

CLAIMS

1.—A computer-implemented method ~~performed by a blockchain node of a blockchain network, (1700),~~ comprising:

~~—receiving, at the blockchain node, a cyphertext of a digital document specifying a guarantee and one or more zero-knowledge proofs (ZKPs) from a processing, by a trusted execution environment of a first computing device associated with a first guarantor;~~ a plaintext of a digital document specifying a guarantee, and outputting, by the trusted execution environment, of a cyphertext of the digital document, wherein the

~~—wherein the one or more ZKPs prove one or more values associated with the guarantee;~~

~~—wherein the guarantee is from~~ made by the first guarantor to a beneficiary; and

~~wherein~~ the digital document specifies one or more predetermined conditions of executing the guarantee;

~~—determining, receiving (1702), by a blockchain node (214) of a blockchain network (212) and from the first computing device, the cyphertext and one or more zero-knowledge proofs related to one or more values associated with the guarantee;~~

verifying (1704), by the blockchain node, that the one or more ZKPszero-knowledge proofs are- correct;

~~in response to determiningupon verifying that the one or more ZKPszero-knowledge proofs are correct, performing a consensus algorithm by the blockchain node;~~

~~in response to determining that a consensus has been reached based on performing the consensus algorithm, storing the cyphertext to a blockchain; (1706) the —cyphertext to a blockchain (216) based on performing a consensus algorithm;~~

~~receiving, (1708), by the blockchain node, a first message indicating an acceptance of the guarantee by the beneficiary from a second computing device- associated with the beneficiary or a representative of the beneficiary; and, the first message including an acceptance of the guarantee by the beneficiary; and~~

~~sending, by the blockchain node, information associated with the first message to a trusted execution environment;~~

~~receiving, by the trusted execution environment, the information associated with the first message;~~

~~processing, by the trusted execution environment, the received information associated with the first message from the blockchain node; and~~

updating, (1710), by the ~~trusted execution environment~~blockchain node, a status of the guarantee, ~~wherein the updated status indicates to indicate~~ that the guarantee has been accepted by the beneficiary.

2. The method of claim 1, wherein the guarantee is in a form of a standby letter of credit (SBLC).

3. The method of claim 2, wherein the guarantee specifies that the first guarantor shall pay the beneficiary a predetermined amount when the one or more predetermined conditions of executing the guarantee are met.

4. The method of claim 3, wherein the first guarantor is an offshore bank associated with an applicant of the guarantee, the representative of the beneficiary is an onshore bank associated with the beneficiary, and the predetermined amount is paid to the beneficiary through the onshore bank when the one or more predetermined conditions are met.

5. The method of claim 4, wherein the digital document further includes information that specifies an identity of the onshore bank.

6. The method of any preceding claim, wherein the one or more predetermined conditions include one or more of default conditions, amendment conditions, cancelation conditions, effective date, and expiration date.

7. The method of any previous claim, wherein at least one of the one or more ZKPs is generated based on homomorphic encryption.

8. The method of any previous claim, wherein the one or more ZKPs includes one or more of a range proof and a zero test.

9. The method of any previous claim, wherein the cyphertext is encrypted using an encryption key derived based on a linear secret sharing scheme.

10. The method of claim 1, wherein the guarantee is from the first guarantor and a second guarantor to the beneficiary, the guarantee is in the form of a standby letter of credit (SBLC), and the guarantee specifies that the first guarantor and the second guarantor shall pay the beneficiary a predetermined amount when the one or more predetermined conditions of executing the guarantee are met.

11. The method of any previous claim, wherein the consensus algorithm is based on one of proof of work (PoW), proof of stake (PoS), and practical Byzantine fault tolerance (PBFT).

12. A system for processing blockchain-based guarantee information, comprising:
one or more processors; and
one or more computer-readable memories coupled to the one or more processors and having instructions stored thereon that are executable by the one or more processors to perform the method of any of claims 1 to 11.

13. An apparatus for processing blockchain-based guarantee information, the apparatus comprising a plurality of modules for performing the method of any of claims 1 to 11.