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(54) **SYSTEMS AND METHODS FOR MOBILE DEPOSIT OF NEGOTIABLE INSTRUMENTS**

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CPC ***G06Q 20/10*** (2013.01); ***G06Q 20/204*** (2013.01); ***G06Q 40/025*** (2013.01)

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USPC 705/35; 235/435
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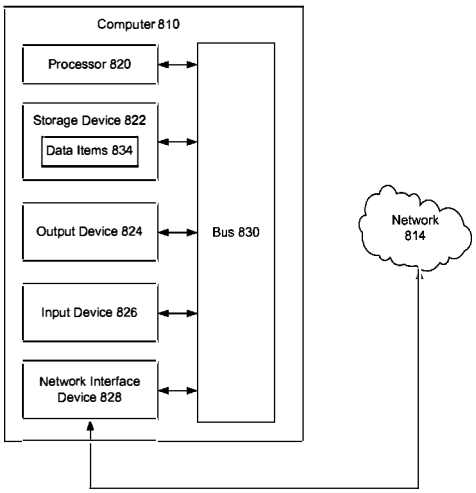
(57) **ABSTRACT**

An image of a negotiable instrument may be taken by a camera associated with a mobile device and provided from a user to a financial institution via the mobile device. The negotiable instrument may be deposited in a user's bank account based on the image. Any technique for sending the image to the financial institution may be used. The mobile device may process the image prior to sending the image to the financial institution. Additionally or alternatively, the financial institution may process the image.

19 Claims, 8 Drawing Sheets



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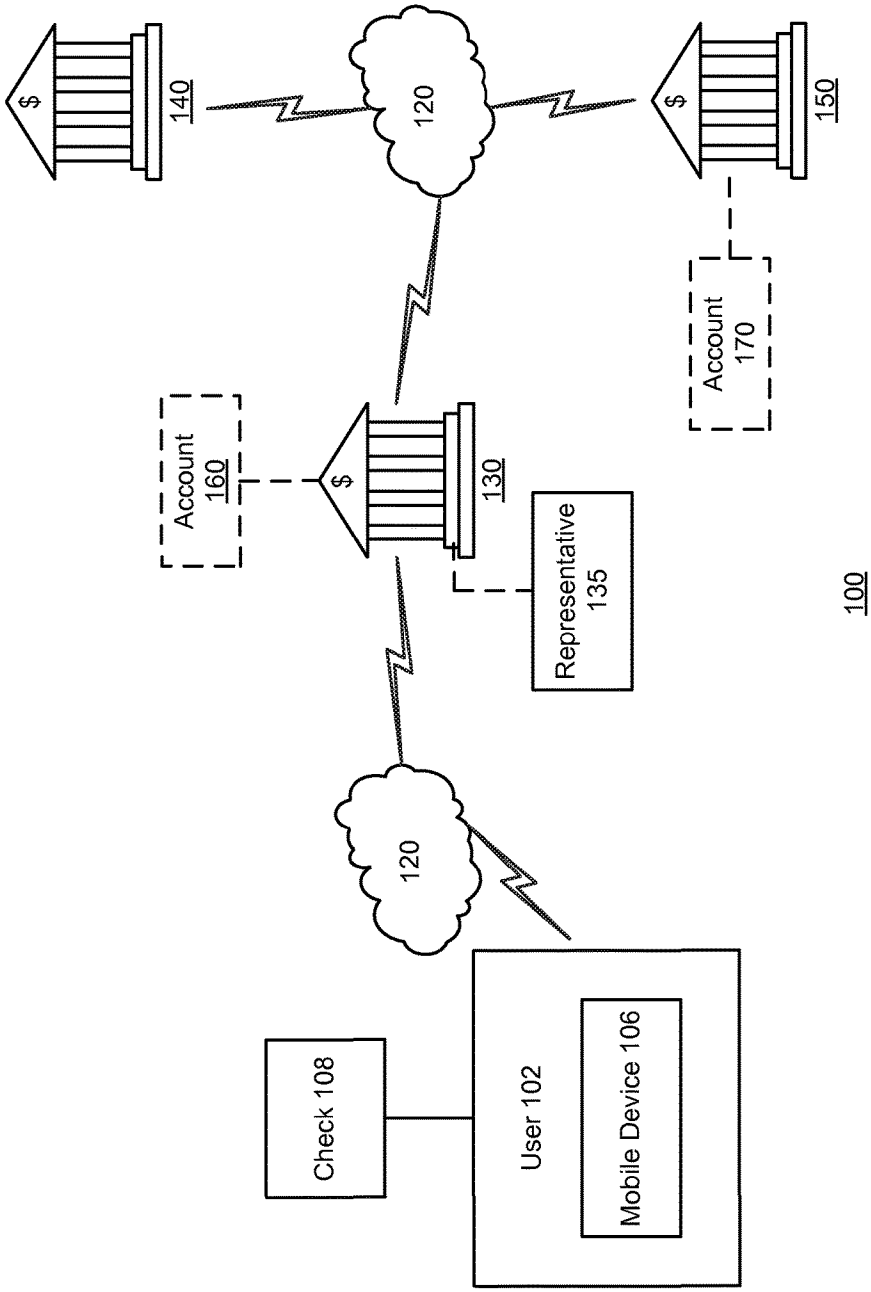
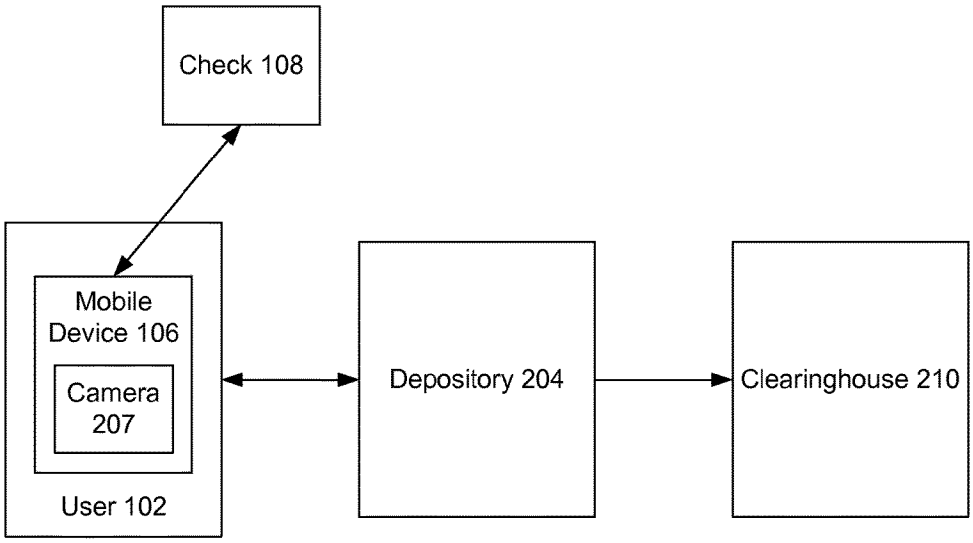
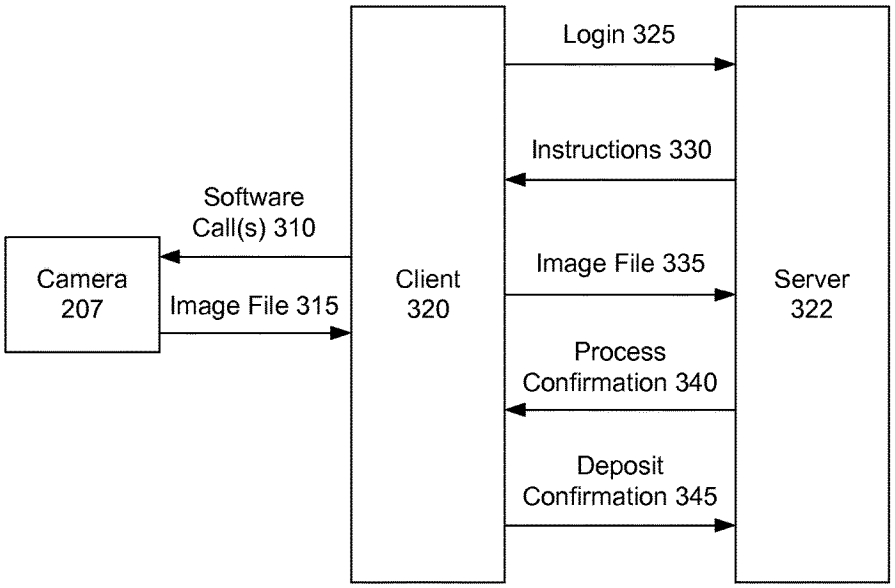

140
120
150
Account 160
130
Account 170
Representative 135
120
Check 108
User 102
Mobile Device 106
100

FIG. 1


Check 108
Mobile Device 106
Camera 207
User 102
Depository 204
Clearinghouse 210

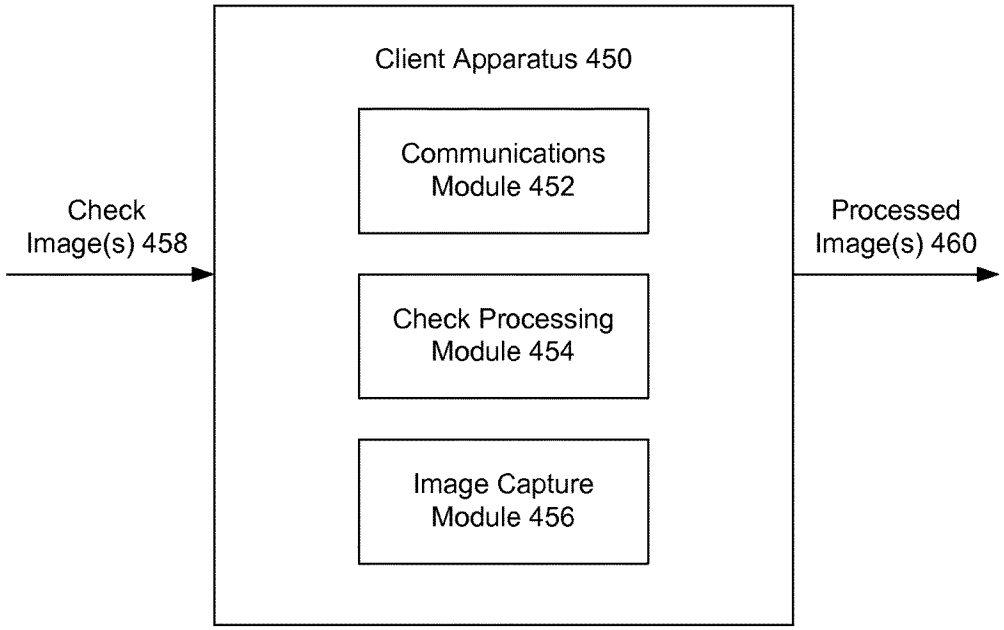
200

FIG. 2


Login 325
Instructions 330
Software
Call(s) 310
Camera
207
Image File 315
Client
320
Image File 335
Server
322
Process
Confirmation 340
Deposit
Confirmation 345

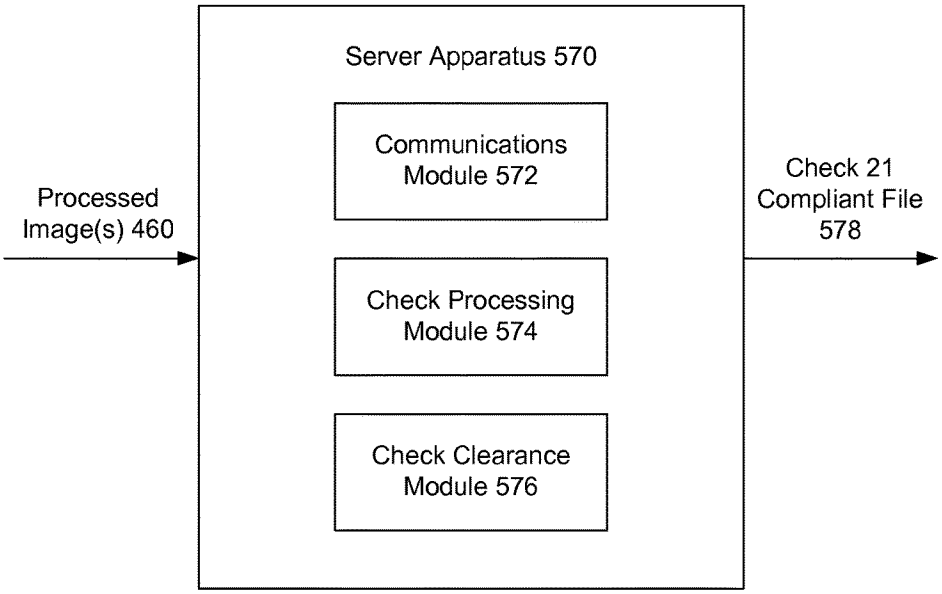
300

FIG. 3


Client Apparatus 450
Communications Module 452
Check Processing Module 454
Image Capture Module 456
Check Image(s) 458
Processed Image(s) 460

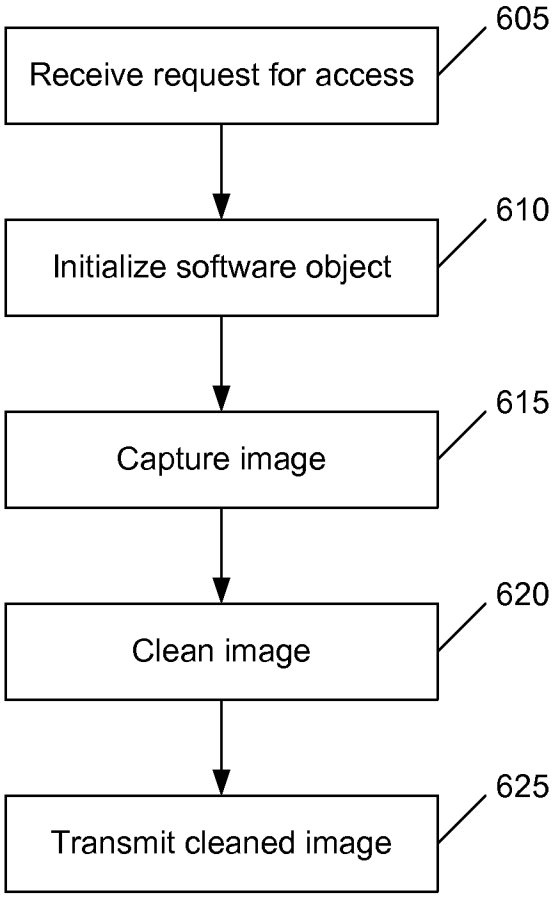
400

FIG. 4


Server Apparatus 570
Communications Module 572
Check Processing Module 574
Check Clearance Module 576
Processed Image(s) 460
Check 21 Compliant File 578

500

FIG. 5


605
Receive request for access
610
Initialize software object
615
Capture image
620
Clean image
625
Transmit cleaned image

600

FIG. 6

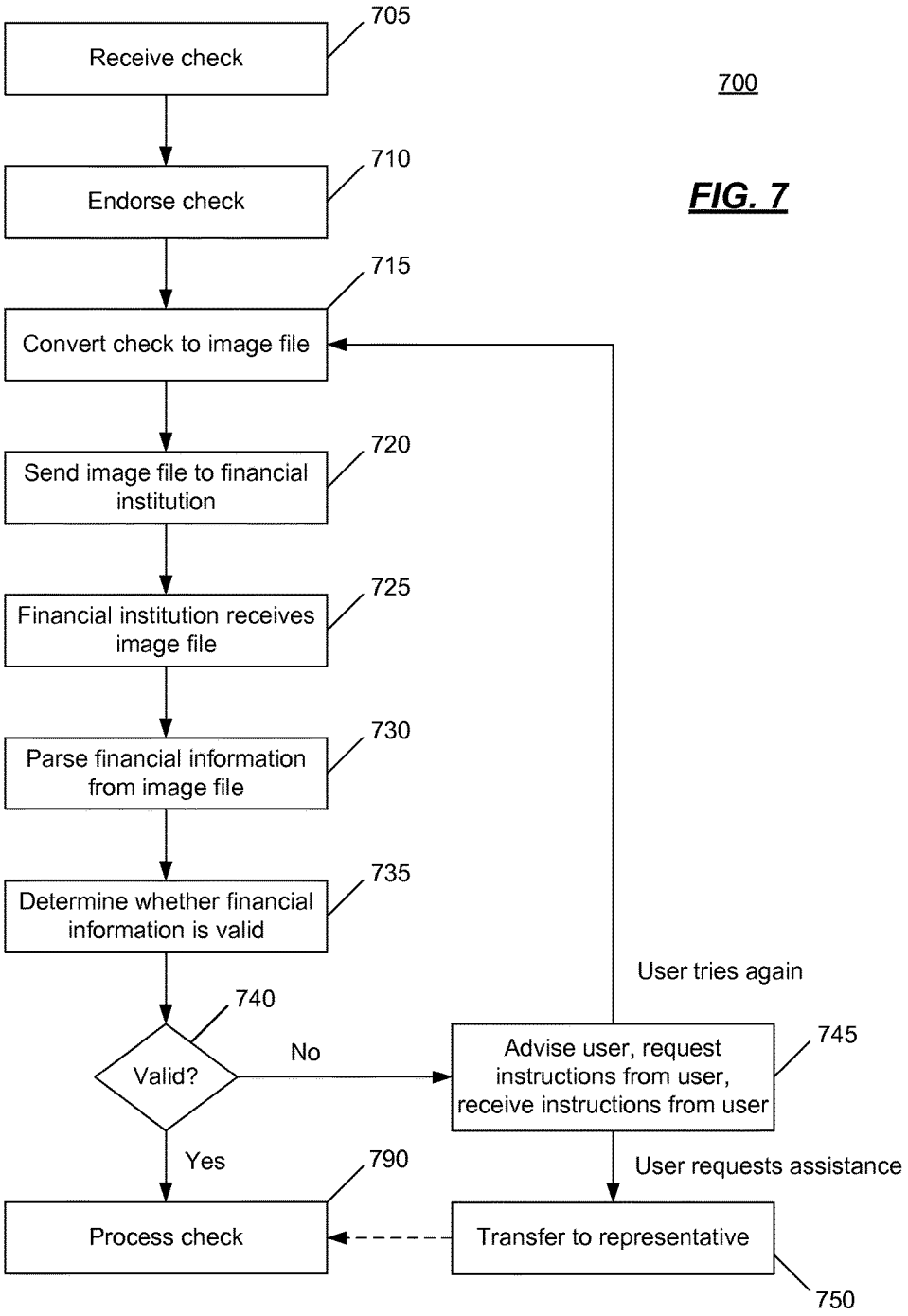
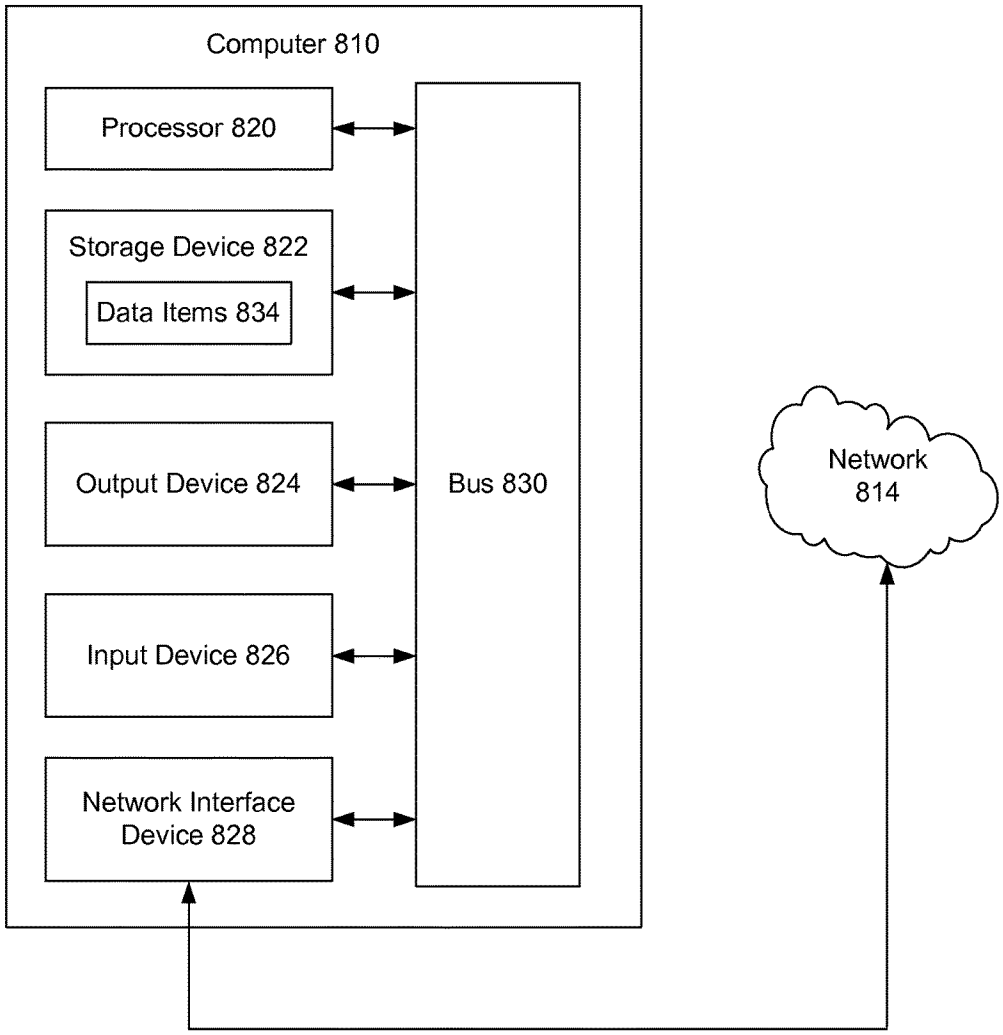

705
Receive check
700
710
Endorse check
715
Convert check to image file
720
Send image file to financial institution
725
Financial institution receives image file
730
Parse financial information from image file
735
Determine whether financial information is valid
740
Valid?
No
Yes
User tries again
745
Advise user, request instructions from user, receive instructions from user
User requests assistance
790
Process check
Transfer to representative
750

FIG. 7


Computer 810
Processor 820
Storage Device 822
Data Items 834
Output Device 824
Input Device 826
Network Interface Device 828
Bus 830
Network 814

800

FIG. 8

SYSTEMS AND METHODS FOR MOBILE DEPOSIT OF NEGOTIABLE INSTRUMENTS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 61/026,977, filed Feb. 27, 2008 and entitled "SYSTEMS AND METHODS FOR MOBILE DEPOSIT OF NEGOTIABLE INSTRUMENTS"; the entire disclosure of which is hereby incorporated by reference into the present disclosure. In addition this application is related by subject matter to that disclosed in the following commonly assigned applications, the entirety of which are hereby incorporated by reference herein: U.S. patent application Ser. No. 12/195,732 and U.S. patent application Ser. No. 12/195,745, each filed on Aug. 21, 2008 and each entitled "Systems And Methods For Mobile Deposit Of Negotiable Instruments."

BACKGROUND

Customers demand more of the products and services they use than ever before. They insist that the companies they deal with provide them greater levels of access and information. One of the methods of providing this increased information and access has been through the mobile telephone channel. Mobile services, enabled through slimmed down interfaces, have proliferated. Customers can receive alerts over a mobile channel, they can check the minutes left on their mobile voice plan, and through pre-set shorthand access numbers vote for their favorite contestant on a reality show.

Mobile banking is in its infancy. Customers have very limited access to their account information. One of the reasons for this limited access is a perceived lack of security over a mobile channel. In a bank branch, a person's identity can be visually verified. Over a web channel, they are required to authenticate themselves. However, on the mobile channel financial institutions are forced to operate through the Simple Message System (SMS) or through a very limited interface (both in screen resolution and in the throughput of the data channel) that provides little or no authentication facility.

SUMMARY

An image of a negotiable instrument may be taken by a camera associated with a mobile device and provided from a user to a financial institution via the mobile device. The negotiable instrument may be deposited in a user's bank account based on the image. Any technique for sending the image to the financial institution may be used.

In an implementation, the mobile device may process the image prior to sending the image to the financial institution. Additionally or alternatively, the financial institution may process the image.

In an implementation, processing the image may comprise one or more cleaning operations at the mobile device, the camera, and/or the financial institution. Cleaning operations may include at least one of the following for example: deskewing the image, dewarping the image, converting the resolution of the image to a predetermined resolution, converting the image from JPEG to TIFF, detecting information from the negotiable instrument, verifying non-duplicate presentment, and verifying signature.

This summary is provided to introduce a selection of concepts in a simplified form that are further described below in the detailed description. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing summary, as well as the following detailed description of illustrative embodiments, is better understood when read in conjunction with the appended drawings. For the purpose of illustrating the embodiments, there are shown in the drawings example constructions of the embodiments; however, the embodiments are not limited to the specific methods and instrumentalities disclosed. In the drawings:

FIG. **1** is a block diagram of an implementation of a system in which example embodiments and aspects may be implemented;

FIG. **2** shows a high-level block diagram of an implementation of a system that may be used for the deposit of a negotiable instrument;

FIG. **3** shows a data-flow diagram of a system for the deposit of a negotiable instrument, in accordance with an example embodiment;

FIG. **4** shows a block diagram of a client apparatus for the deposit of a negotiable instrument, in accordance with an example embodiment;

FIG. **5** shows a block diagram of a server apparatus for the deposit of a negotiable instrument, in accordance with an example embodiment;

FIG. **6** is an operational flow of an implementation of a method that may be used for deposit of a negotiable instrument;

FIG. **7** is an operational flow of another implementation of a method that may be used for deposit of a negotiable instrument; and

FIG. **8** is a block diagram of an example computing environment in which example embodiments and aspects may be implemented.

DETAILED DESCRIPTION

In the following detailed description of example embodiments, reference is made to the accompanying drawings, which form a part hereof and in which is shown, by way of illustration, specific embodiments in which the example methods, apparatuses, and systems may be practiced. It is to be understood that other embodiments may be used and structural changes may be made without departing from the scope of this description.

FIG. **1** is a block diagram of an implementation of a system **100** in which example embodiments and aspects may be implemented. System **100** may include an account owner, referred to herein as a user **102**, and financial institutions **130**, **140**, and **150**, which may be any type of entity capable of processing a transaction involving a negotiable instrument. For example, financial institutions **130**, **140**, and **150** may be a retail bank, an investment bank, an investment company, a regional branch of the Federal Reserve, a clearinghouse bank and/or a correspondent bank.

A negotiable instrument typically includes a type of contract that obligates one party to pay a specified sum of money to another party. Negotiable instrument as used herein is an unconditioned writing that promises or orders payment of a fixed amount of money. One example of a negotiable instrument is a check. The check may be presented from a first person to a second person to affect the transfer of money from the first person to the second person.

It may also include a check that is presented from a company or business to a person. In either case, the check may be taken by the receiving party and deposited into an account at a financial institution of the receiving party. This has required that the receiving party endorse the check and then present it for deposit at a bank branch. However, recent innovations have taken place that have enabled the receiving party to deposit the funds without visiting the bank branch, such as via automated teller machines (ATM). In addition to a check, negotiable instruments may include a draft, a bill of exchange, a promissory note, and the like.

The user **102** may be an individual who owns account **160** that may be held at financial institution **130**. Account **160** may be any type of account for depositing funds, such as a savings account, a checking account, a brokerage account, and the like. The user **102** may communicate with financial institution **130** by way of communications network **120** such as an intranet, the Internet, a local area network (LAN), a wide area network (WAN), a public switched telephone network (PSTN), a cellular network, a voice over Internet protocol (VoIP) network, and the like. The user **102** may communicate with financial institution **130** by phone, email, instant messaging, facsimile, and the like. Financial institutions **130**, **140**, and **150** also may communicate with each other by way of communications network **120**.

In an implementation, the user **102** may receive payment from another individual such as a payor in the form of a check **108** or other negotiable instrument that is drawn from account **170** at financial institution **150**. The user **102** may endorse the check **108** (e.g., sign the back of the check **108**) and indicate an account number on the check **108** for depositing the funds. It is noted that although examples described herein may refer to a check, the techniques and systems described herein are contemplated for, and may be used for, deposit of any negotiable instrument.

As described further herein, a digital image of a check or other negotiable instrument may be provided from a user to a financial institution, and the digital image may be processed and funds associated with the check or negotiable instrument in the digital image may be deposited in a user's bank account. The user **102** may deposit the check **108** into account **160** by making a digital image of the check **108** and sending the image file containing the digital image to financial institution **130**. For example, after endorsing the check **108**, the user **102** may use a mobile device **106** that comprises a camera to convert the check **108** into a digital image by taking a picture of the front and/or back of the check **108**. The mobile device **106** may be a mobile phone (also known as a wireless phone or a cellular phone), a personal digital assistant (PDA), or any handheld computing device, for example.

In an implementation, the user **102** may send the digital image(s) to financial institution **130** using the mobile device **106**. Any technique for sending a digital image to financial institution **130** may be used, such as providing a digital image to a website associated with financial institution **130** from storage, emailing a digital image to financial institution **130**, or sending a digital image in a text message or instant message, for example.

Financial institution **130** may receive a digital image representing the check **108** and may use any known image processing software or other application(s) to obtain the relevant data of the check **108** from the digital image. Financial institution **130** may determine whether the financial information associated therewith may be valid. For example, financial institution **130** may include any combination of systems and sub-systems such as electronic devices including, but not limited to, computers, servers, databases, or the like. The electronic devices may include any combination of hardware components such as processors, databases, storage drives, registers, cache, random access memory (RAM) chips, data buses, or the like and/or software components such as operating systems, database management applications, or the like. According to an embodiment, the electronic devices may include a network-based server that may process the financial information and may receive the digital image from the user **102**.

The electronic devices may receive the digital image and may perform an initial analysis on the quality of the digital image, the readability of the data contained therein, or the like. For example, the electronic devices may determine whether the account number, amount payable, and the like may be readable such that it may be parsed or otherwise obtained and processed by the financial institution to credit an account **160** associated with the user **102** and debit an account associated with the payor. In an implementation, a representative **135** of financial institution **130** may provide assistance to the user **102** and may provide assistance in determining whether the financial information may be readable and/or of a good enough quality to be processed, as described further herein.

Upon receipt and approval of the digital image, financial institution **130** may credit the funds to account **160**. Financial institution **130** may clear the check **108** by presenting a digital image of the check **108** captured from the digital image to an intermediary bank, such as a regional branch of the Federal Reserve, a correspondent bank and/or a clearinghouse bank. For example, the check **108** may be cleared by presenting the digital image to financial institution **140**, which may be a regional branch of the Federal Reserve, along with a request for payment. Financial institutions **130** and **150** may have accounts at the regional branch of the Federal Reserve. Financial institution **130** may create a substitute check using the image provided by the user **102** and present the substitute check to financial institution **140** for further processing. Upon receiving the substitute check, financial institution **140** may identify financial institution **150** as the paying bank (e.g., the bank from which the check **108** is drawn). This may be accomplished using a nine-digit routing number located on the bottom left hand corner of the check. A unique routing number is typically assigned to every financial institution in the United States. Financial institution **140** may present the substitute check to financial institution **150** and request that the check be paid. If financial institution **150** verifies the check (i.e., agrees to honor the check), financial institution **140** may then settle the check by debiting funds from financial institution **150** and crediting funds to financial institution **130**. Financial institution **150** may then debit funds from account **170**.

It will be appreciated that the preceding examples are for purposes of illustration and explanation only, and that an embodiment is not limited to such examples. For example, financial institution **150** may be a correspondent bank (i.e., engaged in a partnership with financial institution **130**). Thus, financial institution **130** may bypass the regional branch of the Federal Reserve and clear the check directly with financial institution **150**. In addition, account **160** and account **170** may both be held at financial institution **130**, in which case the check **108** may be cleared internally.

FIG. **2** shows a high-level block diagram of an implementation of a system **200** that may be used for the deposit of a negotiable instrument. As described further herein, the user **102** may deposit the funds of the negotiable instrument using the camera functionality in the mobile device **106**. In

the example of one person giving a check to another person, this would enable the receiving party to deposit the funds at that time, without physically visiting an ATM or a bank branch.

In an implementation, the system **200** may include the user **102** and a depository **204**. The mobile device **106** may comprise a camera **207**, such as a digital camera. Such a mobile device may be called a camera phone. The mobile device **106**, through the camera **207**, has the ability to take or capture a picture or digital image of the check **108** or other negotiable instrument.

In an implementation, the camera **207** may take an image of the front of the check **108**. Alternatively, the camera **207** may take an image of both the front and the back of the check **108**. The back of the check may provide endorsement verification, such as the signature of the person or party the check is made out to. This may also include stamps, such as checks received at a merchant.

The depository **204** may include a bank in which the user **102** has a deposit account; however, the present disclosure is not limited to just banks. Alternatively, a third party may act as the depository **204** providing functionality to a plurality of users without regard to the bank at which they have deposit accounts, or whether their individual bank allows for the methods and systems described herein.

The depository **204**, in an implementation, after receiving the image(s) of the check **108** from the user **102**, may use a clearinghouse **210** to perform the check clearing operations. As described with respect to the system **100** of FIG. **1**, check clearing operations are used by banks to do the final settlement of the check **108**, such as removing funds from the account of the payor and transferring those funds to the user's bank. The user's bank may choose to make the funds available to the user **102** immediately and take on the risk that the check **108** does not clear. However, for various reasons, the bank may only make those funds available to the user **102** after the check **108** finally clears.

FIG. **3** shows a data-flow diagram of a system **300** for the deposit of a negotiable instrument, in accordance with an example embodiment. In the data-flow diagram of FIG. **3**, a client **320** is one example of the mobile device **106** of the user **102** described with respect to the systems **100** and **200** of FIGS. **1** and **2**, respectively. In an implementation, a server **322** may be a software component operable by the depository **204** of FIG. **2**.

The client **320** may log in to a remote deposit system executed on the server **322**. The login **325** may serve to authenticate the user **102** as an authorized consumer of the depository **204**.

The server **322**, in one example, may send instructions **330** to the client **320** that execute an application on the client **320**. This may include instructions that cause a software object, which may have been previously downloaded and installed on the client **320**, to be executed on the client **320**.

In another example, the instructions **330** may include a wholly self-contained application that when delivered to the client **320** will execute and perform one or more operations described herein. In either example, the software object may be configured to make one or more software calls **310** to a digital camera, such as the camera **207** associated with the mobile device **106**. This may be through specific software instructions to the camera. In other words, the camera's functionality may not be abstracted through any software library. In such an example, software code may be written and delivered to every different camera-equipped mobile phone.

In an alternate example, the software object may operate through a software abstraction layer, such as an application programming interface (API). The software object developer may only insert code into the software object to call one or more APIs exposed by the software operating the mobile device. One example of such software is Windows Mobile by Microsoft Corporation. In the context of a Windows Mobile device, the Windows Mobile operating system (OS) has one or more APIs exposed to application developers that will translate instructions from applications into instructions operable by the camera **207** on the mobile device **106**. A mobile operating system, also known as a mobile platform or a handheld operating system, is the operating system that controls a mobile device. Other mobiles OSs include Symbian OS, iPhone OS, Palm OS, BlackBerry OS, and Android.

The software object may cause the camera **207** to take a picture or capture one or more images of the check **108** being deposited. These images may be captured sequentially, e.g., pursuant to the user **102** flipping the check **108** over after an image of the front of the check **108** has been captured. However, each side of the check **108** may be captured by the camera **207** using similar API calls. The images may be stored in an image file **315**.

Once the images of one or both sides of the check **108** are captured by the camera **207**, the image file **315** may be operated on by the software object of the client **320**. These operations may include any of the following: deskewing, dewarping, magnetic ink character recognition (MICR), cropping (either automatically, or having the user **102** manually identify the corners and/or edges of the check **108** for example), reducing the resolution of the image, number detection, character recognition, and the like.

With respect to number and character recognition, commercial check scanners have used characteristics of the MICR encoding to detect information about the check, such as the bank's routing number and the account number. However, the characteristics that these scanners have used are the magnetic characteristic of the ink itself and these scanners have used methods similar to those of magnetic audio tape readers. In an implementation, a software object of the client **320** may optically recognize the characters on the MICR line, as a consumer mobile device such as the mobile device **106** will lack the magnetic reading ability of a commercial check scanner.

The image may be also down converted into a grayscale or black and white image, such as either in Joint Photographic Experts Group (JPEG) compliant format or in tabbed image file format (TIFF) for example. In an alternate example, the image may be formatted as a Scalable Vector Graphics (SVG) image. One of the benefits of an SVG file is a large size advantage over JPEG. In the former example, the image at some point before entry into the clearing system may be converted to TIFF format. This may be performed at the mobile device **106**, wherein the camera **207** captures the image in TIFF format. However, the camera **207** of the mobile device **106** may capture the image in JPEG format, which may then be converted into TIFF either at the mobile device **106** or at the server **322**. In the latter example, this may use the transmission of the TIFF image across a communications network which may be more advantageous as TIFF images are typically smaller in file size for the same size of picture as a JPEG formatted image.

The software object on the client **320** may operate by performing one or more of the operations described herein and then transmitting an image file **335** (e.g., based on image file **315** that has been processed) to the server **322** after the

user **102** confirms that they do wish to deposit the check **108**. Alternately, the software object may capture the image of the check **108** and transmit that image to the server **322** that in turn may perform those operations, verifies that the image quality is within acceptable thresholds, and communicates that verification back to the client **320**, which can then instruct the user **102** to take a picture of the other side of the check **108**. In this example, the image transmitted to the server **322** may be in any format, such as JPEG or TIFF, insofar as the server software has the ability to convert that image into a Check 21 compliant format. Alternately, the bank may output an X9.37 file to the clearing system. 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. The Check 21 standard for electronic exchange is defined in the standard DSTU X9.37-2003 ("X9.37"). It is a binary interchange format.

The server **322** may confirm (e.g., using a process confirmation **340**) with the user **102** the transmission, reception, and processing of each side of the check **108** separately, or may confirm both sides at the same time. On the server side, more operations may be performed, such as signature verification. Where to perform these operations may be determined by the processing power of the mobile device **106** itself, which is typically limited in computational power. However, the present discussion is not limited in any way by discussion of where certain operations are described as operating. The operations of detecting and verifying information may be performed by the client **320** before the information is transmitted along with the image in the image file **335** to the server **322**. Alternately, the software object operating on the mobile device **106** may perform no operation other then capturing images of the front and back of the check **108**, receiving confirmation that the user **102** wishes to proceed, and transmitting those images to the server **322**, wherein the server **322** performs those operations.

In an implementation, after the image file **335** has been received by the server **322**, the server **322** may send a process confirmation **340** to the client **320**. The process confirmation **340** may request instructions from the client **320** to continue proceeding with the deposit now that the server **322** has received the image file **335**. In response, the client **320** may send a deposit confirmation **345** to the server **322**, instructing the server **322** to process the deposit of the check based on the image file **335** that had been received by the server **322**.

FIG. **4** shows a block diagram of a client apparatus **450** for the deposit of a negotiable instrument, in accordance with an example embodiment. The client apparatus **450** may include one or more software objects operating on a mobile device **106**, such as described above. The client apparatus **450** may include a communications module **452**, a check processing module **454**, and an image capture module **456**. The client apparatus **450** may receive, in one example, one or more check images **458** as an input and output one or more processed images **460**.

In an implementation, the check images **458** may be received following a software call from the check processing module **454** to the image capture module **456**. In such an implementation, the image capture module **456** may include the camera **207** contained within the mobile device **106**. Alternately, the camera **207** may be detachably coupled to the mobile device **106** such as through a secure digital (SD) slot or over any suitable communications bus, such as USB (universal serial bus).

In an implementation, the image capture module **456** may retrieve previously captured and stored image files (e.g., in local, remote, or removable storage associated with the client apparatus **450**) and send the image files to a financial institution (e.g., financial institution **130**, the server **322**, the server apparatus **570** of FIG. **5**, etc.) for processing.

In an implementation, the client apparatus **450** may comprise a browser such as a web browser, for accessing a website on the Internet or other network associated with a financial institution. The user may access the website and select a "capture image" link or similar icon, button or link, for example, displayed on the browser. Such a selection may call the image capture module **456** on the client apparatus **450**.

The communications module **452** may be configured, in one example, to receive and send data signals over a suitable communications network. This may include, without limitation, GSM/GPR3, HSDPA, CDMA, TDMA, 802.11, 802.16 and the like. While the bandwidth available to the mobile device **106** may be an implementation concern such discussion is outside the scope of the present discussion and any suitable wireless communications network is considered to be within the scope of the present discussion. With respect to the present discussion, the communications module **452** may receive one or more processed check images **460** from the check processing module **454** and may transmit them over the suitable communications network to the depository **204**, as described herein.

The check processing module **454** may be configured, in one example, to cause the image capture module **456** to capture a digital image of at least one side of a check. The check processing module **454** may then perform one or more cleaning operations on the image of the check. These cleaning operations, at a high level, are intended to ensure that the image of the check is suitable for one or more processing tasks. For instance, if the check is rotated 45 degrees clockwise when captured, the check processing module **454** or a software object operated on the server **322** described above may be unable to optically detect information on the check. In this example, the check processing module **454** may deskew the image such that the image was no longer rotated.

Another aspect of an image that may be cleaned is a warping of the image. Warping, as used herein, is meant to denote that the check is tilted forward or back with respect to a plane that is perpendicular to a line drawn from the camera lens to the center of the check. Warping, or tilting, of the image may also lead to incorrect optical detection of the check. In an implementation, the check processing module **454** may dewarp the check image such that, in a three-dimensional space, the check would appear to be perpendicular to an imaginary line drawn from the center of the camera lens to the center of the check itself.

The check processing module **454**, in further examples, may perform one or more other cleaning or processing operations. This may include down-converting the image received from the image capture module to a suitable size, such as 200 dots per inch (DPI) resolution or in a resolution range such as 200 DPI to 400 DPI, 300 DPI to 500 DPI, etc., and/or converting the image to grayscale or black and white. Such operation(s) may reduce the file size of the check image.

Alternatively, the check processing module **454** may send instructions to the image capture module **456** to cause the image capture module **456** to capture an image of the check at a suitable resolution. The check processing module **454** may additionally perform any of the following operations, in

further examples: convert from JPEG to TIFF, detect check information, perform signature detection on the image of the check, and the like. The check processing module **454** may, alternatively, send the captured check image to the server described herein for such processing, and receive confirmation that the operations were completed before further operations can proceed.

One of the issues with check processing is to detect the presence of a check against whatever background is present. While a user may be instructed to place the check on a dark or black background, such instructions may not provide a positive user experience. Alternatively or additionally, edge detection may be used to detect the check. Edge detection techniques have been described in other articles and any suitable method may be used herein. Alternative or additional methodology for check detection may use tile-cropping to detect and process the check.

As discussed above, the size of the file sent between the mobile device and the server may be small. This runs counter with respect to automatic check detection against a background. If captured in color, the contrast between check and background becomes easier. However, the processed image sent over the communications network may need to be smaller, and if the detection operation is performed by the server, it may be advantageous to convert the captured image to grayscale, or even black and white, before transmission to the server. Grayscale images are compliant with the Check 21 Act.

While "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. As the image captured is a set of pixels, a tilted image will result in a jagged polygon rather then a perfect rectangle. Using convex hull algorithms, the check processing modules may create a smooth polygon around the boundary and remove the concavity of the check image. Alternatively, a rotating calipers algorithm may be used to determine the tightest fitting rectangle around the check boundary, which can then be used to determine the angle of it, with that angle being used to align the check properly.

The operator of the camera **207** may introduce distortions in the image due to a perspective problem, specifically an angling of the camera vertically over the check, and the top of the check is smaller then the bottom, or the reverse. A warping transformation algorithm (e.g., which may be exposed as a software call within Java advanced imaging) may be used to remove this distortion.

If user involvement is tolerated, the user may be queried to supply or identify three of the four corners of the check. In such an operation, the fourth corner may be derived, showing the perimeter of the check. This may allow a software object described herein to use less computational resources in processing the image of the check.

FIG. **5** shows a block diagram of a server apparatus **570** for the deposit of a negotiable instrument, in accordance with an example embodiment. The server apparatus **570** may include one or more software objects operating on a server operated by the depository **204** described above with respect to FIG. **2**. The server apparatus **570** may include a communications module **572**, a check processing module **574**, and a check clearance module **576**. The server apparatus **570** may receive one or more processed images **460** from a mobile device **106** or a client apparatus **450** as an input and may output a file such as a Check 21 compliant file **578**. The Check 21 compliant file **578** may be a file or entry in a record set that is compliant with the clearinghouse rules set forth in the Check 21 Act and may include outputting an X9.37 file, in one example.

The communications module **572** may be configured to receive a wireless communication from the mobile device **106** over any suitable communications network, such as those described above. The communications module **572** may additionally receive a communication over a different communications network than the mobile device **106** communicated on, such as receiving the communication over a TCP/IP (Transmission Control Protocol/Internet Protocol) connection from the user's communication provider.

The check processing module **574** may be configured, in one example, to perform one or more check processing operations on the processed image(s) **460** that are received. In an implementation, these operations may include any of the operations described herein with respect to the check processing module **454** of FIG. **4**. The operation of signature verification may be performed by the check processing module **574** of the server apparatus **570** as the server apparatus **570** may interface with other systems of the depository **204** that may maintain previously verified signature samples of the user **102**. Performing signature verification at the client apparatus **450** may be computationally unfeasible; additionally, there may be a security risk if the signature sample is stored on the user's own device.

A cropped grayscale image may be sent to the server apparatus **570**. The server apparatus **570** may perform further processing to remove distortion such as warping. The server apparatus **570** may extract information via a TIFF conversion and determine the DPI and re-scale to the proper DPI (e.g., convert to TIFF and detect the DPI that was used in the grayscale image). In an implementation, DPI detection may run on the client apparatus **450**.

The check clearance module **576** may be configured, in one example, to receive a file from the check processing module **574** and may communicate with a check clearinghouse such that a Check 21 compliant file may be delivered to the check clearinghouse and funds may be received by the depository **204**. The availability of the funds to the user **102** may be delayed by this operation such that the user **102** only has access to those funds when the depository **204** receives confirmation that the check has cleared.

FIG. **6** is an operational flow of an implementation of a method **600** that may be used for deposit of a negotiable instrument. At **605**, a request for access may be received from a user. The user may request access to a deposit system operated by a depository as described above by way of a mobile device, such a cellular phone, a PDA, a handheld computing device, etc. operated by the user. The access may be through some sort of user login, in some examples. The deposit system may be configured to receive a deposit of a negotiable instrument, such as a check, money order, cashier's check, etc. from the user and clear the negotiable instrument in a suitable clearinghouse system.

At **610**, the system may initialize a software object on the mobile device. This may include sending instructions to the mobile device intended to execute a previously installed software object. Alternatively, the system may send a software object to the mobile device that may execute the software object, carry out operations described herein by use of the software object, and terminate the software object. In an implementation, the system may instruct a camera associated with the mobile device to capture an image of the negotiable instrument.

At **615**, an image of the check may be captured. This may be accomplished through the software object accessing a

camera associated with the mobile device (e.g., either comprised within the mobile device or separate from the mobile device). This may be done through an API exposed by the OS of the mobile device, or may be through software code customized for a specific phone and specific camera. With respect to the former, a developer of the software object may write code to the camera API(s), which may be specific to the OS and without regard to the camera on the device.

At **620**, the image may be cleaned. Cleaning may include converting the image from JPEG format to TIFF format. Other cleaning operations are described herein. Cleaning operations may also be augmented by detecting operations. The operations at **620** may be carried out on the mobile device, in an implementation, though may include sending the image to the server apparatus, which may perform one or more cleaning operations and when complete may send a notification back to the mobile device of the completion. In either instance, the image may be deskewed, dewarped, and cropped for example, at block **620**. Additionally, detection operations may be performed, e.g. after the cleaning operations are performed. The detection operations may include any of the following: optically read the MICR line, courtesy amount recognition (CAR), legal amount recognition (LAR), signature block, and payee. As discussed above, the detecting operations may be performed by the client, the server, or some combination thereof.

At **625**, the cleaned image may be transmitted to the depository. This may include transmitting the cleaned image alone to the depository, but may also include transmitting the detected information on the check to the depository.

FIG. **7** is an operational flow of another implementation of a method **700** that may be used for deposit of a negotiable instrument. At **705**, a user (e.g., an account owner, payee, etc.) may receive a check from a third party (i.e., a payor). At **710**, the user may endorse the check by signing the back of the check in the designated field. If the user wishes to deposit the check into an account, such as a savings and/or checking account, they also may write an account number below the signature.

At **715**, the user may convert the check into an image file that comprises electronic data representing an image of the check. For example, the user may create an image file comprising an image of the first side of the check, the second side of the check, or both. In an implementation, the image file may be created using a digital camera. The digital camera may be comprised within mobile device or may be separate from the mobile device and detachably connectable to the mobile device.

At **720**, the user may transmit the image file to a financial institution, such as a bank, that may be associated with an account for depositing funds. For example, the user may send the image file of the check to the financial institution by attaching the image file to an email. Alternatively, the image file may be sent using various means, including, but not limited to, an Internet connection via a website of the financial institution or a wireless cellular transmission. In an implementation, the image file may be sent to the financial institution via streaming.

Additionally, the image file may be augmented by secondary data, which may be information relating to the check, such as an account number, a deposit amount, or a routing number associated with the check, and/or relating to the account for depositing funds, such as the account number and/or the name on the account. The account number may appear on the check itself, below the signature endorsing the check. The account number and/or name on the account also may appear in an email, either with or without the image file, for example. The user may send the image file and the secondary data to the financial institution, using any technique, along with a request to deposit the check into a particular user account.

At **725**, the financial institution may receive the image file pertaining to the check along with financial information pertaining to the account for depositing funds and any secondary data. In an implementation, the financial institution may determine that there are multiple user accounts in which to deposit the check. The accounts may be the same type of account, such as a checking account, or different types of accounts, such as checking, savings, or investment accounts. The user may make a selection among a list of accounts in which to deposit the check. The selection may be transmitted to the financial institution, which may process the deposit request according to the image file, the secondary data, and the selected account.

At **730**, the financial institution may open the image file and parse financial information from the image file. The image file may be processed using any known technology to retrieve financial information regarding the check. Example technologies that may be used by the financial institution may include image editing, filtering to remove imagery except the check in the received image, image sharpening, and technologies to distinguish between the front and the back sides of the check.

At **735**, after retrieving the financial information from the check in an electronic data representation form, the financial institution may determine whether the financial information such as the amount payable to the user, the account associated with the user to deposit funds, an account associated with a payor to debit funds, and a financial institution associated with the payor and/or the user may be valid. For example, the financial institution may include electronic devices such as computers, servers, databases, or the like that may be in communication with each other. The electronic devices may receive an electronic data representation and may perform an initial analysis on the quality of the data representation, the readability of the data representation, or the like. For example, the electronic devices may determine whether the account number, amount payable, or the like may be readable such that they may be parsed and processed by the financial institution to credit an account associated with the user and debit an account associated with the payor.

At **740**, if the financial information is determined to be valid, the electronic data representation may be processed by the financial institution at **790**, thereby depositing the check in the user's account. If the financial information is determined to be invalid at **740**, then the user may be advised at **745**. For example, the financial institution may transmit an email, a web message, an instant message, or the like to the user indicating that the financial information associated with the electronic data representation may be invalid. The user may determine how to proceed by selecting an option on the web message, replying to the email, or the like.

Thus, in an implementation, instructions on how the user would like to proceed may be requested from the user, such as whether the user would like to try the image deposit again (e.g., make another image file using the camera and send it to the financial institution) or whether the user would like assistance from a representative, for example. The user may indicate how they would like to proceed. If the user would like to try the image deposit again, processing may continue at **715** in an implementation.

If the user would like assistance, the financial information may be transferred to a representative for further review at **750**. The representative, such as a customer service repre-

sentative, a bank teller who may be located at a branch, a virtual bank teller who may be located remotely via an electronic device, or the like, may review the financial information associated with the electronic data representation to determine whether to allow the electronic data representation to be processed by the financial institution. For example, the initial analysis may require a certain quality requirement, a certain readability requirement, or the like, thus, leading to a high failure rate even though the electronic data representation may otherwise be valid. Thus, the representative may review the electronic data representation to determine whether the financial information may be readable and/or of a good enough quality to be processed. If so, the electronic data representation of the financial information may be processed by the financial institution at **790**, thereby depositing the check in the user's account.

The user may receive a notice via email, facsimile, instant message, or mail, for example, that the check has been deposited into the selected account. In an implementation, if the check is not successfully deposited by image deposit, the financial institution may provide additional options to the user on how to redeem the check, such as mailing the check to the financial institution or the like.

In an implementation, the financial institution may receive a decision from a representative on whether to credit the funds to an account. For example, a representative such as a virtual or remote teller may make a decision such as to approve or deny processing of the electronic data representation. According to an embodiment, a virtual teller may fill in the invalid financial information. For example, the virtual teller may issue a decision to approve the electronic data representation and may fill in the financial information deemed invalid from the initial analysis based upon inspection or review by the teller. The financial institution may then receive the invalid information from the virtual bank teller such that the electronic data representation may be processed.

In an implementation, at **790**, the financial institution may process the electronic data representation of the check. For example, the financial institution may credit the funds to an account associated with the individual if, based on the decision received from the representative, the financial information may be approved. Additionally, the financial institution may credit the funds to an account associated with the user if, based on the determination, the financial information may be valid. The credit may be a provisional credit, enabling the user to access the funds while the check is being cleared. A provisional credit may be voided if the bank determines that the transaction is erroneous and/or fraudulent. Additionally, to credit funds to the account, the bank may generate an Automated Clearinghouse (ACH) debit entry, substitute check, and/or electronic image. ACH transactions typically include payment instructions to debit and/or credit an account. Banks often employ ACH service providers to settle ACH transactions. Examples of ACH service providers include regional branches of the Federal Reserve and the Electronic Payments Network (EPN).

The ACH service provider may process the debit entry by identifying the account and bank from which the check may be drawn. The bank from which the check is drawn (i.e., the payor's bank) may be referred to as a receiving depository financial institution. If the payor's bank verifies the transaction, the ACH service provider may settle the transaction by debiting the payor's bank and crediting the user's bank. The payor's bank may then debit the payor's account.

Accordingly, a user, without regard to physical location, may access a system described herein, take images of a check, deposit that check into their account and have the funds immediately available (depending on the depository's clearance policies). The user would not have to wait for the mail to pick up their check, the check to get to the bank, the bank to deposit the check, and then have the funds available. The implementations described herein may be limited by the risk tolerance of the depository. If the depository is concerned with fraudulent presentment of the checks through these systems, they may restrict access to particular level of user, such as an "elite" level user. Though the term check has been used as representative of a negotiable instrument, the present discussion is not limited to checks and encompasses any negotiable instrument that a user may present to a depository.

FIG. **8** is a block diagram of an example computing environment in which example embodiments and aspects may be implemented. The computing system environment is only one example of a suitable computing environment and is not intended to suggest any limitation as to the scope of use or functionality.

Numerous other general purpose or special purpose computing system environments or configurations may be used. Examples of well known computing systems, environments, and/or configurations that may be suitable for use include, but are not limited to, personal computers (PCs), server computers, handheld or laptop devices, multiprocessor systems, microprocessor-based systems, network PCs, minicomputers, mainframe computers, embedded systems, distributed computing environments that include any of the above systems or devices, and the like.

Computer-executable instructions, such as program modules, being executed by a computer may be used. Generally, program modules include routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Distributed computing environments may be used where tasks are performed by remote processing devices that are linked through a communications network or other data transmission medium. In a distributed computing environment, program modules and other data may be located in both local and remote computer storage media including memory storage devices.

With reference to FIG. **8**, a system **800** includes a computer **810** connected to a network **814**. The computer **810** includes a processor **820**, a storage device **822**, an output device **824**, an input device **826**, and a network interface device **828**, all connected via a bus **830**. The processor **820** represents a central processing unit of any type of architecture, such as a CISC (Complex Instruction Set Computing), RISC (Reduced Instruction Set Computing), VLIW (Very Long Instruction Word), or a hybrid architecture, although any appropriate processor may be used. The processor **820** executes instructions and includes that portion of the computer **810** that controls the operation of the entire computer. Although not depicted in FIG. **8**, the processor **820** typically includes a control unit that organizes data and program storage in memory and transfers data and other information between the various parts of the computer **810**. The processor **820** receives input data from the input device **826** and the network **814** reads and stores code and data in the storage device **822** and presents data to the output device **824**.

Although the computer **810** is shown to contain only a single processor **820** and a single bus **830**, the disclosed embodiment applies equally to computers that may have multiple processors and to computers that may have multiple busses with some or all performing different functions in different ways.

The storage device **822** represents one or more mechanisms for storing data. For example, the storage device **822** may include read-only memory (ROM), RAM, magnetic disk storage media, optical storage media, flash memory devices, and/or other machine-readable media. In other embodiments, any appropriate type of storage device may be used. Although only one storage device **822** is shown, multiple storage devices and multiple types of storage devices may be present. Further, although the computer **810** is drawn to contain the storage device **822**, it may be distributed across other computers, for example on a server.

The storage device **822** includes a controller (not shown in FIG. **8**) and data items **834**. The controller includes instructions capable of being executed on the processor **820** to carry out the functions as previously described herein with reference to FIGS. **1-7**. In another embodiment, some or all of the functions are carried out via hardware in lieu of a processor-based system. In one embodiment, the controller is a web browser, but in other embodiments the controller may be a database system, a file system, an electronic mail system, a media manager, an image manager, or may include any other functions capable of accessing data items. The storage device **822** may also contain additional software and data (not shown), which is not necessary to understand the invention. Although the controller and the data items **834** are shown to be within the storage device **822** in the computer **810**, some or all of them may be distributed across other systems, for example on a server and accessed via the network **814**.

The output device **824** is that part of the computer **810** that displays output to the user. The output device **824** may be a liquid crystal display (LCD) well-known in the art of computer hardware. In other embodiments, the output device **824** may be replaced with a gas or plasma-based flat-panel display or a traditional cathode-ray tube (CRT) display. In still other embodiments, any appropriate display device may be used. Although only one output device **824** is shown, in other embodiments any number of output devices of different types, or of the same type, may be present. In an embodiment, the output device **824** displays a user interface.

The input device **826** may be a keyboard, mouse or other pointing device, trackball, touchpad, touch screen, keypad, microphone, voice recognition device, or any other appropriate mechanism for the user to input data to the computer **810** and manipulate the user interface previously discussed. Although only one input device **826** is shown, in another embodiment any number and type of input devices may be present.

The network interface device **828** provides connectivity from the computer **810** to the network **814** through any suitable communications protocol. The network interface device **828** sends and receives data items from the network **814**.

The bus **830** may represent one or more busses, e.g., USB, PCI, ISA (Industry Standard Architecture), X-Bus, EISA (Extended Industry Standard Architecture), or any other appropriate bus and/or bridge (also called a bus controller).

The computer **810** may be implemented using any suitable hardware and/or software, such as a personal computer or other electronic computing device. Portable computers, laptop or notebook computers, PDAs, pocket computers, appliances, telephones, and mainframe computers are examples of other possible configurations of the computer **810**. For example, other peripheral devices such as audio adapters or chip programming devices, such as EPROM (Erasable Programmable Read-Only Memory) programming devices may be used in addition to, or in place of, the hardware already depicted.

The network **814** may be any suitable network and may support any appropriate protocol suitable for communication to the computer **810**. In an embodiment, the network **814** may support wireless communications. In another embodiment, the network **814** may support hard-wired communications, such as a telephone line or cable. In another embodiment, the network **814** may support the Ethernet IEEE (Institute of Electrical and Electronics Engineers) 802.3x specification. In another embodiment, the network **814** may be the Internet and may support IP (Internet Protocol). In another embodiment, the network **814** may be a LAN or a WAN. In another embodiment, the network **814** may be a hotspot service provider network. In another embodiment, the network **814** may be an intranet. In another embodiment, the network **814** may be a GPRS (General Packet Radio Service) network. In another embodiment, the network **814** may be any appropriate cellular data network or cell-based radio network technology. In another embodiment, the network **814** may be an IEEE 802.11 wireless network. In still another embodiment, the network **814** may be any suitable network or combination of networks. Although one network **814** is shown, in other embodiments any number of networks (of the same or different types) may be present.

It should be understood that the various techniques described herein may be implemented in connection with hardware or software or, where appropriate, with a combination of both. Thus, the methods and apparatus of the presently disclosed subject matter, or certain aspects or portions thereof, may take the form of program code (i.e., instructions) embodied in tangible media, such as floppy diskettes, CD-ROMs, hard drives, or any other machine-readable storage medium wherein, when the program code is loaded into and executed by a machine, such as a computer, the machine becomes an apparatus for practicing the presently disclosed subject matter. In the case of program code execution on programmable computers, the computing device generally includes a processor, a storage medium readable by the processor (including volatile and non-volatile memory and/or storage elements), at least one input device, and at least one output device. One or more programs may implement or use the processes described in connection with the presently disclosed subject matter, e.g., through the use of an API, reusable controls, or the like. Such programs may be implemented in a high level procedural or object-oriented programming language to communicate with a computer system. However, the program(s) can be implemented in assembly or machine language, if desired. In any case, the language may be a compiled or interpreted language and it may be combined with hardware implementations.

Although exemplary embodiments may refer to using aspects of the presently disclosed subject matter in the context of one or more stand-alone computer systems, the subject matter is not so limited, but rather may be implemented in connection with any computing environment, such as a network or distributed computing environment. Still further, aspects of the presently disclosed subject matter may be implemented in or across a plurality of processing chips or devices, and storage may similarly be effected across a plurality of devices. Such devices might include personal computers, network servers, and handheld devices, for example.

Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

The invention claimed is:

1. A processor-implemented method of depositing a negotiable instrument, comprising:

with a processor of a server of a financial institution in communication with a mobile device, the mobile device communicatively coupled to an image capture device, the processor:

delivering an application comprising a remote deposit processing component from the financial institution for instantiation on the mobile device communicatively coupled to the image capture device, the delivering of the application occurring at least partially after authenticating a user of the mobile device, the authenticating of the user, comprising:

receiving, from the mobile device, authentication information of the user of the mobile device for authenticating the user to the server of the financial institution; and

authenticating, through the authentication information, that the user is an authorized consumer of the financial institution;

instructing the application on the mobile device, after the authenticating of the user, to enable execution of the remote deposit processing component on the mobile device;

receiving, from the remote deposit processing component, an image file of the negotiable instrument, wherein the image file comprises an image of the negotiable instrument captured by the image capture device communicatively coupled to the mobile device of the user;

verifying that the image file is readable such that financial information may be obtained from the negotiable instrument;

obtaining the financial information pertaining to the negotiable instrument from the image file, wherein the financial information includes information regarding an account for depositing funds of the user; and

depositing funds of the negotiable instrument into the account based on the financial information pertaining to the negotiable instrument.

2. The method of claim **1**, wherein the image file is received via an Internet connection or a wireless cellular transmission.

3. The method of claim **1**, wherein the image file is received via email.

4. The method of claim **1**, wherein the image of the negotiable instrument comprises first side of the negotiable instrument, and wherein the image file further comprises a second image comprising a second side of the negotiable instrument.

5. The method of claim **1**, further comprising determining whether the financial information is invalid, and if so, transferring the financial information to a representative.

6. The method of claim **1**, further comprising determining whether the financial information is invalid, and if so,

advising the user;

receiving a second image file from the user;

obtaining second financial information pertaining to the negotiable instrument from the second image file; and

depositing funds of the negotiable instrument into an account based on the second financial information pertaining to the negotiable instrument.

7. A computer-readable medium comprising:

computer-readable instructions for depositing a negotiable instrument, said computer-readable instructions comprising instructions that, when executed by a processor of a server of a financial institution, cause the processor to:

deliver an application comprising a remote deposit processing component from the financial institution for instantiation on a mobile device communicatively coupled to an image capture device, the delivering of the application occurring at least partially after authenticating a user of the mobile device, the authenticating of the user, comprising:

receive, from the mobile device, authentication information of the user of the mobile device for authenticating the user to the server of the financial institution; and

authenticate, through the authentication information, that the user is an authorized consumer of the financial institution;

instruct the application on the mobile device, after the authenticating of the user, to enable execution of the remote deposit processing component on the mobile device;

receive, from the remote deposit processing component, an image file of the negotiable instrument, wherein the image file comprises an image of the negotiable instrument captured by the image capture device communicatively coupled to the mobile device of the user;

verify that the image file is readable such that financial information may be obtained from the negotiable instrument;

obtain the financial information pertaining to the negotiable instrument from the image file, wherein the financial information includes information regarding an account for depositing funds of the user; and

deposit funds of the negotiable instrument identified by the financial information obtained from the negotiable instrument into an account held by the user at the financial institution.

8. The computer-readable medium of claim **7**, wherein the image file is received via an Internet connection or a wireless cellular transmission.

9. The computer-readable medium of claim **7**, wherein the image file is received via email.

10. The computer-readable medium of claim **7**, wherein the image of the negotiable instrument comprises first side of the negotiable instrument, and wherein the image file further comprises a second image comprising a second side of the negotiable instrument.

11. The computer-readable medium of claim **7**, further comprising instructions that determine whether the financial information is invalid, and if so, transfer the financial information to a representative.

12. The computer-readable medium of claim **7**, further comprising instructions that determine whether the financial information is invalid, and if so,

advise the user;

receive a second image file from the user;

obtain second financial information pertaining to the negotiable instrument from the second image file; and

deposit funds of the negotiable instrument into an account based on the second financial information pertaining to the negotiable instrument.

13. A system for depositing a negotiable instrument, comprising:

a server of a financial institution, the server comprising:

a memory storing instructions;

a processor disposed in communication with said memory, the processor configured to execute the instructions to:

deliver an application comprising a remote deposit processing component from the financial institution for instantiation on a mobile device communicatively coupled to an image capture device, the delivering of the application occurring at least partially after authenticating a user of the mobile device, the authenticating of the user, comprising:

receive, from the mobile device, authentication information of the user of the mobile device for authenticating the user to the server of the financial institution; and

authenticate, through the authentication information, that the user is an authorized consumer of the financial institution;

instruct the application on the mobile device, after the authenticating of the user, to enable execution of the remote deposit processing component on the mobile device;

receive, from the remote deposit processing component, an image file of the negotiable instrument, wherein the image file comprises an image of the negotiable instrument captured by the image capture device communicatively coupled to the mobile device of the user;

verify that the image file is readable such that financial information may be obtained from the negotiable instrument;

obtain the financial information pertaining to the negotiable instrument from the image file, wherein the financial information includes information regarding an account for depositing funds of the user; and

deposit funds of the negotiable instrument identified by the financial information obtained from the negotiable instrument into an account held by the user at the financial institution.

14. The system of claim **13**, wherein the image file is received via an Internet connection or a wireless cellular transmission.

15. The system of claim **13**, wherein the image file is received via email.

16. The system of claim **13**, wherein the image of the negotiable instrument comprises first side of the negotiable instrument, and wherein the image file further comprises a second image comprising a second side of the negotiable instrument.

17. The system of claim **13**, further comprising at least one subsystem that determines whether the financial information is invalid, and if so, transfers the financial information to a representative.

18. The system of claim **13**, further comprising at least one subsystem that determines whether the financial information is invalid, and if so,

advises the user;

receives a second image file from the user;

obtains second financial information pertaining to the negotiable instrument from the second image file; and

deposits funds of the negotiable instrument into an account based on the second financial information pertaining to the negotiable instrument.

19. A processor-implemented method of depositing a negotiable instrument, comprising:

with a processor of a mobile device communicatively coupled to an image capture device, the mobile device in communication with a server of a financial institution, the processor:

receiving an application comprising a remote deposit processing component from the financial institution for instantiation on the mobile device communicatively coupled to the image capture device, the receiving of the application occurring at least partially after authenticating a user of the mobile device, the authenticating of the user, comprising

sending, via the application on the mobile device, authentication information to the financial institution to authenticate that the user of the mobile device is an authorized consumer of the financial institution;

receiving an instruction from the financial institution to enable execution of the remote deposit processing component on the mobile device;

capturing an image of a negotiable instrument via the image capture device communicatively coupled to the mobile device;

performing a cleaning procedure via the remote deposit processing component on the captured image of the negotiable instrument, the cleaning procedure including deskewing and dewarping the captured image of the negotiable instrument;

sending the cleaned image of the negotiable instrument to the financial institution via the remote deposit processing component; and

receiving an indication including information related to a status of depositing the negotiable instrument.

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