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(54) Title: METHOD AND CIRCUIT OF ADDING BINARY STRINGS

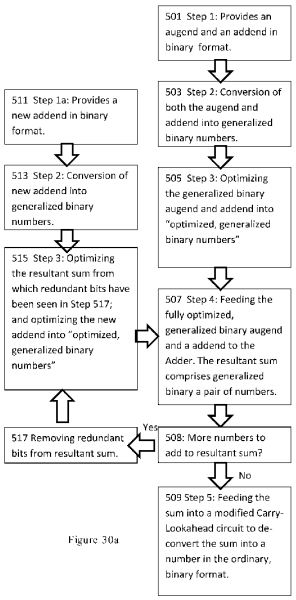


Figure 30a

(57) **Abstract:** Methods and logic circuits for adding two binary strings that remove the need to consider carry-over bit from an upstream adder by converting each addend into a generalized and optimized binary string. The format of this binary string extinguishes carry-over bits before the carry-over bits can propagate. The conversion removes all instances of neighbouring nonzero bits from the addends, such that there is at least one zero bit between every two nonzero bits. Any carry-over from adding up the addends is caught by the zero bit in the next higher position, and does not propagate. However, the conversion must preserve the values the addends for the addition to give the correction sum, by applying the Equivalence Principle.

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