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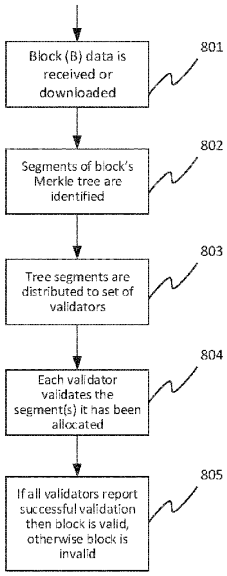
(54) Title: METHODS AND SYSTEMS FOR DISTRIBUTED BLOCKCHAIN FUNCTIONALITIES

(57) Abstract: The present disclosure provides methods and systems for distributed and/or parallel processing of data records, and in particular validation of blockchain transactions in a blockchain block. In a preferred embodiment, a distributed validation node is disclosed in which one or more transactions are allocated to a validating resource in a plurality of validating resources. The one or more transactions relates to a portion of a Merkle tree for the block, so that each validation resource is able to operate independently on verification of a subset of the block's transactions, each subset being based on a segment of the Merkle tree. The disclosure includes advantageous techniques for at least: allocation of tree segments to different validation resources, load balancing, download of the transactions to be validated, distributed UTXO pools, indexing schemes and prevention of double spend events.

Figure 8



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