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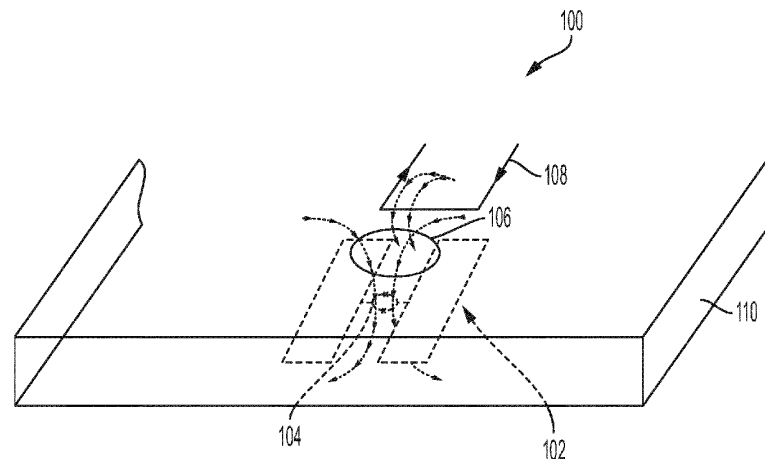


FIG. 1

(57) Abstract: A tunable qubit device includes a tunable qubit, the tunable qubit including a superconducting quantum interference device (SQUID) loop. The tunable qubit device further includes a superconducting loop inductively coupled to the SQUID loop, and a flux bias line inductively coupled to the superconducting loop. The superconducting loop includes a superconducting material having a critical temperature that is a lower temperature than a critical temperature of any superconducting material of the tunable qubit. In operation, the superconducting loop provides a persistent bias to the tunable qubit.

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