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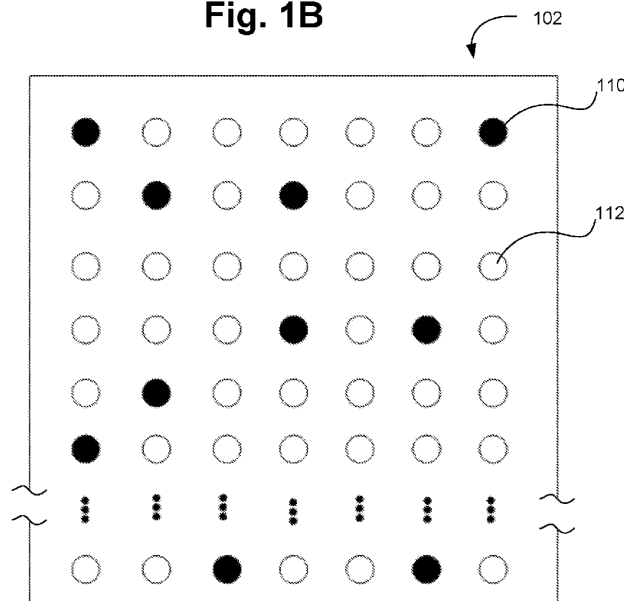
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(54) **Title:** ADVANCED QUANTUM PROCESSING SYSTEMS AND METHODS

Fig. 1B



(57) **Abstract:** Quantum processing devices and methods for shuttling qubits between a pair of processing elements are disclosed. In particular, a disclosed method for shuttling a qubit from a first processing element to a second processing element in a quantum processing device comprising a plurality of processing elements, includes: applying an optimal bias configuration between the first processing element and the second processing element to shuttle the qubit from the first processing element to the second processing element in a manner that minimizes the time spent by the qubit in one or more state transition points between the first processing element and the second processing element.

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