

Summary

[1004a] In an aspect, the present disclosure refers to a method, comprising: storing data associated with a plurality of proportions of assets from a plurality of fungible assets in a first instance of distributed ledger database at a transaction originating communication device; dividing, at a processor of the transaction originating communication device, a plurality of fungible tokens into a first plurality of groups of fungible tokens based on the data, each proportion of assets from the plurality of proportions of assets associated with a communication device from a first plurality of communication devices, the plurality of fungible tokens collectively representing on a distributed ledger-based network the plurality of fungible assets; sending, via the distributed ledger-based network and based at least in part on an asymmetric cryptography key pair, each group of fungible tokens from the first plurality of groups of fungible tokens to a communication device (1) associated with that group of fungible tokens and (2) from the first plurality of communication devices, the first plurality of groups of fungible tokens being divided into a second plurality of groups of fungible tokens and received at a second plurality of communication devices that is at a different hierarchical level in an order of data transmission than the first plurality of communication devices to cause the second plurality of communication devices to send, to a designated recipient communication device, a plurality of non-fungible tokens for each group of fungible tokens from the second plurality of groups of fungible tokens, each non-fungible token from the plurality of non-fungible tokens being non-divisible and associated with an identifier (1) uniquely identifying a transaction destination from a plurality of transaction destinations and (2) from a plurality of identifiers, the second plurality of communication devices not including the transaction originating communication device.

[1004b] In another aspect, the present disclosure refers to an apparatus comprising: a memory; and a processor operatively coupled to the memory, the processor configured to: generate a plurality of fungible tokens associated with a plurality of fungible assets, a first fungible token from the plurality of fungible tokens being of a type same as a second fungible token from the plurality of fungible tokens, the plurality of fungible tokens collectively representing on a distributed ledger-based network the plurality of fungible assets; divide the plurality of fungible tokens into a first plurality of groups of fungible tokens; send, via the

distributed ledger-based network, each group of fungible tokens from the first plurality of groups of fungible tokens to a communication device (1) associated with that group of fungible tokens and (2) from a first plurality of communication devices, the first plurality of groups of fungible tokens being divided into a second plurality of groups of fungible tokens and received at a second plurality of communication devices that is at a different hierarchical level in an order of data transmission than the first plurality of communication devices; and receive, from the second plurality of communication devices, a plurality of non-fungible tokens, each non-fungible token including an identifier (1) uniquely identifying a transaction destination from a plurality of transaction destinations and (2) from a plurality of identifiers, each non-fungible token associated with a group of fungible tokens from the second plurality of groups of fungible tokens.

[1004c] In another aspect, the present disclosure refers to a method comprising: receiving, at a processor of a communication device from a plurality of communication devices, a plurality of fungible tokens, the communication device storing an account identifier associated with a transaction destination from a plurality of transaction destinations, a first fungible token from the plurality of fungible tokens being of a type same as a second fungible token from the plurality of fungible tokens; generating, at the processor of the communication device and based on the plurality of fungible tokens, a non-fungible token having (1) the account identifier uniquely identifying the transaction destination, (2) a value representing a number of the plurality of fungible tokens, and (3) characteristic information associated with the transaction destination; and sending, to a processor of a designated recipient communication device via a distributed ledger-based network, the non-fungible token to establish a chain of custody of the plurality of fungible tokens starting from the transaction originating communication device and ending at the plurality of communication devices, the plurality of communication devices not including the transaction originating communication device or the transaction destination.

[1005] In some ~~embodiment~~examples, a method includes storing data associated with a set of proportions of assets from a set of fungible assets in a first instance of distributed ledger database at a transaction originating communication device. The method includes dividing, at a processor of the transaction originating communication device, a set of fungible tokens into a first set of groups of fungible tokens based on the data. Each proportion of assets from the set of proportions of assets is associated with a communication device from a first set of communication devices. The set of fungible tokens collectively represents the set of fungible

assets on a distributed ledger-based network. The method includes sending, via the distributed ledger-based network and based at least in part on an asymmetric cryptography key pair, each group of fungible tokens from the first set of groups of fungible tokens to a communication device (1) associated with that group of fungible tokens and (2) from the first set of communication devices to cause the second plurality of communication devices to send, to a designated recipient communication device, a set of non-fungible tokens for each group of fungible tokens from the second set of groups of fungible tokens. The first set of groups of fungible tokens is divided into a second set of groups of fungible tokens and received at a second set of communication devices that is at a different hierarchical level in an order of data transmission than the first set of communication devices. Each non-fungible token from the set of non-fungible tokens is non-divisible and associated with an identifier (1) uniquely identifying a transaction destination from a set of transaction destinations and (2) from a set of identifiers, the second set of communication devices not including the transaction originating communication device.

Brief Description of the Figures

[1006] FIG. 1 shows a distributed ledger-based networks (DLN) configured for use in establishing chains of custody of assets in a network of cascading communication devices in the DLN, and uncovering or identifying distinguishing characteristics of said assets, where the assets are represented on the DLN via tokens, according to some embodiments.

[1007] FIGS. 2A-2C show example sequential flowchart illustrating the establishment of chains of custody of assets in a network of cascading communication devices in the DLN, and