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- (54) **Title:** GRAPHENE BASED MAGNETORESISTANCE SENSORS

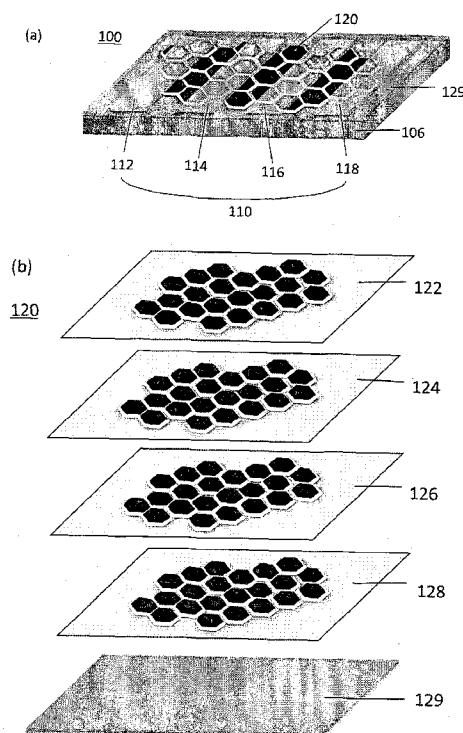


FIG.1

- (57) **Abstract:** A graphene structure is provided. The graphene structure comprises a substrate layer and at least two graphene layers disposed on the substrate. The at least two graphene layers comprises a gate voltage tuned layer and an effective graphene layer and the effective graphene layer comprises one or more graphene layers. A magnetoresistance ratio of the graphene structure is determined by a difference in a charge mobility and/or a carrier density between the gate voltage tuned layer and the effective graphene layer. The charge mobility and/or the carrier density of the gate voltage tuned layer is tunable by a gate voltage applied to the graphene structure. A magnetic field sensor comprising the graphene structure is also provided.



SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,  
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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