

FIG. 1

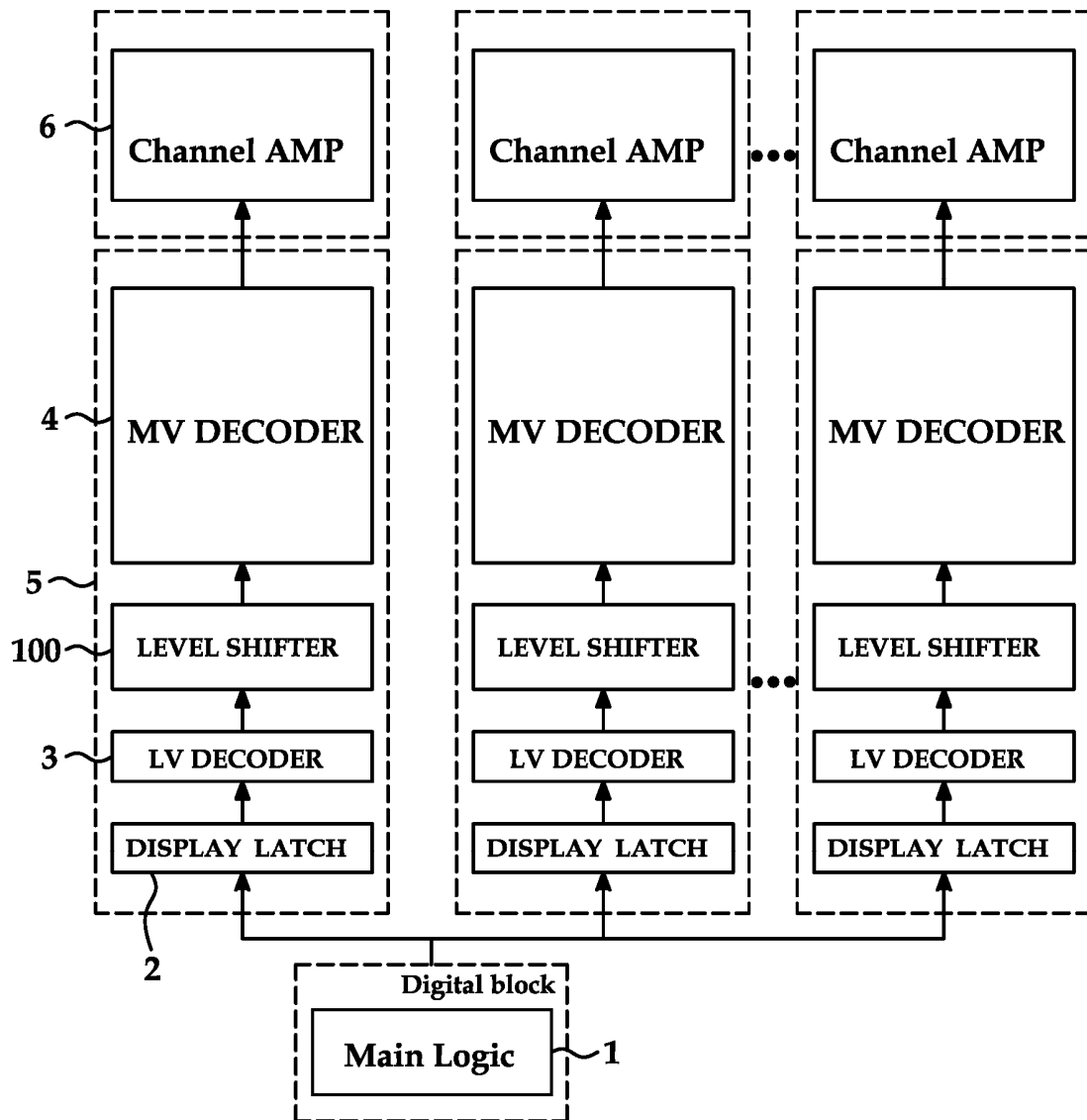


FIG. 2

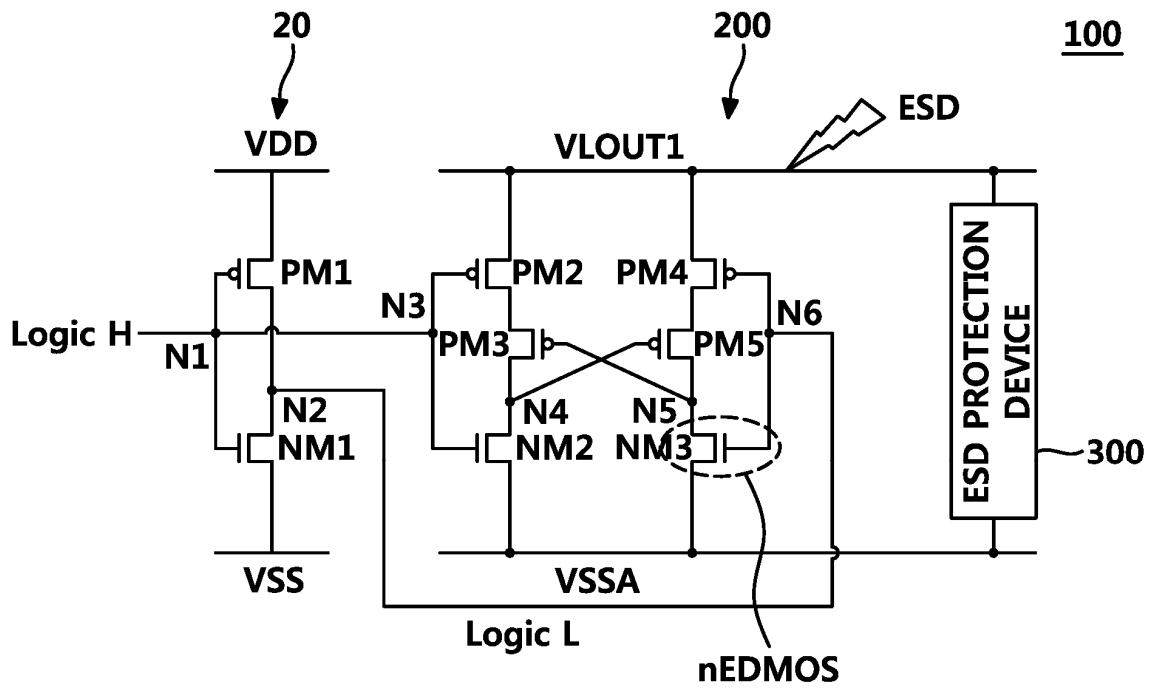


FIG. 3A

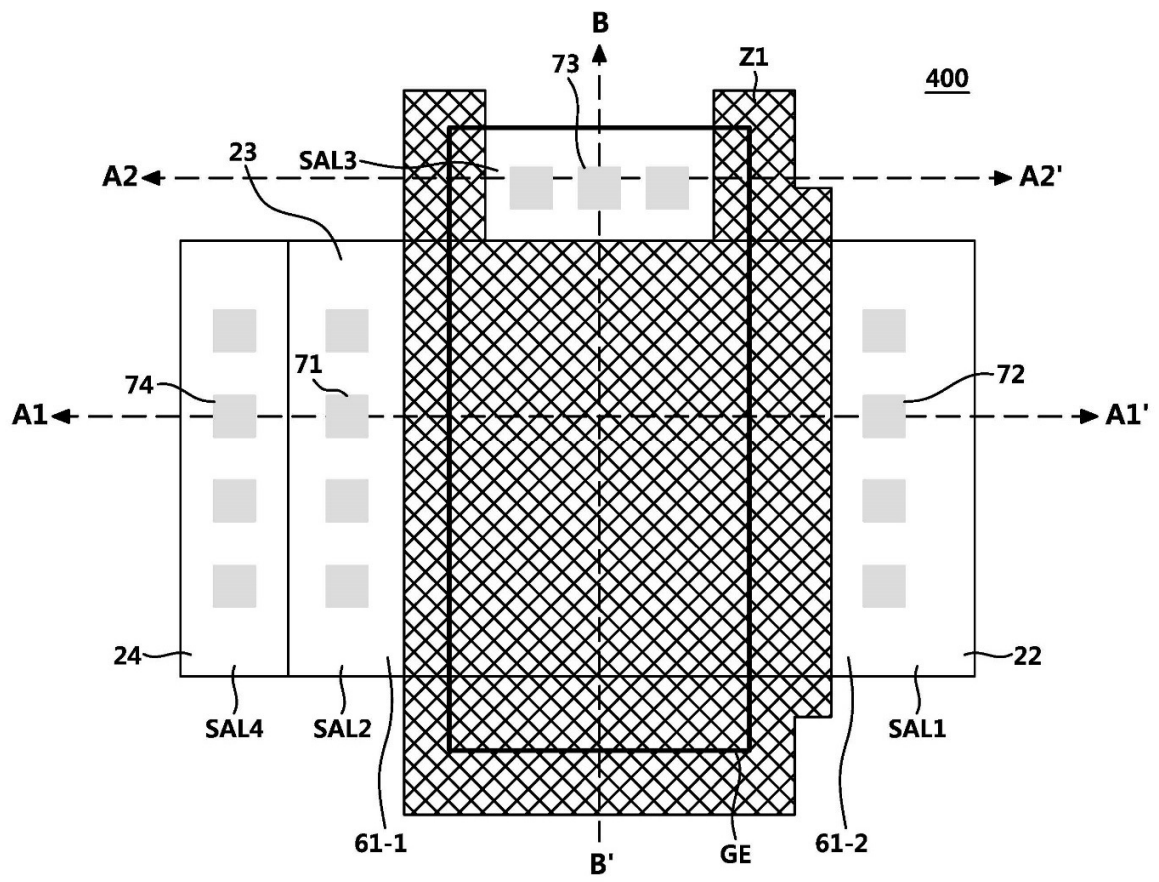


FIG. 3B

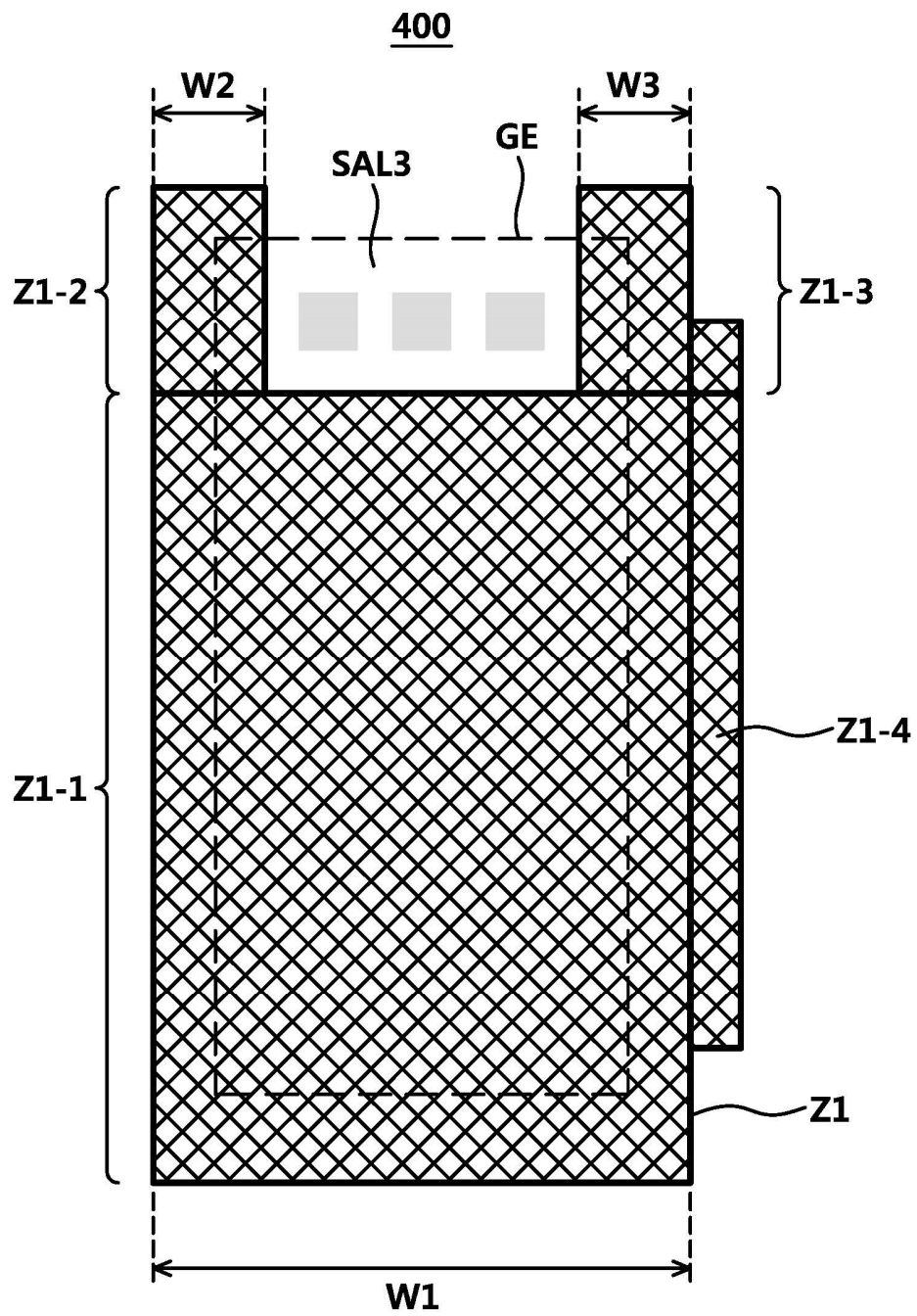


FIG. 4

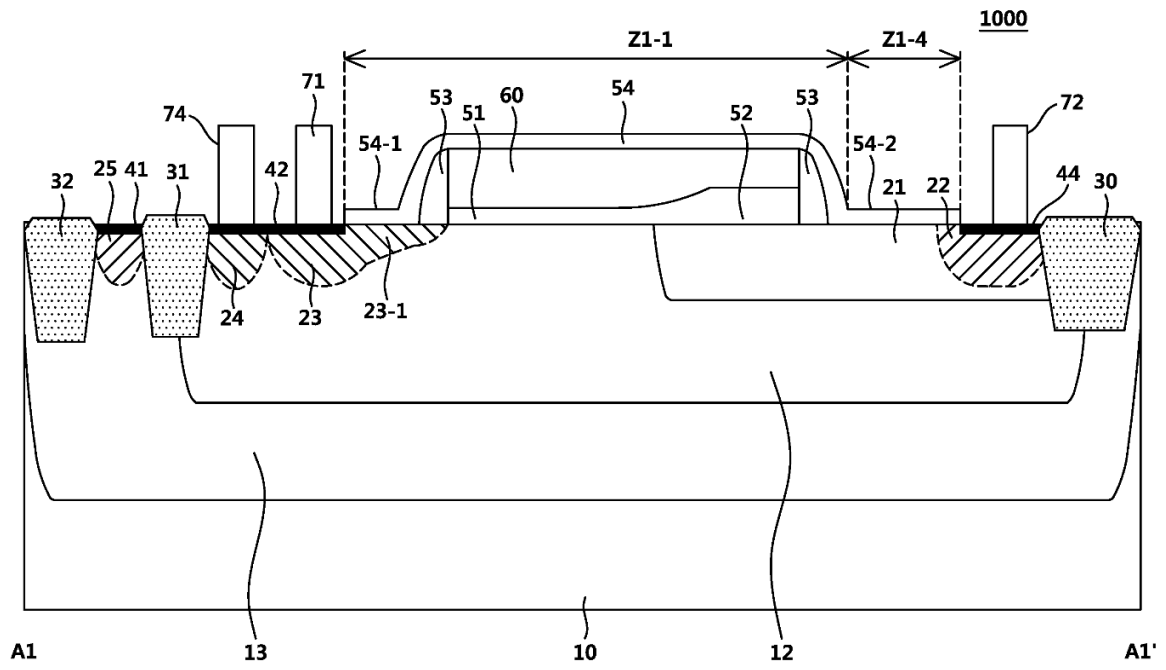


FIG. 5

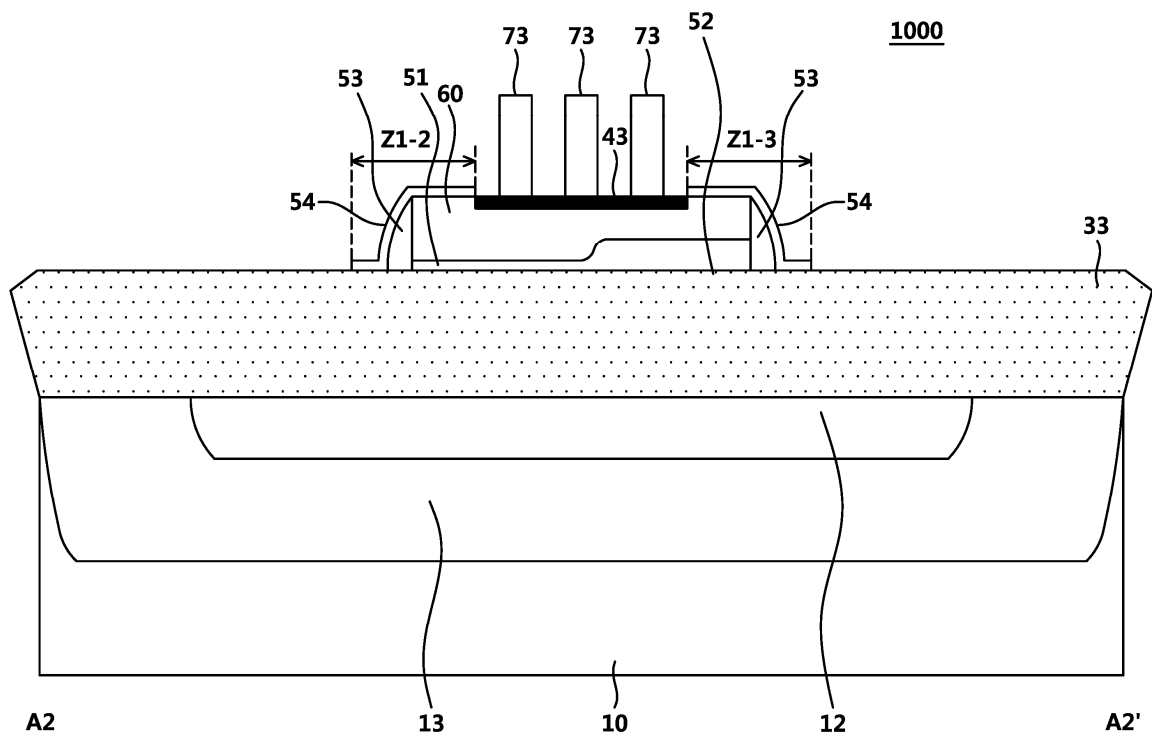


FIG. 6

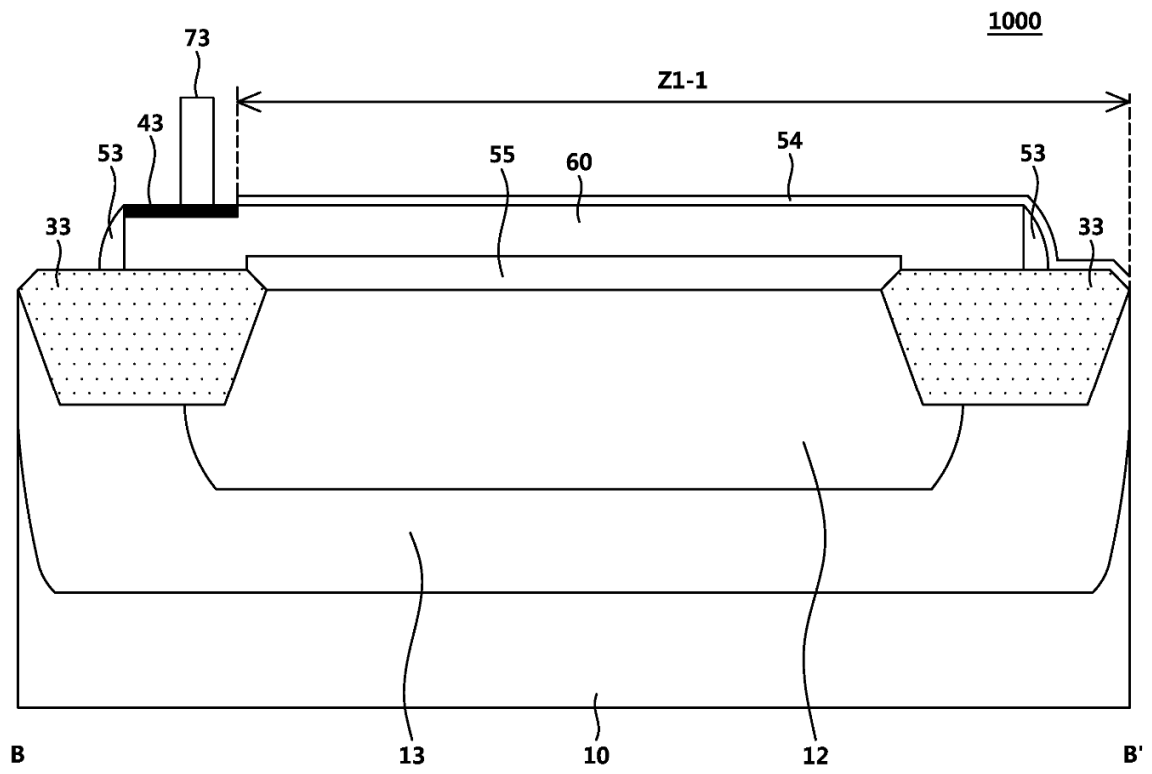




FIG. 8

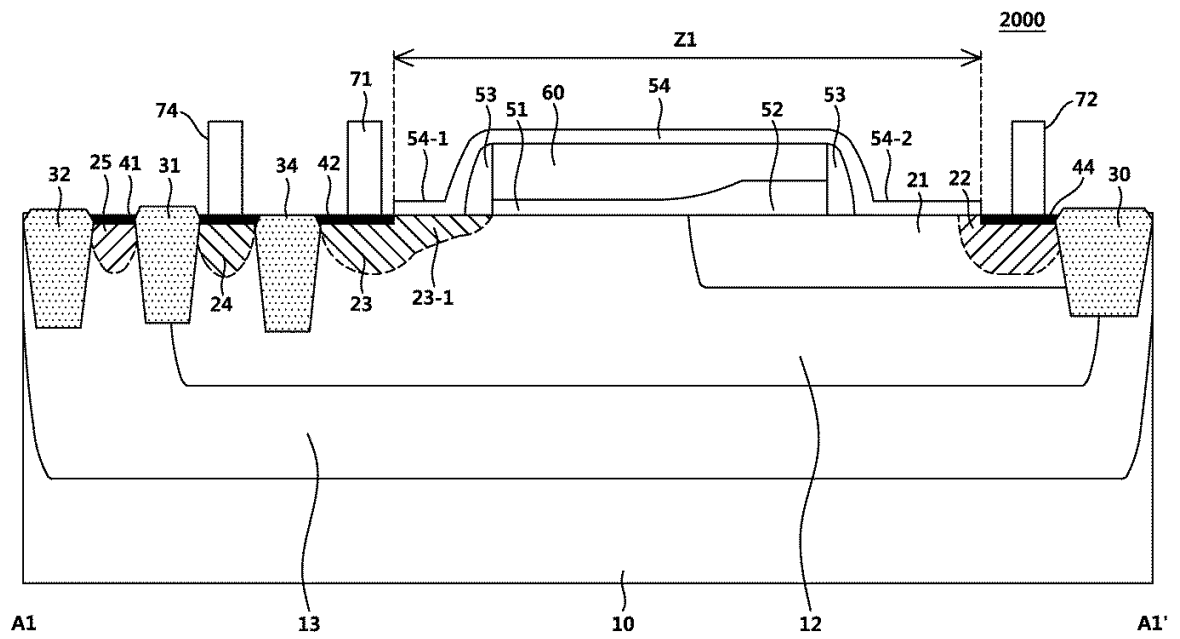


Figure 4 is a plan view of a semiconductor device 420. The device features a central rectangular region 22 filled with a cross-hatched pattern, representing a gate electrode (GE). To the left and right of this central region are two rectangular areas, 24 and 22 respectively, which contain three small gray squares each, representing semiconductor layers (SAL4 and SAL1). Above the central region is a rectangular extension 73, also filled with a cross-hatched pattern, containing three small gray squares (SAL3). The device is divided into four quadrants by a vertical line 61-1 and a horizontal line 61-2. The quadrants are labeled SAL4 (top-left), SAL2 (top-right), SAL3 (bottom-left), and SAL1 (bottom-right). A dashed line A1-A1' passes through the center of the device. Various labels with leader lines point to specific features: 23 points to the top edge of the central region, 71 points to the top edge of the left side region, 72 points to the top edge of the right side region, 74 points to the top edge of the bottom-left region, and 75 points to the top edge of the bottom-right region. The label 420 is located in the top right corner.

This cross-sectional view shows the internal structure of the device along the Z-Z' axis. The substrate 10 contains a central channel 12. On the left side, there are two gate structures 25 and 41, each with a gate stack 32 and 31 respectively. Between them is a region 24. To the right of the gates are regions 23 and 23-1. A thick layer 74 covers the top of the left side. In the center, a long horizontal structure 60 is shown, with layers 51, 54, and 52 above it. This structure is flanked by regions 53 and 54-2. On the right side, there is a gate structure 72 with a gate stack 44 and a region 30 below it. A dimension line Z-Z' indicates the cross-section plane.

FIG. 11

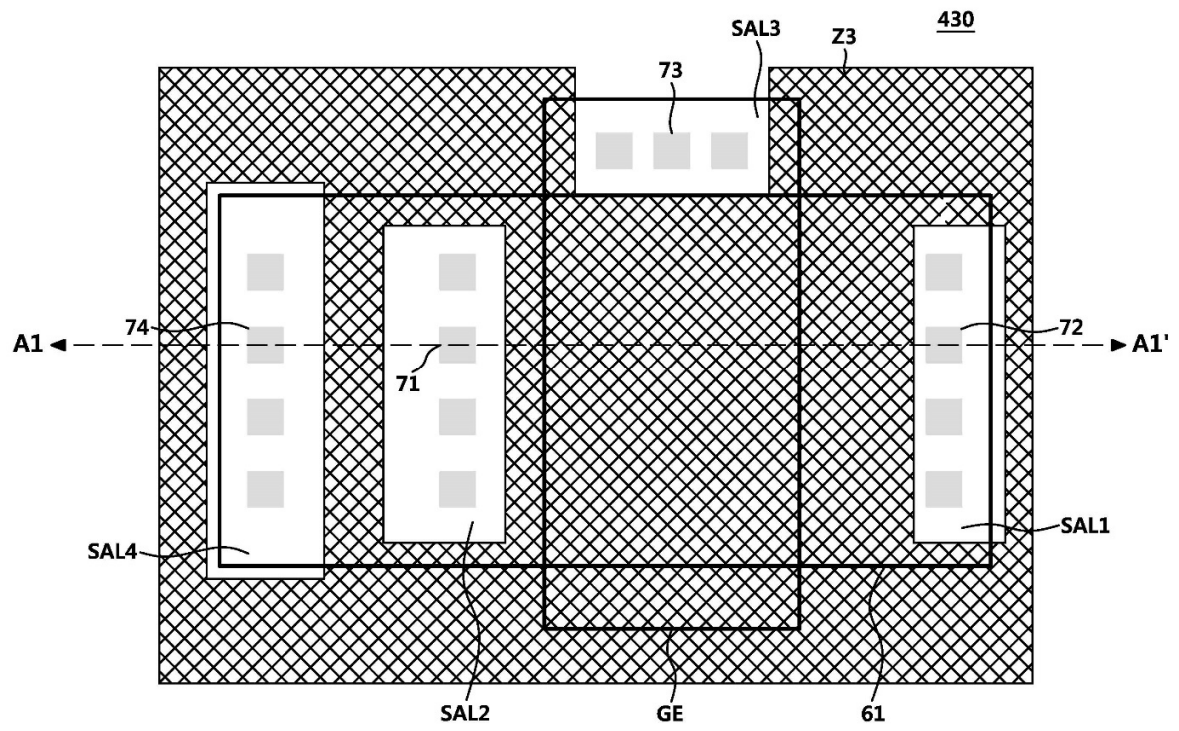


FIG. 12

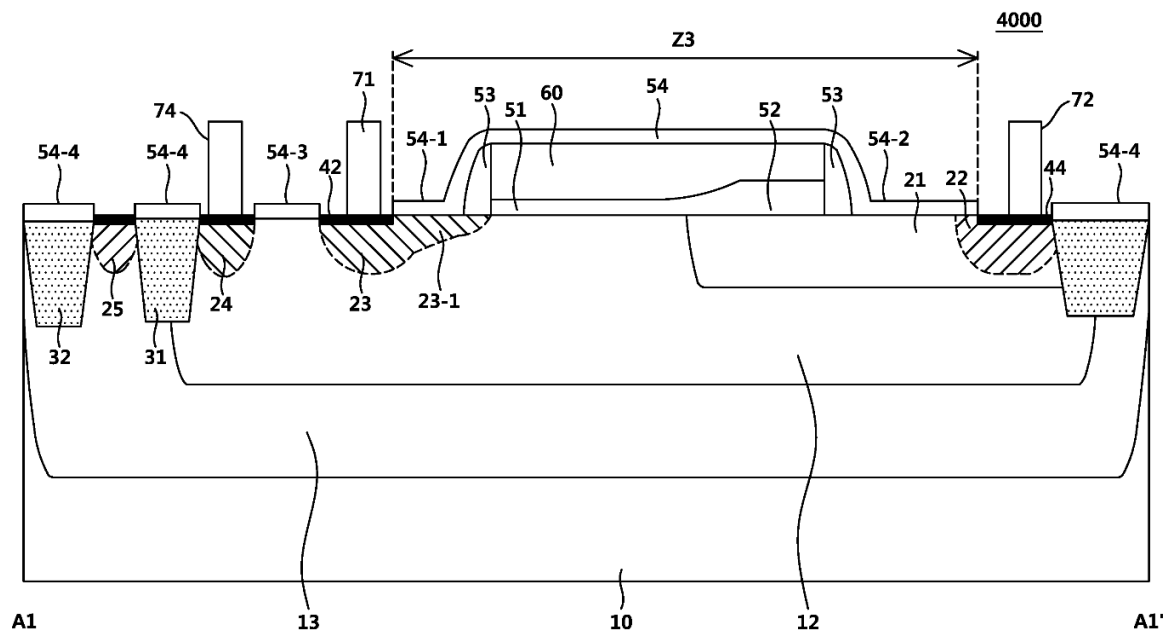


FIG. 13

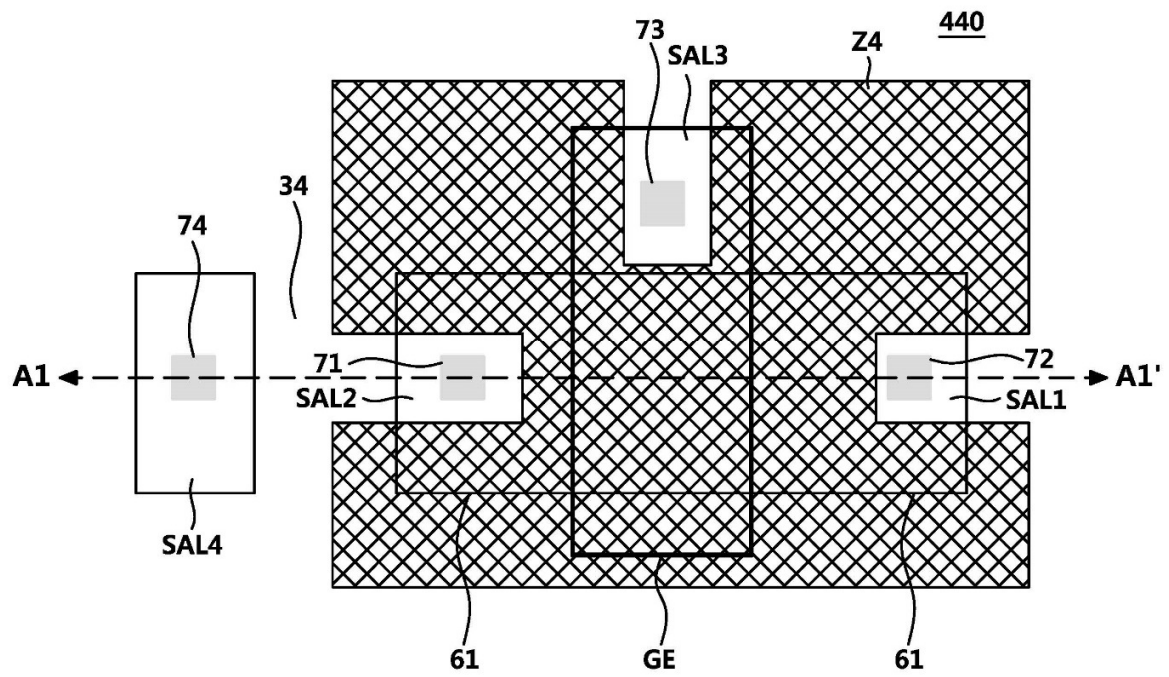


FIG. 14

