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(54) Title: MULTIPLE-STACK THREE-DIMENSIONAL MEMORY DEVICE AND FABRICATION METHOD THEREOF

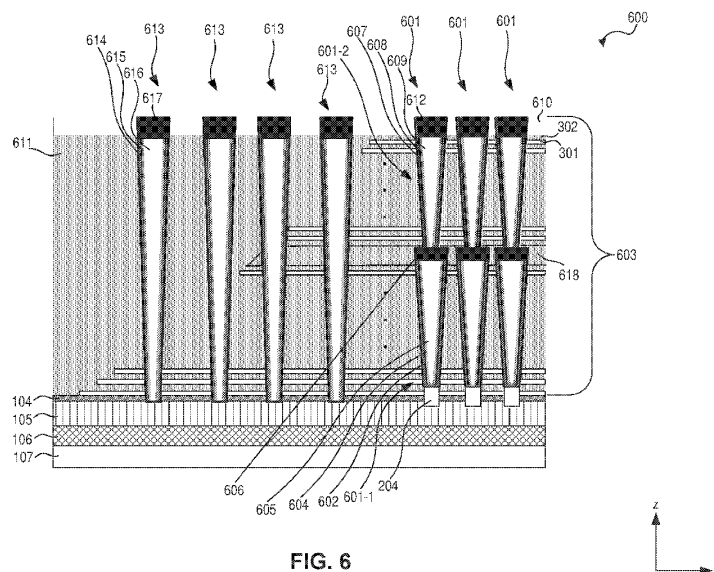


FIG. 6

(57) Abstract: Methods and structures of a three-dimensional memory device are disclosed. In an example, the memory device includes a substrate and a multiple-stack staircase structure. The multiple-stack staircase structure can include a plurality of staircase structures stacked over the substrate. Each one of the plurality of staircase structures can include a plurality of conductor layers each between two insulating layers. The memory device can also include a filling structure over the multiple-stack staircase structure, a semiconductor channel extending through the multiple-stack staircase structure, and a supporting pillar extending through the multiple-stack staircase structure and the filling structure. The semiconductor channel can include unaligned sidewall surfaces, and the supporting pillar can include aligned sidewall surfaces.

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