of scanner abstraction APIs as well as differences in functionality between these APIs.

An Exemplary Scanning Device

One embodiment of the invention provides means for building a device wrapper or Ranger-wrapper ActiveX that can return images as Base64 strings. It provides a control that can take scanned image(s) and package them up into a string that can be transmitted to the enterprise server, such as CEO. One embodiment of the invention provides a means for transmitting them to CEO that includes setting up the images using a Base64 encoding scheme and transmitting the images to CEO as a standard HTML form-post. The invention provides a means for the control or device that takes the current image as an argument, such as front-1, front-2, reverse-1, or reverse-2, and returns a Base64 encoded string. In one embodiment of the invention, the code returns just the Base64 string without any MIME information. It is possible to prefix the string with additional information as well as return just the raw Base64 string.

In one embodiment of the invention, the Base64 encoder performs the call to read the address and byte-count rather than the application. The Base64 encoder should be passed a front, rear, grayscale, or bi-tonal parameter in the same manner that the GetImageAddress() and GetImageByteCount() methods are designed to do as in a standard call. A name for the functionality that is suggestive to its function is, RangerImagetoBase64(long side, long ColorType). Such name is by way of example only and is not meant to be limiting.

In another embodiment of the invention, the images are set up following the HTP multi-part format, or, in other words, the format used when an HTML page requests a file from a user. Such embodiment may lend itself to have more complexity in the programming logic: Web logic has to be able handle multi-part POSTs correctly, when some may be configured to handle x-www-

form-urlencoded MIME type only, such as older versions of servlet code. Another challenge may be encountering character set mapping issues, such as ISO-8859-1 vs. UTF-8, for the characters used to represent the image.

Visual Scenario depicting Control and Data Flow

With reference to Figure 5, a means for control flow according to the invention can be described. It should be appreciated that the details are by way of example and are not meant to be limitng.

In step 1.1, a user clicks on a button on a browser screen in Desktop Deposit. The javascript submits the form data to the Desktop Deposit gateway servlet, which invokes Action Servlet, along with the Action. In step 1.2, the Action Servlet invokes the Request Processor class. In step 1.3, the Request Processor invokes the appropriate Action Class and sets Action Form. In step 1.4, the Action Class builds the appropriate domain object from the data. It does a look-up, calls an appropriate Business Object (BO), invokes the appropriate method on it, and passes the domain object to it. In step 1.5, the BO evaluates the business rules, if any, calls one or more Data-Access Object, invokes appropriate method on it, and passes the domain object(s) to it. In step 1.6, the DAO makes one or more Interface API method calls to the access to the Database, Envoy2. In step 1.7, tor Database Calls, JDBC is the communication mechanism for accessing Local Desktop Deposit database. In step 1.8, for WPR access, the Envoy2 Client talks to Envoy2 Server hosted externally with appropriate protocol. In step 1.9, the JSP extracts data from the Action Form and builds the screen HTML and sends it to the browser. In step 2.1, VBScript/JavaScript is used for interacting with ActiveX, this will in turn iterface with Scanner. In step 2.2, Actions or steps 1.2, 1.3, 1.4, 1.5, 1.6 are performed. In step 2.3, Business Layer interacts with JMS layer to put the data in JMS queue. In step 2.3, Image Viewer Utility is used for manupulation of the checks. In step 2.4, Image Quality Analyser uses wfxml protocol to interact with IQA Service. And, in step 2.5, Interface API uses JMS to interact with ICING.

Assumptions

Following is a list of assumptions in the building of the system and method according to the invention:

User can have multiple sessions per day;

User can have multiple deposit account numbers. A user is given a choice of authorized accounts. While the average might be around five (5) accounts, some users are authorized to a couple of hundred accounts. The application will display the deposit account number, RTN and name;

User can receive multiple items from the same person, including OTC and new account checks;

Deposit bag is a holding/receiving area until the customer commits the deposit. Items are not committed to ICING until the bag is closed;

Trickle-in approach. This does not preclude a batch approach, but the customer experience with a long upload may trigger an unexpected timeout. Recommend configurable option on client and servlet code to render some flexibility;

The image message is based on standard HTTP protocol to port 443 and not proprietary transmission forms, including FTP;

The client can elect to have the OCR information and/or image sent back from the server as an acknowledgment for each scanned item; and

The application is not limited to checks. The application should be able to handle any scanned image type. The application may be expanded to include file uploads.

An Exemplary Client Flow

Referring to Figure 6, a schematic flow diagram, an exemplary client flow according to the invention can be described. A user begins by logging into a CEO system. A Check21 application launches in response and creates an account list from the user's authorized accounts. The user selects an account to which to deposit checks to, *e.g.* from a dropdown list. The system creates a bag for this session 602.

An application child or window opens and is an ActiveX control. The logic following (from 606 through 614) can be performed by a full application or can be part of an ActiveX control. Regardless, the front of an image is scanned 606. The check amount is obtained, the MICR is OCRed, and it is verified that the MICR is magnetic.

The image back is scanned 608. Optionally, it is detected whether the check is endorsed. The system uses a checking means, such as checking for an imprint image, a scanned serial number, and the like, to indicate that the check had been properly scanned.

An HTTP POST is prepared 610. Amount is formatted, MICR information, such as RTN, account, amount, RAA, and the like, is formatted. This may be a unique hash.

Image front and image back are added to a POST message. It is optional to take in customer free-form text information 612.

The following information is sent to CEO 614:

receive ack. RAA; and
receive optional image(s) based on a flag means.

The user prepares to scan next item. If the hopper is empty, the system and method allows the user to select another account and may leave previously selected account highlighted 614.

By a messaging means, such as a multi-part POST or BASE64 string sent to the CEO system, a channel secure session is validated and access is open 616.

The CEO Check21 Servlet filters input to check if the message is complete 618. It rejects partial POSTs immediately. The total turn-around time is preferably one second or better per check item.

The account sequence number is obtained from the request and the actual account number is determined from the session list 620. The system date is also obtained. The item sequence number or identification (ID) is generated.

The CEO system and method then takes the incoming request and access the current session deposit bag 622. It takes the session ID and tags it to each item, having identified the item sequence number.

The CEO system and method checks for any additional validations to be performed 624.

In one embodiment of the invention, the CEO system and method then writes the information and images to the cache server 626.

A trigger type of indicator is posted to EJB to save the image and information into the user virtual database 628.

An acknowledgment/post receipt of each item is sent, such as echo RAA 630. Optionally, an echo front, back image, and/or receipt information is sent.

The acknowledgment is uploaded to the user's client, the content of which depends on the client options.

The client flow after the client elects to commit uploaded contents can be described with reference to Figure 7, a flow diagram showing the same. Via

an application child window it portlet, a user selects a finish scanning means. The finish function closes the bag and commits to a deposit. The message is sent to the Check21 servlet 704. The servet adds a deposit ticket means as a trailer to the bag 706. A message is posted to ICING to pick up the bag and process a deposit batch 708. The servlet responds back to the user with the deposit ticket information 710.

Accordingly, although the invention has been described in detail with reference to particular preferred embodiments, persons possessing ordinary skill in the art to which this invention pertains will appreciate that various modifications and enhancements may be made without departing from the spirit and scope of the claims that follow.

CLAIMS

1. A computer implemented method for transmitting captured objects from a capturing device in real-time from one or more client components through an enterprise server component to one or more enterprise backend processing components, comprising the steps of:

one or more client components creating a session with a component on an enterprise server;

responsive to said creating a session, said enterprise server launching an enterprise application and downloading one or more corresponding runtime components onto said one or more client components;

from a browser window on said one or more client components, executing said one or more runtime components to invoke interface APIs of a capturing device, and on said browser window displaying an interface to said enterprise application for accessing said enterprise application;

from the browser runtime components, calling capturing device interface APIs to communicate with said device, wherein said capturing device interface APIs make device driver calls to said capturing device;

capturing one or more objects through said capturing device;

from said one or more runtime components, optionally calling capturing device interface APIs to direct said device to selectively extract additional information from each said captured object;

said browser runtime components pre-processing said captured objects to ensure message consistency and compatibility with said enterprise server;

transmitting said captured one or more objects and, if available, said selectively extracted additional information, to a repository communicably connected to said enterprise application for enterprise backend post-processing; and

said browser runtime components detecting exception conditions on said capturing device and, if within scope of said runtime components, handling exception conditions, and passing said detected exception conditions and said handled exception conditions, as well as unhandled

exception conditions and ancillary information to said enterprise server component;

wherein no captured objects are stored on said one or more client components.

2. The computer implemented method of Claim 1, wherein said capturing device is a scanning device and said one or more captured objects is one or more scanned images.

3. The computer implemented method of Claim 1, wherein said runtime components are any of plugins or ActiveX components.

4. The computer implemented method of Claim 1, wherein said selectively extracted information is any of: a Magnetic Ink Character Recognition (MICR) line, written text, or a bar-code.

5. The computer implemented method of Claim 2, wherein any of said scanned one or more images for deposit is a bank check, coupon, or document.

6. The computer implemented method of Claim 2, wherein future plugins are supported that work with a variety of scanning device protocols, scanning devices, and documents.

7. The computer implemented method of Claim 1, wherein said one or more client components are developed as ActiveX controls that are downloadable over the Web.

8. The computer implemented method of Claim 1, wherein said one or more client components provide an interface such that said enterprise application interacts with said scanning device.

9. The computer implemented method of Claim 1, wherein said one or more client components provides an abstraction layer to said capturing device

such that said enterprise application interfaces with one or more different capturing device types.

10. The computer implemented method of Claim 1, further comprising the step of:

responsive to a new version of said one or more client components posted to said enterprise server component, said browser initiating a download of said one or more client components of the new version.

11. The computer implemented method of Claim 1, wherein said one or more client components interact through HTTP messages.

12. The computer implemented method of Claim 2, wherein said scanning device returns scanned images and any extracted information to said plugin as Base64 string and plain-text for some selectively extracted regions, and said plugin prepares image and extracted information to the browser as a combination of Base64 strings and plain-text within a HTTP message, which can be further transmitted to said enterprise server component as an HTTP message.

13. The computer implemented method of Claim 2, further comprising the step of:

providing a deposit bag that serves as a holding area until a deposit is committed.

14. The computer implemented method of Claim 1, wherein said capturing one or more objects is performed in parallel with said transmitting said captured one or more objects, whereby a trickle-in approach is implemented.

15. The computer implemented method of Claim 1, wherein any of said captured one or more objects is replaced by a file upload.

16. A system for transmitting captured objects from a capturing device in real-time from one or more client components through an enterprise server

component to one or more enterprise backend processing components, comprising:

means for one or more client components creating a session with a component on an enterprise server;

responsive to said creating a session, means for said enterprise server launching an enterprise application and means for downloading one or more corresponding runtime components onto said one or more client components;

from a browser window on said one or more client components, means for executing said one or more runtime components to invoke interface APIs of a capturing device, and on said browser window means for displaying an interface to said enterprise application for accessing said enterprise application;

from the browser runtime components, means for calling capturing device interface APIs to communicate with said device, wherein said capturing device interface APIs make device driver calls to said capturing device;

means for capturing one or more objects through said capturing device;

from said one or more runtime components, means for optionally calling capturing device interface APIs to direct said device to selectively extract additional information from each said captured object;

means for said browser runtime components pre-processing said captured objects to ensure message consistency and compatibility with said enterprise server;

means for transmitting said captured one or more objects and, if available, said selectively extracted additional information, to a repository communicably connected to said enterprise application for enterprise backend post-processing; and

means for said browser runtime components detecting exception conditions on said capturing device and, if within scope of said runtime components, handling exception conditions, and means for passing said detected exception conditions and said handled exception conditions, as well as unhandled exception conditions and ancillary information to said enterprise server component;

wherein no captured objects are stored on said one or more client components.

17. The system of Claim 16, wherein said capturing device is a scanning device and said one or more captured objects is one or more scanned images.

18. The system of Claim 16, wherein said runtime components are any of plugins or ActiveX components.

19. The system of Claim 16, wherein said selectively extracted information is any of: a Magnetic Ink Character Recognition (MICR) line, written text, or a bar-code.

20. The system of Claim 17, wherein any of said scanned one or more images for deposit is a bank check, coupon, or document.

21. The system of Claim 17, wherein future plugins are supported that work with a variety of scanning device protocols, scanning devices, and documents.

22. The system of Claim 16, wherein said one or more client components are developed as ActiveX controls that are downloadable over the Web.

23. The system of Claim 16, wherein said one or more client components provide an interface such that said enterprise application interacts with said scanning device.

24. The system of Claim 16, wherein said one or more client components provides an abstraction layer to said capturing device such that said enterprise application interfaces with one or more different capturing device types.

25. The system of Claim 16, further comprising:

responsive to a new version of said one or more client components posted to said enterprise server component, means for said browser initiating a download of said one or more client components of the new version.

26. The system of Claim 16, wherein said one or more client components interact through HTTP messages.

27. The system of Claim 17, wherein said scanning device returns scanned images and any extracted information to said plugin as Base64 string and plain-text for some selectively extracted regions, and said plugin prepares image and extracted information to the browser as a combination of Base64 strings and plain-text within a HTTP message, which can be further transmitted to said enterprise server component as an HTTP message.

28. The system of Claim 17, further comprising:

means for providing a deposit bag that serves as a holding area until a deposit is committed.

29. The system of Claim 16, wherein said capturing one or more objects is performed in parallel with said transmitting said captured one or more objects, whereby a trickle-in approach is implemented.

30. The system of Claim 16, wherein any of said captured one or more objects is replaced by a file upload.

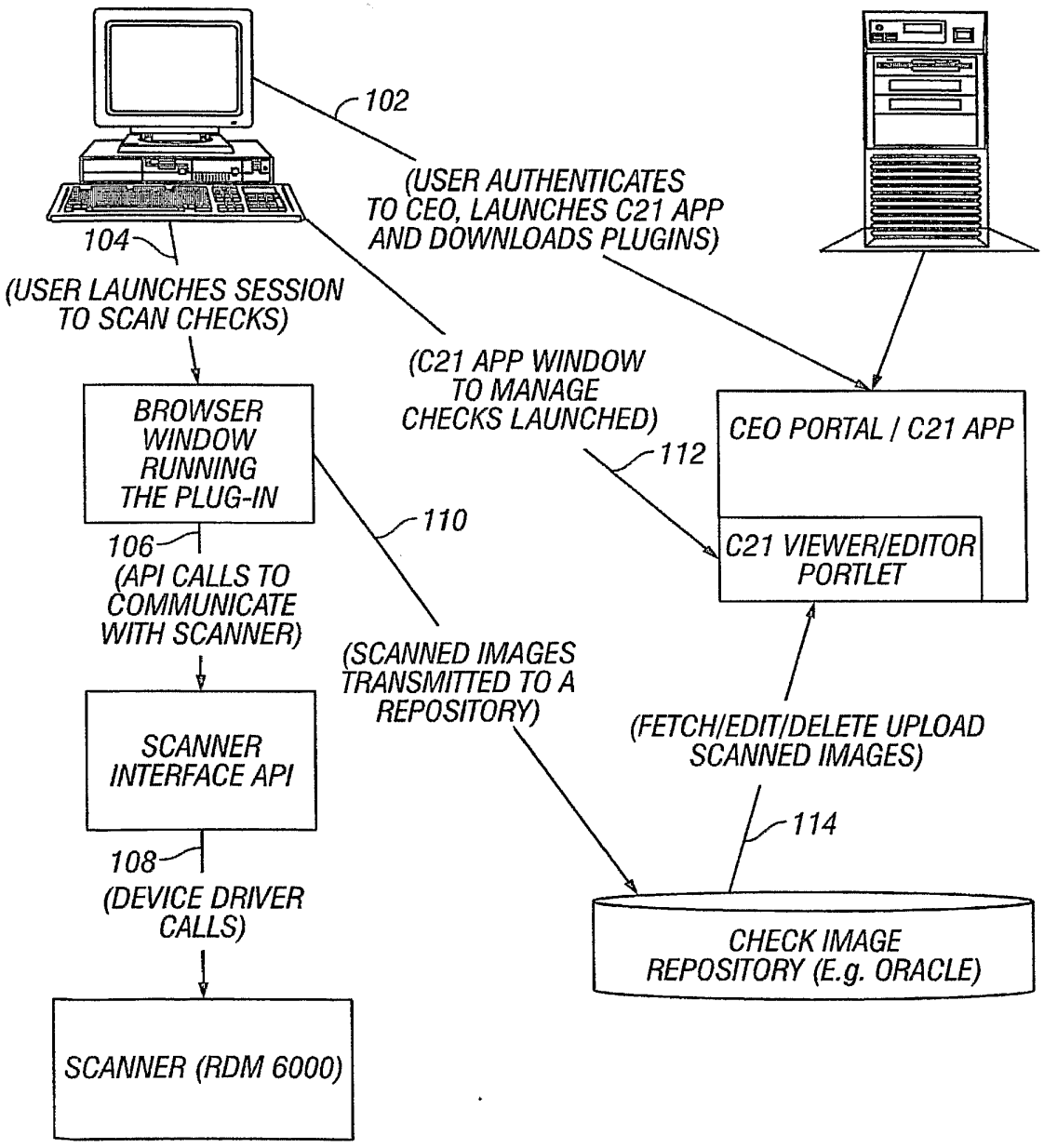
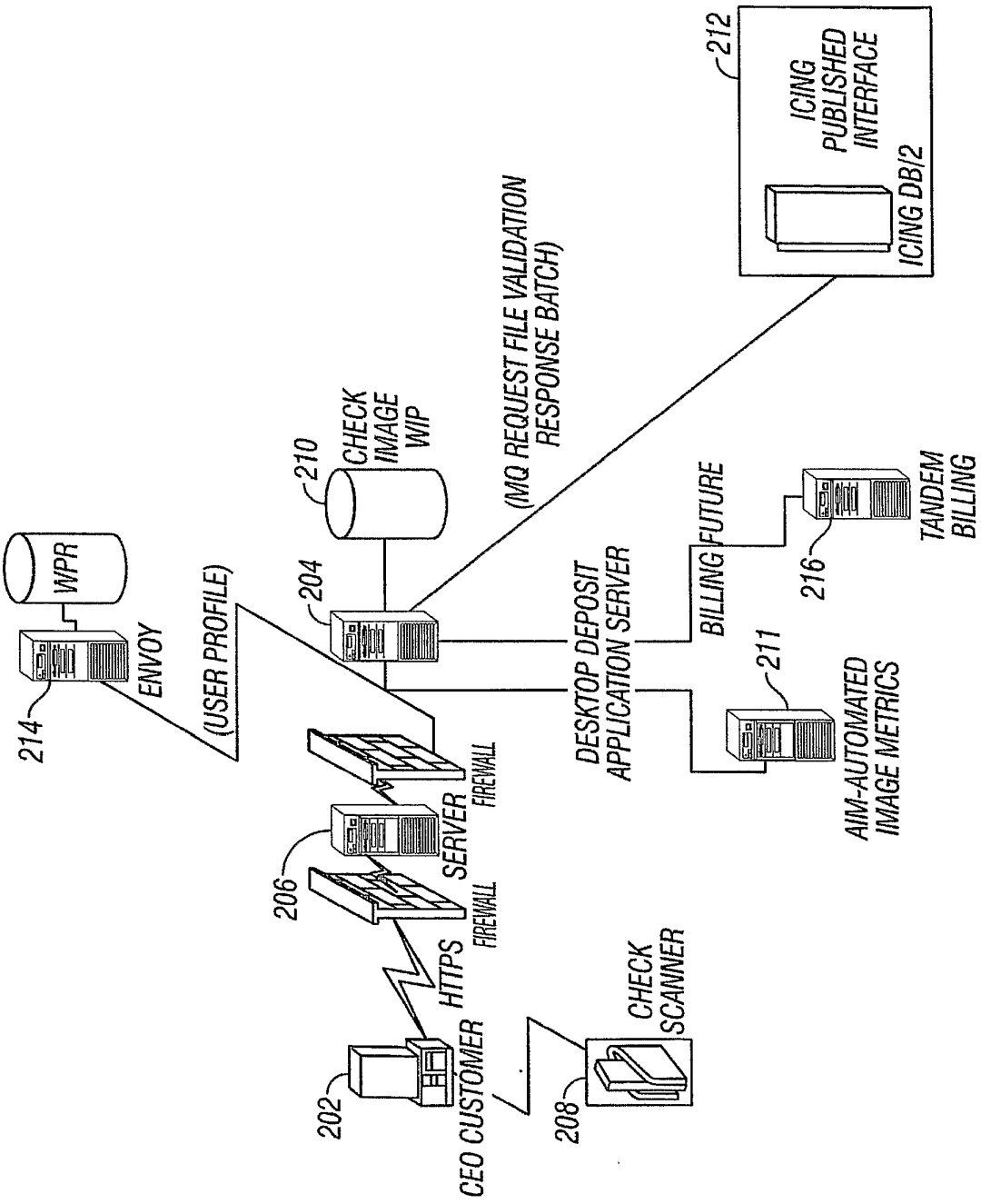

102
(USER AUTHENTICATES TO CEO, LAUNCHES C21 APP AND DOWNLOADS PLUGINS)
104
(USER LAUNCHES SESSION TO SCAN CHECKS)
(C21 APP WINDOW TO MANAGE CHECKS LAUNCHED)
BROWSER WINDOW RUNNING THE PLUG-IN
CEO PORTAL / C21 APP
112
110
C21 VIEWER/EDITOR PORTLET
106
(API CALLS TO COMMUNICATE WITH SCANNER)
(SCANNED IMAGES TRANSMITTED TO A REPOSITORY)
(FETCH/EDIT/DELETE UPLOAD SCANNED IMAGES)
SCANNER INTERFACE API
114
108
(DEVICE DRIVER CALLS)
CHECK IMAGE REPOSITORY (E.g. ORACLE)
SCANNER (RDM 6000)

FIG. 1



SUBSTITUTE SHEET (RULE 26)

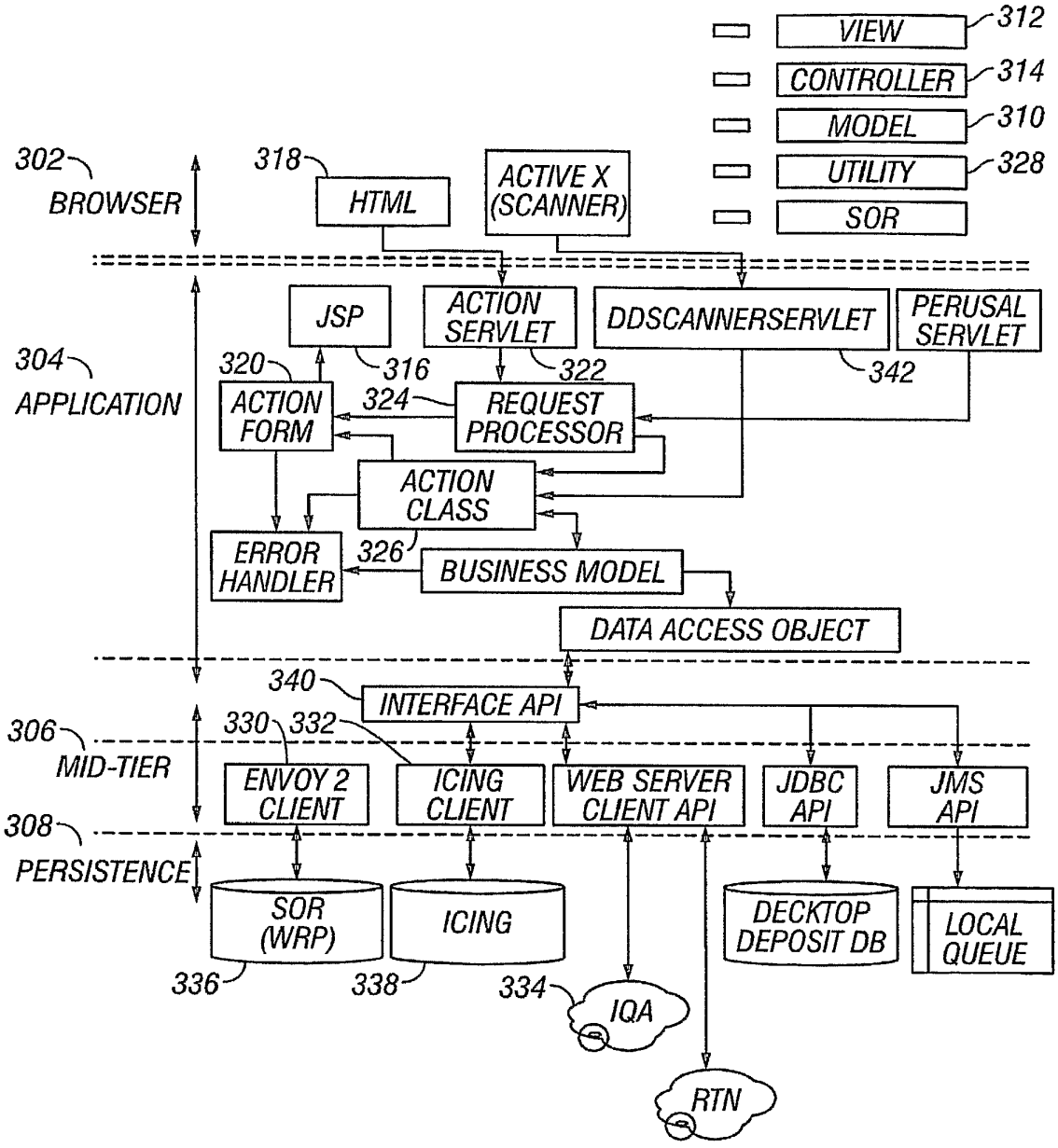

VIEW
312
CONTROLLER
314
MODEL
310
UTILITY
328
SOR
302
BROWSER
318
HTML
ACTIVE X (SCANNER)
JSP
ACTION SERVLET
DDSCANNERSERVLET
PERUSAL SERVLET
304
APPLICATION
320
316
322
342
ACTION FORM
324
REQUEST PROCESSOR
ACTION CLASS
ERROR HANDLER
326
BUSINESS MODEL
DATA ACCESS OBJECT
340
INTERFACE API
306
MID-TIER
330
332
ENVOY 2 CLIENT
ICING CLIENT
WEB SERVER CLIENT API
JDBC API
JMS API
308
PERSISTENCE
SOR (WRP)
ICING
DECKTOP DEPOSIT DB
LOCAL QUEUE
336
338
334
IQA
RTN

FIG. 3

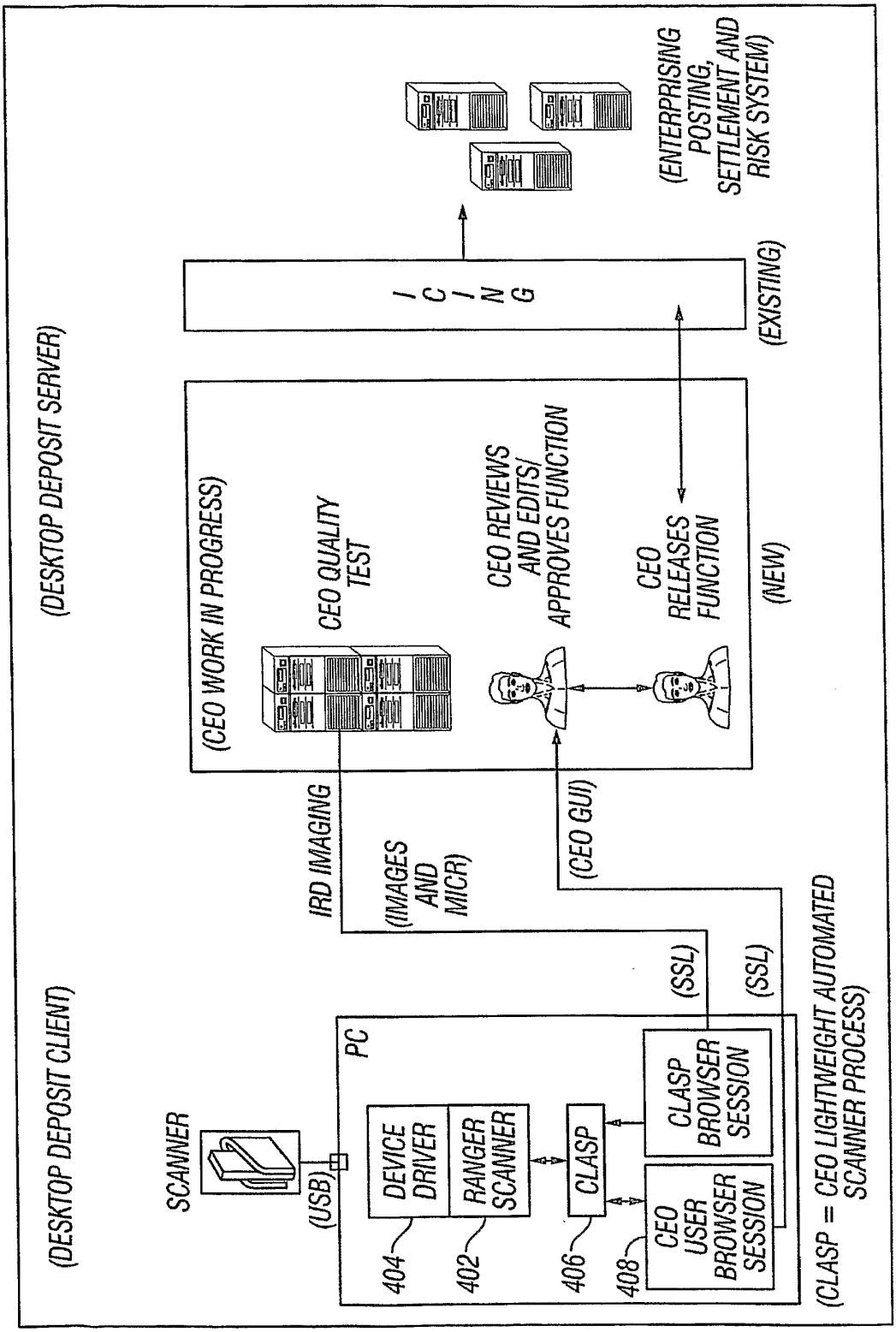

(DESKTOP DEPOSIT CLIENT)
(DESKTOP DEPOSIT SERVER)
SCANNER
(USB)
PC
DEVICE DRIVER
RANGER SCANNER
CLASP
CLASP BROWSER SESSION
CEO USER BROWSER SESSION
404
402
406
408
(SSL)
(SSL)
IRD IMAGING
(IMAGES AND MICR)
(CEO GUI)
(CEO WORK IN PROGRESS)
CEO QUALITY TEST
CEO REVIEWS AND EDITS/ APPROVES FUNCTION
CEO RELEASES FUNCTION
(NEW)
I C I N G
(EXISTING)
(ENTERPRISING POSTING, SETTLEMENT AND RISK SYSTEM)
(CLASP = CEO LIGHTWEIGHT AUTOMATED SCANNER PROCESS)

FIG. 4

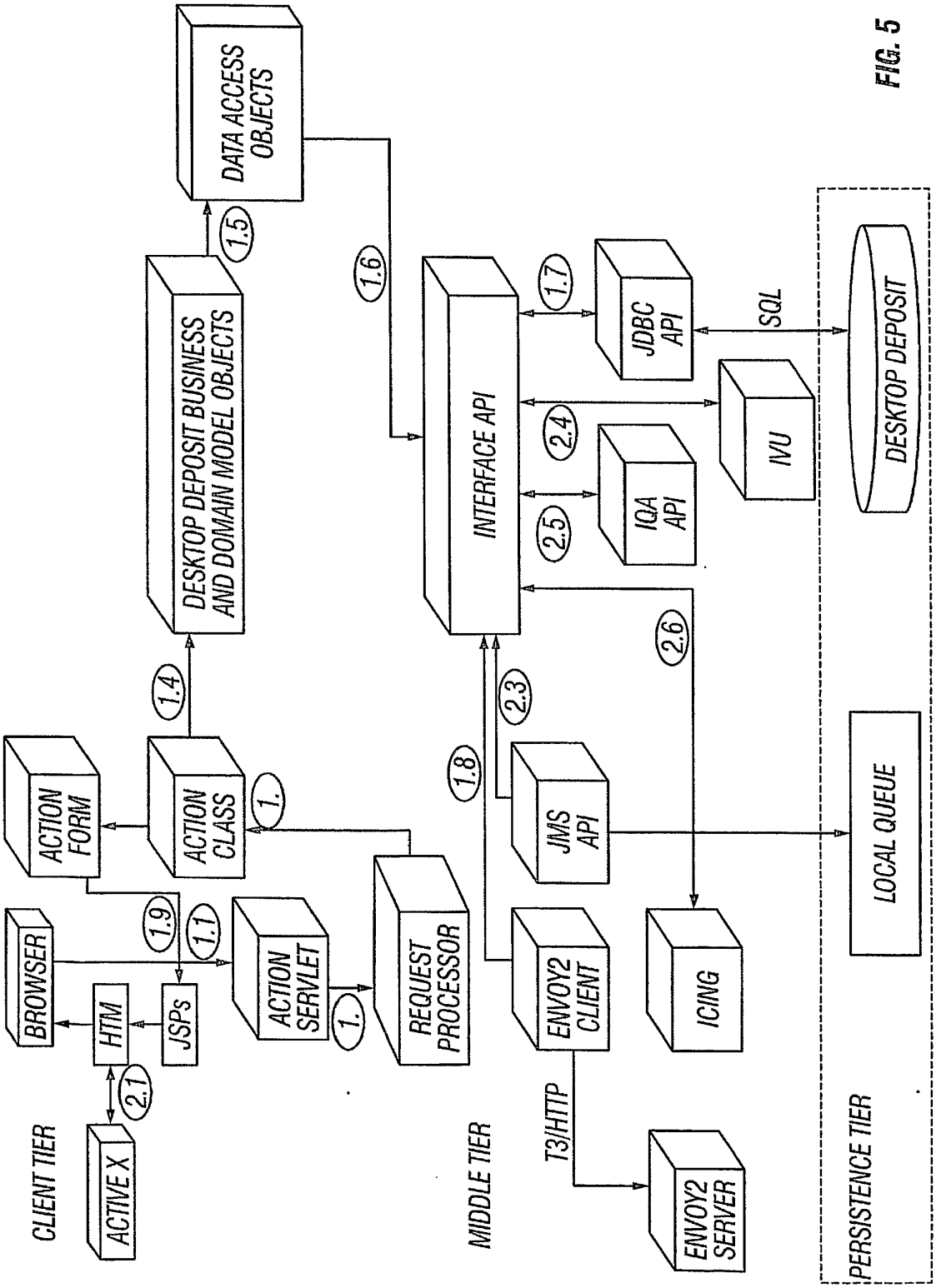

DATA ACCESS OBJECTS
DESKTOP DEPOSIT BUSINESS AND DOMAIN MODEL OBJECTS
INTERFACE API
JDBC API
SQL
DESKTOP DEPOSIT
IVU
IQA API
ACTION FORM
ACTION CLASS
JMS API
LOCAL QUEUE
BROWSER
HTM
JSPs
ACTION SERVLET
REQUEST PROCESSOR
ENVOY2 CLIENT
ICING
ACTIVE X
ENVOY2 SERVER
CLIENT TIER
MIDDLE TIER
T3/HTTP
PERSISTENCE TIER
1.
1.1
1.4
1.5
1.6
1.7
1.8
1.9
2.1
2.3
2.4
2.5
2.6

FIG. 5

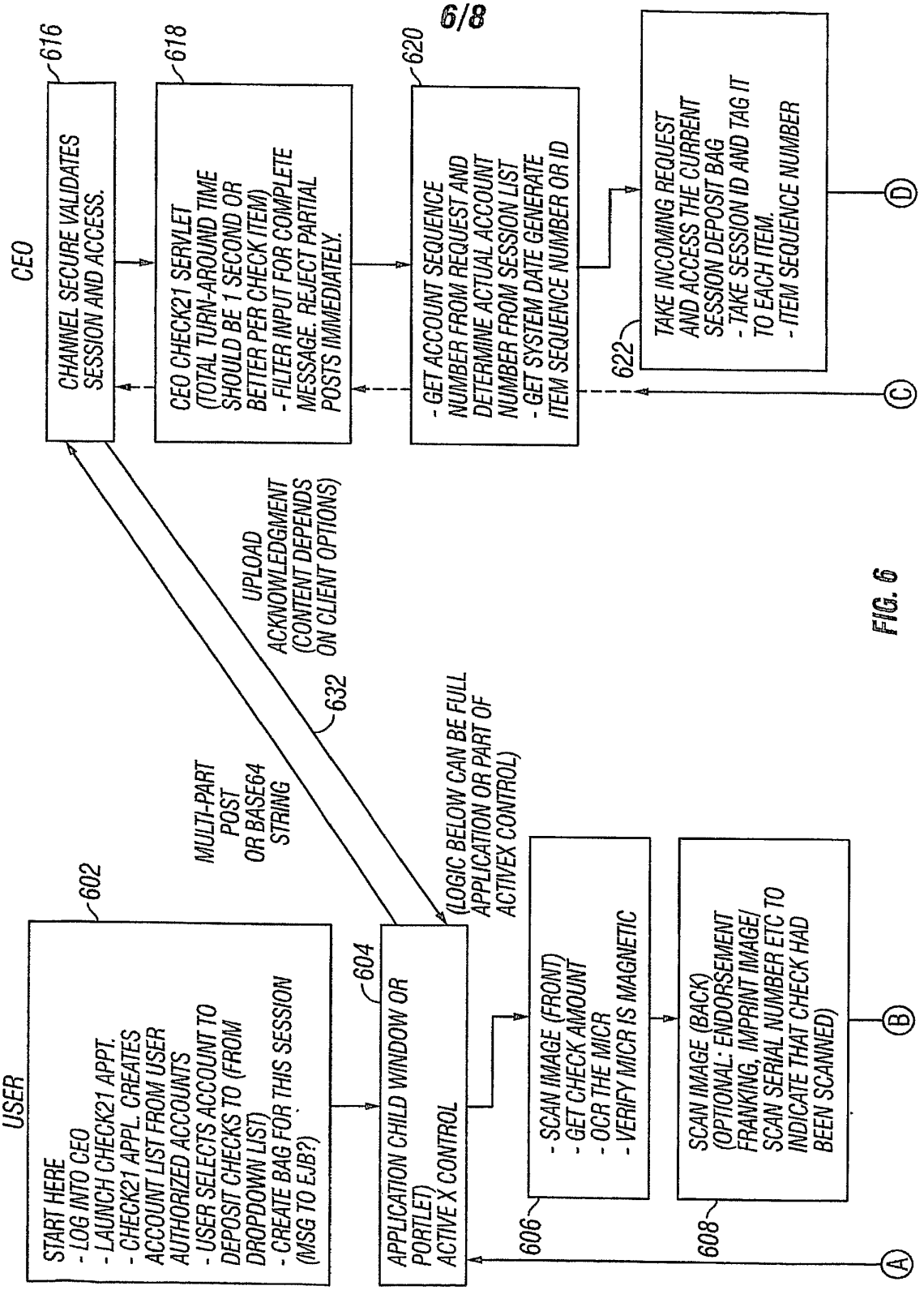

USER
START HERE
- LOG INTO CEO
- LAUNCH CHECK21 APPT.
- CHECK21 APPL. CREATES ACCOUNT LIST FROM USER AUTHORIZED ACCOUNTS
- USER SELECTS ACCOUNT TO DEPOSIT CHECKS TO (FROM DROPDOWN LIST)
- CREATE BAG FOR THIS SESSION (MSG TO EJB?)
602
APPLICATION CHILD WINDOW OR PORTLET)
ACTIVE X CONTROL
604
MULTI-PART POST OR BASE64 STRING
(LOGIC BELOW CAN BE FULL APPLICATION OR PART OF ACTIVEX CONTROL)
- SCAN IMAGE (FRONT)
- GET CHECK AMOUNT
- OCR THE MICR
- VERIFY MICR IS MAGNETIC
606
SCAN IMAGE (BACK) (OPTIONAL: ENDORSEMENT FRANKING, IMPRINT IMAGE/ SCAN SERIAL NUMBER ETC TO INDICATE THAT CHECK HAD BEEN SCANNED)
608
A
B
CEO
CHANNEL SECURE VALIDATES SESSION AND ACCESS.
616
CEO CHECK21 SERVLET (TOTAL TURN-AROUND TIME SHOULD BE 1 SECOND OR BETTER PER CHECK ITEM)
- FILTER INPUT FOR COMPLETE MESSAGE. REJECT PARTIAL POSTS IMMEDIATELY.
618
UPLOAD ACKNOWLEDGMENT (CONTENT DEPENDS ON CLIENT OPTIONS)
632
- GET ACCOUNT SEQUENCE NUMBER FROM REQUEST AND DETERMINE ACTUAL ACCOUNT NUMBER FROM SESSION LIST
- GET SYSTEM DATE GENERATE ITEM SEQUENCE NUMBER OR ID
620
C
TAKE INCOMING REQUEST AND ACCESS THE CURRENT SESSION DEPOSIT BAG
- TAKE SESSION ID AND TAG IT TO EACH ITEM.
- ITEM SEQUENCE NUMBER
622
D

FIG. 6

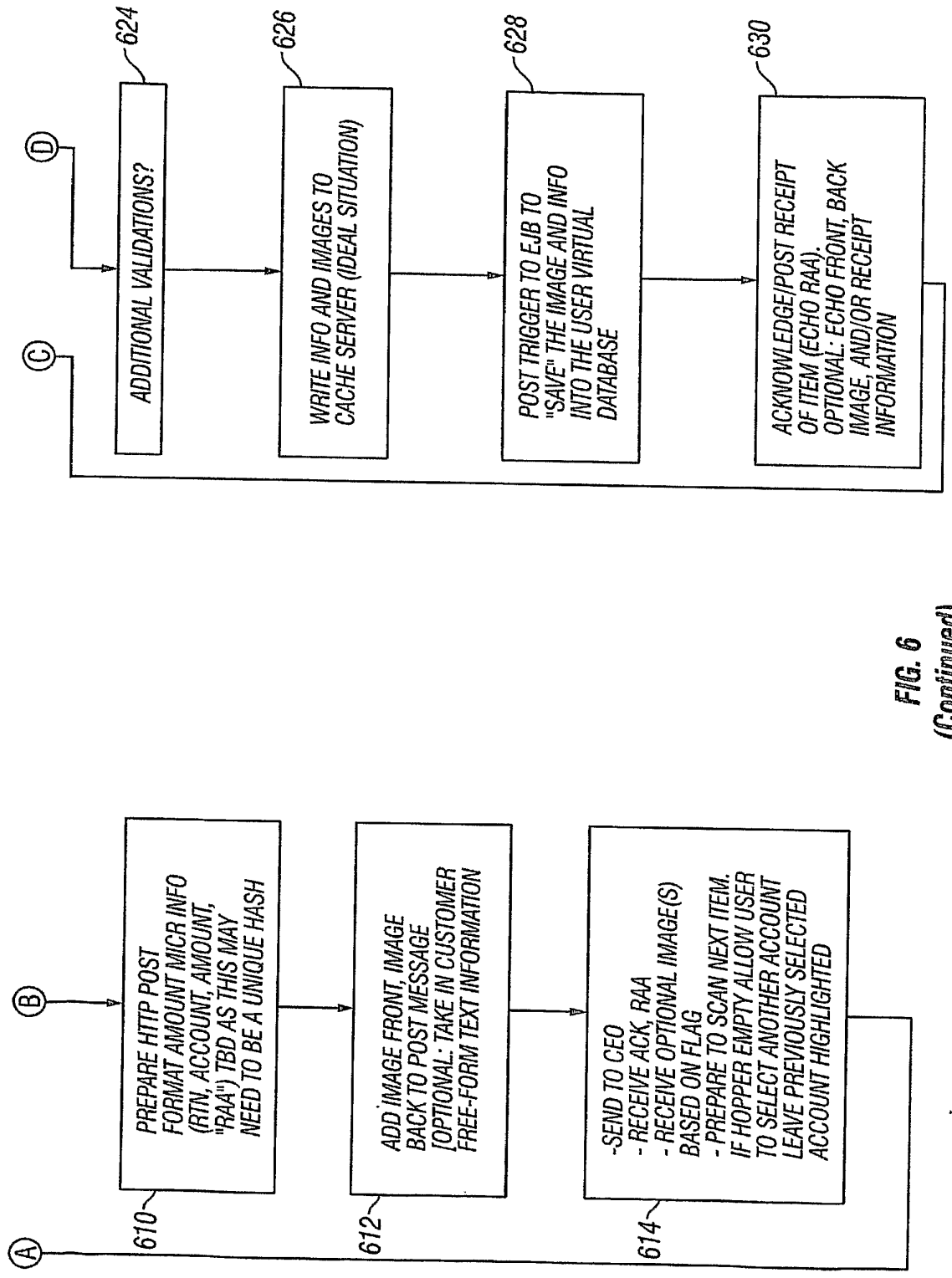


FIG. 6
(Continued)

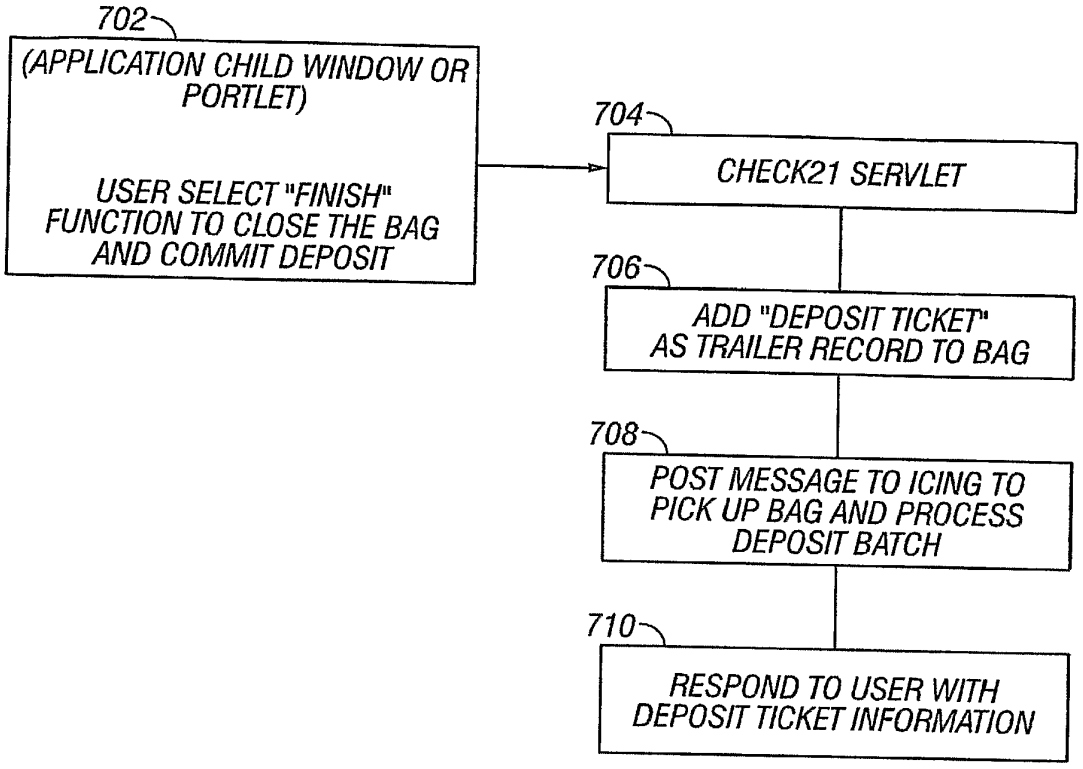

702
(APPLICATION CHILD WINDOW OR PORTLET)
USER SELECT "FINISH" FUNCTION TO CLOSE THE BAG AND COMMIT DEPOSIT
704
CHECK21 SERVLET
706
ADD "DEPOSIT TICKET" AS TRAILER RECORD TO BAG
708
POST MESSAGE TO ICING TO PICK UP BAG AND PROCESS DEPOSIT BATCH
710
RESPOND TO USER WITH DEPOSIT TICKET INFORMATION

FIG. 7

Electronic Acknowledgement Receipt	
EFS ID:	35875663
Application Number:	16025701
International Application Number:	
Confirmation Number:	8845
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM
First Named Inventor/Applicant Name:	Charles Lee Oakes
Customer Number:	16530
Filer:	Peter S. Lee/Camilo Arce
Filer Authorized By:	Peter S. Lee
Attorney Docket Number:	US-0152.09 (14538-649)
Receipt Date:	30-APR-2019
Filing Date:	02-JUL-2018
Time Stamp:	15:51:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	14538-649_Transmittal.pdf	120858 a323f7fee4bfd3e869987708b5d339345e97ad8c	no	1
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Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	14538-649_CBM_Suppl_IDS-E.pdf	170010 6a0e8a7f3f1e96d1dffb20cc16091e015f58ed8a	no	6
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This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	1-WO0161436A2.pdf	610419 db6d1aff61069a2ce07faf888717a294f031c697	no	15
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4	Foreign Reference	1-WO2006086768A2.pdf	1814367 6bff9789a9b356c4c754cc21c510c463e4f205ef	no	42
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5	Non Patent Literature	2-US-8699779-14538-114-PatentDisclaimer.pdf	125326 efcd938798556abe26655aca4bf11b702ee8fc3a	no	2
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6	Non Patent Literature	2-US-8977571-14538-69-PatentDisclaimer.pdf	298959 ac7123958d6fcd829e8fb49cf704a3044d4a98de	no	2
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7	Non Patent Literature	2-US-9336517-14538-559-PatentDisclaimer.pdf	125395 e15addc5a6d9ff4ea6f5a451fb651f84f21611aa	no	2
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Information:					
8	Non Patent Literature	2-US-9818090-14538-604-PatentDisclaimer.pdf	301944 9d1976dbfa981e078ebf84ffecc931e12099720e	no	2
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9	Non Patent Literature	3-CBM2019-00002_USAA-PreliminaryResponse.pdf	797345 843dfd89d5571a05ab25271b528c0ff74f69b66e	no	75
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10	Non Patent Literature	3-CBM2019-00002_DeclarationTimCrews.pdf	2454735 0e50d513689f22651005ac3ddb21ba077a6efc06	no	8
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11	Non Patent Literature	3-CBM2019-00002_DeclarationMatthew_Calman.pdf	230442 14ec755a68f03f13061173a239b76b44f77b02cc	no	14
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12	Non Patent Literature	3-CBM2019-00002_KatieKnightDeposition.pdf	134296 540cae75a8ba5aee71b0df7ab072c9bffaf7df60	no	27
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13	Non Patent Literature	3-CBM2019-00002_PeterAlexanderDeposition.pdf	126984 18afd4b95662716645518f2f197a2a3e3b0854e2	no	27
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14	Non Patent Literature	3-CBM2019-00002_USAA-UpdatedExhibitList.pdf	126301 2ea3f0d259f65f506989ad538fad1f597e6dfc5f	no	8
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15	Non Patent Literature	3-CBM2019-00003_PatentOwnerPreliminaryResponse.pdf	1122350 a28682671e8c7946bb9c855ee8e263c4b6c625e9	no	91
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16	Non Patent Literature	3-CBM2019-00003_MatthewCalman-Declaration.pdf	235685 6581c38fb32bdcd702c1fa585ba0b6028ed81de5	no	15
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17	Non Patent Literature	3-CBM2019-00003_KatieKnightDeposition.pdf	136205 8ced01bb99f20f76b0c91dccfb46642a6b49ced9	no	27
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19	Non Patent Literature	3-CBM2019-00003-USAA-UpdatedExhibitList.pdf	130320 97ada51851ab82e6a82880d8ad5be8d749a70a2f	no	8
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20	Non Patent Literature	3-CBM2019-00003-PetitionerReplyBrief.pdf	139743 b524a7333715c4fe809301fded038cef379241ef	no	10
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25	Non Patent Literature	3-CBM2019-00005-USAA-PreliminaryResponse.pdf	1281555 0b86599926c8454c087d0f31258f6b826036d48f	no	103
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26	Non Patent Literature	3-CBM2019-00005_Katie_Knight-DepositionTranscript-c.pdf	137194 ad7808b7b8c640d26aaeaefb9b6b01400ee5d296	no	27
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Information:					
28	Non Patent Literature	3-CBM2019-00005_Peter_Alexander-DepositionTranscript-c.pdf	129143 31d28e9396a3b9f9d725664330ccc7b51f851b78	no	27
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29	Non Patent Literature	3-CBM2019-00027_DeclarationPeteAlexander.pdf	8680925 de1556d4bfc3c7a79bdcd931bdef9294f3a7ecf2	no	147
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30	Non Patent Literature	3-CBM2019-00027_CBM-ReviewClaims.pdf	1397690 ab3106d4ceb8b84138a9ae907512a3c397c2aaa6	no	93
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31	Non Patent Literature	3-CBM2019-00027_AccordedFilingDate.pdf	85975 6ab91d32355f7f633a5932457d217fc5d1d254e1	no	3
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32	Non Patent Literature	3-CBM2019-00028_USAAPreliminaryClaimConstruction.pdf	560337 6c7448611778a3f0e2790e2ca96e9ca93539165c	no	74
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33	Non Patent Literature	3-CBM2019-00028_DeclarationPeterAlexander.pdf	1695274 539402319bee668ecba9c3ec55a69823139fb157	no	94
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34	Non Patent Literature	3-CBM2019-00028_PetitionCBMReviewClaims.pdf	2014528 2cba8d3e21350323acb9a57e29090061e2dec361	no	99
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35	Non Patent Literature	3-CBM2019-00028-PetitionerUpdatedExhibitList.pdf	97700 59790780b9e4e396a8b2f9aad8776e01363fa9d3	no	5
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Information:					
36	Non Patent Literature	3-CBM2019-00028_AccordedFilingDate.pdf	85959 d9aa508475da866c22d5c1cb29dbdd75efa499a5	no	3
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37	Non Patent Literature	3-CBM2019-00029_DeclarationPeterAlexander.pdf	1550676 06d53ccfab14944b944d28d82fcda0d0cd717805	no	76
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Information:					
38	Non Patent Literature	3-CBM2019-00029_PetitionCBMReviewClaims.pdf	1217361 94aafb6f4c8a15e5b39636c1836ad4114de58e5b	no	88
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39	Non Patent Literature	3-CBM2019-00029_USAAPreliminaryClaimConstruction.pdf	560315 65944442d4ff4e6e3712f0dccdb6160e76089eb3	no	74
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40	Non Patent Literature	4-IPR2019-00815_PetitionIPR-US-9818090.pdf	3328924 f008d654e43b194f8f1753c4282e4f738d3234c4	no	56
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41	Non Patent Literature	4-IPR2019-00815_DECLARATION-PETER_ALEXANDER.pdf	2019235 10e976f0137c805138bedf83e225a5ddae46e445	no	99
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42	Non Patent Literature	4-IPR2019-00815_NoticeAccorded.pdf	4017379 dd221d1e8c9e578bcd8a0c57193fe9f2b86d1b84	no	5
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44	Non Patent Literature	ABA_RoutingTransitNumber.pdf	191772 8133c1fbf684199d9a51cbad9220d8497e1b26fd	no	3
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45	Non Patent Literature	AccreditedStandardsReport_TR33-2006-c.pdf	1056626 bd0524798549713504 1e639b066b728b64b860f1	no	75
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46	Non Patent Literature	ANS-X9-100-140-2004_IRD.pdf	1951320 1b70c88a2db75df85882a2f82bc4c6e5271f3f33	no	15
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47	Non Patent Literature	ANSI-News-Check21GoesIntoEffect-c.pdf	108727 131743225c1c83a882a07208a6bc194f88e56f19	no	1
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48	Non Patent Literature	ANSI-ReturnCheckImageExchange-c.pdf	352187 d0c512076cc30cd07697402af3494ddc3107c7da	no	23
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49	Non Patent Literature	ANSI-SpecificationsElectronicExchangeCheckImageData-c.pdf	1671049 cf1a8a397d09ace03ef88725d285ddfd392e0512	no	230
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51	Non Patent Literature	ASCX9-DSTX9-37_SpecificationElectronicExchangeCheckImage-c.pdf	1198203 dff38dce448dbb4670a8785113379930ad0f6f8d	no	156
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52	Non Patent Literature	BankersHotline-TrainingPage.pdf	284491 4ea7216cf5d68173a3ff79855cca3d8ee86fcd00	no	2
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Information:					
53	Non Patent Literature	Brainjar-ValidationAlgorithms.pdf	101879 a9775bf1ddf79e77b4014b358429bb65fbb4e964	no	2
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Information:					
54	Non Patent Literature	Canon-TwoWordsEveryBusinessShouldKnow-RemoteDeposit-c.pdf	226203 d734dedbdaa2e787d539039d0a7775d5edf3341e	no	7
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58	Non Patent Literature	FedReserve-DSTUX9-37-2003_ImageCashLtr-c.pdf	515238 97a8100cbdb5f86ed7770f542068e9d1ee1307a5	no	48
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59	Non Patent Literature	Fielding-RFC-2616_Hypertext.pdf	528748 b54b59f865a73f143b2422e5d4bab8f37a1277d4	no	177
Warnings:					
Information:					
60	Non Patent Literature	Hill-FromJPhonetoLuminaCompleteHistory.pdf	1396164 feafa1951a4c408200aa3688945e1e5ee6387ec8	no	19
Warnings:					
Information:					
		Total Files Size (in bytes):	57830156		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: April 30, 2019 Name: Peter S. Lee (Reg. No. 64,728) Signature: /Peter S. Lee/



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of:	Charles Lee Oakes et al.		
Appln. No.:	16/025,701	Examiner:	Ojo O. Oyebisi
Filed:	July 2, 2018	Art Unit:	3697
For:	DIGITAL CAMERA PROCESSING SYSTEM	Conf. No.:	8845
Attorney Docket No.:	US-0152.09 (14538-649)		

TRANSMITTAL

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Attached is/are:

☒ Supplemental Information Disclosure Statement by Applicant; Foreign Patent References (E31-E32) and Non Patent Literature Documents (E33-E115).

Fee calculation:

☐ No additional fee is required.

☐ Per 37 CFR §1.27, ☐ Applicant is small entity ☐ Applicant is micro entity.

☐ An extension fee in an amount of $_____ for a _____-month extension of time under 37 CFR § 1.136(a).

☒ A petition or processing fee in an amount of $240 under 37 CFR § 1.17(p).

☐ An additional filing fee has been calculated as shown below:

					Fee		Small Entity Fee		Micro Entity Fee	
	Claims Remaining After Amendment		Highest No. Previously Paid	Present Extra	Rate	Add'l Fee	Rate	Add'l Fee	Rate	Add'l Fee
Total		Minus			x $100 =	$	x $ 50 =	$	x $25 =	$
Independent		Minus			x $460 =	$	x $230 =	$	x $115 =	$
First Presentation of Multiple Dep. Claim					+ $820 =	$	+ $410 =	$	+ $205 =	$
					Total	$	Total	$	Total	$

Fee payment:

☒ Please charge Deposit Account No. 50-4184 in the amount of $240 for Information Disclosure Statement.

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Respectfully submitted,

April 30, 2019
Date

/Peter S. Lee/
Peter S. Lee (Reg. No. 64,728)

BRINKS GILSON & LIONE
NBC Tower – Suite 3600, 455 N. Cityfront Plaza Drive, Chicago, IL 60611-5599

Electronic Patent Application Fee Transmittal					
Application Number:	16025701				
Filing Date:	02-Jul-2018				
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM				
First Named Inventor/Applicant Name:	Charles Lee Oakes				
Filer:	Peter S. Lee/Deborah Dudek				
Attorney Docket Number:	US-0152.09 (14538-649)				
Filed as Large Entity					
Filing Fees for Utility under 35 USC 111(a)					
Description		**Fee Code**	**Quantity**	**Amount**	**Sub-Total in USD($)**
Basic Filing:					
Pages:					
Claims:					
Miscellaneous-Filing:					
Petition:					
Patent-Appeals-and-Interference:					
Post-Allowance-and-Post-Issuance:					
Extension-of-Time:					

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	240	240
		Total in USD ($)		**240**

Electronic Acknowledgement Receipt	
EFS ID:	35876293
Application Number:	16025701
International Application Number:	
Confirmation Number:	8845
Title of Invention:	DIGITAL CAMERA PROCESSING SYSTEM
First Named Inventor/Applicant Name:	Charles Lee Oakes
Customer Number:	16530
Filer:	Peter S. Lee/Camilo Arce
Filer Authorized By:	Peter S. Lee
Attorney Docket Number:	US-0152.09 (14538-649)
Receipt Date:	30-APR-2019
Filing Date:	02-JUL-2018
Time Stamp:	15:48:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$240
RAM confirmation Number	050119INTEFSW00003088504184
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	Instrument_Merriam-WebsterDictionary-c.pdf	216471 29ded97d3b91678f920985066b1ab3a5d0df47a8	no	1
Warnings:					
Information:					
2	Non Patent Literature	Instrument-OxfordDictionary-c.pdf	584342 4913f7584a8f1d567ca965d869c78ff1647a40c7	no	44
Warnings:					
Information:					
3	Non Patent Literature	iPhoneApplicationProgrammingGuideDeviceSupport-c.pdf	284585 343c2a8533b0877bc774ec4bcd4ed87b19d5dfeb	no	7
Warnings:					
Information:					
4	Non Patent Literature	iphone_Accounces3gsFastest.pdf	103562 2202c7c92ab2d0cff68aa82702851a4028c6e7d4	no	4
Warnings:					
Information:					
5	Non Patent Literature	Klein-Financial_Servies-ImageQualityUsabilityAssurance-c.pdf	3045351 ce2fb70dd58f74b3103650f266d9066cbd8b88c8	no	67
Warnings:					
Information:					
6	Non Patent Literature	Lange-CombiningRemoteCaptureIRDPrinting-c.pdf	973911 a328e9ee1ffe0728c7ee69b7ec323bc2e637bcc5	no	25
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Information:					
8	Non Patent Literature	Meara-StateRemoteDepositCapture2015-MobileNew-c.pdf	249306 3eee3da2d08363fb5a8aeaaf9cb71b7f84f2eac7	no	3
Warnings:					
Information:					
9	Non Patent Literature	Meara-StateRemoteDepositCapture2015Scanner-c.pdf	921759 b3d058df6b56f793911fe7c94aa9f0437416fdbb	no	56
Warnings:					
Information:					
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Warnings:					
Information:					
11	Non Patent Literature	Mitek-MobileDepositProcessesMoreThanTwoBillionCks-c.pdf	98008 66c930c15bc50fa0205cc86073e0595b7e847b87	no	2
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12	Non Patent Literature	Mitek-VideoReleaseMiSnapMobileAutoCapture-c.pdf	154196 fdd8e7ed509305dd22cb4e96857fa051ed1349ae	no	2
Warnings:					
Information:					
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Warnings:					
Information:					

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Warnings:					
Information:					
15	Non Patent Literature	Nokia_N95-8GB-UserGuide-Part1-c.pdf	15647919 560d366df9937eb553cfe5f9c894bb44ce704765	no	67
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16	Non Patent Literature	Nokia_N95-8GB-UserGuide-Part2-c.pdf	15685374 4c16bff84ea5866d45840d3c7a3de5023b38ccfe	no	60
Warnings:					
Information:					
17	Non Patent Literature	Nokia_N95-8GB-UserGuide-Part3-c.pdf	12333614 3a4af4f97bb123fbbbc922193de6612cdbe5308b	no	53
Warnings:					
Information:					
18	Non Patent Literature	Patel_HowMobileTechnologyIsChangingBank-c.pdf	150705 83cda699fea83ea76795c17d4b308a4c0eb9e81a	no	3
Warnings:					
Information:					
19	Non Patent Literature	RemoteDepositCaptureBasicRequirements-c.pdf	137936 29340bf850d89ce4a8472779a4e641f1c7c437c0	no	1
Warnings:					
Information:					
20	Non Patent Literature	RemoteDepositCaptureScanner-c.pdf	449408 d248e5f53193a165e6654d5447e2df74364c9cc0	no	3
Warnings:					
Information:					

21	Non Patent Literature	Rowles-Email-Jan-24-2019-Email.pdf	802914 0db794735f32fa936ada8275a815158582aa8791	no	2
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Information:					
23	Non Patent Literature	Spenser-WhitePaper_Check21-ControllingImageQuality-c.pdf	295935 a68875c5c9298d0017d28f7e8935ccc5d6e14bfb	no	7
Warnings:					
Information:					
24	Non Patent Literature	TimothyRCrews-Patent-list.pdf	942806 b54ae87feb5e5740cc1466ee5fc66da39be50f58	no	7
Warnings:					
Information:					
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Warnings:					
Information:					
26	Non Patent Literature	WAUSAU-UnderstandingImageQualityEnvironment-c.pdf	211377 22fb846c75824882a417782f3960e5b8af6c2329	no	1
Warnings:					
Information:					
27	Non Patent Literature	Whitney-AFrameworkExchangingImageReturns-c.pdf	1424441 64214150592d750cdb9fac79c08207bd8fb0e512	no	129
Warnings:					
Information:					

28	Fee Worksheet (SB06)	fee-info.pdf	30626 230c35ad4436f4e5d6a429f3c31d7e6848186d94	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	82722779	

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/025,701	07/02/2018	Charles Lee Oakes III	US-0152.09 (14538-649)	8845

16530 7590 04/23/2019

BGL
P.O. Box 10395
Chicago, IL 60611

EXAMINER	
OYEBISI, OJO O	

ART UNIT	PAPER NUMBER
3697	

MAIL DATE	DELIVERY MODE
04/23/2019	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of Panel Decision from Pre-Appeal Brief Review

Application No.	Applicant(s)		
16/025,701	Oakes et al.		
Examiner	**Art Unit**	**AIA (FITF) Status**	
OJO O OYEBISI	3697	Yes	

This is in response to the Pre-Appeal Brief Request for Review filed 21 March 2019 .

1. ☐ **Improper Request** - The Request is improper and a conference will not be held for the following reason(s):

☐ The Notice of Appeal has not been filed concurrent with the Pre-Appeal Brief Request.
☐ The request does not include reasons why a review is appropriate.
☐ A proposed amendment is included with the Pre-Appeal Brief request.
☐ Other: _____ .

The time period for filing a response continues to run from the receipt date of the Notice of Appeal or from the mail date of the last Office communication, if no Notice of Appeal has been received.

2. ☑ **Proceed to Board of Patent Appeals and Interferences** - A Pre-Appeal Brief conference has been held. The application remains under appeal because there is at least one actual issue for appeal. Applicant is required to submit an appeal brief in accordance with 37 CFR 41.37. The time period for filing an appeal brief will be reset to be one month from mailing this decision, or the balance of the two-month time period running from the receipt of the notice of appeal, whichever is greater. Further, the time period for filing of the appeal brief is extendible under 37 CFR 1.136 based upon the mail date of this decision or the receipt date of the notice of appeal, as applicable.

☑ The panel has determined the status of the claim(s) is as follows:
Claim(s) allowed: _____ .
Claim(s) objected to: _____ .
Claim(s) rejected: 25-54 .
Claim(s) withdrawn from consideration: _____ .

3. ☐ **Allowable application** - A conference has been held. The rejection is withdrawn and a Notice of Allowance will be mailed. Prosecution on the merits remains closed. No further action is required by applicant at this time.

4. ☐ **Reopen Prosecution** - A conference has been held. The rejection is withdrawn and a new Office action will be mailed. No further action is required by applicant at this time.

All participants:

(1) OJO O OYEBISI .	(3) Sue Lao .
(2) Jerry O'Connor .	(4) _____ .

/OJO O OYEBISI/ Primary Examiner, Art Unit 3697		/Jerry O'Connor/ Supervisory Patent Examiner, Group Art Unit 3697

CERTIFICATE OF EFS FILING UNDER 37 CFR §1.8

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office, Commissioner for Patents, via the EFS pursuant to 37 CFR §1.8 on the below date:

Date: March 21, 2019 Name: Peter S. Lee (Reg. No. 64,728) Signature: /Peter S. Lee/

THIRDD SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/025,701
	Filing Date	July 2, 2018
	First Named Inventor	Charles Lee Oakes
	Art Unit	3697
	Confirmation Number	8845
	Examiner Name	Ojo O. Oyebisi
	Attorney Docket No.	US-0152.09 (14538-649)

In accordance with the duty of disclosure, Applicant(s) hereby cites the following references:

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Examiner Signature		Date Considered	

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Examiner Signature		Date Considered	

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	D118	WO 98/37655 A1	08/27/1998	WIPO	

OTHER ART – NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
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Examiner Signature		Date Considered	

EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
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	D138	Wausau Financial Systems, *Understanding Image Quality & Usability Within a New Environment*, 2006, 22 pgs,
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	D140	Knerr et al., *The A2iA Intercheque System: Courtesy Amount and Legal Amount Recognition for French Checks in Automated Bankcheck Processing 43-86,* Impedove et al. eds., 1997, 50 pgs.
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	D144	E. MacKenzie, *Photography Made Easy*, copyright 1845, 80 pgs.
	D145	12 CFR § 229.51 and Appendix D to Part 229 (1-1-05 edition), 3 pgs.

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EXAMINER INITIAL	Include name of author, title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	D146	Excerpts from American National Standard for Financial Services, ANS, X9.100-140-2004-Specifications for an Image Replacement Document – IRD, October 1, 2004, 16 pgs.
	D147	Sumits, *Major Mobile Milestones – The Last 15 Years, and the Next Five*, Cisco Blogs, February 3, 2016, located on the Internet at: https://blogs.cisco.com/sp/mobile-vni-major-mobile-milesrones-the-last15-years-and-the-next-five, 12 pgs.
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1. PRIORITY INFORMATION:

☐ This application claims priority under 35 USC §120 to the following United States patent application(s): _____. In accordance with 37 CFR §1.98(d), copies of the references cited herein which were submitted to, or cited by, the office, in compliance with 37 CFR §1.98(a)-(c) in the earlier application are not provided herewith. The Examiner is directed to those references cited in all Information Disclosure Statements filed in the priority United States patent application(s) cited above in addition to the references cited herein.

2. CERTIFICATIONS: (CHECK ALL THAT APPLY)

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☐ Applicant hereby certifies pursuant to 37 CFR §1.97(e)(1) that each item of information in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

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B. For Patent Term Adjustment Purposes:

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☒ Applicant has calculated a processing fee in the amount of $240.00 for large entity to be due under 37 CFR §1.17(p) in connection with the filing of this Information Disclosure Statement. Applicant authorizes charging the fee to Deposit Account. 50-4184.

☒ The Director is hereby authorized to charge any fee deficiency associated with the filing of this Information Disclosure Statement to Deposit Account 50-4184.

Examiner Signature		Date Considered	

Information Disclosure Statement

Application No. 16/025,701 Attorney Docket No. US-0152.09 (14538-649)

Pursuant to the undersigned attorney's obligation and duties under 37 CFR §§ 1.56 and 1.98(a)(3) and (c), either English language abstracts, partial translations, or full translations are included for patent documents which are not in English for the express purpose of providing a concise explanation of the references to the Patent and Trademark Office with the opportunity to evaluate the same. Applicant respectfully requests the Examiner's consideration of the above reference(s) and entry thereof into the record of this application.

By submitting this Statement, Applicant is attempting to fully comply with the duty of candor and good faith mandated by 37 CFR §1.56. As such, this Statement is not intended to constitute an admission that any of the enclosed references, or other information referred to therein, constitutes "prior art" or is otherwise "material to patentability," as that phrase is defined in 37 CFR §1.56(a).

Respectfully submitted,

March 21, 2019
Date

/Peter S. Lee/
Peter S. Lee (Reg. No. 64,728)

Examiner Signature		Date Considered	

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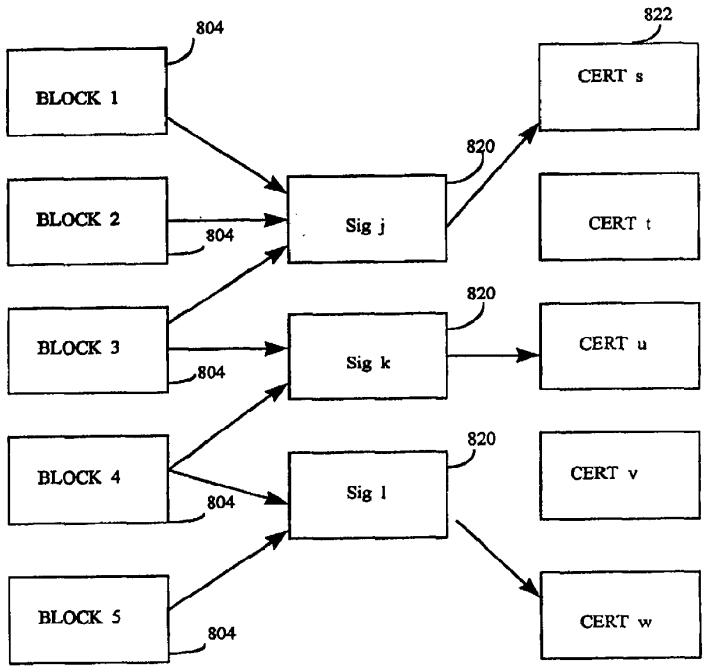
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(54) Title: METHOD AND SYSTEM FOR PROCESSING ELECTRONIC DOCUMENTS

(57) Abstract

The invention includes a markup language according to the SGML standard in which document type definitions are created under which electronic documents are divided into blocks that are associated with logical fields that are specific to the type of block and that are separately cryptographically signed (Fig. 35). Each of many different types of electronic documents can have a record mapping to a particular environment, such as a legacy environment of a banking network, a hospital's computer environment for electronic record keeping, a lending institution's computer environment for processing loan applications, or a court or arbitrator's computer system. Semantic document type definitions for various electronic document types (including, for example, electronic checks, mortgage applications, medical records, prescriptions, contracts, and the like) can be formed using mapping techniques between the logical content of the document and the block that is defined to include such content. Also, the various documents types are preferably defined to satisfy existing customs, protocols and legal rules.



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METHOD AND SYSTEM FOR PROCESSING ELECTRONIC DOCUMENTS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application incorporates by reference the following patent applications or publications:

1. U.S. Patent Application No. 08/418,190, filed April 7, 1995, naming John Doggett, Frank A. Jaffe et al. and Milton M. Anderson as inventors.

2. U.S. Provisional Patent Application No. 60/033,896, filed December 20, 1996, to Anderson et al.

3. Published PCT Patent Document WO 96/31965, published October 10, 1996, pertaining to International Application No. PCT/US96/04771.

The present invention relates to electronic documents and, more particularly, to electronic documents that are both human readable and computer readable.

BACKGROUND OF THE INVENTION

Preparation and storage of copies of documents for paper transactions is expensive and time consuming. Completion of such transactions among geographically distant parties has traditionally required conventional transmission mechanisms, such as mail, with inherent delays associated with such mechanisms. Record keeping for such transactions has required

significant additional steps, such as keeping a checkbook log for personal checks, keeping copies of prescriptions and medical records, making many duplicates of mortgage applications, and the like.

The digital computer and computer network make it possible to eliminate many of the drawbacks of paper transactions. The digital computer is a powerful data processing tool that allows a user to organize, store and analyze data at volumes and rates that would be impossible by any prior known techniques. The computer network is a similar step forward. By linking together several computers and by providing shared resources and cross-platform communications, engineers have developed the computer network into a tool that provides sufficient processing power to provide improved access to sophisticated applications by users at remote locations and to permit easy transmission of electronic documents between such locations.

One of the most widely accepted and heavily used networks is the Internet. The Internet is a global system of interconnected computer networks formed into a single world wide network, using an agreed-upon protocol. A user, through the Internet, can interactively transmit messages with users in different countries. Similarly, a user in the U.S. connected to files and libraries and other jurisdictions such as Europe and Asia, can download files for personal use. Accordingly, the Internet computer network provides strong communications functions similar to the communications functions provided by ham radio operators. Moreover, the Internet computer network acts like a universal library, providing electronic

access to resources and information available from Internet sites throughout the world.

In addition to the inherent inefficiencies of paper transactions, other problems exist. Many of these problems relate to documents that require signatures. In particular, in order for a reader of a paper document to determine that a particular document or part of a document has been signed, the reader must be given access to the entire document; thus, a party who may only need to know that the document has been signed must be given access to the entire document, including any confidential information contained therein. Signatures are used in a wide range of contexts, including financial instruments, contracts, mortgage applications, and medical records and prescriptions, to indicate the agreement, consent or authority of the signer. Transactions that require signatures have traditionally employed conventional means for execution, such as pen and paper. As used herein, "signature" has its broadest source; that is, it means any indication of agreement, consent, certification, acceptance, or other giving of authority, that is associated with a person or entity.

The present invention leverages the power of distributed network computing to overcome many of the inherent inefficiencies of paper transactions.

It is well known that digital computing and computer networks reduce or eliminate many of the inherent inefficiencies in dealing with documents. Word processing programs are used almost universally by individuals and businesses who produce, store and transmit documents. However, documents that require signatures are a special case that present special

problems. The signature itself is the first problem, since a signature is traditionally thought of as a manual signature. Protocols for signing electronic documents have been developed, including cryptographic digital signature algorithms, more particularly discussed below.

In addition to the problem of associating a signature with a document, other special problems are likely to exist in cases of documents that require signatures or affect commercial transactions. In particular, special requirements or protocols may apply to the content of such documents. For example, detailed rules exist as to how various actors are required to complete or respond to the information on each part of a paper check or other financial instrument. Similarly, rules exist as to how to complete and process a mortgage loan application. Different parts of medical records are also completed pursuant to protocols that require specific action on the part of medical personnel, insurers, and the like. In each of these cases the logical content of the different parts of the document is important, and a need exists to use the logical structure in the storage, manipulation and transmission of such document so that documents can be sent to known protocols. For example, if a protocol requires that a document bear a date, a logical element of the document should be defined for data information. Moreover, the protocols associated with signed documents are often established over time through custom and usage, so a need exists to permit electronic documents that closely mirror current practice. Also, although most individuals or businesses have computers, certain functions continue to be performed without the aid of a computer, such as viewing a human signature. Thus, it is important that documents that require signatures not only be machine processable, but also human readable.

A group of computer languages has been developed to help users manipulate documents according to logical content. Such languages, known as "markup languages," are a powerful tool in processing documents. Markup languages also have other advantages more particularly described below. One of the most important such languages is the Standard Generalized Markup Language ("SGML"). Certain advantages of an embodiment of the present invention may be understood by developing an understanding of SGML.

SGML is defined by the International Organization for Standardization in ISO 8879 (Information processing---Text and office systems---Standard Generalized Markup Language (SGML), ([Geneva]: ISO, 1986)). SGML is an international standard for the definition of device-independent, system-independent methods of representing texts in electronic form. SGML is an international standard for the description of marked-up electronic text. More particularly, SGML is a meta-language formally describing markup languages. In the present context, the word "markup" covers all sorts of special markup codes inserted into electronic texts to govern formatting, printing, or other processing. More generally, markup, or encoding, can be defined as any means of making explicit an interpretation of a text.

A markup language is a set of markup conventions used together for encoding texts. A markup language must specify what markup is allowed, what markup is required, how markup is to be distinguished from text, and what the markup means. SGML provides the means for doing the first three; a specific markup language such as that of the present invention fulfills the last function for particular contexts.

Three characteristics of SGML distinguish it from other markup languages: emphasis on descriptive rather than procedural markup; document type definitions; and independence from any one system for representing the script in which a text is written.

A descriptive markup system uses markup codes which simply provide names to categorize parts of a document. Markup codes such as <list> simply identify a portion of a document and assert of that portion that ``the following item is a list," etc. By contrast, a procedural markup system defines what processing is to be carried out at particular points in a document. In SGML, the instructions needed to process a document for some particular purpose (for example, to format it) are distinguished from the descriptive markup which occurs within the document. Usually, the instructions are collected outside the document in separate procedures or programs such as that of the present invention.

With descriptive instead of procedural markup the same document can readily be processed by many different pieces of software, each of which can apply different processing instructions to those parts of it which are considered relevant. For example, a content analysis program might disregard entirely the footnotes embedded in an annotated text, while a formatting program might extract and collect them all together for printing at the end of each chapter. Different sorts of processing instructions can be associated with the same parts of the file. For example, one program might extract names of persons and places from a document to create an index or database, while another, operating on text that has been "marked up" in some way, might print names of persons and places in a distinctive typeface.

SGML also provides the notion of a document type, and hence a document type definition ("DTD"). Documents are regarded as having types, just as other objects processed by computers. The type of a document is formally defined by its constituent parts and their structure. The definition of a report, for example, might be that it consists of a title and author, followed by an abstract and a sequence of one or more paragraphs. Anything lacking a title, according to this formal definition, would not formally be a report, and neither would a sequence of paragraphs followed by an abstract, whatever other report-like characteristics these might have for the human reader.

If documents are of known types, a special purpose parser can be used to process a document claiming to be of a particular type and check that all the elements required for that document type are indeed present and correctly ordered. More significantly, different documents of the same type can be processed in a uniform way. Programs can be written which take advantage of the knowledge encapsulated in the document structure information, and which can thus behave in a more intelligent fashion.

SGML also ensures that documents encoded according to its provisions are transportable between different hardware and software environments without loss of information. The descriptive markup feature and the document type definition address the transportability requirement at the abstract level. A third feature addresses it at the level of the strings of bytes (characters) of which documents are composed. SGML provides a general purpose mechanism for string substitution; i.e., a machine-independent way of stating that a

particular string of characters in the document should be replaced by some other string when the document is processed. This feature counteracts the inability of different computer systems to understand each other's character sets, or of any one system to provide all the graphic characters needed for a particular application, by providing descriptive mappings for non-portable characters. The strings defined by this string-substitution mechanism are called entities.

The SGML structure for a textual unit is known as an element. Different types of elements are given different names, but SGML provides no way of expressing the meaning of a particular type of element, other than its relationship to other element types. Within a marked up text (a document), each element must be explicitly marked or tagged in some way. The standard provides for a variety of different ways of doing this, the most commonly used being to insert a tag at the beginning of the element (a start-tag) and another at its end (an end-tag). The start- and end-tag pair are used to bracket off the element occurrences within the running text, in rather the same way as different types of parentheses or quotation marks are used in conventional punctuation.

SGML has the ability to use rules stating which elements can be nested within others to simplify markup. Such rules are the first stage in the creation of a formal specification for the structure of an SGML document, or document type definition. SGML is most useful in contexts where documents are seen as raw material to be matched against a pre-defined set of rules. Such rules can include legal rules or known protocols, customs or practices. By making

the rules explicit, the designer reduces his or her own burdens in marking up and verifying the electronic text, while also being forced to make explicit an interpretation of the structure and significant particularities of the text being encoded.

A variety of software is available to assist in the tasks of creating, validating and processing SGML documents. At the heart of most such software is an SGML parser: that is, a piece of software which can take a document type definition and generate from it a software system capable of validating any document invoking that DTD. Output from a parser, at its simplest, is just ``yes'' (the document instance is valid) or ``no'' (it is not). Most parsers will however also produce a new version of the document instance in canonical form (typically with all end-tags supplied and entity references resolved) or formatted according to user specifications. This form can then be used by other pieces of software (loosely or tightly coupled with the parser) to provide additional functions, such as structured editing, formatting and database management.

A structured editor is a kind of intelligent word-processor. It can use information extracted from a processed DTD to prompt the user with information about which elements are required at different points in a document as the document is being created. It can also greatly simplify the task of preparing a document, for example by inserting tags automatically.

A formatter operates on a tagged document instance to produce a printed form of it. Many typographic distinctions, such as the use of particular typefaces or sizes, are intimately

related to structural distinctions, and formatters can thus usefully take advantage of descriptive markup. It is also possible to define the tagging structure expected by a formatting program in SGML terms, as a concurrent document structure.

Text-oriented database management systems typically use inverted file indexes to point into documents, or subdivisions of them. A search can be made for an occurrence of some word or word pattern within a document or within a subdivision of one. Meaningful subdivisions of input documents will of course be closely related to the subdivisions specified using descriptive markup. It is thus simple for textual database systems to take advantage of SGML-tagged documents.

Hypertext systems improve on other methods of handling text by supporting associative links within and across documents. Again, the basic building block needed for such systems is also a basic building block of SGML markup: the ability to identify and to link together individual document elements is an inherent a part of the SGML protocol. By tagging links explicitly, rather than using proprietary software, developers of hypertexts can be sure that the resources they create will continue to be useful. To load an SGML document into a hypertext system requires only a processor which can correctly interpret SGML tags. HTTP servers in wide use for network computing are suitable to interpret SGML.

Although markup languages exist in accordance with the SGML standard that permit the user to manipulate documents according to logical content identified by tags within a document,

conventional markup languages have not fully addressed the special problems associated with documents involved in signature transactions. A particular need exists for a flexible markup language that permits a document designer to create documents that are designed to comply with legal requirements and other protocols of a wide variety of particular transaction contexts that involve signatures. Also, a need exists for a markup language that permits the design of documents that are machine processable and human readable. A further need exists for electronic documents that can be subdivided or redacted as transmitted in parts, wherein the integrity of the document and the validity of the signature remains.

The benefits of a flexible, powerful markup language may best be understood by reference to a number of specific transaction contexts in which such a language is particularly useful. These transaction contexts relate to embodiments of the invention. One such context is in the area of financial instruments, and particularly electronic funds transfer instruments. These contexts are described merely by way of illustrations and it should be understood that any context in which signed documents are used may benefit from the present invention.

As seen in Fig. 1, in a typical financial transaction 10 a payer 12 transfers funds to a payee 14. Individual payers and payees prefer different payment methods at different times, including cash, checks, credit cards and debit cards. The transfer of funds between the payer 12 and the payee 14 may involve intermediate transactions with one or more banking institutions 16. The banks' functions include collecting and holding funds deposited by account holders and responding to instructions from the account holders. Checks are an example of financial transactions which invoke

these banking institution functions.

Fig. 2 shows a paper check transaction 20, in which a check 22 is transferred from the payer 12 to the payee 14. The check 22 is typically found in a checkbook 24. Each check has several blank spaces (for the date 34, the name of the payee 30, the sum of money to be paid 28, and the signature of the payee 38) to be filled out by the payer 12. As each check is written, the payer 12 keeps a record of the check in a check register 26 which lists check transactions including the sum to be paid 28, the name of the payee 30, the identification number of the check 32, and the date of the transaction 34.

In the body of the check 22, the payer 12 instructs the payer's bank 36 to pay the stated sum of money 28 to the payee 14. The check 22 identifies the payer's bank 36, the payer's account number 40 (using magnetically readable characters) at the payer's bank, and the payer 23 (usually by printed name and address). After filling in the date 34, the name of the payee 30 and the sum of money 28 as ordered by the payee 14, the payer signs the check 22. A payee typically considers a check authentic and accepts it for payment only if it contains the signature 38 of the payer, the printed identification of the payer 23 and the printed name and logo 42 of the payer's bank 36, and does not appear to be altered. The check 22 also contains a routing and transit number 25 which indicates the routing of the check to the payer's bank 36 for presentment.

After the payer 12 presents the completed check 22 to the payee 14 in a financial transaction (such as a sale of goods or services), the payee 14 endorses the check 22 on the back with instruction

to deposit the amount 28 with the payee's bank 46. If the check looks authentic, the payee bank 46 provisionally credits the payee's account 48 for the amount of money designated on the face of the check 28 pending clearance through the federal reserve system and acceptance and payment by the payer's bank 36.

The payee's bank 46 routes the check 22 to the payer's bank, possibly using the federal reserve bank clearing house 50 or other established clearing arrangement, which uses the routing and transit number 25 to deliver it to the payer's bank 36, which then verifies the authenticity of the check 22 and (at least for some checks) the signature 38 of the payer 12. If the check 22 is authentic and the payer 12 has sufficient funds in her account 40 to cover the amount of the check 28, the payer's bank 36 debits the payer's account 40 and transfers funds to the payee's bank 46 for the amount designated on the check 28. A complete check transaction 20 thus includes verification steps performed by the payee 14 and the payer's and payee's banks 36 and 46.

The banks 36 and 46 send bank statements 52 and 54 to the payer 12 and payee 14, respectively, which reflect events of the transaction 20 pertinent to each of the parties for reconciliation of their accounts with their records.

Processing a paper check requires time as the physical check is routed to the payer, the payee, the payee's bank, the clearing house and/or the payer's bank. The same is true of other types of financial transactions involving paper instruments, such as credit card slips generated during a credit card sale. In a credit card transaction, a merchant makes an impression of the customer's card, which

the customer then signs, to function as a receipt for the transaction. The merchant typically obtains a positive acknowledgment or credit authorization from the customer's credit card company before accepting the credit card slip. This assures that payment will be received.

Several mechanisms for using electronic communication to substitute for paper flow in financial transactions are in use or have been proposed.

Electronic Check Presentment (ECP) is a standard banking channel used to clear checks collected by banks prior to or without routing the physical checks. The Automated Clearing House (ACH) is an electronic funds transfer system used by retail and commercial organizations. The ACH acts as a normal clearing house, receiving a transaction over the network and then splitting and routing the debit and credit portions of the transaction to the payer's and the payee's banks. Electronic Data Interchange (EDI) is a similar electronic transactional system, primarily used for the interchange of business documents such as invoices and contracts. With EDI, the funds transfer is frequently transmitted over other financial networks, such as through electronic funds transfer or ACH.

So-called home banking allows a consumer to use a home or personal computer to, e.g., request that the bank pay certain bills.

Electronic funds transfer (EFT), or wire transfer, is used for direct transfer of funds from a payer to a payee, both usually corporations, using a bank's centralized computer as an intermediary.

The EFT system may be used in conjunction with the ACH system described above.

Automatic teller machines (ATM) and point of sale (POS) devices allow an individual to conduct a transaction from a location outside the home. ATMs have remote computer terminals connected to the user's bank which allow access, directly or indirectly through switching networks, to the user's account in the central computer of the bank. Similarly, POS devices are remote computer terminals located at a place of business which allow access to an individual's account information stored in a computer within a network of financial institutions, to permit transfer of funds from the user's account to the merchant's account at another bank.

Check imaging, another electronic transaction procedure, involves the scanning of a paper check by a scanner, which digitizes the image of the check pixel by pixel and stores the image electronically in a memory. The image may then be transferred electronically to substitute for or precede the physical delivery of the check, e.g., to truncate the clearing process. The image of the check may be recreated on a computer monitor or on paper for verification by the appropriate banking institutions.

Several systems are currently used to secure electronic financial transactions. For example, IC chip cards, or smart cards, are small devices (containing chips with memories) which are capable of exchanging data with a computer or a terminal and of performing simple data processing functions, and are thus more versatile than a simple credit card. The smart card is portable and may be easily used in POS and ATM environments.

Other embodiments of the invention relate to execution of legal documents, completion of mortgage applications, and transmission of signed medical records.

As seen in FIG. 18, in a typical contract transaction 401 a first signer 410 signs a legal document 483 and delivers the document to a second signer 422. The document may pass through various intermediaries 421, such as a notary, for other actions, such as notarization. Also, the document may be passed on to various third parties 425 who will read the document in order to verify the signature or the contents of the document. A third party 425 could be a judge, arbitrator 423, escrow agent 427, or other party whose action depends on the contents of the document and the signature.

Referring to FIG. 21, a typical contract transaction 481 is depicted in which the first signer 410 signs a document 483. In addition to substantive contract clauses, the document may include the names of the parties 484, the date 486, a signature line 470, a second signature line 472, a notarization line 474 and other features. Once signed by the first signer 410 the document may be transmitted to a second signer 422. The second signer may sign the document with the second signer's signature 480 at the second signature line 472. The document may then be notarized by a notary 421 with a notarization 482 at the notarization line 474. The document may be transmitted to various third party readers 423. For example, the contract may provide for an escrow of funds with an escrow agent, and the document may need to be transmitted to the escrow agent in order to permit the escrow agent to understand the conditions under which the funds will be released.

In contract transactions such as that depicted in FIG. 21, it is often a condition of the contract that certain information exchanged between the parties be kept confidential. In particular, certain terms of the contract are often required to be kept confidential. However, one or more parties may need to demonstrate to a third party that the contract has been signed as to certain other terms. Often, the third party does not need to know all terms of the contract, only that the contract has been signed as to certain terms. For example, the escrow agent only needs to know the terms of the escrow arrangement, not all of the terms of the business relationship between the parties. Similarly, third parties relying on a statement by one signer that the signer owns certain property only need to see the provisions of the contract that relate to ownership of property. The dilemma is that under known electronic document processing systems, where the signer signs the entire file, such a demonstration requires the disclosure of the entire file. With paper transactions, the confidential information can be blacked out, so that only the relevant information and the signature remains. With an electronic file, such redaction places in question the integrity of the entire document, as well as the validity of the signature. A need has arisen to provide the convenience and flexibility of electronic contracting, along with the security and familiarity of known paper contracting methods.

As with electronic checks, a need also exists for electronic contracts to remain human readable. That is, an individual should be able to read the contract or a portion of the contract on the screen or in a printout and obtain any relevant information that can be obtained through electronic processing. The need for human readability arises from, among other things, the fact that not all readers will have computer systems that are capable of reading the electronic form of the documents.

A mortgage loan application is one type of legal document that may be prepared in accordance with the present invention. Referring to FIG. 19, in typical mortgage transaction 489, a borrower 452 signs a loan application 490. The loan application may be signed at various signature lines. The loan application is then transmitted to a lender in some cases through an intermediary such as a broker 455. The application may then be reviewed and acted upon by various third parties 456, such as mortgage lenders, credit reporting agencies, banking institutions and the like.

Referring to FIG. 22, a typical mortgage loan application transaction 489 is depicted in which the borrower 452 submits a mortgage application 490. The mortgage application 490 may include various information such as the date 491, the names of the parties 493, various signature lines for particular clauses 492, 494, and a signature line 498 for the entire application for the borrower, as well as a signature lines 500, 501 for the lender and for the broker 455. The mortgage application, once signed by the borrower at the signature lines 492, 494 and 498, may be transmitted to the lender 454. The lender may then sign with the lender's signature 505 at the lender's signature line 501 and transmit it to the lender. The broker 455 may also sign at the signature line 500. The document may then be sent on to one or more third parties 456 such as a bank for review. Also other parties may need to see the application, such as a credit reporting agency or an appraiser, to verify that the borrower has given permission to reveal information contained in the application or in a credit report. Once the credit reporting agency and other third party has reported to the lender 454, the lender 454 may then approve the loan and provide an approval 508 to the borrower 452.

Mortgage loan transactions raise similar confidentiality concerns as legal contracts. A credit

reporting agency may only need to see the part of the application that authorizes a credit report, but known electronic techniques require the signer to sign the entire file; thus, in order to ensure the validity of the signature, the credit reporting agency must receive the entire document. Other third parties may also need to see only part of the application. Accordingly, a need has arisen to provide for transmission of part of a mortgage loan application while ensuring the integrity and validity of the signature, as well as of the information in the part that is transmitted.

A mortgage application needs to be human readable, because various parties who will read part or all of the document, such as credit agencies, appraisers or the like may not have computer systems that are capable of reading electronic documents. Human readability permits the continued application of existing customs and legal rules, increasing the comfort of users with electronic document processing.

Referring to FIG. 20, another type of document that requires signatures and is subject to various legal requirements is a patient's medical record 520. A first doctor 462 may sign the medical record or part of the medical record and transmit it to a second doctor 464 who may add additional information and signatures to the document. The document may be transferred through or to various intermediaries 467, or third parties 468, such as the patent, other doctors, hospital administrators, insurance companies, guardians, family members and the like.

Referring to FIG. 23, a depiction of a medical record transaction 521 is provided. A first doctor 462 may sign a record 520. The record may include one or more dates 530, 532. The medical

record 520 may include various health-related content items such as a diagnosis 522, prescription 524, or an action taken 523, as well as other content items, such as health insurance information 525. The record 520 may include a signature line 528 for the first doctor 462 and a signature line 529 for other items to be signed by a second doctor 464. Once the medical record is signed and completed by a first doctor 462, it may be transmitted to the second doctor 464 for signature 534 by the second doctor 464 at the second doctor's signature line 529. Once the medical record 520 is signed by one or more doctors, it may be transmitted to an intermediary 467, such as a hospital administration, or to a third party 468 such as an insurance company, a medical records sections of the hospital, a guardian, a family member or the patient. One or more of these parties may be required to take action 537, for example to sign the record, to indicate consent to procedures, to indicate insurance coverage, or for other purposes. These parties may need to rely on the signature of the doctors 462, 464 in order to take action on the medical record.

Medical records are like contracts and loan applications in that they contain confidential information that may need to be read by third parties, such as patient health information, insurance information and the like, but most of the third parties only need access to certain portions of the information. For example, an insurer may need to know the diagnosis, but may be excluded from consideration certain information in the record, such as HIV status. Similarly, a doctor diagnosing a medical condition may not need to know insurance eligibility. Under current electronic document systems, in order for the reader to ensure the integrity of the record and the validity of the signature, the entire file is disclosed. A need exists to be able to transmit portions of a signed medical record while ensuring the integrity of the record and the validity of the signature

Medical records also need to be human readable. Many of the parties who will read the records, such as doctors and nurses may not have immediate access to computer systems for processing the documents. Also, human readability permits parties in the medical field to continue to use customary practices in dealing with such records. Moreover, if documents remain human readable, then existing legal rules for paper records can be applied to electronic records. Medical records also need to be readable in segments. For example, a health insurer may be entitled to know a particular diagnosis or prescription without having knowledge of a patient's entire medical history.

SUMMARY OF THE INVENTION

The invention includes a computer-based method for creating a signed electronic documents.

In one aspect, the invention includes a markup language according to the SGML standard in which document type definitions are created under which electronic documents are divided into blocks that are associated with logical fields that are specific to the type of block. Each of many different types of electronic documents can have a record mapping to a particular environment, such as a legacy environment of a banking network, a hospital's computer environment for electronic record keeping, a lending institution's computer environment for processing loan applications, or a court or arbitrator's computer system. Semantic document type definitions for various electronic document types (including, for example, electronic checks, mortgage applications, medical records, prescriptions, contracts, and the like) can be formed using mapping techniques between the logical content of the document and the block that is defined to include

such content. Also, the various document types are preferably defined to satisfy existing customs, protocols and legal rules. For example, in the case where the electronic document is an electronic check, the document type definition for electronic checks can be designed to comply with Regulation E, of the Uniform Commercial Code and other state and federal laws for payment instruments. An example of a document type definition for the electronic check is depicted in FIG. 43. Where the document is a medical record, the document type definition can be designed to comply with health care regulations. When the document is a mortgage loan application, the document can be designed to comply with mortgage lending regulations. Other embodiments can be readily envisioned for other types of documents in other contexts that are legally required to have particular content. Document type definitions in FSML or SGML can thus be applied to legally significant communications, such as performative utterances, in a manner that permits the establishment of rules and protocols for handling content for that type of communication. Thus, a content block for the "pay to the order of" block of a check can be defined, and the associated computer software will treat the content in that block as the identification of the payee of the check. Similar protocols can be established for all types of significant content, including content relevant to business practices and legal rules.

In one embodiment, the invention features a computer-based method in which an electronic instrument is created for effecting a transfer of funds from an account of a payer in a funds-holding institution to a payee, the instrument including an electronic signature of the payer. A digital representation of a verifiable certificate by the institution of the authenticity of the account, the payer, and the public key of the payer is appended to the instrument. This enables a party receiving the

instrument, e.g., the payee or a bank, to verify the payer's signature on the instrument. A similar certificate of authenticity could also be issued in other contexts. For example, a certifying authority could certify that a doctor is properly licensed and authorized to sign a prescription. A certifying authority could certify as to the creditworthiness of a borrower in a transaction. A certifying authority could certify as to the authority of an individual to sign a contract for a given company. These examples are merely illustrative of all transactions in which a certifying entity participates.

Implementations of the invention may also include one or more of the following features. The electronic instrument may include digital representations of the content of the document. In the case of the electronic check, this may include: (a) payment instructions, (b) the identity of the payer, (c) the identity of the payee, and (d) the identity of the funds-holding institution. In the case of medical records, the digital representations may include the identities of the doctor or doctors, the identity of the patient, the identity of the hospital, as the identity of an insurer. In the case of a mortgage application, the identities of borrower, lender, broker, and other parties and relevant third parties may be digitally represented. In the case of a contract, the identities of all parties may be digitally represented. Digital representations of a verifiable signature of a signing party, such as the payer of an electronic check, may also be appended to the electronic document. The electronic document may be delivered electronically to the institution at least in part via a publicly accessible data communication medium. At the receiving party, the signature of the signer and the certificate may be verified in connection with whatever action is required by the receiving party, such as transmitting funds to the payee in the case of the electronic check. In the case of the electronic check, an account number may be included in the electronic instrument. In other embodiments,

similar identifying information, such as the patient's health insurance code number, the number of a given loan application or contract, or the like, may be included. In the electronic check embodiment, the account may be a deposit account or a credit account. The instrument may be an electronic substitute for a check, a traveler's check, a certified check, a cashier's check, or a credit card charge slip. In all embodiments, the publicly accessible data communication medium may be unsecured.

Also appended to the electronic document may be digital representations of a verifiable signature of a second signer. The second signer may be the payee of an electronic check, a second or doctor, a mortgage lender, for example. A verifiable certificate by a third party, such as an institution which holds an account of the payee of an electronic check, or a credit institution in the case of a mortgage application, may also be appended, as may be a verifiable certificate by a central authority, such as a banking authority, with respect to the third party, such as the institution which holds the payee's account in the case of the electronic check.

Delivery of the electronic document may be in part via a private controlled secure communication medium and in part via a publicly accessible data communication medium. The electronic document may be delivered from one third party to another, such as from an institution which holds an account of the payee to the funds-holding institution via an electronic clearing house in the case of an electronic check, from a broker to a lender in the case of a mortgage loan application, or from a hospital to an insurance company in the case of a medical record, for example.

A party reading the signature of the first signer can verify the signature and the certificate of any party certifying the signature. In the case of the electronic check, at the payee, the signature of the payer and the certificate of the institution may be verified. Other signatures and certificates may be verified by other parties to various transactions. Thus, in the case of the electronic check, at the institution holding an account of the payee, the signature of the payer and the certificate of the funds-holding institution may be verified.

The signatures may be generated by public key cryptography. The appending step may be done by a separate signature device from the device which performs the creation of the electronic document.

Digital representations of a proposed transaction and a verifiable signature of the party initiating or proposing a transaction, such as a payee of a check, may be delivered from that party to the other party, such as the payer of an electronic check, at least in part via the publicly accessible communication network.

Information may be automatically transferred from the electronic document to a computer-based data storage, manipulation, access and retrieval system, such as an accounting system that tracks accounts receivable or processes orders. A log or database of information about electronic document transactions may be created.

In general, in another aspect, the invention features an apparatus including a portable token

having a memory, a processor, and a port for communication with a computer. The memory contains a private encryption key associated with a party or with another item associated with that party, such as an account in a funds-holding institution, or a health insurance number, and which is usable to append a secure, verifiable signature to an electronic payment document executed in connection with the item, such as a check drafted on an account or a claim against a health insurance policy.

Implementations of the invention may include one or more of the following features. The memory may contain certification information provided by the institution and which is usable to append secure, verifiable certificates to electronic documents to certify a relationship between an owner of the signature and a public key of the owner. A unique identifier may be assigned to each electronic document. The portable token may be a PCMCIA compatible card, smart card or smart disk, which may internally hold a private signature key and a secure memory for the check serial number. The certification information may be given a limited useful life. The memory may also contain certification information provided by a third party authority, such as a central banking authority in the case of an electronic check, and which is usable to append secure, verifiable certificates to electronic documents to certify the authenticity of a party, such as the funds-holding institution in the case of the electronic check. The certification information provided by the third party authority may have a limited useful life. In the electronic check embodiment of the present invention, the central banking authority may be a United States Federal Reserve Bank. The memory may also contain a complete or partial register of electronic documents, or a subset of the information contained in the documents, to which signatures have been appended. The appended signature may be a signature of any party to a transaction, such as a payer who holds the account in

the institution, an endorsement signature of a payee, a signature of a doctor or patient, a signature of a borrower, broker or lender, or the signature of a contracting party. The memory may also contain a personal identification number for controlling access to the memory.

In general, in another aspect, the invention features a computer-based method of creating an electronic document. Digital data is formed which represents the identity of each party to the transaction, and other relevant facts to the transaction, such as the amount to be paid in the case of an electronic check, or the amount of medicine in the case of an electronic prescription that is part of a medical record. Then, in a secure hardware token, a digital signature is appended to the data.

In another aspect the invention features having a second signer sign an electronic document and enter information about a transaction in digital form into the secure hardware token and, in the token, append a digital signature to the digital information. In the electronic check embodiment, the invention features a computer-based method of endorsing a payment instrument by entering information included in the payment instrument in digital form into a secure hardware token and, in the token, appending a digital signature to the digital information.

In general, in another aspect, the invention features a computer-based method for regulating the use of account numbers with respect to accounts in a funds-holding institution. Digital account numbers are assigned for use by account holders in creating electronic instruments, the digital account numbers being distinct from non-electronic account numbers used by account holders with respect to non-electronic instruments. At the funds-holding institution, electronic instruments are

then accepted from account holders only if the electronic instruments include one of the digital account numbers. In implementations of this feature, each digital account number may be linked with a non-electronic account number, and the two numbers may be linked with a common account in the institution, so that electronic instruments and non-electronic instruments may be drawn against the same account. A similar aspect can be applied to regulating unique identifying numbers to information in a particular mortgage application, contract, medical record, or other electronic document.

In general, in another aspect, the invention features a computer-based method of attaching a document to a related electronic document by forming a cryptographic hash of the document and appending the hash to the electronic document. In particular, the invention includes a method for calculating hashes of blocks of content within the document, appending the hashes to document name tags of the blocks, hashing the appended result, and signing the hash.

In general, in another aspect, the invention features a computer-based method for reducing fraud with respect to transmission of an electronic document, such as deposit of an electronic payment instrument with a funds-holding institution. A key-encrypted signature of a first party, such as a payee in the case of the electronic check, a public key of the party, a routing code of an institution or third party, and a number associated with information of the first party associated with the transaction, such as the number of the payee's account in the institution in the case of the electronic check, are included with the document, and, at the third party, there is automatic checking of the routing code and the number before accepting the electronic document.

In general, in another aspect, the invention features a computer-based method for reducing fraud associated with an electronic payment document. A cryptographic signature associated with a party to the document is appended to the document or to part of the document. Upon receipt of an electronic document, there is automatic checking of the cryptographic signature against cryptographic signature information of other electronic documents previously received.

Advantages of the invention may include one or more of the following.

The invention provides an all-electronic payments and deposit gathering instrument that can be initiated from a variety of devices, such as a personal computer, screen phone, ATM or payments accounting system. Financial accounts may be rapidly and securely settled between trading partners over open public or proprietary networks, without requiring pre-arrangement, by interconnection with the existing bank clearing and settlement systems infrastructure. The integration of controlled existing banking communication systems with rapidly growing public networks in a secure fashion will allow for implementation and acceptance by banking institutions, industry, and consumers.

The invention addresses the problem of gathering deposits electronically over public networks, since it enables all customers, retail and commercial, to gather, transmit and deposit, e.g., checks, into their accounts without physically going to a bank branch. The invention provides an electronic payment alternative for trading using public data networks to conduct transactions.

The invention to a degree electronically replicates heavily-used and well-understood existing

paper check processes to enable it to be readily accepted by the marketplace. By retaining the basic characteristics and flexibility of, e.g., the paper check, the invention may be adopted more rapidly. Due to its similarity to, e.g., paper checks, the invention can be used within the structure of existing laws, regulations, and standard business practices. Similarly, the medical records, loan applications, electronic contracts and other embodiments of the present invention can be used within existing legal and business structures.

A variety of types of payment instruments may be implemented, e.g., certified checks, cashiers' checks and credit card charge slips, and additional capabilities may be provided, e.g., future dating, limit checks, and multi-currency payments.

The invention may be used in all market segments, from individual consumers to large corporations. It will enable businesses to complete safely and cheaply payments over public networks, to prepare and transmit medical records, to execute and transmit contracts, to complete and process loan applications, and to engage in other transactions that require signatures. Because the contents of the electronic document, or part of the electronic document, may be attached to a party's remittance information, the instrument will easily integrate with existing or new computer applications, such as accounts receivable systems, claim tracking systems, database applications and the like.

The security of the electronic documents enables open public networks to be linked to private networks, such as financial payments and bank clearing networks, hospital networks, or the like, in

a secure fashion. The use of digital signatures, hardware based signing, and certification agents, such as banks, make the electronic documents trusted and secure. They are tamper-resistant due to the use of cryptographic signatures. This will provide greater security and reduced fraud losses for all parties in the transaction process by eliminating most of the common causes of bad transactions, such as bad paper checks, fake prescriptions, and the like. To provide confidentiality, the documents may also be encrypted when sent over public networks.

The use of public-key certificates enables easy electronic authentication by a contracting party such as a payee of a check, and third parties such as the payee's and payer's banks. Digital signatures can be validated automatically.

Since the system can be fully automated, and new processing can be done outside of existing applications, such as a standard Demand Deposit Account (DDA), the cost of processing an electronic document will be quite low, and the costs of implementation minimized. To further minimize implementation costs, in the electronic check embodiment, the electronic instruments may be integrated with the existing bank infrastructure, including some of the mechanisms currently used for interbank clearing of checks and electronic payments, such as bilateral arrangements, ACH and ECP.

In all embodiments, parties of all sizes gain substantial benefits. The use of electronic documents will be more cost effective than existing paper documents due to volume efficiencies and the automatic processing capabilities of computers. The use of electronic mail or electronic

transmission is less costly than physically transporting paper. In addition to the significantly reduced costs of creating and mailing a document (no check stock, envelopes, stamps, photocopies or incremental labor), the party gains the ability to control the timing of transactions, such as payments, both through future dating of transactions and through the increased reliability and delivery speeds of electronic mail.

The invention addresses the problem of fraud and supports prudent fraud management through integrated fraud prevention measures and distributed liability for fraud. These mechanisms will reduce most of the current causes of fraud, including forgery, alteration, duplication, and fraudulent depositing. In addition, because the electronic check implementation follows the check payment model, the potential liability of the banks for fraudulent transactions will be limited while equitably sharing the responsibilities for the integrity of the system among payer, payee, and banks.

An electronic document may be signed and transmitted from personal financial software and other computing applications, through the use of an open programmatic tool set and application programming interfaces. Electronic instruments capability can be directly integrated into a payer's application, and does not require that a payer "go off-line" to complete a transaction. This benefit will be available to both consumers, through integrations with packages such as Intuit's Quicken™, and businesses through integration with existing accounting systems.

Electronic documents of the present invention have the further advantage that a signer can sign and transmit part of the electronic document, and a third party receiver of part of the document

can read that part, without being given access to other parts, and verify that the part is part of a document that is subject to a valid, certified signature.

Other advantages and features of the invention will become apparent from the following description and from the claims.

Advantages and features of the invention may be better understood by reference to certain definitions.

The term "client," as used herein, encompasses any data processing systems suitable for operating a processor according to the invention and for establishing a communication link to an Internet site. An Internet site can be any program running on a data processing platform that connects to the Internet and that receives access requests, whether under HTTP, FTP or any other conventional or proprietary transfer protocol.

The term "application program," as used herein, encompasses any computer file that contains or manipulates data in a format for being accessed and processed by the processing unit of a computer.

The term "disk," as used herein, encompasses any memory device that can store computer data and that provides an interface for accessing the stored data.

The term "network," as used herein, encompasses any system comprising a series of computers linked by telecommunications networks and may include the Internet, intranets, or other computer networks.

The term "browser," as used herein, encompasses any application program which allows for multimedia presentation of information, including text images, sound and video clips. Typically a browser allows the user to connect by the Internet to different sites on the Internet.

The term "hypertext link" as used herein, encompasses any graphical icon, button, highlighted text or other symbol that permits a computer to direct a server to display a page of a site which is associated with the hypertext link.

The term "URL" means "uniform resource locator" and the term encompasses the address of a network site that is accessed by clicking or initiating a hypertext link that is associated with the URL.

The term "HTML" means hypertext markup language, which refers to languages for the creation of pages of the type capable of being viewed by a browser.

The term "FSML" means "Financial Services Markup Language," in accordance with the present invention.

The term "HTTP" as used herein, shall encompass the "HyperText Transfer Protocol", which shall mean a protocol under which messages are sent over the Internet from clients to servers in the client/server model of distributed computing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a financial transaction.

FIG. 2 is a flow diagram of the steps of a check transaction.

FIG. 3 is a flow diagram of the steps of an electronic instrument transaction.

FIG. 4 is a block diagram of a workstation.

FIG. 5 is a format of an electronic check template example for use with the World Wide Web.

FIG. 6 is a format of an electronic check and deposit endorsement instrument.

FIG. 7 is a block format of an electronic check.

FIG. 8 is a format of a digital cryptographic signature based on DDS.

FIG. 9 is a block diagram of an electronic checkbook card.

FIG. 10 is a block diagram of the interaction between a screen phone and a server.

FIG. 11 is a block diagram of a certified check transaction.

FIG 12 is a block diagram of a normal transaction flow.

FIG. 13 is a block diagram of a cash and transfer transaction flow.

FIG. 14 is a block diagram of a "lockbox" transaction flow.

FIG. 15 is a block diagram of a funds transfer transaction flow.

FIG. 16 is a block diagram of an electronic checkbook application interface.

FIGS 17A and 17B are block diagrams of electronic check API's, modules and protocols.

FIG. 18 is a block diagram depicting a contract transaction.

FIG. 19 is a block diagram depicting a loan application transaction.

FIG. 20 is a block diagram depicting a medical record transaction.

FIG. 21 is a block diagram depicting additional details of a contract transaction.

FIG. 22 is a block diagram depicting additional details of a loan application transaction.

FIG. 23 is a block diagram depicting additional details of a medical record transaction.

FIG. 24 is a block diagram depicting use of a computer network in a contract transaction.

FIG. 25 is a block diagram depicting use of a computer network in a loan application transaction.

FIG. 26 is a block diagram depicting use of a computer network in a medical record transaction.

FIG. 27 is a block diagram depicting a computer hardware system for the signatories of a contract.

FIG. 28 is a block diagram depicting a computer hardware system for the parties to a loan application transaction.

FIG. 29 is a block diagram depicting a computer hardware system for the participants in a medical record transaction.

FIG. 30 is a schematic diagram illustrating the basic components of the World Wide Web.

FIG. 31 is a diagram depicting the block structure of an electronic check.

FIG. 32 is a diagram depicting the block structure of a medical record.

FIG. 33 is a diagram depicting the block structure of a loan application.

FIG. 34 is a diagram depicting the block structure of an electronic contract.

FIG. 35 is a depiction of the multi-level hash method of the present invention.

FIG. 36 is a block diagram depicting the document combination method of the present invention.

FIG. 37 is a flow chart depicting the steps of the secure hash algorithm of the present invention.

FIG. 38 is a block diagram depicting the nested structure of the documents of the present

invention.

FIG. 39 depicts the certain tags of FSML for enclosing blocks of information, in the electronic check embodiment of the invention.

FIG. 40 depicts the FSML tags for signature blocks in an embodiment of the invention.

FIG. 41 depicts the FSML tags for combining blocks.

FIG. 42 depicts the FSML tag structure for an electronic check.

FIG. 43 depicts an example of a document type definition for the electronic check.

DESCRIPTION OF THE INVENTION

Broadly speaking, the invention is a method and system for processing electronic documents. The electronic documents have a predefined structure that is both human readable and computer readable. In an embodiment of the invention, the electronic documents may be financial electronic documents. As an example, one type of financial electronic document is an electronic check. Other examples include loan applications, medical records, contracts and other documents that are signed or certified. Further examples include notarized documents, medical prescriptions, transcripts, wills and trusts, and the like. Any of these documents may be formatted as a document type definition in FSML. The examples herein are merely illustrative

and all signed documents and document-based transactions are within the scope of the invention.

Part of the underlying system for an embodiment of the invention is the World Wide Web. FIG. 30 is a schematic diagram illustrating the basic components of the World Wide Web. FIG. 30 depicts client computers 400 which are connected by telecommunications links 402 to one or more server computers 404. The client computers 400 are equipped with web browsers 408 that permit the client computers 400 to view pages of documents that are prepared according to the SGML standard. The SGML pages, such as HTML pages, are typically displayed in graphical format. Well-known web browsers 408 such as Netscape navigator and Microsoft Explorer automatically format data that is programmed in the HTML language according to well-known protocols. Information is transported back and forth between the client computer 400 and one or more server computers 404 according to a well-known protocol known as the HyperText Transport Protocol. The messages sent according to the HTTP are addressed according to Uniform Resource Locators, or "URLs", which determine where the Internet resource is and which protocol to use to access the resource. Other protocols, such as FTP, are also available.

In the so-called "client-server" model of distributed computing, messages are sent from client computers to one or more servers. Servers that use the World Wide Web are typically called "HTTP servers" or "web servers." "A web server may have installed on it files that include SGML documents that can be displayed on a client's computer screen when accessed from a client computer. Also, web servers may include or provide access to other servers that

include Common Gateway Interface ("CGI") programs that permit access to other resources on the web server, such as application programs and databases including application programs for manipulating electronic documents. Thus, without the need for any hardware or software, other than a standard personal computer and a common web browser 408, a user can access dynamic applications and content that are stored on the web server.

A Financial Services Markup Language (FSML) has been developed to allow for the creation of electronic documents that are human readable and machine readable and processable. FSML is a markup language according to the SGML standard. By using FSML, one can create, sign and process electronic documents. In an embodiment of the invention, the electronic documents may be electronic checks, and FSML may be used to create, sign and process electronic checks and their associated documents. In other embodiments, the documents may be medical records, loan applications, contracts, or the like. The creation of the electronic documents uses a block structure as noted below. The signing of the electronic documents can employ a public key cryptographic signature and hash algorithm to provide security attributes. The FSML signature mechanism also allows documents to be combined, or added to, without loss of the security attributes. The processing (e.g., signature verification, endorsements, authentication, payment, etc.) of the electronic documents is also automated.

The FSML documents are ASCII documents that are both human readable and machine readable and processable. ASCII encoding of data items provides integer, hex, real, string and boolean types. Tags and values are readable without special software. SGML escape sequences

permit internationalization. ASCII formats are compatible with electronic mail transaction as well as with V.42bis and other data compression.

An FSML electronic document is made up of a number of blocks as depicted in FIGS. 31-34. An electronic check is depicted in FIG. 31. A medical record is depicted in FIG. 32. A loan application is depicted in FIG. 33. A contract is depicted in FIG. 34. Each block contains some common "fields" or "elements" in (SGML) terminology. Every FSML electronic document consists of one or more enclosed documents. These documents are nested. Nesting may be done by enclosing earlier forms of a document inside later editions of the document or by other conventional markup techniques. Each enclosed document is built inside a <fstc-doc> tag structure. The FSML tag structure for an electronic check is depicted in FIG. 42.

Referring to FIG. 31, an electronic check may be a document type 700 and the type appears in the type block of the document. A header 702 may include the name of the check, a version number or similar information. A logged data block 704 may include information that is to be logged by a database, such as an electronic checkbook, such as the date and amount of a transaction. A contents block 708 may include all other content for the check.

Referring to FIG. 32, the type block 700 reflects a medical record type. The header 702 shows a version of the record; e.g. a patient's chart. Logged data block 704 may include dates and amounts of prescriptions, records of vital signs and the like. The contents block 708 may include any contents to be signed, such as a prescription, or other information.

Referring to FIG. 33, the type block 700 reflects a loan application type. The header block 702 may include a version number of the type of application, such as a home mortgage refinancing. The logged data block 704 may include information from the application, such as dates, names, salary information, debts and the like. The contents block 708 may include all items for signature, such as the whole application and separate clauses or consents that require separate signatures.

Referring to FIG. 34, the type block 700 reflects a contract type. The header block 702 may reflect other information, such as the version of the contract or the license agreement. The logged data block 704 may include dates, names and other pertinent items for storage, and helpful for providing an audit trail. The contents block 708 may include one whole contract and any parts that require separate signatures.

The blocks include the relevant data for a transaction. Moreover, these document type definitions permit the establishment of rules that will reject a document that is missing some required element. For example, a contract may require an approval of a clause by a manager, and if approval is not included, the software of FSML would reject the document as an invalid type. Thus, document type definitions may be used to support legal rules and business practices.

The blocks making up the electronic document can be protected from tampering, and all blocks that need to be authenticated are assigned a digital signature contained in a signature block.

The digital signature may use one of the standard digital signature algorithms, such as MD5/RSA or SHA/DSS. The digital signatures can be created using a private key, and then later verified using a public key which also can employ a certificate such as an X.509 Version 1 Certificate.

The various blocks making up the electronic documents and any associated documents may be bound together by a signature block. In one embodiment, depicted in FIG. 35, the signature block 800 contains the block names (j, k) of the blocks 804 and 806 being bound together and the digital hashes 808 and 810 of the content for these blocks. A hash 811 can be generated from the document names and the digital hashes 808 and 810, and a digital signature 812 can be generated by digitally signing the hash 811. The digital signature 812 of the hash 811 can be incorporated into the block 800. Next, the contents of the block 800 can be signed, such as by a private encryption key. By employing this multilevel hashing technique, the binding is such that the receiving software is able to verify that all the blocks that are bound together are present and have not been tampered with. Thus, the integrity of the entire document is verifiable.

Specific block structures for electronic documents and associated documents are described in Appendix B, which contains a Document Type Definition (DTD) for certain FSML electronic documents, namely checks. Additionally, Appendix B contains an example of an electronic check document.

In situations in which the FSML electronic document is to pass through various steps and institutions that are part of an entire system that processes the electronic document and perhaps

adds new information to the document, a document combining mechanism is described that allows the additional information to be added while allowing the original information to be protected and verified using digital signatures. By binding blocks together, the data in all the blocks being bound is protected from tampering while at the same time the blocks become cryptographically associated. One such process is depicted in FIG. 38. Referring to FIG. 38, to add new information to a document 824, the existing document 824 is enclosed in a <fstc-doc> tag structure 826 which may also enclose new blocks 828 and 830 containing the new information. New signature blocks 832 and 834 may also be contained in the new information and may sign blocks in the inner nested document. Each new, surrounding electronic document (<fstc-doc>) can also have a new <action> block and a DOCTYPE parameter for use by the receiving system to determine the method used to process the modified document. FIG. 39 depicts the certain tags of FSML for enclosing blocks of information, in the electronic check embodiment of the invention.

Referring to FIG. 36, whenever a block 804 is to be authenticated, or tamper-proofed, a digital signature block 820 is added to the electronic document. The signature block 820 contains a reference to a certificate block 822 containing a public key used to verify the digital signature. The signature block can also be used to bind multiple blocks together, so that the resulting compound document can be verified. The FSML tags for signature blocks in an embodiment of the invention are depicted in FIG. 40.

When combining an FSML block into a larger, compound document, the names of the original blocks may not be unique. As such, the document combining process also operates to

handle naming conflicts when the documents being combined use block names that are not unique. FIG. 41 depicts the FSML tags for combining blocks.

The digital signature is to insure that the electronic document is authentic and has not been tampered with. By using the multilevel hash operation, the electronic document is able to provide improved authentication and tamper resistance. The multilevel hash operation also allows various blocks or associated documents to be bound together while still providing improved authentication and tamper resistance. The digital signature can pertain to any of the blocks or a set of blocks. Further, improved authentication and tamper resistance allows blocks to be later dropped or remove from a bundle, yet the digital signature is still able to be authenticated. Thus, portions of documents may be transmitted and authenticated, while confidential portions are redacted.

Referring to FIG. 37, the calculation of a digital signature is performed as follows. First, a nonce value (<nonce>) is created as a random number at step 600. The nonce value is used in producing a hash value as discussed below to enhance the security provided by the hash operation. Second, the nonce value is logically prepended to the subject block contents before hashing at a step 602. Third, at a step 604 a hash value is calculated using the contents of the subject block having the nonce value prepended, while excluding the block start tag and block end tag, but including all characters in between, with the exception of all carriage returns, line feeds, and trailing spaces on a line. Leading and embedded spaces in a line are included in the hash. SGML entities, i.e., character names enclosed between an ampersand (&) and a semicolon (;), are left untranslated when hashing. Fourth, at a step 608 the resulting hash value is inserted into the

<hash> entry in the signature block. Fifth, at a step 610 the second through fourth steps are repeated for each block to be signed. Sixth, at a step 612 a second hash calculation is performed on the contents of the <sigdata> sub-block, which contains the previously calculated hashes, their block references, and the <nonce>. This includes all characters between <sigdata> tag and the </sigdata> tag, while admitting all carriage returns, line feeds and trailing spaces. Seventh, at a step 614 the second hash value is then encrypted using a private key. The result is the signature which is inserted (as Hex ASCII) into the signature block as the value for the <sig> tag.

An application programming interface (API) between an application program and an FSML electronic document is created by conventional programming means. The API allows developers of application programs to process electronic documents and associated documents without having to handle all of the details associated with the internal format and processing of these electronic documents. Instead, the API facilitates calls to an FSML Object Library that handles all the details of the internal format and processing of these electronic documents.

An FSML Object Library is described to handle processing that deals with the format and contents of FSML documents, an application program thus does not need to know about the actual format of an FSML document or any of the details of the interaction with a database application, such as an electronic checkbook. Likewise, the FSML Object Library will not need to know or care about details of hardware, operating systems, GUI's, databases, etc. In order to have platform independence, the FSML Object Library receives all input from the calling application

program which also performs any necessary output. A call is made by the application program to create, parse, verify, modify, bind and otherwise operate on the memory-resonant FSML document. Functions are also provided to allow insertion and extraction of data items into and out of an FSML document.

The FSML Object Library described herein resides over an FSML system library which acts as a lower layer that translates the FSML Object Library requirements into the particular hardware library functionality.

An FSML System Layer API provides a standardized vendor-independent interface to functionality of the electronic checkbook hardware. Application programs do not need to invoke functions of the FSML System Layer Library indirectly but instead may use the API.

An electronic checkbook is an electronic card (e.g., a smart card) that is programmed to act as an electronic checkbook. The electronic checkbook carries signature and decryption private keys, activation PINs (Personal Identification Numbers or passwords) that for security reasons are accessible only by processes internal to the electronic checkbook. Suitable electronic cards are available from National Semiconductor, Inc of Santa Clara, California, Telequip Corporation in Hew Hampshire, and others. Electronic cards can be used to store logged data for medical records, loan applications, contracts, and other transactions as well.

Although, FSML is described with respect to electronic checks, FSML is a flexible

structure that allows many other documents to be built from these primitives while retaining a standard format which can be partially verified during processing.

The present system and method offers a number of advantages over existing systems for processing of signed documents. The document type definitions of the present invention permit the design of transaction document types according to the logical purpose of blocks of content of such signed documents. The document type definitions thus permit a wide range of flexibility in structuring documents for meeting legal requirements and other requirements for such documents. For example, in the electronic check embodiment of the present invention, documents may be produced that comply with existing legal structures for paper checks.

The flexible document structures also permit the user to design documents that can be accessed by a wide range of transport systems and that can be manipulated by a wide range of computer systems. Thus, in the electronic check embodiment of the present invention, the instruments created with the present system may be accessed and manipulated by existing computer systems for demand deposit accounts.

Since it is created according to the SGML standard, a standard that is designed to permit easy interface to HTTP servers that are connected to the Internet, the present system is compatible with almost all computer network communications systems, including the Internet and local computer networks connected to the Internet by HTTP servers.

In an embodiment of the invention, an architecture for an electronic check system is disclosed. The electronic check system is an all-electronic payment and deposit gathering instrument that can be initiated from a variety of devices, such as a personal computer, screen phone, ATM machine, or payments accounting system. The electronic check system provides rapid and secure settlement of financial accounts between trading partners over public or proprietary networks without requiring pre-arrangement.

The electronic check is an electronic financial instrument which in some respects mimics the paper check. It is initiated and routed electronically, uses digital signatures for signing and endorsing, and relies on digital cryptographic certificates to authenticate the payer and payee and their respective banks and bank accounts and to provide a degree of security to all parties to the transaction.

As seen in FIG. 3, the use of electronic checks may take advantage of the interaction between publicly available, relatively unsecure electronic networks 65, such as dial-up networks, the Internet, wireless, or e-mail networks, are distinct entities in terms of the security of information during transmission over the two types of networks and systems 80. Public networks and banking networks are distinct entities in terms of the security of information during transmission over the two types of networks. Existing communications approaches in the banking system are secure and well disciplined. Public electronic networks are unsecured and to some degree less disciplined. The cryptographically sealed and authenticated electronic check passing across gateway 60 is the link between the public networks and secured financial

networks. The gateway filters undesired traffic through and helps to prevent corruption of the secure financial networks resulting from intentional or unintentional access by persons operating in the public networks.

As seen in FIG. 3, in a broad sense, a transaction is initiated when a payer 12, e.g., a consumer, electronically receives a memorandum of a proposed transaction 66, such as a bill, invoice or order form, from a payee 14, e.g. a merchant. Alternatively, a transaction may be initiated by the payer 12 only. The memorandum 66 may contain the payee's digital signature, which may be generated by the payee's secure authenticator 68 using public key cryptography. The payer 12 validates the payee's signature by using the payer's public key to verify the payee's digital signature and thus authenticates the payee 14. To proceed with the transaction, the payer 12 electronically creates a financial instrument 74, e.g., an electronic check (e.g., on a personal computer), payable to the order of the payee 14, and signs and records it using the payer's secure authenticator 70. In effect, the secure authenticator 70 enables the payer 12 to digitally sign the instrument 74 with a private signature key and enter the transaction in a secure log, such as an electronic check book 71. A record of the transaction may also be kept in the payee's accounting system 72. The authenticator also appends to the check cryptographically signed certificates of, e.g., the payer's bank and the federal reserve bank authenticating the payer's account and the payer's bank., respectively. The payer 12 then electronically sends the instrument 74 and the memorandum 66 via a public network 65 to the payee 14.

Upon receipt of the instrument 74 from the payer 12, the payee 14 validates the payee's

digital signature using public key cryptography. The payee 14 verifies the payer's bank 82 and the payer's account with the certificates. The payee 14 also verifies that the instrument 74 is not a recent duplicate, and holds it in storage until the date specified by the payer 12, if necessary. The payee 14 endorses the instrument 74 with the payee's digital signature using its authenticator 68. In effect, this enables the payee 14 digitally to sign the instrument 74 with a private signature key and enters the transaction in a secure log, such as an electronic checkbook 69. The authenticator also appends to the check cryptographically signed certificates of, e.g., the payee's bank and the federal reserve bank authenticating the payee's account and the payee's bank, respectively. The payee 14 detaches the memorandum 66 and forwards the memorandum and appropriate payment information from the electronic check to the payee's accounts receivable system 76. Finally, the payee 14 electronically deposits, typically via a public network, the instrument 74 with the banking institution which maintains the payee's account 78.

The payee's bank 78 receives the endorsed instrument 74 deposited by the payee 14, validates both the payee's digital signature of endorsement and the payer's original digital signature using public key cryptography, verifies that the instrument 74 is valid and checks the certificates. The payee's bank 78 then credits the sum of money specified in the instrument 74 to the payee's account and clears the instrument 74 with the payer's bank 82 via existing electronic settlement procedures, e.g., bilateral arrangements, ECP, ACH, ATM, EFT, or check imaging. The settlement procedures are carried out over a network 80 connecting the computers of a large number of banking institutions, the network 80 itself indirectly connected with the public network 65.

After clearance of the instrument, the payer's banking institution 82 receives the processed instrument 74. The payer's bank 82 validates both the payer's and the payee's signatures using public key cryptography. The payer's bank 82 also verifies that the instrument 74 is not a duplicate and that the date of the instrument 74 is valid, and checks the certificates. If there are sufficient funds to cover the face value of the instrument 74 in the payer's account, the payer's bank 82 debits the payer's account, treating the items as a normal DDA transaction, and electronically sends payment to the payee's bank 78 over the financial network 80 to settle the payment. The instrument 74 is archived for permanent storage and retrieval 83 at the payer's bank or elsewhere.

After the transaction has been completed, the payer's bank 82 issues a DDA statement 84 to the payer 12 reflecting the debit to the payer's account, and the payee's bank 78 issues a statement, report or accounts receivable update 86 to the payee 14 reflecting the credit to the payee's account. Supplementary information related to the transaction in the instrument 74, such as the payer's and payee's names or memo lines, can be included in the statement 84 or the report 86. The information contained in the statement 84 and the report 86 may be automatically compared with the payer's accounting system 72, and the payee's accounts receivable system 74, respectively, to verify that the transaction was carried out properly.

As seen in FIG. 4, an electronic document, such as an FSML document, such as an electronic check, may be created or verified and endorsed at a computer terminal or workstation, such as the payer's workstation 90 or the payee's workstation 92. Both workstations have the

same general format. Each has a CPU with disk storage and memory and a keyboard, mouse and display for interaction with the user. Modems 91 and 93 (or other network connections) are attached to the workstations 90 and 92 and permit information, including the electronic check, to be passed electronically to other parties to the transaction via one of the electronic networks. Each workstation 90 and 92 also has a PCMCIA port 98 and 100, into which a signature card, such as a PCMCIA card 94 or 96, may be inserted. The PCMCIA card 94 or 96 is an electronic device that acts as the user's digital signature card, provides a secure means for generating a signature with a private signature key, and acts as an electronic checkbook. Alternatively, the electronic checkbook with its register may be a separate card from the digital signature card.

Each workstation 90 and 92 contains a software package 102 or 104 to be run by the CPU. Besides the usual operating system, the software package contains programs for handling electronic checks. The payer's workstation 90 has manipulations of the electronic checkbook as one of its software applications, including invoking the signature function of the PCMCIA card 94 to attach the payer's signature to an electronic check. The electronic checkbook application prepares an electronic check to be sent to the payee 14 upon the input of the necessary information by the payer 12 and records the transaction in a secure electronic register 95. The payer's workstation 90 also helps finance software for keeping track of the payer's transactions and communication software for sending the electronic check and other information electronically over one of the networks from its modem 91 to another party's modem.

The payee's workstation 92 similarly has finance and communications software

applications. However, the payee's workstation 92 has software for preparing an order or invoice to be sent to the payer 12. It also contains software for invoking the signature function of the PCMCIA signature card 96 to attach the payee's signature to an electronic check as an endorsement before the payee 14 sends the electronic check to the payee's bank for deposit.

The formatting of the electronic check has a number of embodiments. A preferred embodiment is as an FSML document, as described above. In another embodiment, the electronic check is formatted as a series of 7 bit ASCII text lines using a restricted character set in order to be compatible with a wide variety of electronic mail systems, including those implementing the Internet Simple Mail Transfer Protocol. The format of this other embodiment of the electronic check is based on tagged value pairs. Each information line is composed of a label name and a value, e.g., amount=$19.95. In this embodiment, an electronic check is typically created with a template document, as seen in FIG 5. The top portion 106 of the template 105 contains the payee's remittance information. The bottom portion 107 of the template contains field that the payer completes to prepare the electronic check. The template may be sent by e-mail from the payee to the payer. In which case the payer can use an editor or word processor to enter order and remittance information. The check body can also be pre-formatted by the payee with the amount, "pay to the order of", and payer's public key lines already completed, allowing the payer to enter minimal information into the body of the electronic check before signing it. Alternatively, the payer can use a general template and an editor, word processor and other application, such as Quicken, to create a properly formatted electronic check.

In any embodiment, once the template is filled in by the payer as the FSML document is complete, the electronic check may be signed by passing it through the payer's electronic checkbook. The electronic checkbook is contained within a PCMCIA card containing the payer's private signature key and certificates from the bank and the federal reserve. The certificates may be cryptographically signed letters of reference attesting to the validity of the payer's account and the payer's authority to write checks against the account, and the bank, respectively.

For example, in FIG 6, electronic check 110 contains an identification number for the electronic check 112, the date that the electronic check was created 114, an order to the bank to pay a certain sum of money 116, the name of the payee 118, the payee's public key, the sum of money to be paid 120, the payer's account number 122, the name, address and telephone number of the payer 124, and the payer's signature 126 in digital format verifiable using the payer's public signature key 134. An additional feature of an electronic check delivered over a public network is the payer's network address 128, e.g. an Internet address, to permit the payee to acknowledge receipt of the electronic check. The electronic check also may contain a memo block 130 for storing information personal to the payer and a secure hash algorithm (SHA) 132 resulting from a calculation over an associated document, to attach securely items such as an invoice received from the payee. The hash algorithm may be of the type more particularly described above.

Whenever a block must be authenticated, or tamper-proofed, a digital signature block is

added to the electronic document. The signature block contains a reference to a certificate block containing a public key used to verify the digital signature. The signature block can also be used to bind multiple blocks together, so that the resulting compound document can be verified.

When combining FSML into a larger, compound document, the names of the original blocks may not be unique. As such, the document combining process also operates to handle naming conflicts when the documents being combined use block names that are not unique.

The standardized format of an electronic check makes it a flexible instrument, permitting multiple signatures, annotations and transformation into other document types. The standardized electronic check is also usable over different transportation means, such as Internet and e-mail. In particular, the transport protocols include FTP, STTP and HTTP for the Internet. The format of the electronic check is independent of the transport protocol.

Further, in the various embodiment of the invention, the format of an electronic check may be modular, in that several information lines can be grouped as a block, as seen in FIG 7. Any number of information lines 3 grouped between begin and end lines 4 and 5 is a block 6. Each block has an identifying name which is used to reference it, and blocks can be combined to form other more complicated documents with a meta line 7. The modularity of electronic checks also allows for independent signature of any block by any entity and for use of the system for other financial instruments, such as letters of credit and loan documents.

The security and authentication aspects of electronic checks are supported by digital signatures using public key cryptography. Public key cryptography uses very large numbers and complex mathematical calculations to protect the integrity and secrecy of an encoded electronic transmission. As seen in FIG 8, a digital cryptographic signature 101 is a long number or numbers (here expressed in hexadecimal notation) 102 which are produced by the signer's use of his private signature key and the message to be signed as inputs to the public key signature algorithm. The signature may also be accompanied by a date and time stamp 103. The cryptographic infrastructure is used to authenticate the payer and account, electronic check document and issuing bank, and to securely seal the electronic check, permitting the use of public networks for sending the electronic check. Most importantly, digital signatures may be used to verify a document after issuance.

A public key, applied to verify cryptographic digital signature, is always generated in conjunction with the private key which is used to create the signature. The payer's digital signature 126, the payer's public verification key 134, and the message which was signed are used as inputs to the public key signature verification algorithm, which produces a true or false value. Public key cryptographic signatures are useful because the signature of a signer, computed using the signer's private key, can be verified by anyone else who knows the signer's public key. Since the signer computes his signature on a document using his private key, and since the verifier verifies the signer's signature using the signer's public key, there must be a way for the verifier to trust the association between the signer (and his account information) and the public key used to verify the signer's signature on the electronic check. Cryptographic signatures are

used to sign checks when they are written, co-signed, endorsed and processed. Cryptographic signatures are also used by certification authorities to sign certificates or "letters of reference" that contain a name or description of a signer and the signer's public key. Thus, anyone who trusts the certification authority and who knows the certification authority's widely publicized signature verification key can verify the certificate and trust the signer's public key for use in verifying the signer's signature.

A party signing an electronic check is the only entity in possession of its private signature key. The private signature key need never be exposed to a third party, making it difficult to forge. The private signature key generates a cryptographic signature in a secret code, which is unique and is identified only with the signer. Signature cards always keep the private key internal to the processor and memory on the card. The document to be signed is sent into the signature card, and the signature card uses the private key to compute the signature. The private key is never accessible via the card's connector.

The public signature key must be used in conjunction with a cryptographic signature verification algorithm upon receipt of the signer's signature to verify the signature. The public signature key is known and used by others, who obtain the public keys prior to or during a transaction. The use of public key cryptography allows the public keys to be used and stored independently of the private keys. However, the public and private keys are mathematically linked, since they are generated as a pair.

Tamper-resistant signature cards or other hardware devices are useful to compute the cryptographic digital signatures without the possibility of disclosing the signer's private signature key. Tamper-proofing of an electronic check and associated information is achieved using digital signatures and a secure hash algorithm. Signature cards, or special cryptographic processors, can be used to better secure the private keys and greatly reduce the need for diligence and skill on the part of the account holders to secure their keys, especially against attacks through network connections by computer hackers. Further, the signature card may keep a non-erasable log of documents signed, so that the holder can review whether all uses of the card have been legitimate.

The digital signature is to insure that the electronic document is authentic and has not been tampered with. By using the multilevel hash operation, the electronic document is able to provide improved authentication and tamper resistance. The multilevel hash operation also allows various blocks or associated documents to be bound together while still providing improved authentication and tamper resistance. The digital signature can pertain to any of the blocks or a set of blocks. Further, improved authentication and tamper resistance allows blocks to be later dropped or remove from a bundle yet the digital signature is still able to be authenticated.

Referring still to FIG. 6, one difference between an electronic check and a paper check is the presence of authenticating certificates, in particular an account certificate 136 and a bank certificate 138. The payer can expedite the establishment of trust among the parties to the

transaction by enclosing with the signed check a "letter of reference" or cryptographic certificate 136 regarding the payer's account, stating the payer's name, address and telephone number 124 and Internet address 128, account number 122, and public signature verification key 134, signed by the bank holding the payer's account with its digital signature private key 140. Similarly, a second letter of reference or certificate 38 regarding the payer' bank states the payer's bank's name 142, address 144, electronic network routing code 146 and public signature verification key 134, signed by the bank holding the payer's account with its digital signature private key 140. Similarly, a second letter of reference or certificate 38 regarding the payer's bank states the payer's bank's name 142, address 144, electronic network routing code 146 and public signature verification key 148, signed by a central body such as the federal reserve with its digital signature private key 150. Therefore, anyone knowing the federal reserve's public signature verification key 152 can sequentially verify the bank's certificate 138, the account certificate 136, and then the payer's signature 126 on the electronic check.

The certificates are the electronic check mechanisms for providing a trusted identification between trading partners. The trust mechanism currently used is pre-arrangement of the transaction, so that the receiving part is assured of the secure transmission of the transaction. The structure of the electronic check system with certificates enables banks or their agents, in the role of trusted parties, to provide certificates that validate the identity and authenticity of the electronic check issuer. Trading partners will be able to validate these certificates, if desired, on-line, and conduct business without pre-arrangement, but with the assurance that the other party to the transaction is authentic.

The use of certificates in the electronic check system permits validation at any point, by anyone, in the payment cycle. Electronic checks and electronic checkbooks can be authenticated by the use of public key certificates at any point in the settlement cycle by the payee or the bank. Further, deposit slips and endorsements by the payee may be cryptographically linked to an electronic check as it is processed, resulting in an electronic document suitable for archiving and use as evidence of payment.

In order for payers to determine the public signature keys of payees, and thereby help to ensure that their checks are paid to the correct person, it may be useful to publish the public signature keys in a public director. Alternatively, the payee can furnish his public signature key and certificates with the order blank, invoice or remittance information. In this case, the payer may consult the certificate revocation list (CRL) potion of the director service to determine whether the certificate and account are still valid. Similarly, the payee may consult the CRL to determine the status of the payer's account prior to endorsing and depositing the electronic check.

An electronic check may be delivered by hand, direct transmission or public electronic mail systems. An electronic check may be printed out at the bank of first deposit and passed through the system as a paper check. The signatures and certificates are also produced with OCR and scanned by the issuing bank. Electronic checks transmitted via electronic mail be accessed at personal computers with industry-standard protocols or Application Programming Interfaces (API's), such as VIM or MAPI, or they may be embedded within dedicated application protocols

such as the HTTP server protocol used by Internet World Wide Web servers. In either case, the format of the electronic check is independent of the underlying transmission protocol. Further, disclosure of the electronic check instrument during transmission will not enable fraudulent presentation by others. Thus, the payee need not acknowledge receipt of the electronic check. However, the payer's e-mail address is included to permit acknowledgment. Systems providing certified electronic mail may be used to provide a guarantee of delivery.

Upon receipt of the signed electronic check and associated order, invoice or remittance information, the payee processes the payer's order, extracts the electronic check and endorses the electronic check. The endorsement is done by the payee's electronic checkbook, which signs the check, adds its own endorsement information and appends the payee's certificate information. The payee's PCMCIA card also automatically assigns sequential transaction numbers to endorsements to ensure that each endorsement is unique. This number should be included in the deposit and clearing information, so that the payee can reconcile checks mailed to the payer's bank for cashing with the deposits recorded in his bank statement.

Upon endorsing the electronic check, the payee creates a deposit instrument 160 which is attached to the electronic check 110, as shown in FIG. 6. The deposit instrument 160 may be an FSML document type and may contain some of the same information as in the endorsement, such as the payee's account number. The deposit instrument 160 contains an identification number 162, the date 164, and the sum of money to be deposited 166. It also contains the payee's account number 168, the name, address and telephone number of the payee 170, the payee's Internet

address 174 and the payee's signature 175 in digital format readable using the payee's public signature key 172. The deposit instrument 160 also may contain a memo line 180.

The deposit instrument may also contain an account certificate 190 and a bank certificate 192. The account certificate 190 states the payee's name, address and telephone number 170 and Internet address 174, account number 168, and public signature verification key 172, signed by the bank holding the payee's account with its digital signature 176. Similarly, the bank certificate 192 regarding the payee's bank states the payee bank's name 178, address 182, electronic network routing code 184 and public signature verification key 186, signed by a central body such as the federal reserve with its digital signature 188. Anyone knowing the federal reserve's public signature verification key 152 can sequentially verify the bank certificate 192, the account certificate 190, and then the payee's signature 175 on the electronic check.

The endorsement function of the electronic checkbook need not be as secure as in the case of originally signing an electronic check. However, a heightened level of security is needed if the same signature card is used by the payee for both check writing and endorsement.

The endorsed check is then forwarded to the payee's bank to be deposited or cashed, with the proceeds to be deposited to the payee's account. Payments or deposits consisting of electronic checks are gathered by banks via e-mail or other protocols and cleared through standard banking channels, such as bilateral agreement, ACH or ECP, automatically following the bank routing code 146.

Upon receipt of the endorsed check after clearance, the payer's bank verifies that the check was properly endorsed using the payee's public signature key. It also verifies the payer's signature, and optionally the account and bank certificates. The amount of the check is debited from the payer's account, assuming available funds, and then stored for archival purposes. Finally, an ACH credit transaction is originated to settle with the payee bank (or multiple transactions with the payee bank may be settled in an accumulated group), which credits the proceeds of the cashed check to the payee's account at the payee's bank. If the size of the check so warrants, the payee's account may be credited by Fed Wire or other expedited processing. For example, the payer's bank may e-mail notification to the payee's bank for crediting prior to receipt of actual funds by other means.

The payer's bank will return the endorsed electronic check to the payee if it cannot be cashed, e.g. due to insufficient funds, or if the deposit transaction fails, e.g. the payee's account is closed. For example, if the deposit transaction fails, the payer's account may credited with the amount of the returned check in some flows.

The payer's and payee's banks provide statements or reports to the payer and the payee, respectively, regarding their electronic check transactions. These statements may be generated electronically or on paper. The payer's bank may include a copy of the electronic check with the payer's statement. The payee's bank may identify the payee's deposit transaction on the payee's statement, including the deposit number, so that the payee can reconcile an electronic check sent electronically to the bank for cashing with the transactions actually credited to the payee's

account.

The primary security element of electronic checks is the use of an electronic checkbook in the form of a PCMCIA card, which generates an electronic check and stores a record of it in a secure check register. Possibly suitable PCMCIA cards are Tessera, National Semiconductor's iPower and the Telequip CryptaPlus card. Alternatively, the electronic checkbook may be implemented in an ISO format IC chip smart card or smart disk (perhaps without the check register due to memory limitation), or it may be implemented in cryptographic hardware processors for use by systems that process large volumes of checks or maintain a number of electronic checkbooks. The PCMCIA card is ideal for a transaction between two personal computers, but the smaller and more portable smart card is better suited to a POS transaction at a merchant's premises (if the appropriate smart card reader is implemented).

A PCMCIA card is an electronic device that provides greater security for a financial transaction. A PCMCIA card, or in the case of mainframe accounting systems, a secure black box, e.g. a Racal's Guardata, protects transactional systems from unauthorized access. The PCMCIA card is a separate, narrowly defined, secure electronic environment used in conjunction with a terminal such as a personal computer. Information passes back and forth between the PCMCIA card and the terminal or workstation.

The tamper-resistant PCMCIA card contains a mechanism to generate or store unique check identifiers and calculates and verifies digital signatures and certificates using public key

cryptography. The PCMCIA card securely stores the user's private cryptographic key, which is used to digitally sign electronic checks when they are written and endorsed. The PCMCIA care is preferably initialized by deriving its own random private key using an internal hardware random number generator. Certificates are provided and backed by a Certificate Issuing System (CIS).

The PCMCIA card is also protected by providing for entry of a personal identification number (PIN). The PIN and private signature key must be stored in the electronic checkbook. Some mechanical action may be required of the payer for each new check, either reinsertion of the PCMCIA card into its port on the payer's workstation or activation by a push button on the card itself, to guard against fraudulent use of the card once it is attached to the payer's computer. Additionally, a timeout mechanism may be used. The PCMCIA card also maintains a register of checks signed and issued. The electronic check register should be read only from the PCMCIA's interface. The register may be read, but not overwritten.

As seen in FIG. 9, a PCMCIA card 200 must contain at least the PCMCIA card serial number 202, the PIN 204, the cryptographic function 199, the signer's private signature key 206, and check and endorsement logs 224 and 226 in a register 222. The public keys for the federal reserve 220, the account certificate 208 and the bank certificate 210 may be kept on the PCMCIA card, but storing them in the work-station permits verification using the federal reserve's public key in the case of suspected alteration of the certificates. The electronic checkbook should be accessed using a standard API 228. The input and output of the electronic checkbook should be

compatible with mail user agents, file editors and other software for general uses, as well as specialized financial applications, on a variety of platforms including personal computers and workstations.

The electronic check book contains a register 222 that functions like a conventional checkbook register, but without account balances. When an electronic check is created, the electronic check number, date, amount, payee, signature and hash are recorded in a check log 224. For each deposit made into the electronic check account endorsed by the electronic checkbook, the deposit number, date and amount are stored in an endorsement log 226. If the electronic checkbook has the capability, there may also be entries for bank fees and interest earned on the account. Integrating the electronic checkbook with other software applications would allow the electronic check account to be automatically balanced. Since the register may only have a limited memory space, the oldest transactional items are removed automatically when the memory has been exhausted.

The PCMCIA card 200 acts as an electronic checkbook in conjunction with various application functions 221. For example, an interface with the Internet is set up in a World Wide Web browser and server. There is also a form generator for electronic checks and other forms. In particular, a merchant will have applications such as a sales catalog, accounts receivable and order processing. There are also communications and other personal finance application functions. The output 223 of the PCMCIA card is an electronic check, either signed by the payer or endorsed by the payee. A QIF formatted file or an applications interface file are generated in

software outside the electronic checkbook.

The electronic checkbook 200 should also be compatible with a screen-based telephone 250 connected to a dial-up server 252, as seen in FIG. 10. In this case, most of the contents of the electronic check would be assembled by the screen phone 250 and the server 252 using information stored by each. The variable information, such as the payee and amount, would be sent from the screen phone to the server as part the on-line transaction. To complete the electronic check, the screen phone would enable the electronic checkbook 200 using the payer's PIN 204, the electronic checkbook would sign the electronic check, and the screen phone would send the signature and assemble the completed and valid electronic check for mailing to the payee 14.

The PCMCIA card prefixes each electronic check with its serial number, which is imbedded in the processor of the card during its manufacture. This number helps determine whether the electronic check was signed by a legitimate electronic checkbook in case of fraud investigations. The PCMCIA card also automatically increments the numbers of the electronic checks. Since the check numbers for each PCMCIA card will be sequential and since each PCMCIA card will have its own public signature key, every check will be unique.

Another feature of the PCMCIA card is the use of a secure hash algorithm (SHA), such as an NIST Secure Hash Algorithm, with respect to documents or information associated with or attached to documents or information associated with or attached to an electronic check. This

feature "seals" the associated information and binds it to the signed electronic check. The payee can then verify that the associated information belongs with the electronic check and has not been change after the electronic check was signed.

The only function which must be performed by the PCMCIA card is creating the signature, since the payer's private signature key can never be allowed to leave the PCMCIA card, for security reasons. However, better security is achieved if the SHA of the electronic check is also performed by the PCMCIA card, so that the PCMCIA can be sure that the number, date, payee and amount logged into the PCMCIA card are the ones used in the computation of the SHA.

The electronic checkbook is issued by the bank that holds the electronic checking account. Initialized electronic checkbooks may be sent to the account holder, in which case the PIN should be sent separately for security reasons. Alternatively, uninitialized cards may be distributed to bank branches. The bank officer can then use a trusted initialization terminal and a special smart card identifying the bank officer to establish a secure connection to a centralized CIS. The new card is inserted into the terminal to be initialized. This method has the advantage of making electronic checkbooks immediately available to new customers, accounts can be added to electronic checkbooks already being used by the customer, and certificates can be refreshed prior to their expiration dates without issuing new electronic checkbooks. The bank, or its agent, is also acting as a certifying authority since it is responsible for authenticating the identity of the electronic checkbook and PIN are delivered to the correct person. The electronic check may also

support correspondent banking relationships, and will allow another bank or approved third party to act as a stand-in processor for electronic checks for banks that are unable to directly support the processing requirements for electronic checks. This will facilitate electronic check deployment in a secure way without affecting the traditional bank-customer relationship.

Similar functions to those of the PCMCIA card can be served by large scale cryptographic processors, such as Atalla or Racal Guardata boxes, for large operations where individual signature cards are impractical. For servers or mainframes which issue or endorse a large volume of checks, or which issue or endorse checks on behalf of a number of account holders, the processing and key storage capacities of signature cards may be exceeded. In this case, special cryptographic hardware must be used.

Although the electronic check's primary use is to make electronic payments on public networks, it may be used in any situation where a paper check would be used. For example, banks will use electronic checks to gather electronic deposits from public network users, providing an opportunity for complete full service electronic remote banking anywhere the customer is connected. POS and ATM implementations are also possible.

The electronic check also provides a generic model for all electronic, digitally signed and authenticated financial instruments. The check provides a well understood model for payment, and its electronic analog is necessary for electronic commerce, even if other forms of electronic payment exist. The electronic check will tie other forms of payment into the financial

infrastructure, since checks end up involved at some point in most payment mechanisms.

Through specifications of user-defined attribute parameters and routing information, the electronic check, unlike a paper check, can be made to resemble other financial payments instruments. The flexibility of the parametric approach enables multiple electronic payments instruments to meet current needs, while providing for new financial instruments. The electronic check may embrace a wide variety of the debit and funds transfer functions found in today's banking, as well as other functions yet to be introduced. The provision of new parameters would enable a variety of simple and compound transactions, such as cashier's and certified checks, drafts on a savings account or lines of credit, traveler's checks, credit card debits or credits, foreign or multi-currency drafts, and "split" or "limit" checks that may be endorsed "up to" a predefined limit. These possible instruments will present new processing options. For example, an electronic check may be made out such that it is valid p to a certain amount, e.g. for a hotel room deposit. When endorsed, the electronic check can then be endorsed for the actual amount of the expense, up to the previously defined limit. Other examples may include letters of credit, loan agreements and loan applications. In some cases, changing the instrument type may change the conceptual flow, or routing information; in other cases, the flow may remain unchanged.

For example, as seen in FIG. 11, a certified electronic check involves a payer 12 creating an electronic check in the usual manner as described above. Certified checks are endorsed and cashed similar to normal checks, except that the payee 14 is guaranteed that the funds are available. The payer 12 e-mails the electronic check to the payer's bank 36 for certification. The

bank may require the use of privacy enhanced mail or an equivalent to ensure the identity of the enhanced mail or an equivalent to ensure the identity of the payer and that the communication with the payer is confidential. The bank will then append a certifying signature to the check and e-mail it back to the payer. Upon receipt of the certified electronic check, the payee can verify the bank's certification signature as part of the validation of the check.

As seen in FIGS. 12-15, there are multiple scenarios for the functional flow of electronic checks. In the "deposit and clear" scenario (FIG. 12), the payer 12 receives a bill or invoice from the payee, issues an electronic check, and sends it to the payee. The payee 14 endorses the electronic check and presents it to his bank 46 which, in turn, will settle it with the payer's bank 36. This is the usual format, as described in detail above. In the "cash and transfer" or "Z" scenario (FIG 13), the payer 12 receives a bill or invoice from the payee, issues an electronic check and sends it to the payee. The payee 14 endorses the electronic check and presents it directly to the payer's bank 36, which sends payment to the payee's account at his bank 46. For the "lockbox" scenario (FIG. 14), the payer 12 receives a bill or invoice from the payee 14, issues an electronic check, and sends it to the payee's bank 46, either directly or via a lockbox 260 or other secure intermediary. The payee's bank 46 then sends accounts receivable information to the payee and clears the payment with the payer's bank 36. In this scenario, there may be no payee endorsement. Finally, in the "funds transfer" scenario (FIG. 15), the payer 12 receives a bill or invoice from his bank 36 (assuming electronic bill presentment allows for capture of the payee's bills by the payer's bank), issues an electronic check and sends it to his bank. The payer's bank 36, in turn, transfers funds to the payee's account at the payee's bank 46, which

sends a record of the transaction to the payee 14 with accounts receivable information.

It is clear that electronic checks can be used directly between individual parties, or through third party service providers. Electronic checks can be exchanged consumer to consumer, consumer to business, business to consumer, and business to business. If the payer is a business, then the requirements for signing and logging capacity in the electronic checkbook may be greater due to volume requirements.

The formats of an electronic check and the entire electronic check system will be uniform, so that the electronic check system may be interconnected and used in conjunction with standard Application Programming Interfaces (API's), such as standard electronic checkbook interfaces and electronic check display interfaces. API's apply on the level of individual check processing as well as integration of the entire system. For example, the C language may be used to define an electronic check with field such as the date, the amount and the payee. Also, the Internet World Wide Web browser interacts with the electronic checkbook using an API to create the complete electronic check. The electronic check API's do not change, so that the system may be interfaced with any system by rewriting the particular system API and the link to the electronic check system.

For example, as seen in FIG. 16, an electronic checkbook 200 sends an electronic check over the network 65 after interfacing with a driver 201 at a connector interface 205. The driver 201 works under a driver API 203, which is connected to the signer's application software 207.

Through a mail API 209, the completed electronic check is sent over the network 65.

The electronic check system may be considered a module which provides services to other modules and to API's. The flow of an electronic check through the system is governed by a series of protocols. The API's provide electronic check services to user interface applications, to financial applications such as bill payment, and to third party applications. The modular design of electronic checks also permits separation of the cryptographic functions from the applications which write and endorse checks, both physically and logically, to facilitate application of the cryptographic infrastructure to secure other financial instruments or documents; i.e. two cards may be used.

The five primary applications and API's needed for the electronic check embodiment of the present invention are management, check writing, check acceptance and endorsement, check clearing and reconciliation. Management functions allow for card issuance, inactivation, reactivation, and signature key management functions. Check writing is assumed to be performed by the payer, acceptance and endorsement by a payee, clearing by the banks, and reconciliation by the payer. Most users and organizations will assume the roles of both payer and payee, but at different times.

There is a base set of supporting modules. These base modules provide for the creation, destruction, and manipulation of a parameterized electronic financial instrument (the electronic check), the interpretation of such instruments as electronic checks, the generation and

verification of digital signatures on the payment instruments, and the interaction with electronic checkbook hardware devices.

API functions for supporting the application needs described include a "write" function, for creating an electronic check, binding it to an attached document (if present) and signing the electronic check; a "co-sign" function, for appending a second signature to the electronic check; a "verify" function, for verifying signatures on a check and validating the binding to an associated document (if present); an "endorse" function, for verifying signatures on the check and if valid, appending an endorsement and signing the check to be deposited or cashed; a "register read" function, for reading the contents of the check register contained in the electronic checkbook; and a "registry entry" function, for appending an entry to the check register.

For example, an electronic check an be attached to electronic remittance information provided by a remote payee. This enables the payment to be made, routed correctly and automatically posted to both parties' accounting systems. Integration with micropayment accounting systems for high volume, small value financial transactions will enable those systems to settle accounts using an electronic check. The standardization of the electronic checkbook interfaces and the API's to access electronic checkbook functions simplifies integration with a variety of home and small business accounting and communications software packages. By defining the layout of the electronic check, the information it contains (e.g., account number and amount) can be readily extracted from the electronic check and used in other applications through the API's.

Additional API functions are used to process ancillary electronic messages such as acknowledgment of deposit, returned checks, and electronic statements. The parametric financial instrument approach allows reuse of the cryptographic infrastructure, especially the verify function, to safeguard the integrity of these messages. For instance, the verify function can be used by the payee to verify the signature of the payer, as well as by the payee's bank and the payer's bank to verify check signatures and endorsements prior to further processing to cash or clear the electronic check.

The API functions will be implemented by a combination of software operating in the user's personal computer and in the electronic checkbook hardware. In the case of a PC Card, using the PCMCIA interface and standard Card and Socket Services, most of the functions may be implemented on the PC Card since it can support substantial processing, memory and interface bit rate. This approach maximizes the portability of electronic checking information because the electronic checkbook register function is physically coupled to the signature function.

The electronic check functions in an environment of programmatic tools, including interacting API's, modules and protocols. As seen in FIGS. 17A and 17B, an electronic check is generated at the payer's workstation using signature card API's 300 and electronic checkbook API's 302. The electronic check is transmitted by the payee using electronic mail and transport API's 304. the payee's workstation also receives the electronic check through its electronic mail and transport API's 306. The electronic check is integrated into the software of the payee's

workstation using an electronic check translator module and is acted upon by the software in application modules 308. The electronic check modules 310 include extraction of the check from the transmission, electronic check validation, and extraction of the remittance originally sent from the payee to the payer. After applying endorsement API's 312 to endorse the electronic check, the payee's workstation transmits the endorsed electronic check to the payee's bank for deposit using its electronic mail and transport API's 306.

The payee's bank receives the endorsed electronic check via its electronic mail and transport API's 314 according to a defined transport and deposit protocol 316. The modules applied by the payee's bank include an electronic-check translator 318, electronic check validation and application integration modules 320. After interbank clearing, the electronic check with the payee bank's endorsement is sent electronically to the payer's bank, which receives the processed electronic check through its electronic mail and transport API's 322. The payer's bank also has modules such as an electronic check translator 324, and electronic check validation and application integration modules 326. The electronic check infrastructure is governed by a computer at the payer's bank or its agents which contains protocols 328 for the key server, public keys and the CRL.

The electronic processing scheme may also be applied to "exceptional" cases, such as electronic checks returned due to insufficient funds in the payer's account. Since exceptions processing provides for dealing with a problem in the normal flow of the electronic check through the system, the conventional paper check procedure may be necessary, although aspects

of the electronic procedure may be used as support for more expedited exceptions processing.

Solutions to the problem of potential fraudulent usage of electronic checks must be built into the system at each stage of the processing of an electronic check to ensure the integrity of the entire system.

The security measures discussed above will eliminate most of the causes of losses due to bad checks, including forgery, alteration, duplication, and fraudulent depositing. Forgery is prevented by ensuring that digital signature keys are stored in secure hardware devices and through appropriate controls over the validity of electronic check certificates. Alteration is prevented by the application of digital signatures to the electronic check and through the use of the SHA function which creates a unique digest of the electronic document.

Duplication is a somewhat more difficult problem to prevent, since by its very nature an all-electronic document can be easily reproduced. Although each of the payee, the payee's bank and the payor's bank verifies that there is no recent duplicate check, the problem of duplication is addressed in several additional ways. First, electronic checks must be dated and will expire more rapidly than paper checks. Second, electronic check certificates will also expire, preventing their use after a given time period. This ensures that the accounts are periodically refreshed, and that the bank has an opportunity to ensure the integrity of the secure key storage device. Third, the issuer bank keeps an archive of electronic checks which have been presented previously. In addition, an "active" check file will be used against which checks can be matched. This file need

only store the checks for valid dates, as mentioned above, and the electronic check serial number and hash information to identify a duplicate. Also, the payer may send check details such as the check number, date, signature, payee and amount to the payer's bank at the same time as the electronic check is sent so that the issuer's bank can maintain a file of used electronic checks. This file can be used to determine if a duplicate electronic check was issued and paid by the payer's bank. The combination of these efforts should effectively minimize the risk of a duplicate electronic check successfully flowing through the payments system.

Fraudulent depositing is another significant issue, since electronic checks which are sent unencrypted could conceivably be deposited or "cashed" by someone other than the intended recipient. The electronic check provides for application of the intended recipient's cryptographic keys to minimize this problem.

In the event that an electronic checkbook is compromised, e.g., lost, stolen, or repudiated by a customer, then the certificates for that electronic checkbook can be revoked.

Ensuring the confidentiality of critical customer information is a priority for any network payments instrument. To this end, the electronic check need not contain existing checking account numbers which could be intercepted and then used to commit fraud by paper checks. Digital account numbers may be linked with non-electronic account numbers so that both types of transactions may take place with respect to the same account. Encryption of an electronic check is not required to prevent fraud due to the use of private key cryptographic signatures.

However, electronic checks and other parameterized payment instruments may be encrypted, where possible, during transmission between parties to ensure confidentiality.

Tamper-resistance of the PCMCIA card is also needed to the extent necessary to make it economically unattractive for attackers to steal signature cards, extract the private key, and pass bad checks using the private signature key before the card is reported stolen and disabled. Any attempt to extract the private signature key should result in evident alteration of the card and should take at least a few days to succeed. However, an extremely high degree of tamper-proofing is not necessary, since the card only contains private information for one or several accounts (rather than system level secrets) and since the card holder has an incentive to report theft or tampering (rather than to extract a secret to use for fraud or counterfeiting).

Most importantly, the account and bank certificates can have expiration dates in order to limit the time during which electronic checks can be written. An account may be closed prior to the expiration of the account certificate for other security reasons, preventing verifiers from knowing that the signature on the electronic check is good until it clears. If the account is closed, its associated certificates are revoked. This is no different from the current situation in which someone continues to write checks using check blanks from a closed account. The rapid clearing of electronic checks will deter this behavior, and banks can offer automated check verification services which verify signatures, account status and funds availability.

Although FSML is primarily described with respect to electronic checks, FSML is a

flexible structure that allows many other documents to be built from these primitives while retaining a standard format which can be partially verified during processing.

The present system and method offers a number of advantages over existing systems for processing of signed documents. The document type definitions of the present invention permit the design of transaction document types according to the logical purpose of blocks of content of such signed documents. The document type definitions thus permit a wide range of flexibility in structuring documents for meeting legal requirements and other requirements for such documents. For example, in the electronic check embodiment of the present invention, documents may be produced that comply with existing legal structures for paper checks.

The flexible document structures also permit the user to design documents that can be accessed by a wide range of transport systems and that can be manipulated by a wide range of computer systems. Thus, in the electronic check embodiment of the present invention, the instruments created with the present system may be accessed and manipulated by existing computer systems for demand deposit accounts.

Other embodiments of the present invention are further described and are within the scope of the invention.

As seen in FIG. 24, the execution of a contract 483 may take advantage of publicly available electronic networks 550 such as the Internet, dial-up networks, wireless networks or e-

mail. As seen in FIG. 24, a transaction is initiated when a first signer 410 signs a legal document 483. The first signer may have a secure authenticator 540 which enables the first signer 410 to digitally sign the legal document 483. The first signer may have a database 544 which records the transaction in which the first signer 410 signs the legal document 483. The document may then be transmitted to a second signer 422 by the network 550. The second signer may then sign the document using the second signer's secure authenticator 542 which permits the second signer 422 to digitally sign the legal document 483. The second signer's computer system also includes an electronic database 548 to record the second signer's signature. When signed by the second signer, the document may be sent via the network 550 through a network connection 552 to one or more third parties 425. The third parties 425 may have various types of proprietary networks 426 including ATMs or the like. Signatures, transmissions, data storage and other functions are highly similar to those detailed for the electronic check above, as will be readily apparent to and still in the act.

Referring to FIG. 27, the hardware necessary for participation of a first signer and a second signer in a legal transaction is depicted in which a first signer workstation 600 is provided including a PCMCIA 610, a modem 608, CPU, keyboard, mouse, display, and memory. Residing on the computer is software 604 which includes an operating system as well as a number of applications 606. The applications may include communications applications, database applications and one or more applications for executing transaction documents, such as signature applications. The first signer system may also include a PCMCIA card 612 as well as a register 614 as part of a digital signature card that works in connection with the workstation 600.

The second signer has a second signer workstation 602 which is similarly configured in that it includes a modem 618, a PCMCIA 620, a PCMCIA card 628 with a register 626, a keyboard, mouse, CPU, display, disk and memory. Also, the second signer workstation 602 includes software 622 that includes an operating system as well as various applications 624 which include communications, database applications and signature applications, among others. The configuration of hardware and the software are similar to those described in the electronic check embodiment. Additional software for contract preparation and manipulation may also be provided.

As seen in FIG. 25, a mortgage transaction may also take advantage of a network 561. The borrower 452 may sign the loan application 490 with the borrower's secure authenticator 554 which permits a digital signature of the loan application 490. A database 556 of the borrower's system permits the borrower to record the transaction. Once the borrower has signed the loan application 490, it may be transmitted by the network 561 to the lender 454. The lender may digitally sign the loan application 490 using the lender's secure authenticator 558. This transaction may be recorded by the lender's database 560. Once the broker 455 has signed the loan application 490, it may be transmitted via the network 561 through a network connection 462 to a proprietary network or intranet 564 of one or more banking institutions 456. Signatures, authentication, data manipulations, storage and retrieval, and other functions are accomplished in a manner similar to that used for the electronic check.

Referring to FIG. 28, the hardware necessary for participation of the borrower and lender