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(12) **United States Patent**
Wong

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(54) **ENCRYPTION FOR A STREAM FILE IN AN FPGA INTEGRATED CIRCUIT**

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H04L 9/18 (2006.01)

(52) **U.S. Cl.** **713/189**; 716/16; 716/17; 326/8; 326/38; 326/39; 713/191; 713/193

(58) **Field of Classification Search** 716/16–17; 326/8, 37–41, 4, 44; 380/44, 42, 37; 708/232, 708/626; 712/206; 713/191, 188, 189, 193
See application file for complete search history.

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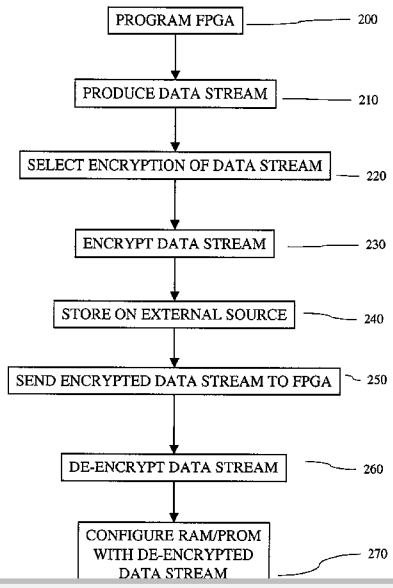
(57) **ABSTRACT**

A system for encrypting and decrypting data in a data stream for programming a Field Programmable Gate Array (FPGA). The system allows for an enable bit to be set for a gap in the data stream and the data is then encrypted from the beginning of the gap. A gap being bits in said data stream that correspond to unprogrammed addresses of a memory in the field programmable gate array. The data is then decrypted by the FPGA when the bit stream is received and an enable bit is detected in a gap of the data stream.

30 Claims, 4 Drawing Sheets



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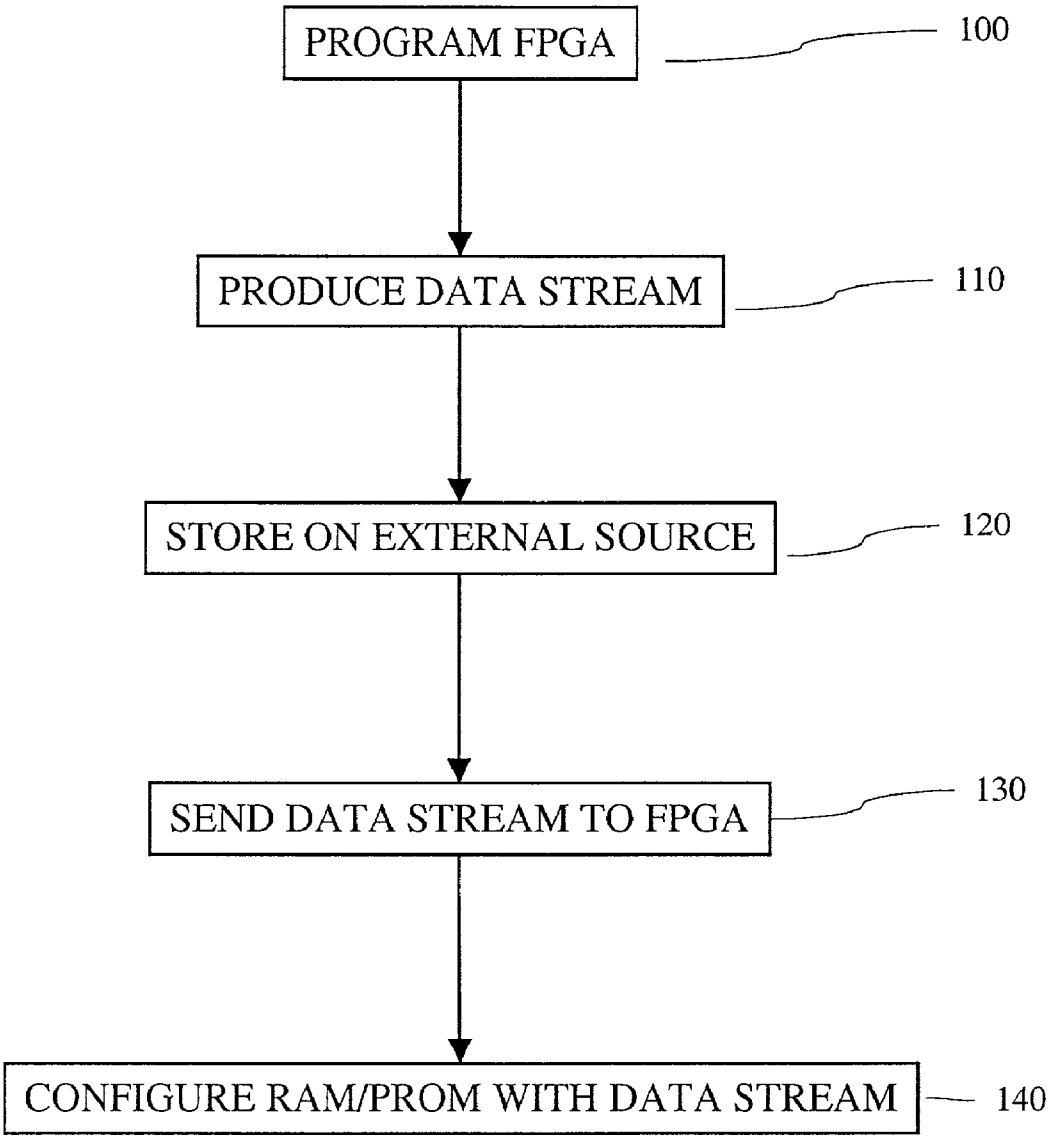

PRIOR ART

FIG. 1

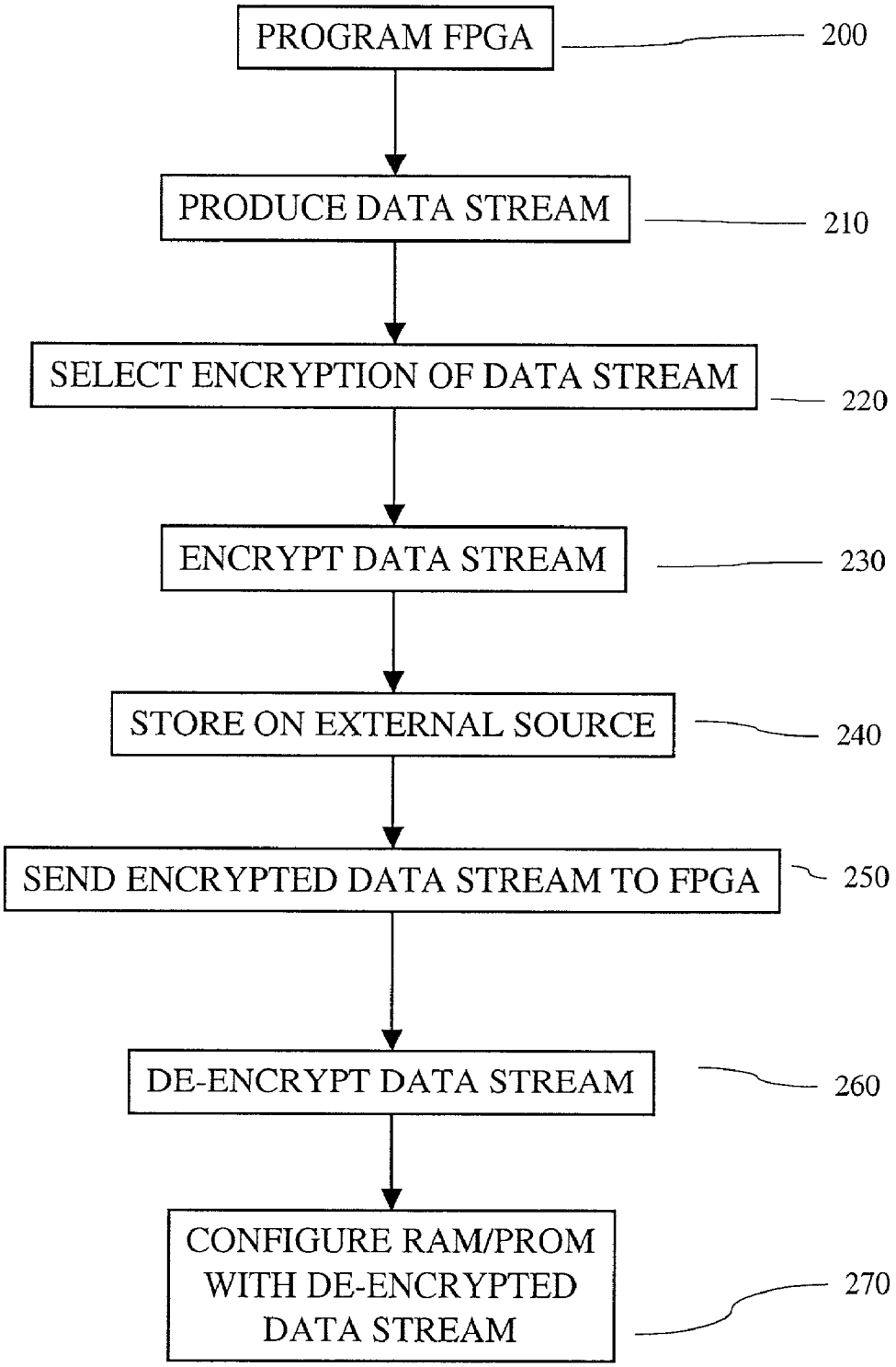

FIG. 2

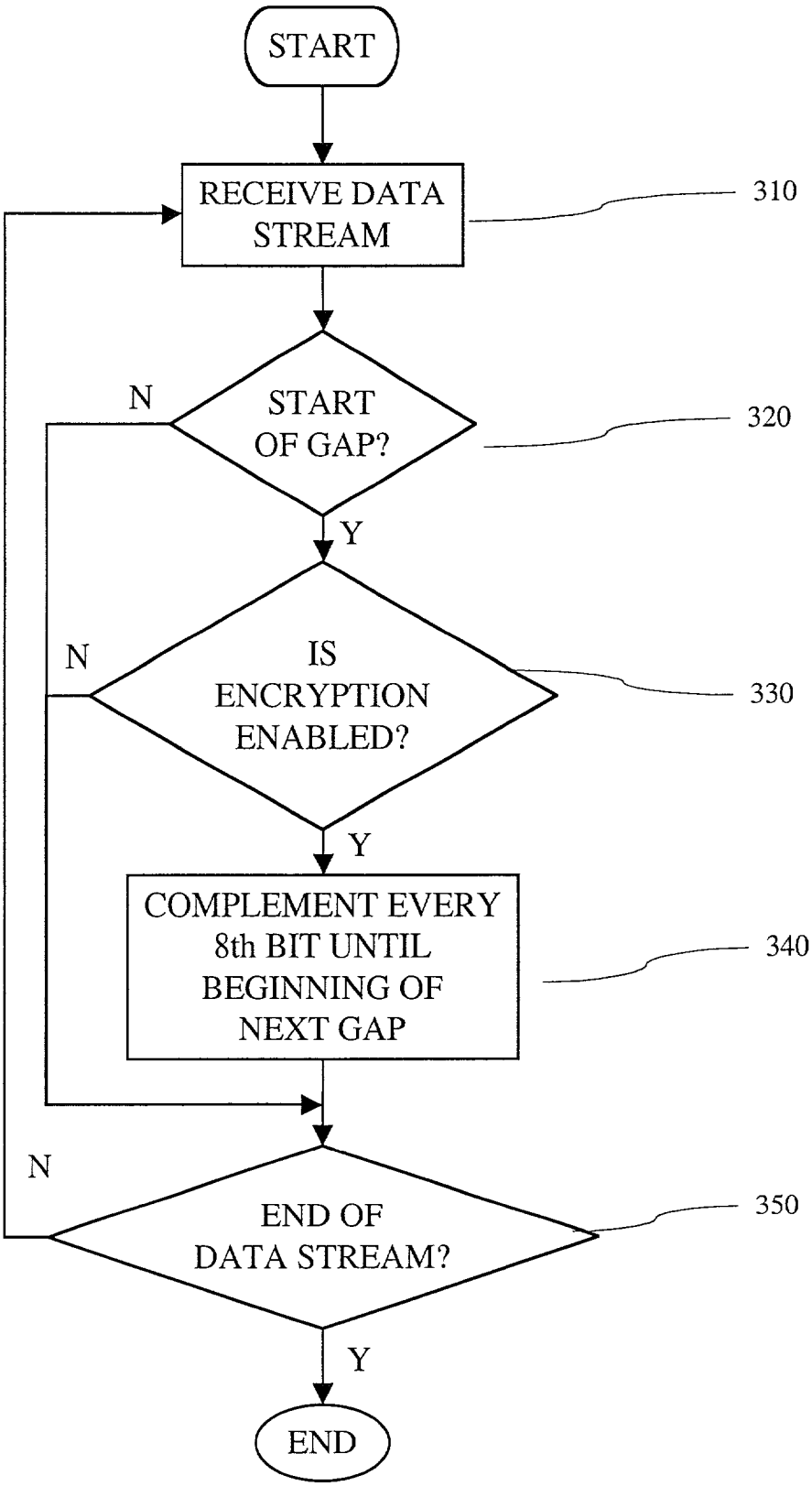

FIG. 3

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