

CLAIMS

1. — An apparatus comprising:

— a network interface configured to receive blocks of a blockchain from one or more of a neighboring blockchain peer and an ordering service node; and

— a processor configured to identify two or more blocks from among the received blocks that belong to a same slot within the blockchain, validate the two or more identified blocks in parallel via execution of the two or more identified blocks at a same time, and in response to validation of the two or more identified blocks, store the two or more identified blocks on a local blockchain ledger of a blockchain peer;

wherein two or more blocks that belong to an immediately previous slot in parallel are validated with the two or more identified blocks that belong to the same slot when two or more other blocks are not dependent on the two or more identified blocks.

2. — The apparatus of claim 1, wherein the two or more identified blocks that belong to the same slot are non-dependent blocks with respect to each other.

3. — The apparatus of claim 1, wherein the processor is configured to simultaneously execute the two or more identified blocks in parallel on two or more independent processor cores of the blockchain peer.

4. — The apparatus of claim 1, wherein the processor is further configured to initialize the local blockchain ledger for at least one of a bootup and recovery process.

5. — The apparatus of claim 1, wherein the processor is further configured to identify the two or more other blocks on the blockchain which belong to ~~an~~the immediately previous slot.

~~6. — The apparatus of claim 5, wherein the processor is further configured to validate the two or more blocks that belong to the immediately previous slot in parallel with the two or more identified blocks that belong to the same slot when the two or more other blocks are not dependent on the two or more identified blocks.~~

~~7. —~~6. The apparatus of claim 1, wherein the processor is configured to identify which of the received blocks belong in the same slot based on hash values stored in the received blocks.

~~8. —~~7. The apparatus of claim 1, wherein the processor determines that a block belongs in a current slot when an immediate previous hash value of the block is a function of hashes of multiple blocks stored in an immediate previous slot on the blockchain.

~~9.~~ ~~8.~~ A method comprising:

~~receiving blocks of a blockchain from one or more of a neighboring blockchain peer and an ordering service node;~~

~~identifying two or more blocks from among the received blocks that belong to a same slot within the blockchain;~~

~~validating the two or more identified blocks in parallel via execution of the two or more identified blocks at a same time; and~~

~~in response to validation of the two or more identified blocks, storing the two or more identified blocks on a local blockchain ledger of a blockchain peer.~~

~~10. wherein two or more blocks that belong to an immediately previous slot in parallel are validated with the two or more identified blocks that belong to the same slot when two or more other blocks are not dependent on the two or more identified blocks.~~

~~9.~~ The method of claim ~~98~~, wherein the two or more identified blocks that belong to the same slot are non-dependent blocks with respect to each other.

~~11.~~ ~~10.~~ The method of claim ~~98~~, wherein the validating comprises simultaneously executing the two or more identified blocks in parallel on two or more independent processor cores of the blockchain peer.

~~12.~~ ~~11.~~ The method of claim ~~98~~, further comprising initializing the local blockchain ledger during at least one of a bootup and recovery process.

~~13.~~ ~~12.~~ The method of claim ~~98~~, further comprising identifying ~~the~~ two or more other blocks on the blockchain which belong to ~~an immediately previous slot.~~

~~14. The method of claim 13, further comprising validating the two or more other blocks that belong to the immediately previous slot in parallel with the two or more identified blocks that belong to the same slot when the two or more other blocks are not dependent on the two or more identified blocks.~~

~~15.~~ ~~13.~~ The method of claim ~~98~~, wherein the identifying comprises identifying which of the received blocks belong in the same slot based on hash values stored in the received blocks.

~~16.~~ ~~14.~~ The method of claim ~~98~~, wherein the identifying comprises determining that a block belongs in a current slot when an immediate previous hash value of the block is a function of hashes of multiple blocks stored in an immediate previous slot on the blockchain.

~~47.~~—15. A non-transitory computer-readable medium comprising instructions, that when read by a processor, cause the processor to perform a method comprising:

—receiving blocks of a blockchain from one or more of a neighboring blockchain peer and an ordering service node;

—identifying two or more blocks from among the received blocks that belong to a same slot within the blockchain;

—validating the two or more identified blocks in parallel via execution of the two or more identified blocks at a same time; and

—in response to validation of the two or more identified blocks, storing the two or more identified blocks on a local blockchain ledger of a blockchain peer;

48.—wherein two or more blocks that belong to an immediately previous slot in parallel are validated with the two or more identified blocks that belong to the same slot when two or more other blocks are not dependent on the two or more identified blocks.

16. The non-transitory computer-readable medium of claim 4715, wherein the two or more identified blocks that belong to the same slot are non-dependent blocks with respect to each other.

~~49.~~—17. The non-transitory computer-readable medium of claim 4715, wherein the validating comprises simultaneously executing the two or more identified blocks in parallel on two or more independent processor cores of the blockchain peer.

~~20.~~—18. The non-transitory computer-readable medium of claim 4715, wherein the method further comprises initializing the local blockchain ledger during at least one of a bootup and recovery process.