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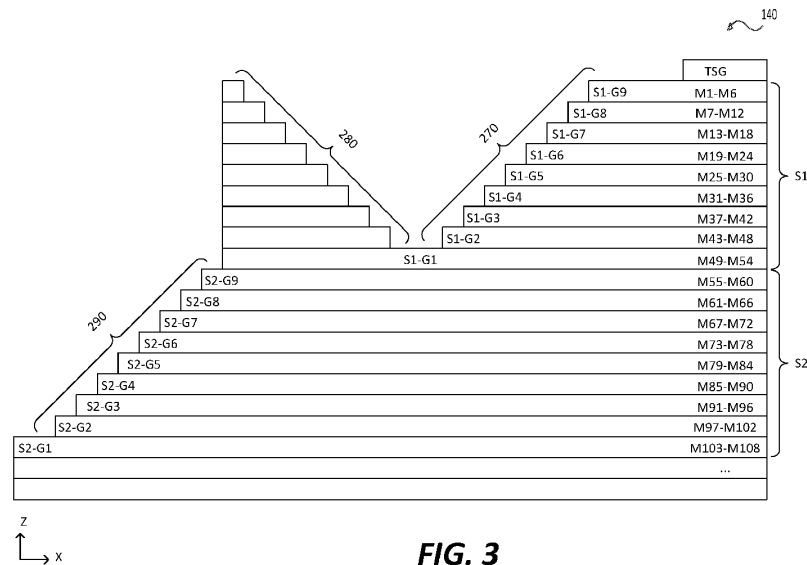


FIG. 3

(57) Abstract: Aspects of the disclosure provide a semiconductor device. The semiconductor device includes gate layers and insulating layers that are stacked alternately along a direction perpendicular to a substrate of the semiconductor device and form a stack upon the substrate. The semiconductor device includes an array of channel structures that are formed in an array region of the stack. Further, the semiconductor device includes a first staircase formed of a first section of the stack in a connection region upon the substrate, and a second staircase formed of a second section of the stack in the connection region upon the substrate. In addition, the semiconductor device includes a dummy staircase formed of the first section of the stack and disposed between the first staircase and the second staircase in the connection region.

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