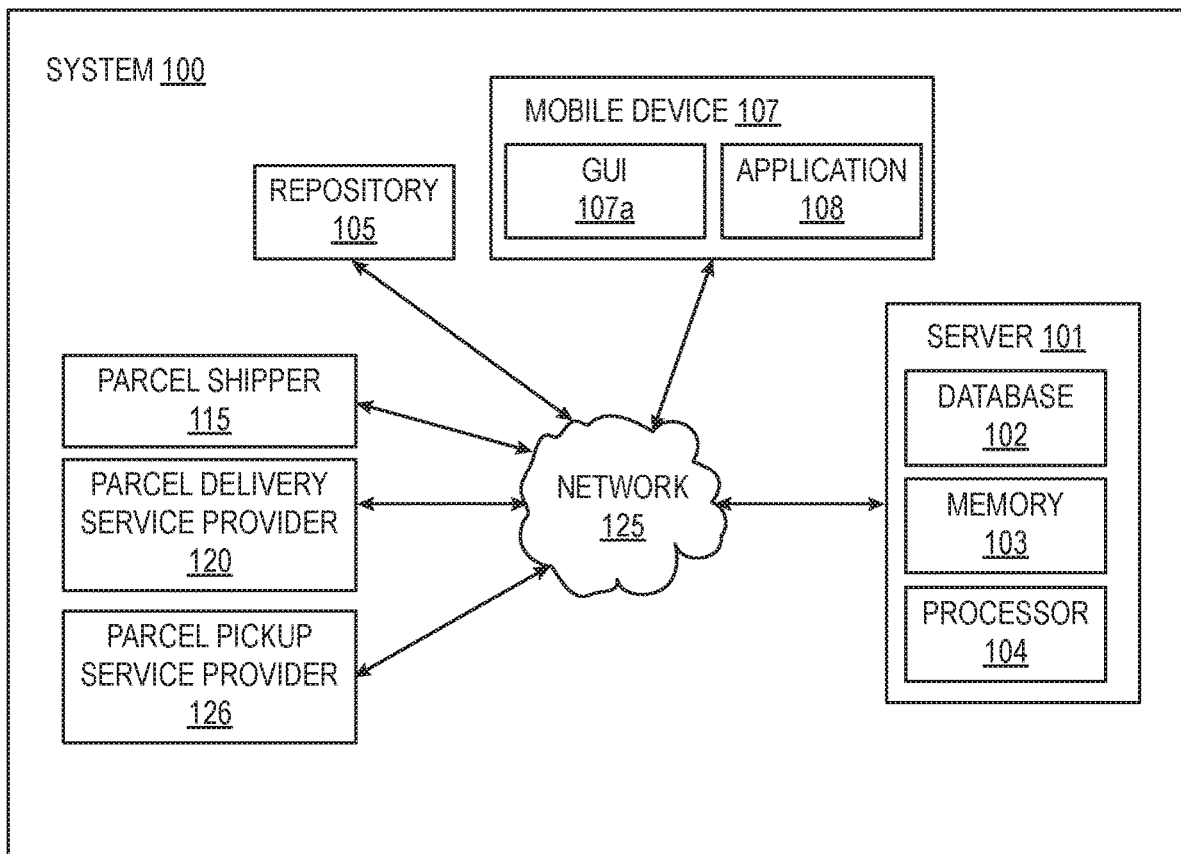(19) **United States**

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(54) **SYSTEM FOR SECURE PACKAGE DROP-OFF AND PICK-UP**

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(57) **ABSTRACT**

Server for facilitating secure delivery and pickup of packages comprises a memory, a database, and a processor. The processor is configured to receive identification information associated with a package to be delivered or picked up, wherein the identification information is generated by a parcel shipper for tracking location and shipping progress of the package. The processor generates an access code based on the identification information, and provides the access code to a first party for opening an access on a repository configured for holding the package. When a code is input at a keypad coupled to the repository, the input code and the generated access code are compared, and access to an internal compartment of the repository through an access door on the repository is provided based on the comparison.

SYSTEM 100

MOBILE DEVICE 107
GUI 107a
APPLICATION 108

REPOSITORY 105

SERVER 101
DATABASE 102
MEMORY 103
PROCESSOR 104

PARCEL SHIPPER 115

PARCEL DELIVERY SERVICE PROVIDER 120

PARCEL PICKUP SERVICE PROVIDER 126

NETWORK 125

SYSTEM 100

MOBILE DEVICE 107

GUI
107a

APPLICATION
108

REPOSITORY
105

PARCEL SHIPPER
115

PARCEL DELIVERY
SERVICE PROVIDER
120

PARCEL PICKUP
SERVICE PROVIDER
126

NETWORK
125

SERVER 101

DATABASE
102

MEMORY
103

PROCESSOR
104

FIG. 1

FIG. 2

105

FIG. 3

105

401

ENTER

403

FIG. 4

SYSTEM FOR SECURE PACKAGE DROP-OFF AND PICK-UP

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application No. 62/781,931 filed on Dec. 19, 2018, the entire contents of which are incorporated by reference herein.

TECHNICAL FIELD

[0002] The invention relates to a server for securely storing an article in a repository after drop-off of the article and before pick-up of the article until removed by a responsible party.

BACKGROUND

[0003] Package delivery, parcel delivery, mail delivery or even grocery delivery to a residential home or to business location is provided by postal systems (e.g., USPS) and private delivery services (e.g., UPS, FedEx, DHL, Amazon, etc.). When delivering a package or article to a residential neighborhood or to a generic building, the package may often be left on the front porch or near the front entrance to the building. There have been increased occurrences of package tampering and package theft with regard to such packages. Further, in a residential home setting, providing access to delivery personnel into the house for package delivery/pick-up when occupant is not present is eschewed by most home occupants. Alternately, if a package cannot be delivered to a destination that requires a signature by the recipient of the package as in, for example, a home where none of the occupants are home at the time of delivery, the package must be couriered to a retention facility for later pick-up by the intended party or another delivery attempt must be scheduled.

[0004] Thus, a need exists for a practical and efficient way of delivering packages or parcels that satisfactorily addresses these issues.

SUMMARY

[0005] This summary is provided to introduce in a simplified form concepts that are further described in the following detailed descriptions. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is it to be construed as limiting the scope of the claimed subject matter.

[0006] According to one aspect of the invention, a server for facilitating secure delivery and pickup of packages comprises a memory, a database, and a processor. The processor is configured to receive identification information associated with a package to be delivered or picked up, wherein the identification information is generated by a parcel shipper for tracking location and shipping progress of the package. The processor is also configured to generate an access code based on the identification information, and provide the access code to a first party for opening an access on a repository configured for holding the package. A code is input at a keypad coupled to the repository. The input code and the generated access code are compared. Access to an internal compartment of the repository through an access door on the repository is based on the comparison.
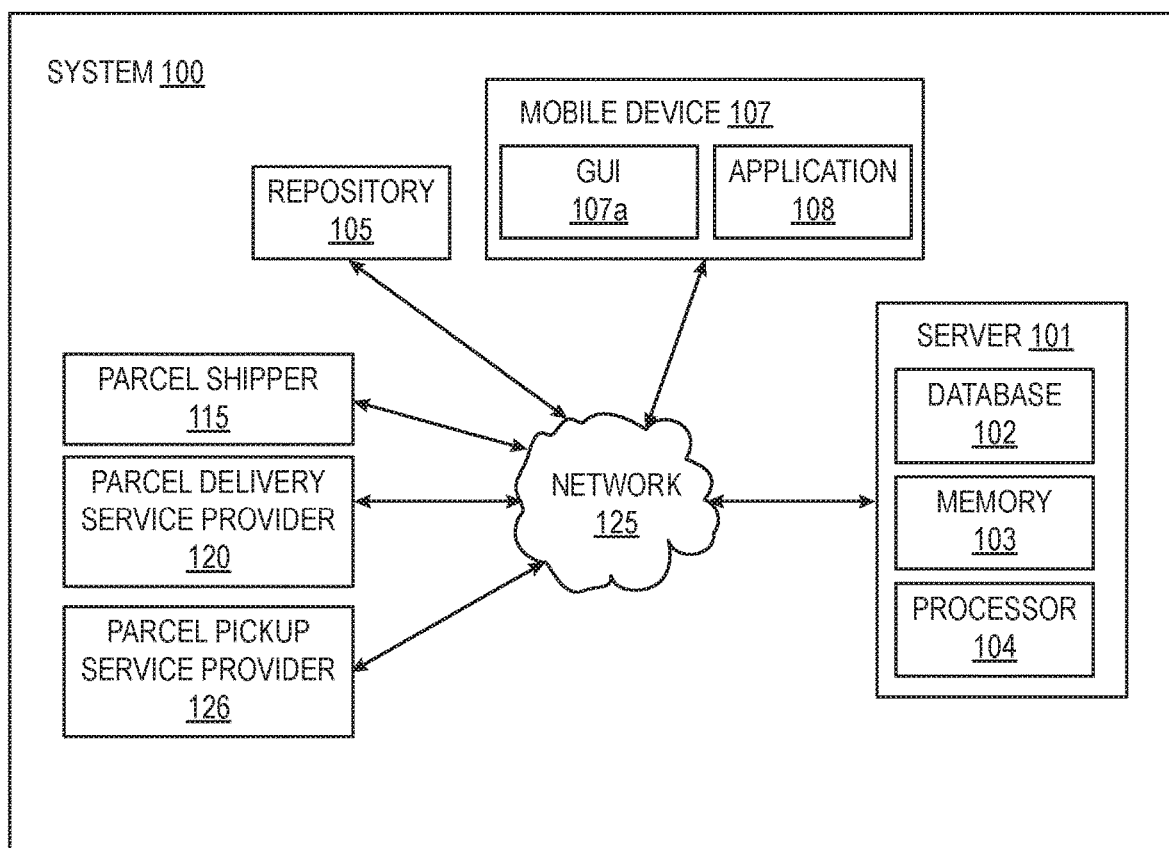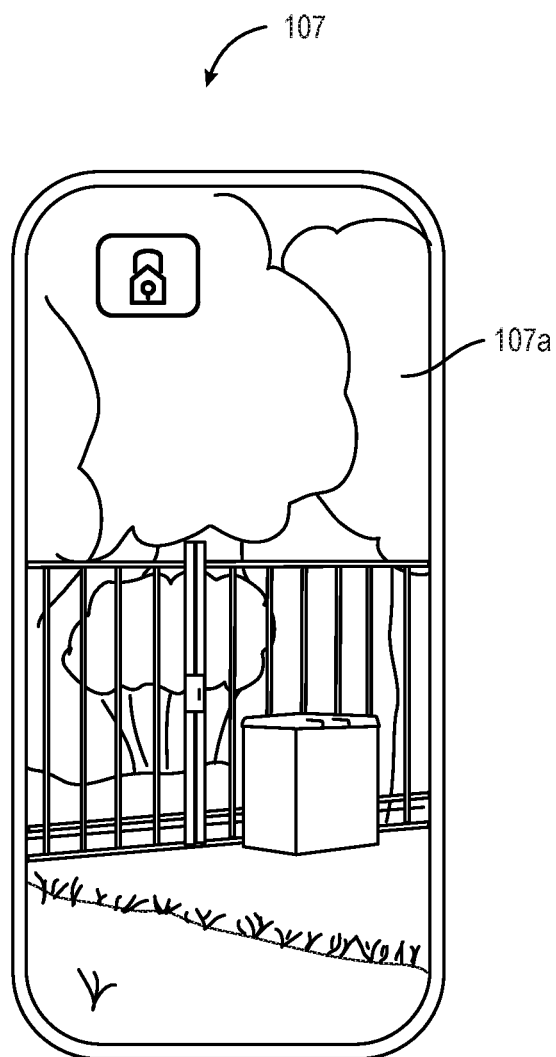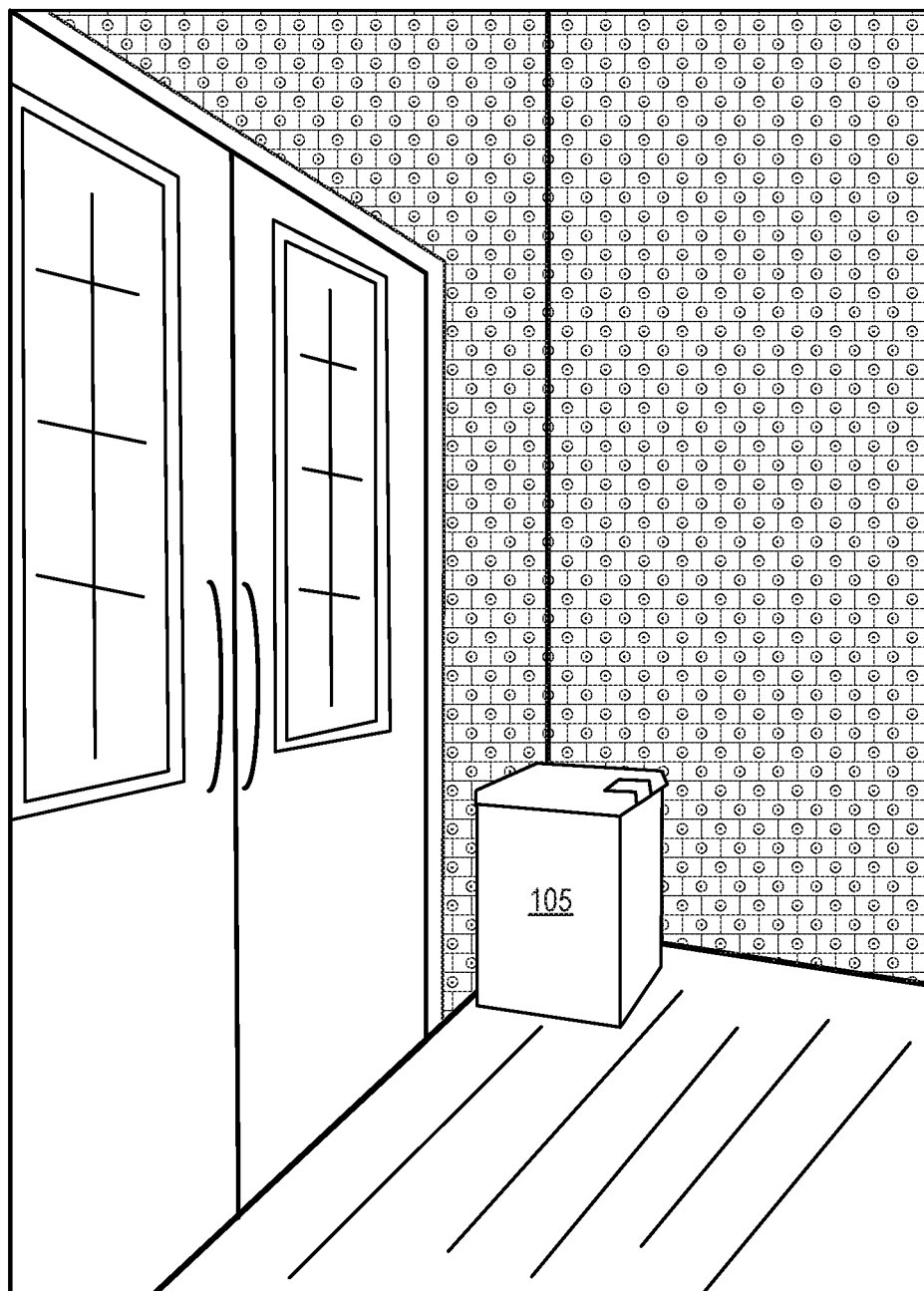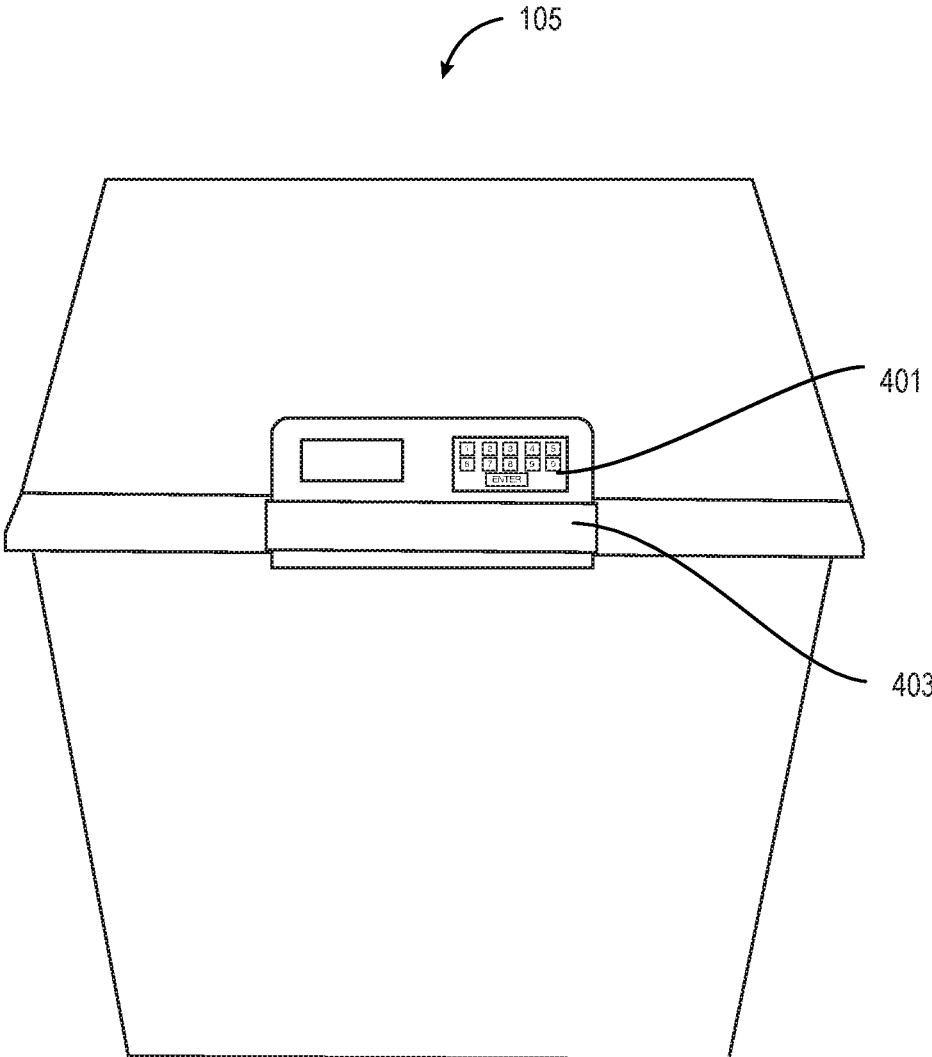
[0007] According to one or more embodiments, the processor is further configured to generate a further access code and provide the further access code to a second party associated with a package delivery, wherein the first party is associated with a package pick-up.

[0008] According to one or more embodiments, the processor is further configured to communicate with a web-portal configured to manage logistics associated with one or more of a package delivery and a package pick-up.

[0009] According to one or more embodiments, the processor is further configured to use an automated harvesting program to scour an email account associated with one or more of the package delivery and the package pick-up to extract the identification information associated with the package.

[0010] According to one or more embodiments, the repository is positioned at a first location, the repository including a first Media Access Control (MAC) address associated with a first network adaptor coupled to the repository.

[0011] According to one or more embodiments, the first MAC address is transferrable to a second network adaptor coupled to a further repository at a second location, wherein the first network adaptor coupled to the repository at the first location is assigned a second MAC address different from the first MAC address.

[0012] According to one or more embodiments, the unlock code is valid for a predetermined time span associated with a delivery time or a pick up time scheduled for the package, wherein the access code is inoperable to provide access through the access door outside of the predetermined time span.

[0013] According to one or more embodiments, the processor is further configured to generate an alert when the repository is tampered with.

[0014] According to one or more embodiments, the processor is further configured to generate a notification when the package is delivered or picked up.

[0015] According to one or more embodiments, the processor is further configured to generate an alert when the repository door remains unlocked beyond a predetermined duration subsequent to deposition of the package into the repository.

[0016] According to one or more embodiments, the repository includes a temperature sensor for sensing a temperature of the internal compartment of the repository, wherein the processor is further configured to receive a temperature notification from the temperature sensor.

[0017] According to one or more embodiments, the repository includes a camera positioned inside the internal compartment of the repository, wherein the processor is further configured to receive a picture taken by the camera of the package positioned inside the internal compartment of the repository.

[0018] According to one or more embodiments, the repository includes a scanner or imaging device for reading the identification information, wherein the access door on the repository is opened after the identification information is captured by the scanner or imaging device.

[0019] According to one or more embodiments, the access code includes at least a last four digits of a package tracking number associated with the package.

[0020] According to one or more embodiments, the access code includes at least a last eight digits of a package tracking number associated with the package.

[0021] According to one or more embodiments, the processor is further configured to process a package return by: facilitating capture of the identification information via an application operating on a mobile computing device; and, scheduling pick up of the package by a route carrier.

[0022] According to one or more embodiments, the repository includes a Wi-Fi hub.

[0023] According to one or more embodiments, the repository generates an audible alarm when the repository is tampered with.

[0024] According to one or more embodiments, the processor is further configured to generate an alert to an individual associated with the repository when the repository is tampered with.

[0025] According to one or more embodiments, the access code is configured for single use.

[0026] According to one or more embodiments, the access code is configured for multiple uses.

[0027] According to one or more embodiments, the access code further includes alphanumeric characters customized for a characteristic associated with the first party.

[0028] According to one or more embodiments, the processor is further configured to receive a picture of a person approaching the repository from a camera coupled to the repository.

[0029] According to one or more embodiments, the processor is further configured to communicate with an application operating on a mobile communication device via a graphical user interface (GUI) of the mobile communication device.

[0030] According to one or more embodiments, the repository includes a key access operable to open the access door on the repository.

[0031] According to one or more embodiments, the processor is further configured to communicate with the repository via one or more of a USB port, a Wi-Fi connection, an Ethernet connection, a Bluetooth connection, a cellphone network tower connection and a satellite connection.

[0032] According to one or more embodiments, the processor is further configured to communicate with a communication transceiver coupled to the repository.

[0033] According to one or more embodiments, the processor is further configured to communicate with a communication transceiver coupled to the repository via a wireless connection.

[0034] According to one or more embodiments, the processor is further configured to communicate with a communication transceiver coupled to the repository via a wired connection.

[0035] According to one or more embodiments, the processor is further configured to determine a location data associated with the package from the identification information, wherein the processor uses the location data for verifying delivery or pick up of the package.

[0036] According to one or more embodiments, the processor is further configured to generate a further access code that does not include a portion of the identification information.

[0037] Other objects and advantages of this invention will be better appreciated from the following detailed description.

BRIEF DESCRIPTION OF DRAWINGS

[0038] FIG. 1 is a block diagram of a system for secure delivery and pickup of packages, in accordance with an embodiment of the present invention.

[0039] FIG. 2 is a front view of a mobile device in communication with the system for secure delivery and pickup of packages, in accordance with an embodiment of the present invention.

[0040] FIG. 3 is a perspective view of a repository in communication with the system for secure delivery and pickup of packages positioned on the front porch of a building, in accordance with an embodiment of the present invention.

[0041] FIG. 4 is a perspective view of the repository of FIG. 3, in accordance with an embodiment of the present invention.

DESCRIPTION OF EMBODIMENTS

[0042] Below, the technical solutions in the examples of the present invention are depicted clearly and comprehensively with reference to the figures according to the examples of the present invention. Obviously, the examples depicted here are merely some examples, but not all examples of the present invention. In general, the components in the examples of the present invention depicted and shown in the figures herein can be arranged and designed according to different configurations. Thus, detailed description of the examples of the present invention provided in the figures below are not intended to limit the scope of the present invention as claimed, but merely represent selected examples of the present invention. On the basis of the examples of the present invention, all of other examples that could be obtained by a person skilled in the art without using inventive efforts will fall within the scope of protection of the present invention.

[0043] Embodiments of the presently disclosed subject matter relate to providing digitally controlled access to a package repository and, more particularly, to a system and a server configured for managing access to an internal compartment of the repository, the access associated with for package pick up or package delivery. One or more embodiments as disclosed herein advantageously allow for secure delivery systems configured for coordinating secure delivery and pick up of packages at a secure repository in communication with the system as disclosed herein, with goods within the repository capable of being retrieved by an user, at his or her convenience. According to advantageous aspects of the disclosed subject matter, the server generates an access code based on identification information generated by a parcel shipper for tracking location and shipping progress of a package to be delivered or picked up. According to at least one embodiment, the access code generated by the server includes at least the last 4 digits of a package tracking number associated with the package. According to another embodiment, the access code generated by the server can include up to the last eight digits of a package tracking number associated with the package. According to another aspect of the invention, the access code generated by the server includes at least the last eight digits of a package tracking number associated with the package.

[0044] One embodiment of a system for facilitating secure delivery or secure pick up of a package is shown in FIG. 1. As shown, system 100 includes at least one repository 105

having an interior compartment in which one or more packages are stored. The repository **105** is connected to a server such as server **101**. Server **101** controls the operation of and access to one or more repositories **105** whereby server **101** facilitates secure delivery and pickup of packages to and from the one or more repositories **105**.

[0045] Server **101** communicates over network **125** with repository **105**, one or more mobile devices **107** with GUI **107***a*, parcel shipping service provider **115**, package delivery service provider **120**, and package pickup service provider **126**. The term "package" as used herein refers to any article that can be dropped off in repository **105** or picked up from the repository **105**, the package including articles such as, for example, a processed food item, a farm produce, a parcel, an envelope, or any other item that may be delivered to, or picked up from, a customer location.

[0046] Server **101** may communicate with one or more mobile devices **107**, each mobile device **107** including a graphical user interface (GUI) **107***a* and an application **108**. A user of mobile device **107** may be able to interact with application **108** via GUI **107***a* for communicating with server **101**, and optionally with repository **105**. Server **101** may communicate wirelessly with application **108** operating on a mobile device **107**. Similarly, server **101** may communicate wirelessly with repository **105**. In one embodiment, the GUI **107***a* associated with application **108** may display a web page associated with system **100** as illustrated in FIG. **2**.

[0047] Server **101** includes database **102**, memory **103** and processor **104**. Processor **104** is configured to receive identification information associated with a package to be delivered or picked up. The identification information is generated by a parcel shipping service provider **115** for tracking location and shipping progress of the package. As is well known in the relevant art, parcel shippers typically generate identification information that helps facilitate identification of a package including its weight, size, point of origin, point of destination, package tracking number and similar other information. The identification information can include alphanumeric characters and other machine readable codes. Processor **104** of server **101** is configured to generate an access code based on the received identification information. The identification information may be received wirelessly by server **101** from a portal operated by the parcel shipping service provider **115**.

[0048] Processor **104** provides the generated access code to an authorized first party for opening an access on repository **105**. In one embodiment, the authorized first party may be a homeowner or home occupant who needs to pick up a package recently dropped within the interior compartment of repository **105**. In one embodiment, the authorized first party may be a delivery person who needs to drop a package within the interior compartment of repository **105**. In one embodiment, the authorized first party may be a pick-up person who needs to pick up a package present within the interior compartment of repository **105**.

[0049] In various embodiments, repository **105** includes a keypad **401** coupled to a locking mechanism **403** that secures the access on repository **105**. The access code may be entered on the keypad **401**. If the entered access code is deemed to be correct or acceptable, the locking mechanism **403** unlocks thereby providing access to an interior compartment of repository **105**. In one embodiment, the verification of the access code may be performed by server **101**.

In one embodiment, the verification of the access code may be performed by a processor forming part of, or otherwise coupled to, repository **105**.

[0050] In some embodiments, the access code may be electronically communicated by server **101** to the repository through a wired connection such as through a USB port, or through a wireless connection such us, for example, a Wi-Fi connection or a Bluetooth connection. In one embodiment, the access code includes at least the last four digits of a package tracking number associated with the package. In another embodiment, the access code includes at least the last eight digits of a package tracking number associated with the package. In another embodiment, the access code includes the middle four or more digits of the package tracking number associated with the package. In a further embodiment, the access code includes alphanumeric characters customized for a characteristic associated with the first party. This way, the input access code may include some identifying information regarding the person inputting the access code into the keypad of repository **105**. As an illustrative example, a FedEx worker may be supplied with an access code that includes the characters "FEDEX" as the first five alphanumeric characters of the access code.

[0051] In various embodiments, server **101** is configured to maintain a history of all codes entered at the keypad with time stamps including those associated with unsuccessful attempts. In some embodiments, different sets of access codes may be generated by server **101**, with one set of access codes configured for a single access to the interior compartment of repository **105** and another set of access codes configured for permitting multiple accesses to the interior compartment of repository **105**.

[0052] In various embodiments, repository **105** includes at least one sidewall having a top rim and a bottom side, as illustrated in FIGS. **3** and **4** below. For example, the repository **105** may include four sidewalls. The sidewalls and the bottom side form an interior storage compartment of repository **105** in between with an upper ceiling covering an access (i.e., an opening) defined by the top rims of the sidewalls. The access may be secured by a door provided with a door handle and/or a door lock. The door may close to cover the access to the interior compartment of repository **105** and open to reveal the inside of the interior compartment of repository **105**. Repository **105** may further include provisions for accepting electrical, data and internet connections to the repository.

[0053] In certain embodiments, repository **105** includes a mounting mechanism for mounting the bottom side of the repository **105** to a flat horizontal surface. In certain embodiments, the surface may be a porch or landing in front of a residential home or a building. The mounting mechanism may include bolts going through openings in the bottom side of the repository **105**, whereby the locking bolt may secure the repository **105** to the surface. In the same embodiments or in other embodiments, repository **105** can include a mounting mechanism for mounting to a wall or a vertical structure.

[0054] Repository **105** may be produced by injection molding. Other construction technics and materials are also envisioned. In certain embodiments, the dimensions of the repository may be about 18 inches in width, at least 24 inches in depth, and 24 inches in length. However, repository **105** is not limited to the dimensions mentioned above and may be any dimensions desired. In other words, reposi-

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tory **105** may have a suitable size depending on the application and/or the requirements of an individual or business as it relates to factors such as quantity, delivery or pick-up frequency, size, volume, and quality of the packages for delivery and/or pick-up.

[0055] According to advantageous features of the presently disclosed subject matter, during operations, a user inputs a code at the keypad coupled to the repository. The input code is compared by server **101** (or alternately by a repository processor coupled to repository **105**) with the access code generated by the server **101**. Subsequent to the comparison, the server **101** (or the repository processor) makes a determination that the input code is adequate and proceeds to initiate the opening of an access door on the repository in order to provide access to the internal compartment of repository **105**. In one embodiment, an exact match between the input code and the generated access may be required. In another embodiment, a partial match may be adequate, the partial match representing a substantial match. In one embodiment, a memory coupled to repository **105** may receive and store the access code, whereby when the code is being input, there is no need for a real-time verification with server **101**; instead, a processor coupled to repository **105** (i.e., the repository processor) may be able to perform the comparison of the input code with the access code generated by the server **101**. Subsequent to the comparison, the repository processor may make a determination that the input code is adequate and proceed to initiate the opening of an access door on repository **105** in order to provide access to the internal compartment of repository **105**.

[0056] In some embodiments, processor **104** of server **101** is further configured to generate a further access code and provide the further access code to a second party associated with a package delivery, wherein the first party is associated with a package pick-up. In this embodiment, the first party may represent an individual authorized to pick up a package present within repository **105**; in one example, the first party represents the owner of repository **105**. In the same embodiment or in a different embodiment, the second party may represent an individual authorized to deliver a package; in one example, the second party may be an employee of a parcel shipping service provider **115** such as UPS, FedEx, USPS, and similar other parcel shipping service providers.

[0057] In some embodiments, server **101** is further configured to communicate with a web-portal configured to manage logistics associated with one or more of a package delivery and a package pick-up. The web-portal may represent a logistics management system that coordinates transportation, tracking and delivery of packages, as well as the pick-up, tracking and transportation of packages being returned, for example. In some further embodiments, server **101** is further configured to use an automated harvesting program to scour an email account associated with one or more of the package delivery and the package pick-up to extract the identification information associated with the package. In one example, application **108** executing on mobile device **107** associated with the first user or the second user is configured to crawl or scour the email accounts present on mobile device **107**, after appropriate permissions are provided by the first and second users for such activity. The effect of such crawling or scouring may be the harvesting of information related to the identification information generated by a parcel shipper, such as parcel

shipping service provider **115**, associated with the tracking location and shipping progress of a package. In various embodiments, application **108** executing on mobile device **107** is communication with a parent application operating on server **101**.

[0058] In some embodiments, the first Media Access Control (MAC) address associated with a first network adaptor coupled to a first repository **105** may be transferable to a different repository **105**. This may advantageously allow an individual to maintain the same MAC address even after the individual relocates to a new second location. After the relocation, the first MAC address may be then linked to a new second repository **105** located at the second location. This may be accomplished by transferring a first MAC address associated with a first network adaptor coupled to the first repository located a first location of the individual to a second network adaptor coupled to a second repository located at a second location associated with the individual's relocation. In this example, the first network adaptor coupled to the first repository at the first location may then be assigned a second MAC address different from the first MAC address.

[0059] In some embodiments, the access code generated by server **101** may be valid only for a predetermined time span associated with a delivery time or a pick up time scheduled for the package; in these embodiment, the access code is rendered inoperable in providing access through the access door outside of the predetermined time span.

[0060] The system **100** may further include several alert systems. In one embodiment, the server **101** of system **100** may generate an alert when repository **105** is tampered with. For example, the tampering may be associated with an attempt to steal a package present in the internal compartment of repository **105**. In another embodiment, or in the same embodiment, server **101** is further configured to generate an alert when the repository door remains unlocked beyond a predetermined duration subsequent to deposition of a package into the repository. In a further embodiment, server **101** is further configured to generate a notification when the package is delivered or picked up. In one embodiment, the repository **105** is configured to generate an audible alarm when the repository is tampered with. In the same embodiment or in a different embodiment, server **101** and/or repository **105** is further configured to generate an alert on mobile device **107** of an individual associated with the repository when repository **105** is tampered with application **108** operating to generate the alert on mobile device **107**.

[0061] In various embodiments, repository **105** can include a temperature sensor for sensing a temperature of the internal compartment of repository **105**. In such an embodiment, server **101** may receive a temperature notification from the temperature sensor, for example, when the temperature is outside of a safe temperature range prescribed for the package present in the internal compartment of repository **105**. The repository **105** and/or server **101** may generate a notification on mobile device **107** regarding this temperature anomaly.

[0062] In one embodiment, repository **105** includes a camera positioned inside the internal compartment of the repository; in other embodiments, the camera may be positioned on an outer surface of the repository. In this embodiment, server **101** may receive a picture taken by the camera of the package positioned inside the internal compartment of repository **105**. Server **101** may utilize the picture taken by

the camera to compare against a pre-existing picture of a package scheduled for delivery around the time when the picture was taken by the camera. Server **101** may further forward the taken picture to mobile device **107** for viewing by the first and/or second user.

[0063] In one embodiment, repository **105** includes a scanner or imaging device for reading the identification information. Server **101** may review the identification information read by the scanner or image device. After determining the identification information to be associated with a package scheduled for delivery around the time when the identification information was read, the server may cause the access door on the repository **105** to open so that the package could be placed within the internal compartment of repository **105**. In an alternate embodiment, the repository processor coupled to repository **105** may make this determination based on a comparison of the scanned information and identification information received earlier from server **101**, wherein the earlier received identification information may be stored in a memory coupled to repository **105** and accessible by the repository processor. Based on a comparison of the two, repository processor may proceed to open access to the internal compartment of repository **105**.

[0064] In some embodiments, server **101** may be further configured to process a package return. To process a package pattern, server **101** may facilitate capture of the identification information on the package via an application **108** operating on mobile device **107**. Server **101** may utilize the captured identification information to schedule pick up of the package by a route carrier.

[0065] In another embodiment, repository **105** includes a camera positioned on an external surface of repository **105**. In this embodiment, server **101** may receive a picture taken by the camera of a person approaching the repository **105** from the camera. Server **101** may save these pictures in memory **103**. In some embodiments, repository **105** may include a key access operable to open the access door on the repository.

[0066] In one embodiment, repository **105** includes a Wi-Fi hub. In various embodiments, server **101** may communicate with a transceiver coupled to repository **105** over any variety of wired and wireless networks, and utilize security and authentication procedures to permitting access to the interior storage compartment of the repository **105**. In various embodiments, server **101** may communicate with repository **105** via one or more of a USB port, Wi-Fi (e.g., 802.11 wireless), Bluetooth, RFID, NFC, cellphone network tower connection, satellite connection, and similar other communication systems. In one embodiment, server **101** communicates with a communication transceiver coupled to repository **105** via a wired connection. In another embodiment, server **101** is configured to communicate with a communication transceiver coupled to repository **105** via a wireless connection. In the same or different embodiment, server **101** is configured to communicate with a communication transceiver coupled to repository **105** via a wired connection.

[0067] In various embodiments, server **101** is configured to determine a location data associated with the package from the identification information; server **101** uses this location data for verifying delivery or pick up of a package. In some embodiments, server **101** is further configured to generate a further (i.e., an additional) access code that does not include a portion of the identification information.

[0068] According to various embodiments, a method of facilitating secure delivery and pickup of packages includes receiving, at a server, identification information associated with a package to be delivered or picked up, wherein the identification information is generated by a parcel shipper for tracking location and shipping progress of the package. The method further includes generating, at the server, an access code based on the identification information. The method also includes providing, by the server, of the access code to a first party for opening an access on a repository configured for holding the package. A code is input at a keypad coupled to the repository, the input code and the generated access code are compared, and access to an internal compartment of the repository through an access door on the repository is based on the comparison.

[0069] As will be appreciated by one skilled in the art, aspects of the present invention may be embodied as a system, method or computer program product. Accordingly, aspects of the present invention may take the form of an entirely hardware embodiment. Any combination of one or more computer readable medium(s) may be utilized. The computer readable medium may be a computer readable signal medium or a computer readable storage medium (including, but not limited to, non-transitory computer readable storage media). A computer readable storage medium may be, for example, but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, or device, or any suitable combination of the foregoing. More specific examples (a non-exhaustive list) of the computer readable storage medium would include the following: an electrical connection having one or more wires, a portable computer diskette, a hard disk, a random access memory (RAM), a read-only memory (ROM), an erasable programmable read-only memory (EPROM or Flash memory), an optical fiber, a portable compact disc read-only memory (CD-ROM), an optical storage device, a magnetic storage device, or any suitable combination of the foregoing. In the context of this document, a computer readable storage medium may be any tangible medium that can contain, or store a program for use by or in connection with an instruction execution system, apparatus, or device.

[0070] A computer readable signal medium may include a propagated data signal with computer readable program code embodied therein, for example, in baseband or as part of a carrier wave. Such a propagated signal may take any of a variety of forms, including, but not limited to, electromagnetic, optical, or any suitable combination thereof. A computer readable signal medium may be any computer readable medium that is not a computer readable storage medium and that can communicate, propagate, or transport a program for use by or in connection with an instruction execution system, apparatus, or device. Program code embodied on a computer readable medium may be transmitted using any appropriate medium, including but not limited to wireless, wireline, optical fiber cable, RF, etc., or any suitable combination of the foregoing.

[0071] Computer program code for carrying out operations for aspects of the present invention may be written in any combination of one or more programming languages, including an object oriented programming language such as Java, Smalltalk, C++ or the like and conventional procedural programming languages, such as the "C" programming language or similar programming languages. The program code may execute entirely on the user's computer, partly on

the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer or server. In the latter situation scenario, the remote computer may be connected to the user's computer through any type of network, including a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider).

[0072] Any dimensions expressed or implied in the drawings and these descriptions are provided for exemplary purposes. Thus, not all embodiments within the scope of the drawings and these descriptions are made according to such exemplary dimensions. The drawings are not made necessarily to scale. Thus, not all embodiments within the scope of the drawings and these descriptions are made according to the apparent scale of the drawings with regard to relative dimensions in the drawings. However, for each drawing, at least one embodiment is made according to the apparent relative scale of the drawing.

[0073] Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood to one of ordinary skill in the art to which the presently disclosed subject matter pertains. Although any methods, devices, and materials similar or equivalent to those described herein can be used in the practice or testing of the presently disclosed subject matter, representative methods, devices, and materials are now described.

[0074] Following long-standing patent law convention, the terms "a", "an", and "the" refer to "one or more" when used in the subject specification, including the claims. Thus, for example, reference to "a device" can include a plurality of such devices, and so forth.

[0075] The descriptions of the various embodiments of the present invention have been presented for purposes of illustration, but are not intended to be exhaustive or limited to the embodiments disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art without departing from the scope and spirit of the described embodiments. The terminology used herein was chosen to best explain the principles of the embodiments, the practical application or technical improvement over technologies found in the marketplace, or to enable others of ordinary skill in the art to understand the embodiments disclosed herein.

What is claimed is:

1. A server for facilitating secure delivery and pickup of packages, the server comprising:

a memory;

a database; and

a processor configured to:

receive identification information associated with a package to be delivered or picked up, wherein the identification information is generated by a parcel shipper for tracking location and shipping progress of the package;

generate an access code based on the identification information;

provide the access code to a first party for opening an access on a repository configured for holding the package;

wherein a code is input at a keypad coupled to the repository;

wherein the input code and the generated access code are compared; and

wherein access to an internal compartment of the repository through an access door on the repository is based on the comparison.

2. The server of claim 1, wherein the processor is further configured to generate a further access code and provide the further access code to a second party associated with a package delivery, wherein the first party is associated with a package pick-up.

3. The server of claim 2, wherein the processor is further configured to communicate with a web-portal configured to manage logistics associated with one or more of a package delivery and a package pick-up.

4. The server of claim 3, wherein the processor is further configured to use an automated harvesting program to scour an email account associated with one or more of the package delivery and the package pick-up to extract the identification information associated with the package from the email account.

5. The server of claim 3, wherein the repository is positioned at a first location, and wherein the repository includes a first MAC (Media Access Control) address associated with a first network adaptor coupled to the repository at the first location.

6. The server of claim 5, wherein the first MAC address is transferable to a second network adaptor coupled to a further repository at a second location, wherein the first network adaptor coupled to the repository at the first location is assigned a second MAC address different from the first MAC address after transfer of the first MAC address to the second network adaptor.

7. The server of claim 2, wherein the access code is valid for a predetermined time span associated with a delivery time or a pick up time scheduled for the package, wherein the access code is inoperable to provide access through the access door outside of the predetermined time span.

8. The server of claim 1, wherein the processor is further configured to generate an alert when the repository is tampered with.

9. The server of claim 1, wherein the processor is further configured to generate a notification when the package is delivered or picked up.

10. The server of claim 1, wherein the processor is further configured to generate an alert when the access to the repository remains unlocked beyond a predetermined duration subsequent to deposition of the package into the repository or pickup of the package from the repository.

11. The server of claim 1, wherein the repository includes a camera positioned inside the internal compartment of the repository, wherein the processor is further configured to receive a picture taken by the camera of the package positioned inside the internal compartment of the repository.

12. The server of claim 1, wherein the repository includes a scanner or imaging device for reading the identification information, wherein the access on the repository is configured to open after the identification information is captured by the scanner or imaging device.

13. The server of claim 1, wherein the access code includes at least a last four digits of a package tracking number associated with the package.

14. The server of claim 1, wherein the access code includes at least a last eight digits of a package tracking number associated with the package.

15. The server of claim 1, wherein the processor is further configured to process a package return by: capture of the

identification information via an application operating on a mobile computing device; and, scheduling of a pick-up of the package by a route carrier.

16. The server of claim **1**, wherein the processor is further configure to generate an alert to an individual associated with the repository when the repository is tampered with.

17. The server of claim **1**, wherein the access code is configured for one or more of: a single use and multiple uses.

18. The server of claim **1**, wherein the repository includes a key access operable to open the access on the repository.

19. The server of claim **1**, wherein the processor is further configured to determine a location data associated with the package from the identification information, wherein the processor uses the location data for verifying delivery or pick up of the package.

20. A method of facilitating secure delivery and pickup of packages, the method comprising:

Receiving, at a server, identification information associated with a package to be delivered or picked up, wherein the identification information is generated by a parcel shipper for tracking location and shipping progress of the package;

Generating, at the server, an access code based on the identification information; and,

Providing, by the server, of the access code to a first party for opening an access on a repository configured for holding the package;

wherein a code is input at a keypad coupled to the repository;

wherein the input code and the generated access code are compared; and

wherein access to an internal compartment of the repository through an access door on the repository is based on the comparison.

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