Claims

1. A mailbox assembly for automated sorting of mail items, the mailbox assembly comprising:

a number of loading units for loading ~~a batch~~one or more stacks of mail items, each mail item comprising an address label representing a mailing address;

a plurality of storage units for storing the mail items for subsequent collection;

a carriage assembly for transferring the mail items from the loading units to the storage units;

an imaging device for scanning the address labels on the mail items; and

a control module configured for:

receiving mail reference data associated with the address labels of the ~~batch~~ one or more stacks of mail items;

matching the scanned address labels against the mail reference data; and

allocating a respective storage unit to each mail item based on the matched address label,

wherein the carriage assembly is configured for transferring each mail item to the respective allocated storage unit, the carriage assembly further configured for iteratively picking each mail item in a stack of the mail items away from the stack of mail items and iteratively transferring the picked mail item to the respective allocated storage unit.

2. The mailbox assembly according to claim 1, each loading unit comprising an object sensor disposed at a top end of the loading unit, the object sensor configured to detect presence of a mail item at the top end.

3. The mailbox assembly according to claim 2, each loading unit comprising air curtains for airflow to separate the mail item at the top end from other mail items.

4. The mailbox assembly according to any one of claims 1 to 3, the carriage assembly comprising a picking mechanism for picking the mail items, the picking mechanism comprising a picking member operative by vacuum suction.

5. The mailbox assembly according to any one of claims 1 to 4, the carriage assembly comprising a height sensor for estimating height of the mail items.

6. The mailbox assembly according to claim 5, wherein the control module is configured for allocating a respective storage unit to each mail item based additionally on the estimated height of the mail items.

7. The mailbox assembly according to any one of claims 1 to 6, the carriage assembly comprising a transfer tray assembly for holding the picked mail items during transfer from the loading units to the storage units.

8 The mailbox assembly according to claim 7, the transfer tray assembly comprising a tray member slidable and tiltable to drop the picked mail items into the storage units.

9 The mailbox assembly according to claim 8, the transfer tray assembly comprising a clamping mechanism for clamping the picked mail items on the tray member.

10. The mailbox assembly according to any one of claims 1 to 9, further comprising one or more collection units, wherein the storage units are configured to release the mail items stored therein to the collection units.

11. The mailbox assembly according to any one of claims 1 to 10, further comprising a control device communicative with the control module and configured for receiving user input data from a user collecting the mail items.

12. The mailbox assembly according to any one of claims 1 to 11, wherein the imaging device is configured for reading written mailing addresses on the mail items using optical character recognition (OCR).

13. A method for automated sorting of mail items in a mailbox assembly, the method comprising:

receiving ~~the~~ one or more stacks of mail items in number of loading units of the mailbox assembly, each mail item comprising an address label representing a mailing address;

receiving mail reference data associated with the address labels of the one or more stacks of mail items; and

for each mail item in a stack of the mail items:

scanning the address label on the mail item using an imaging device of the mailbox assembly;

matching, using a control module of the mailbox assembly, the scanned address label against the mail reference data;

allocating, using the control module, a respective one of a plurality of storage units of the ~~of the~~ mailbox assembly to the mail item based on the matched address label; ~~and~~

picking the mail item away from the stack of mail items using a carriage assembly of the mailbox assembly; and

transferring, using ~~a~~ the carriage ~~assembly of the of the mailbox assembly~~, the picked mail item ~~from the loading units~~ to the respective allocated storage unit,

wherein the mail items are iteratively picked away from the stack of mail items and transferred from the loading units to the respective allocated storage units.

14. The method according to claim 13, wherein the address label comprises a machine-readable optical code, said scanning of the address label comprising decoding the optical code.

15. The method according to claim 13 or 14, further comprising, for each mail item, reading a written mailing address on the mail item by the imaging device using optical character recognition (OCR).

16. The method according to any one of claims 13 to 15, wherein the mail reference data is sent from a remote server to the mailbox assembly.

17. The method according to any one of claims 13 to 16, the method further comprising A~~a method~~ process for automated releasing of the sorted mail items in ~~a~~ the mailbox assembly for collection by a user, the ~~method~~ process comprising:

receiving, by a control device of the mailbox assembly, user input data from the user for collecting one or more mail items stored in one or more storage units of the mailbox assembly;

verifying, using ~~a~~ the control module ~~of the mailbox assembly~~, the user input data against ~~the~~ user reference data comprising one or more identifiers of the one or more storage units; and

opening, using the control module, the one or more storage units based on the identifiers ~~in the verification message~~of the one or more storage units in response to verification of the user input data, thereby releasing the one or more mail items stored therein for collection by the user.

18. The method according to claim 17, wherein said verifying of the user input data comprises:

receiving, by the control module, the user reference data from a remote server; and

verifying, by the control module, the user input data against the user reference data locally.

19. The method according to claim 17, wherein said verifying of the user input data comprises:

sending, using the control module, the user input data to a remote server for verification of the user input data; and

receiving, by the control module, a verification message from the remote server indicating that the user input data has been successfully verified, the verification message comprising the identifiers of the one or more storage units.

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