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(54) Title: CONTINUOUS SPACE-BOUNDED NON-MALLEABLE CODES FROM STRONGER PROOFS-OF-SPACE

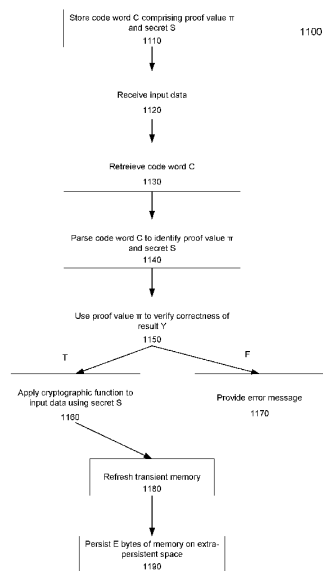


FIG. 11

(57) Abstract: Systems, methods, and apparatuses for protecting a secret on a device with limited memory, while still providing tamper resistance, are described. To achieve security, an encoding computer can apply a memory-hard function MHF to a secret S and determine a result Y, then determine a proof π for the result Y. Then, the encoding computer can send a codeword C comprising the secret S and the proof π to a decoding computer. The decoding computer can retrieve the codeword C from persistent memory and parse the secret S and the proof π . The decoding device can use transient memory to decode the codeword C by verifying the proof π was generated with the secret S and the result Y. When the correctness of the result Y is verified, the decoding device can apply a cryptographic function to input data using the secret S then reset the transient memory.

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