

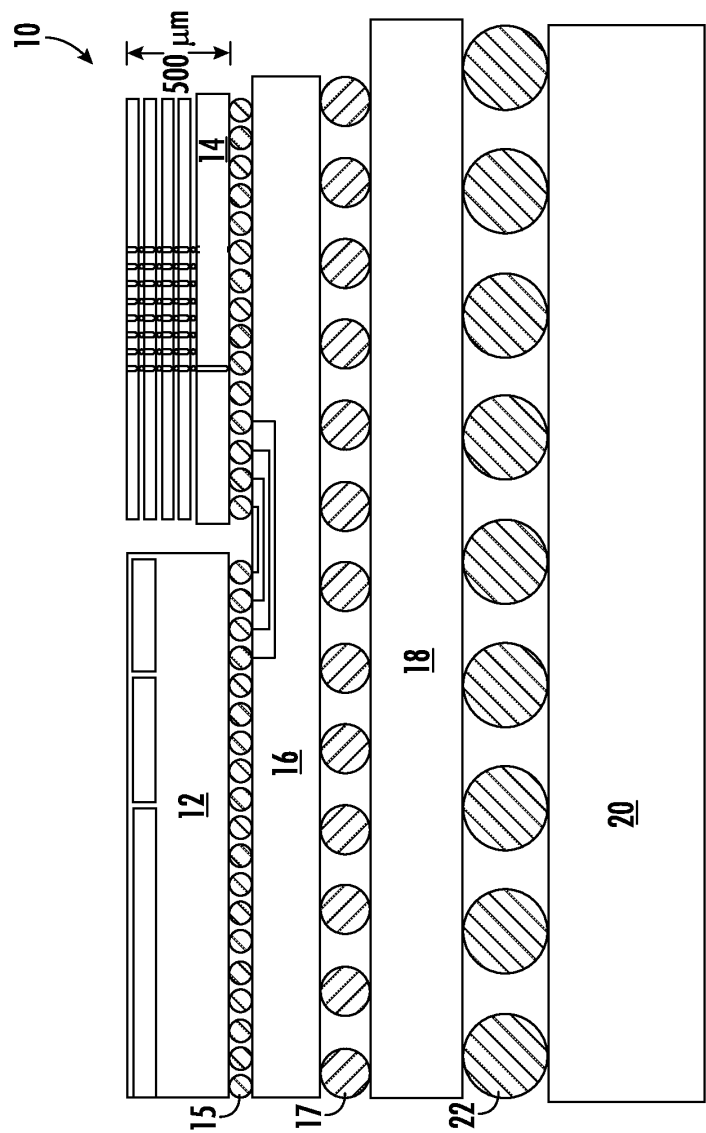


FIG. 1A  
PRIOR ART

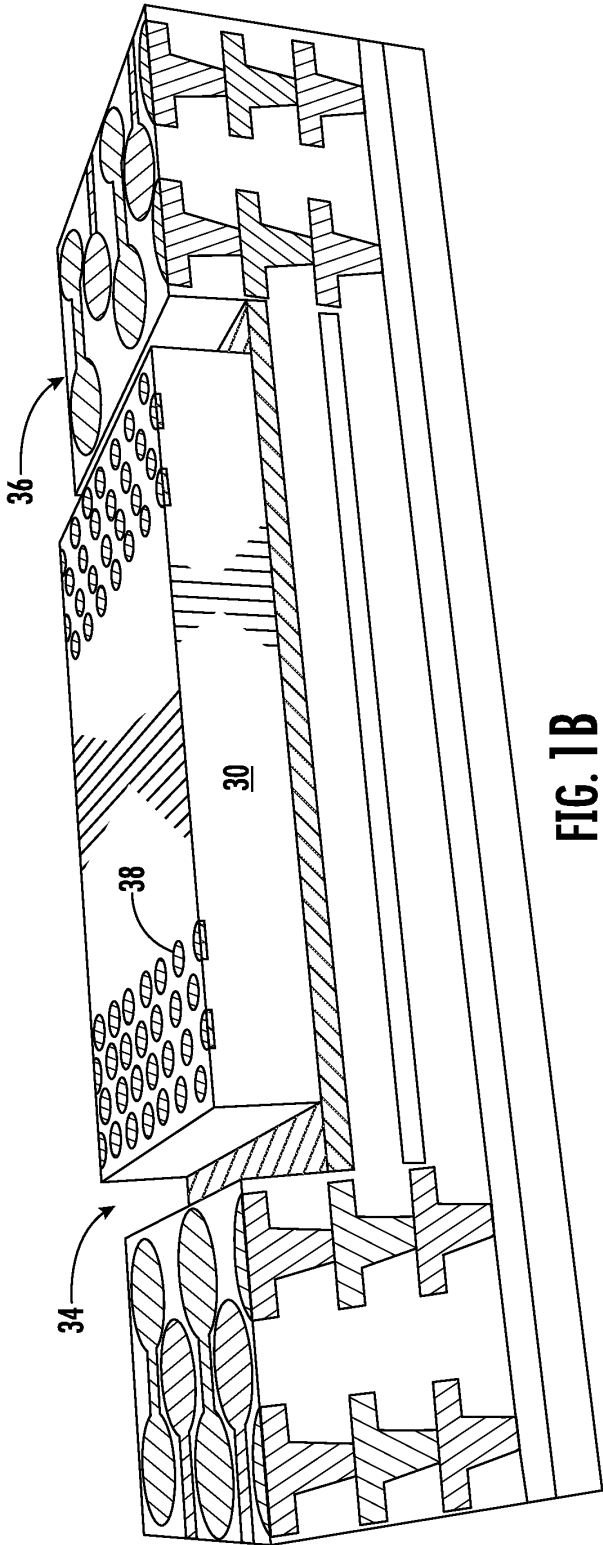
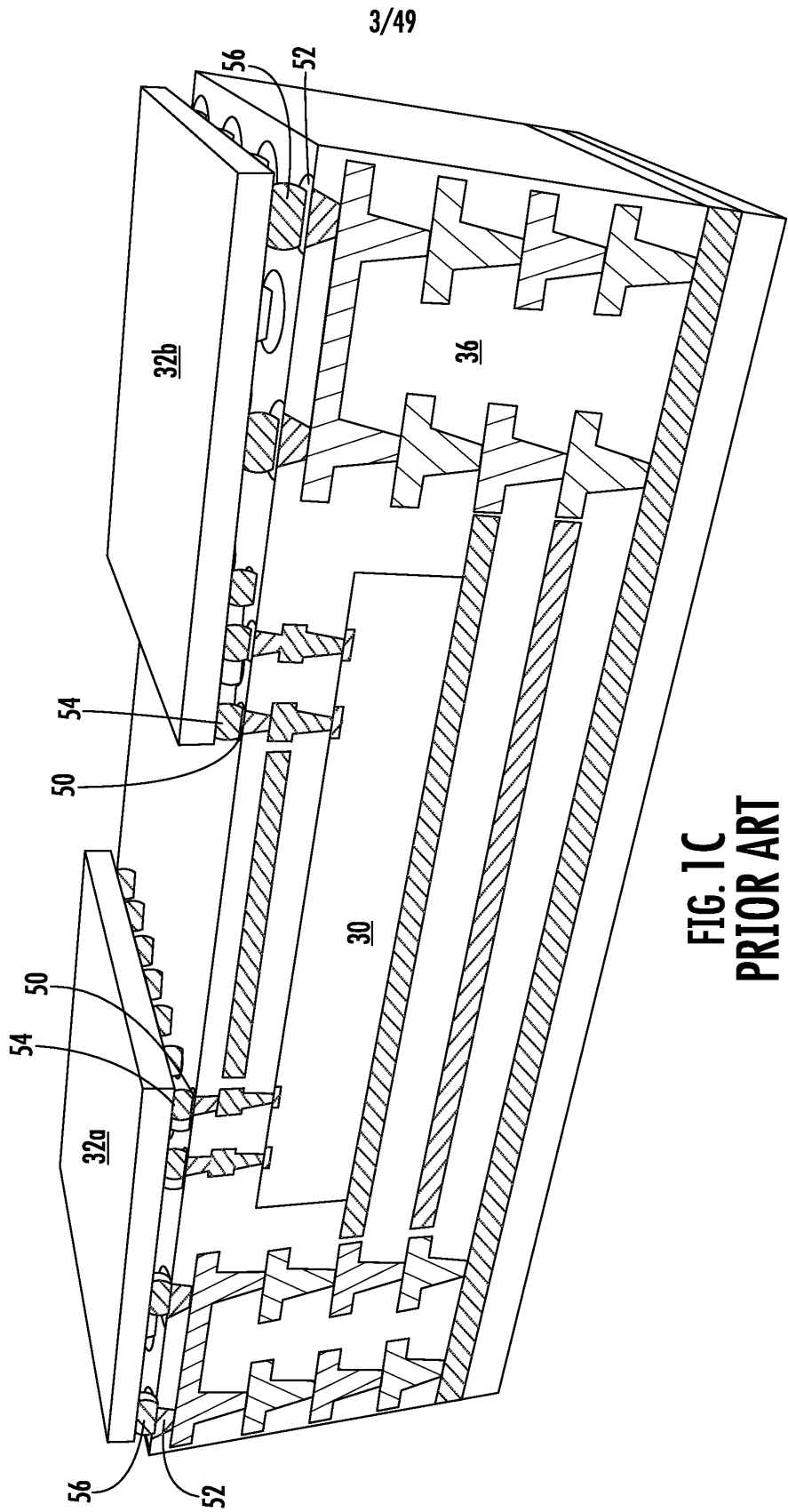


FIG. 1B  
PRIOR ART



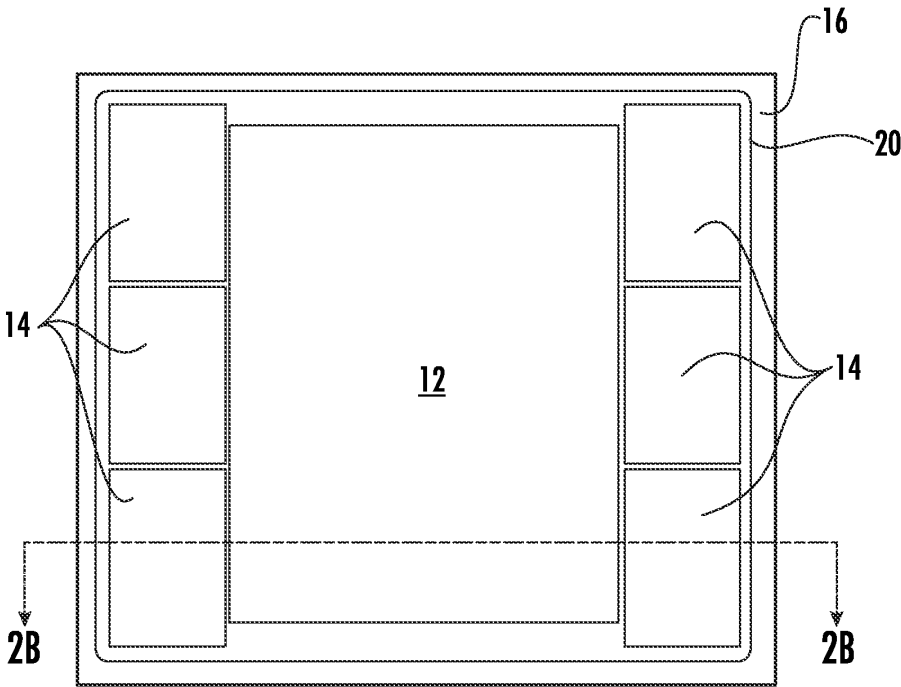


FIG. 2A  
PRIOR ART

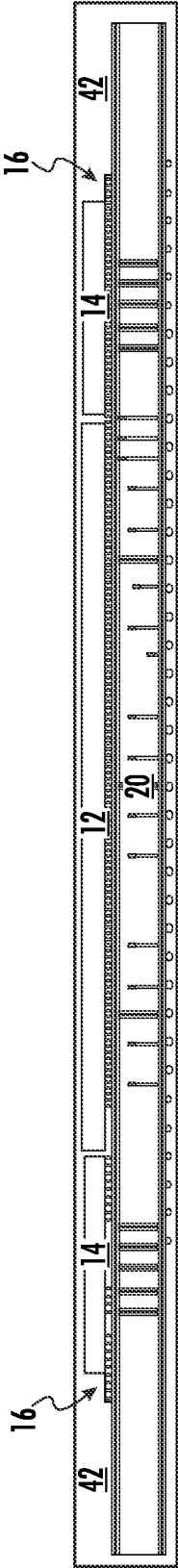


FIG. 2B  
PRIOR ART

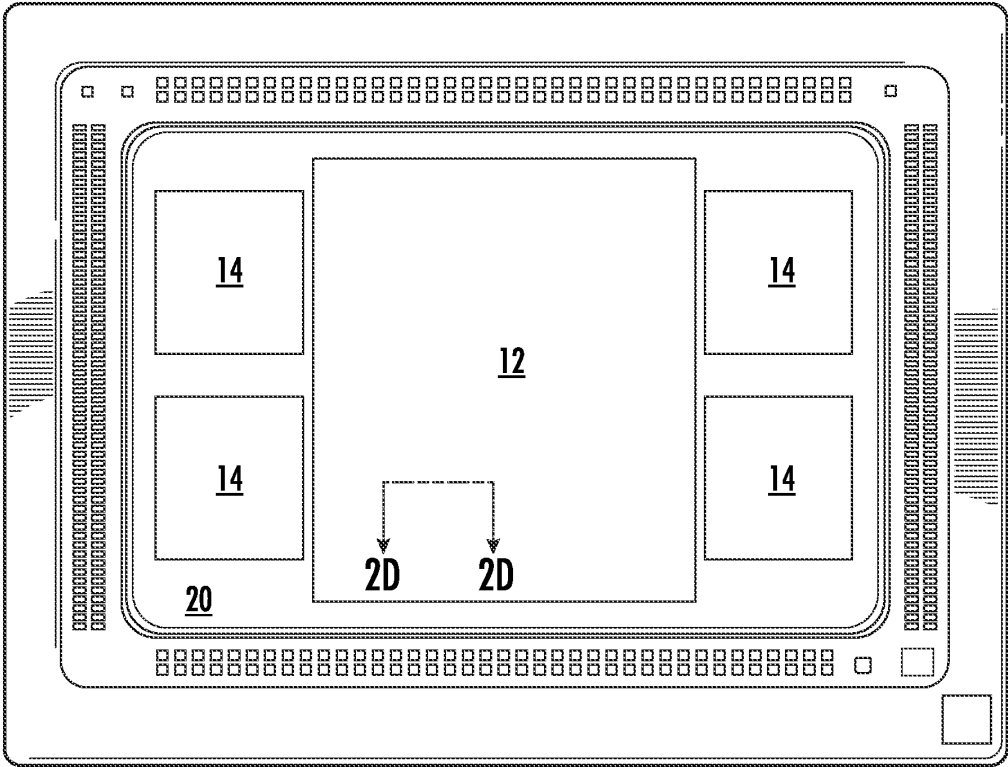


FIG. 2C  
PRIOR ART

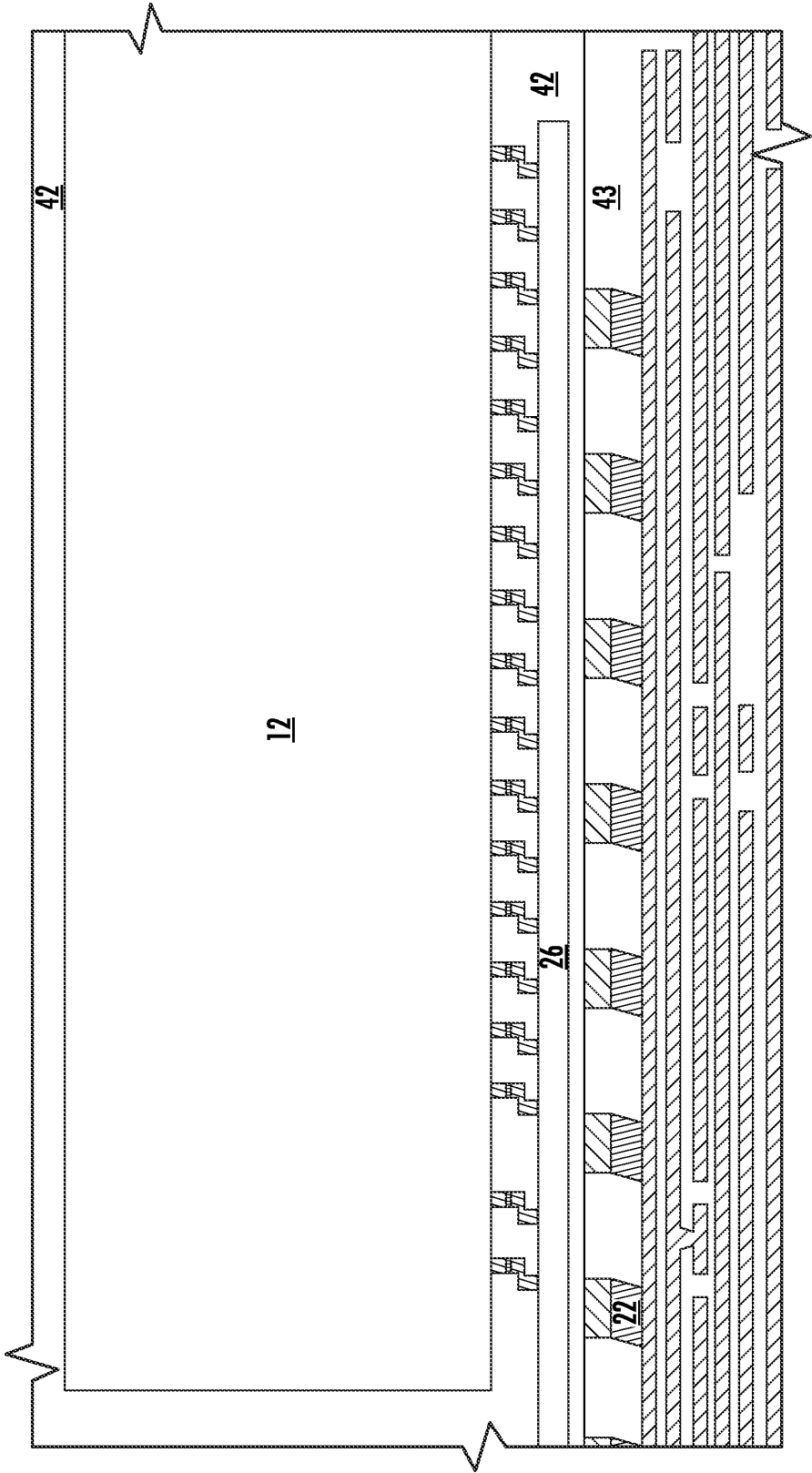


FIG. 2D  
PRIOR ART

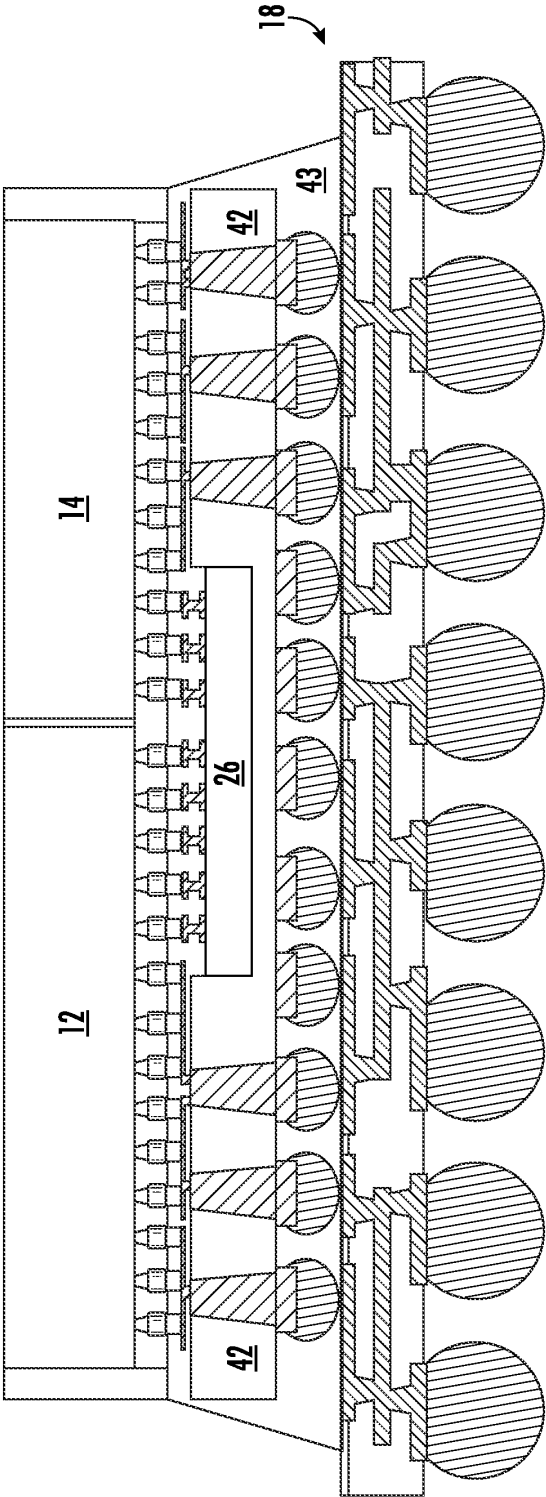


FIG. 2E  
PRIOR ART

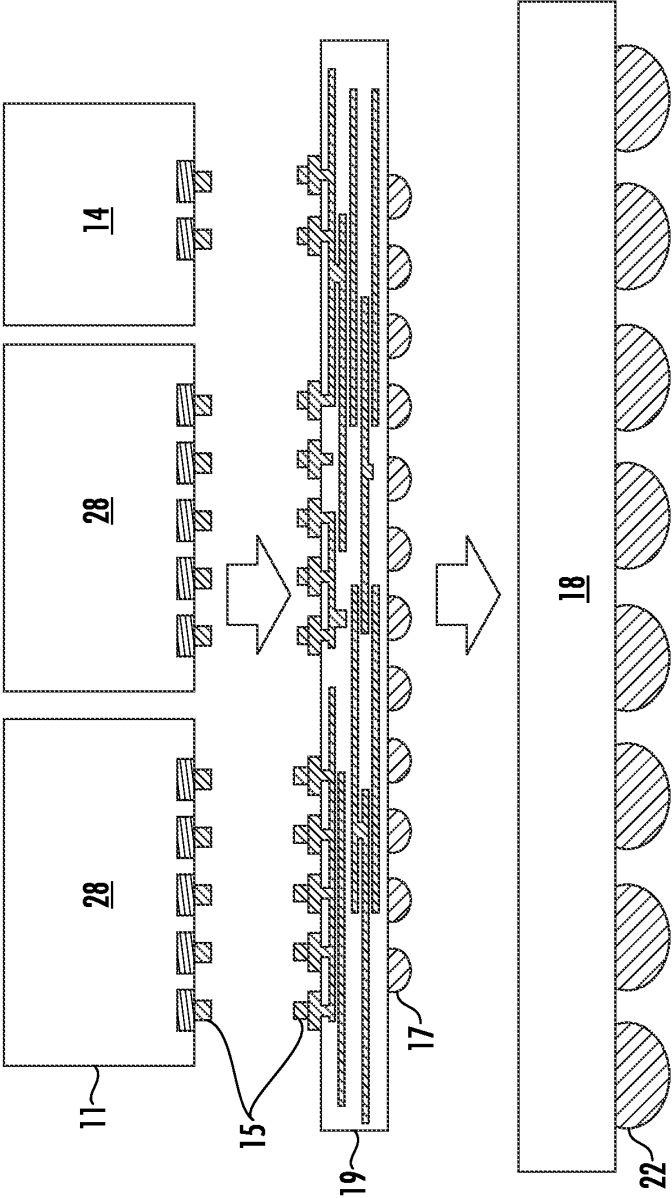
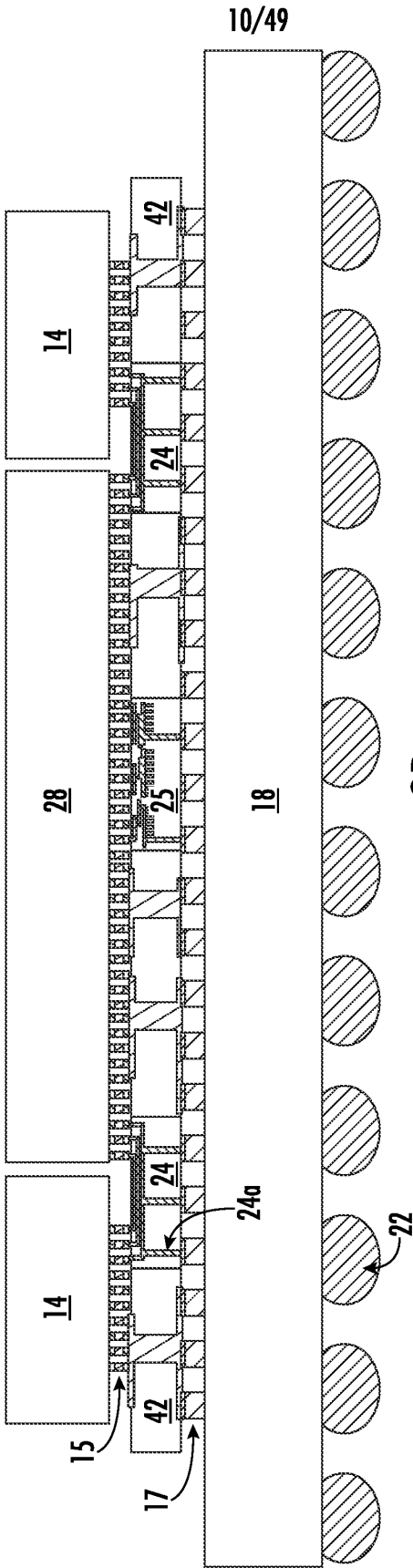


FIG. 3A  
PRIOR ART



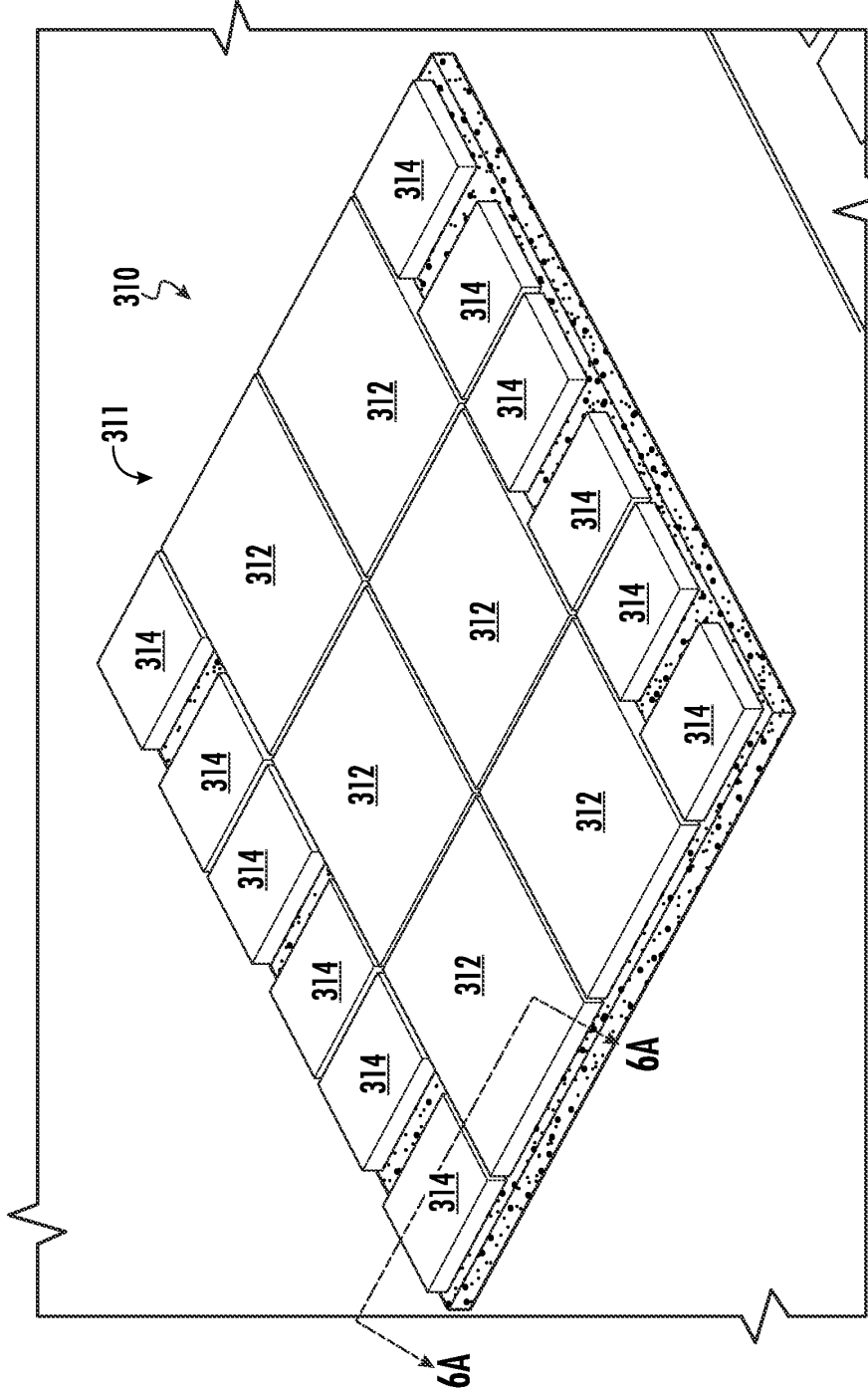


FIG. 4A

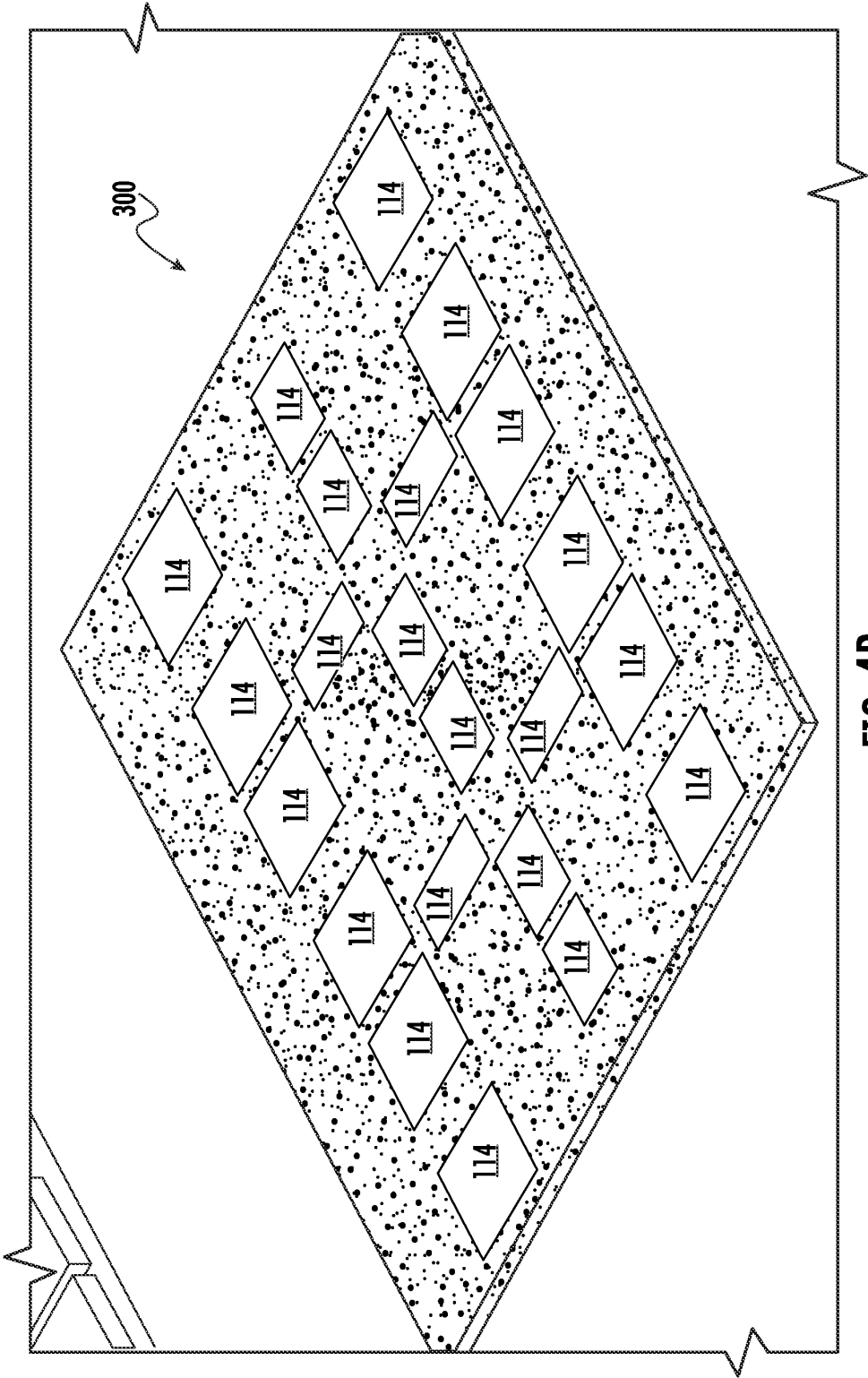


FIG. 4B

- 48mm x 80mm EMBEDDED BRIDGE INTERPOSER
- 12 EMBEDDED BRIDGES FOR HBM3
  - ~9.5 x 7.5 mm
  - 73  $\mu\text{m}$  iHBM3 PITCH
  - 43.5 x 55  $\mu\text{m}$  PHY PITCH
- 10 EMBEDDED DIE-TO-DIE BRIDGES
  - 35  $\mu\text{m}$  PITCH ON PROCESSORS
  - 3 x 8 mm & 3 x 5 mm
- INTEGRATED EMBEDDED COMPONENTS
  - PASSIVE OR ACTIVE DEVICES EMBEDDED IN THE INTERPOSER (EX: DTCs)

**FIG. 4C**

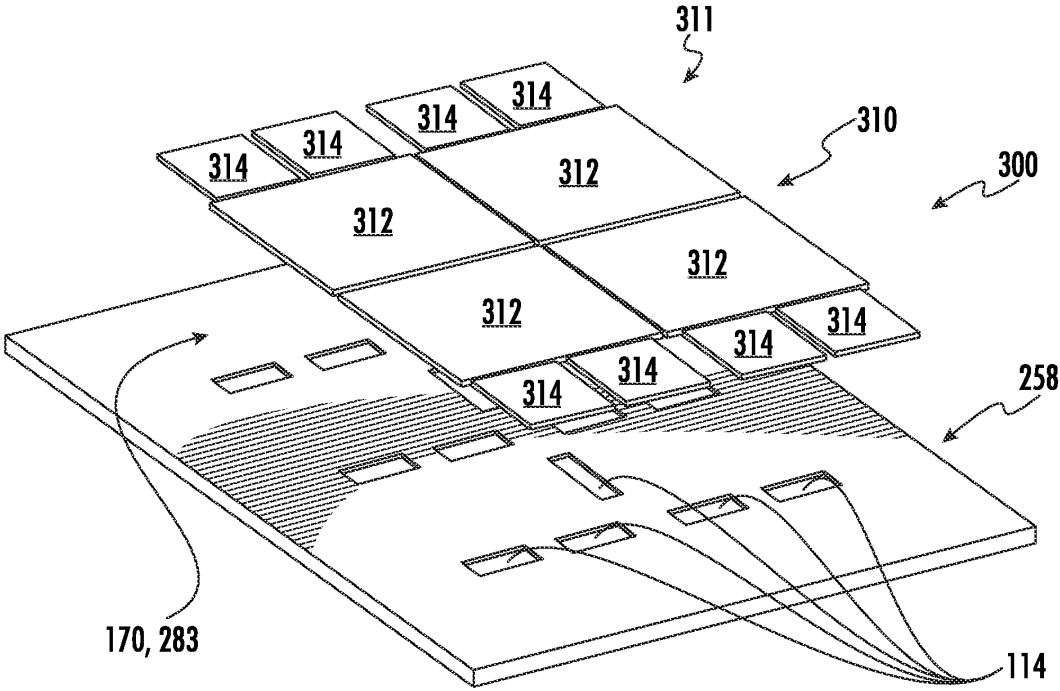


FIG. 5

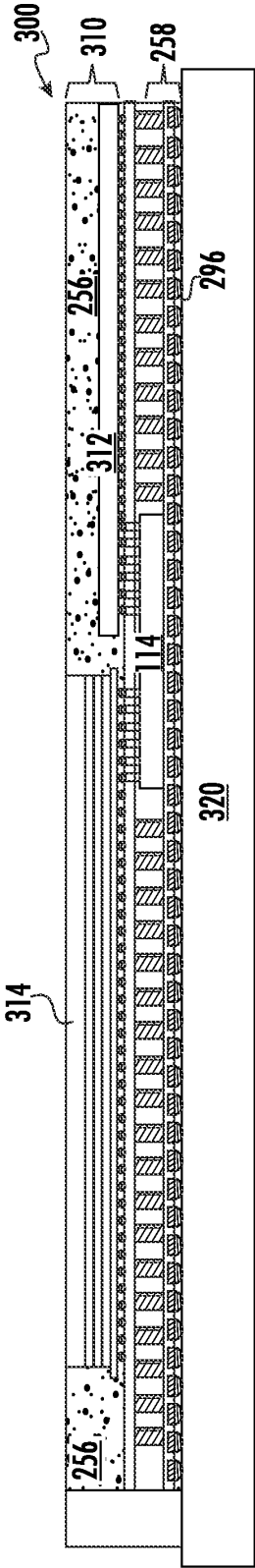


FIG. 6A

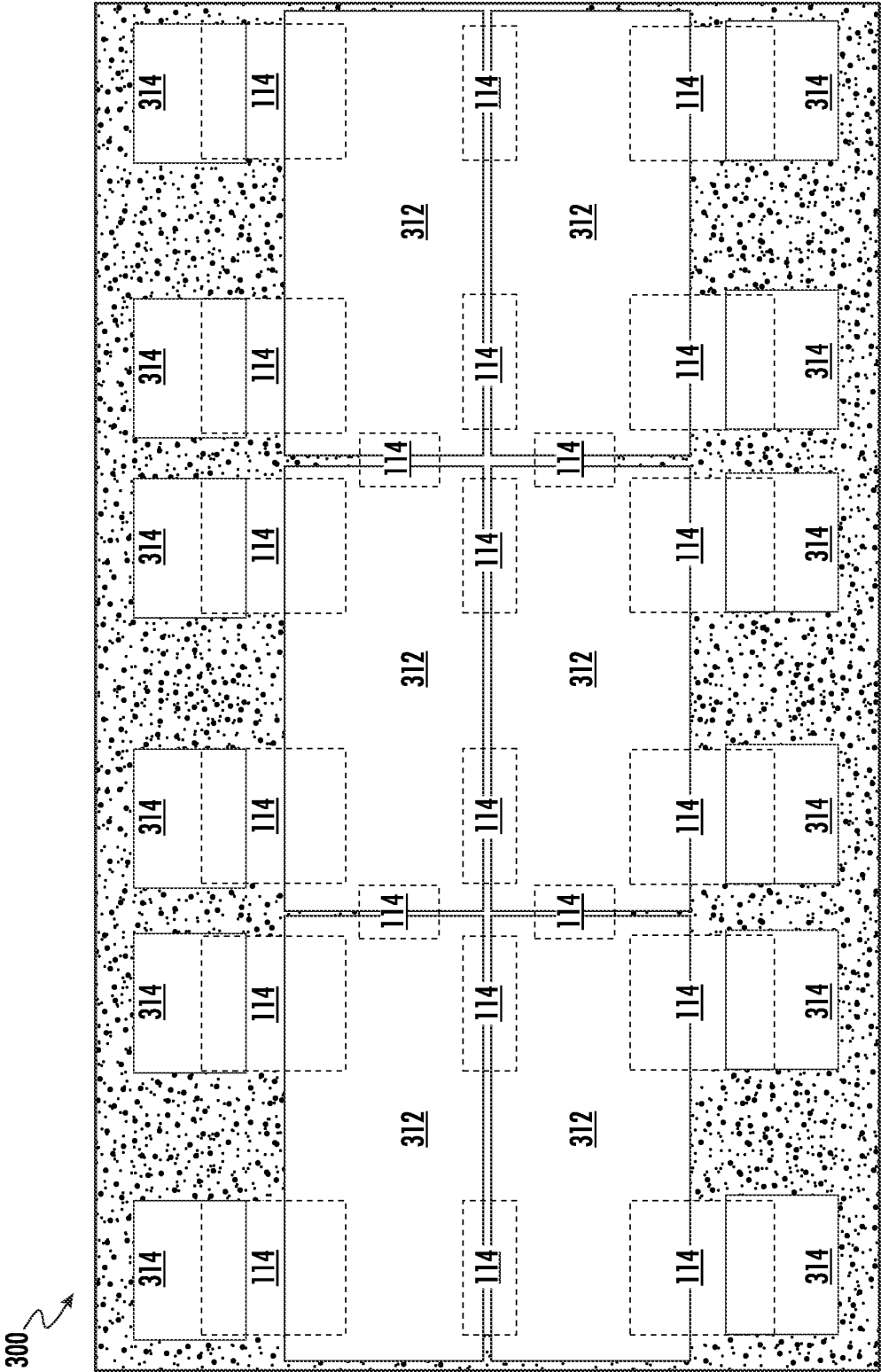


FIG. 6B

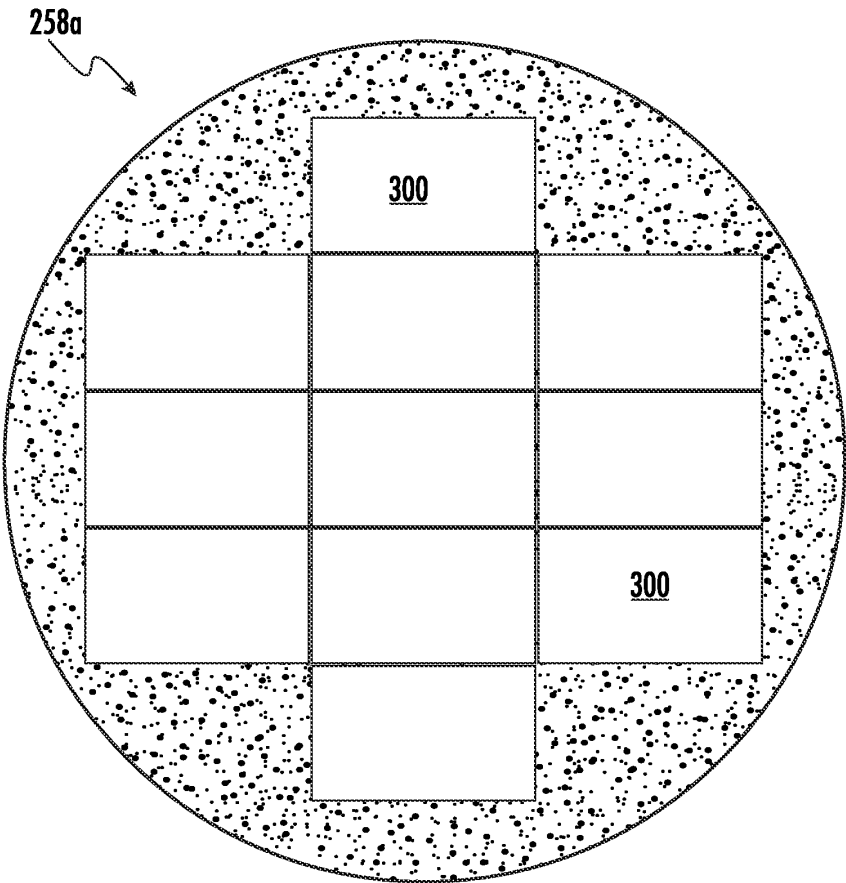


FIG. 6C

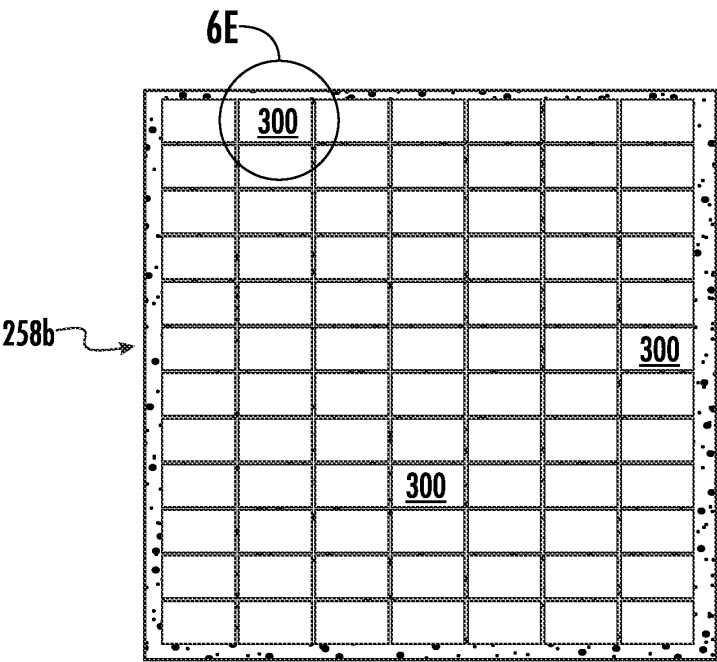


FIG. 6D

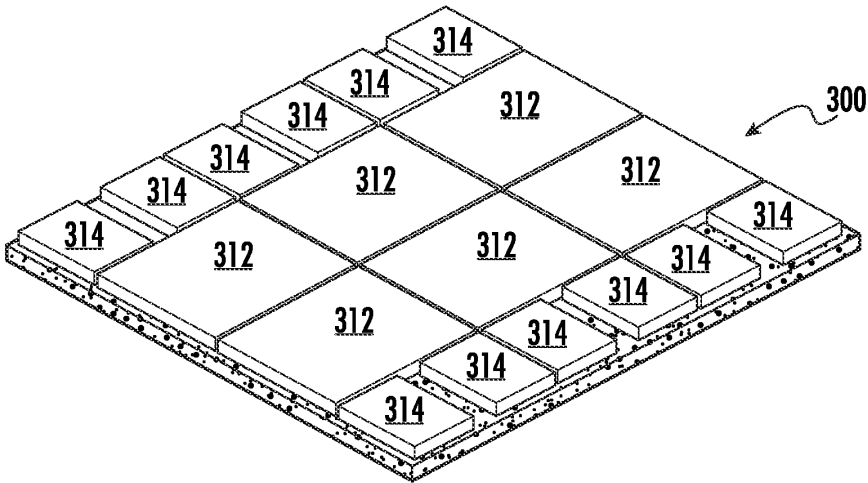


FIG. 6E

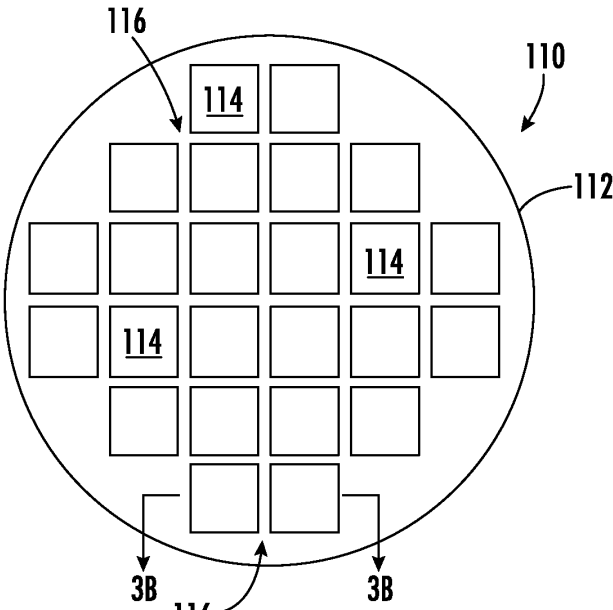
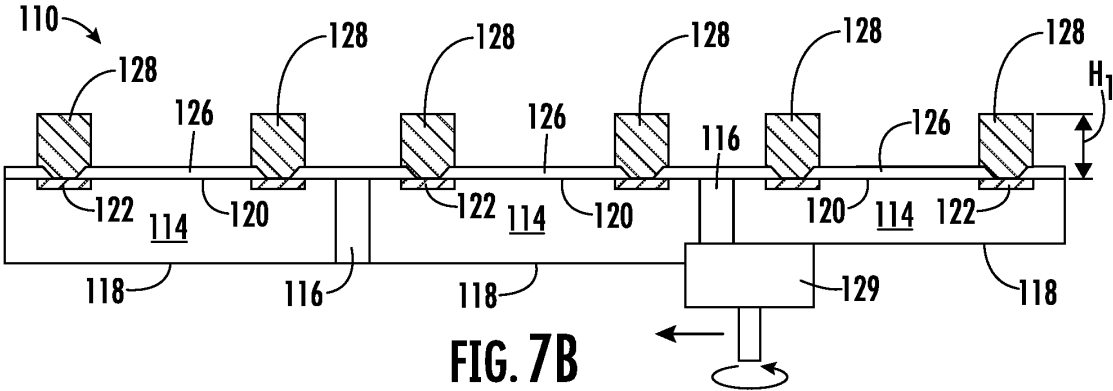


FIG. 7A



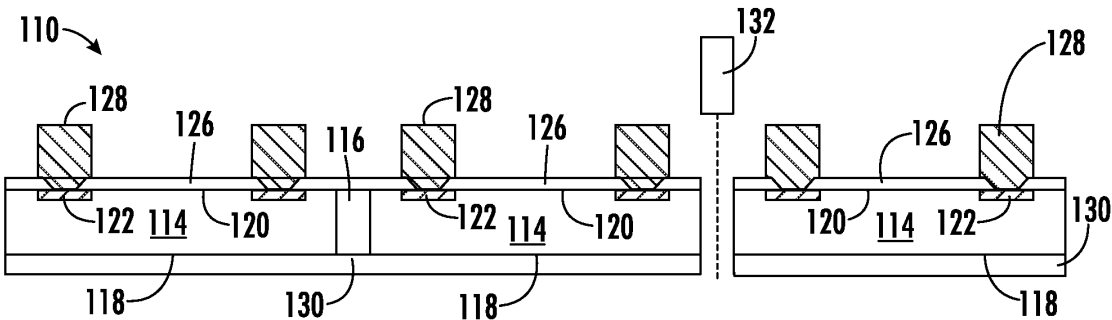


FIG. 7C

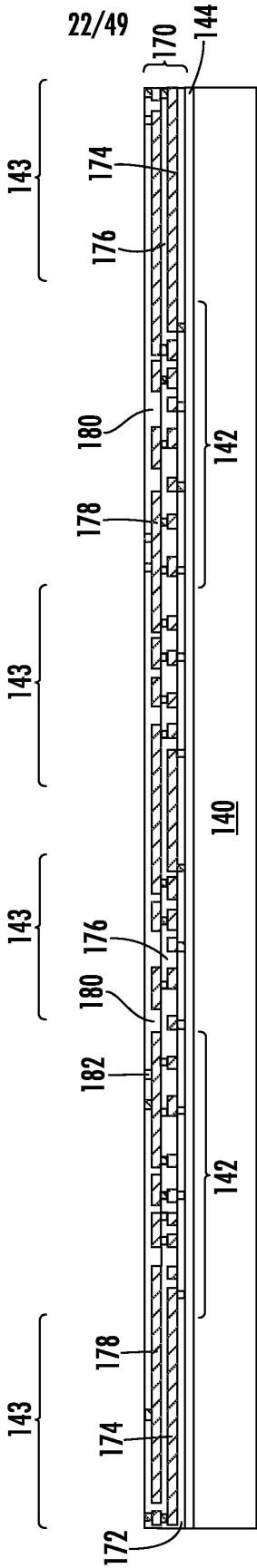
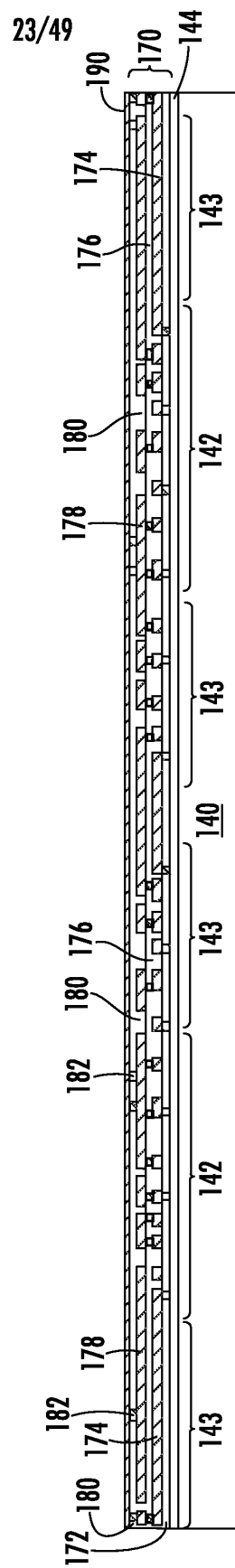


FIG. 8A



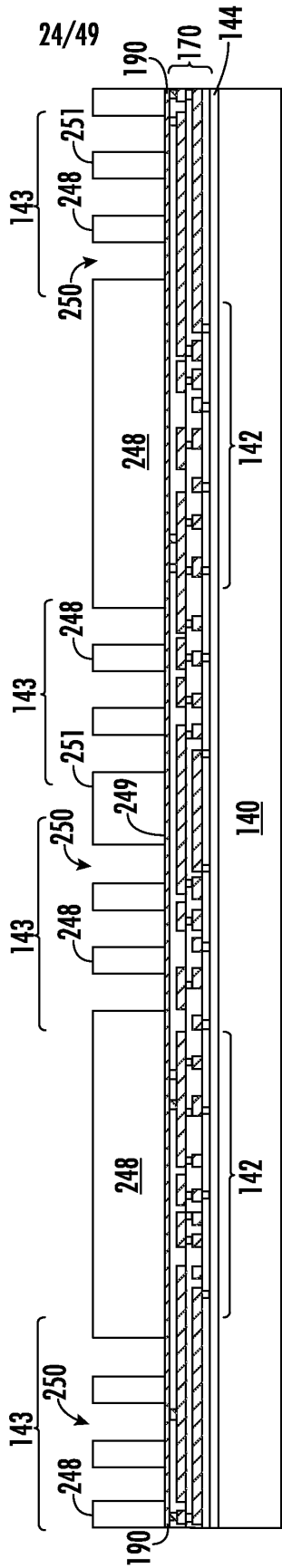
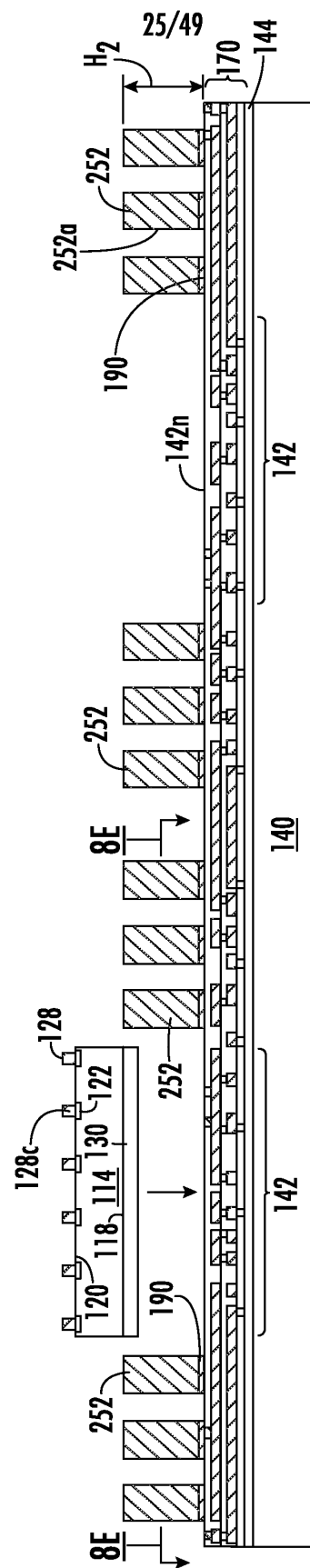


FIG. 8C



**FIG. 8D**

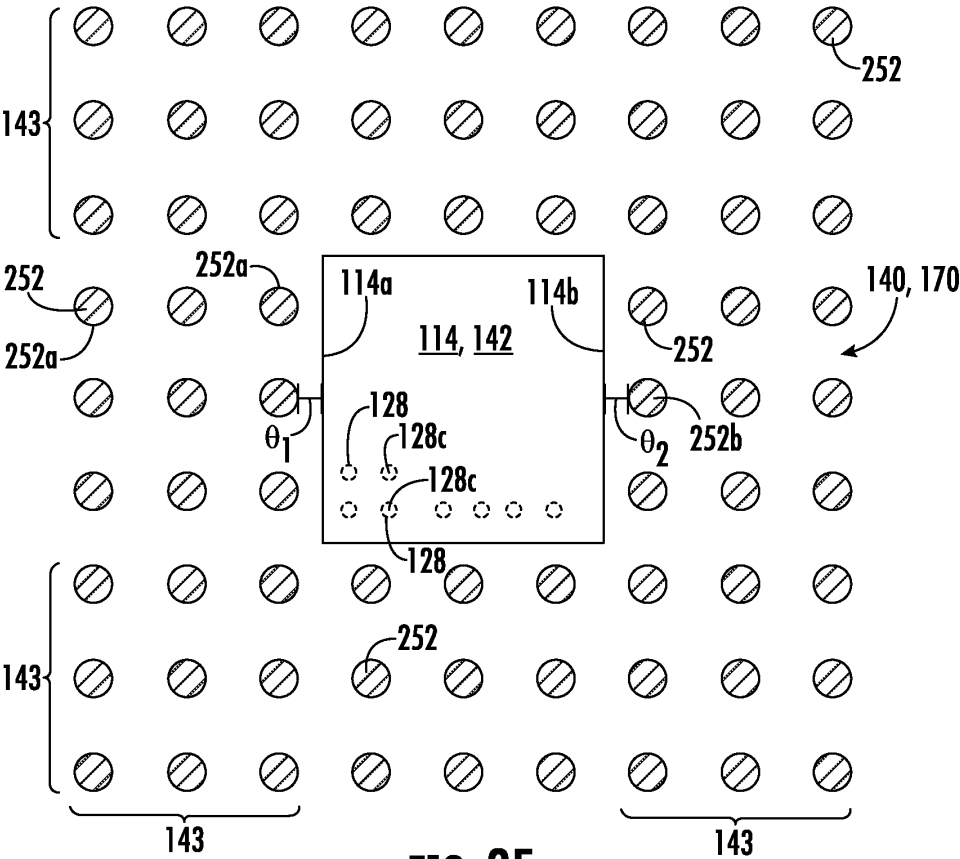


FIG. 8E

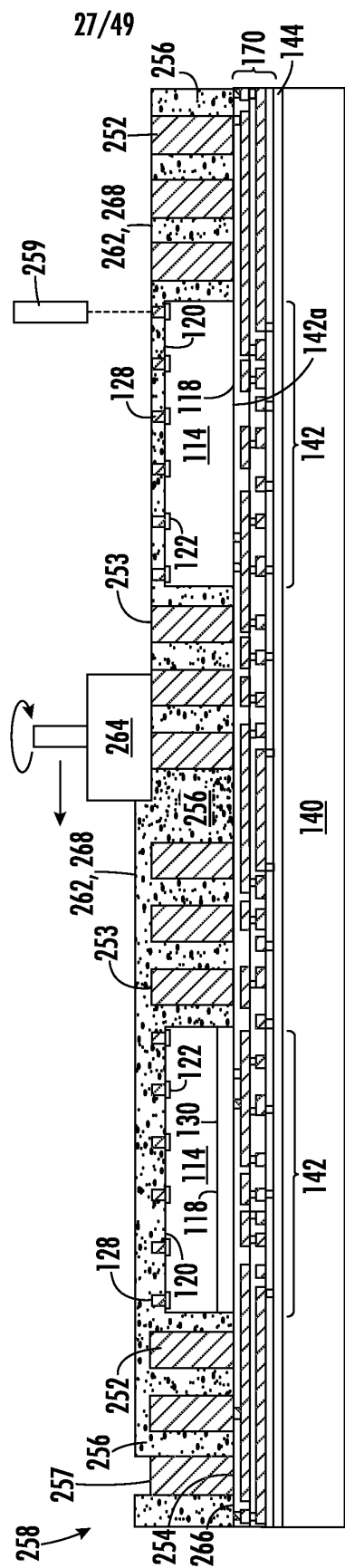
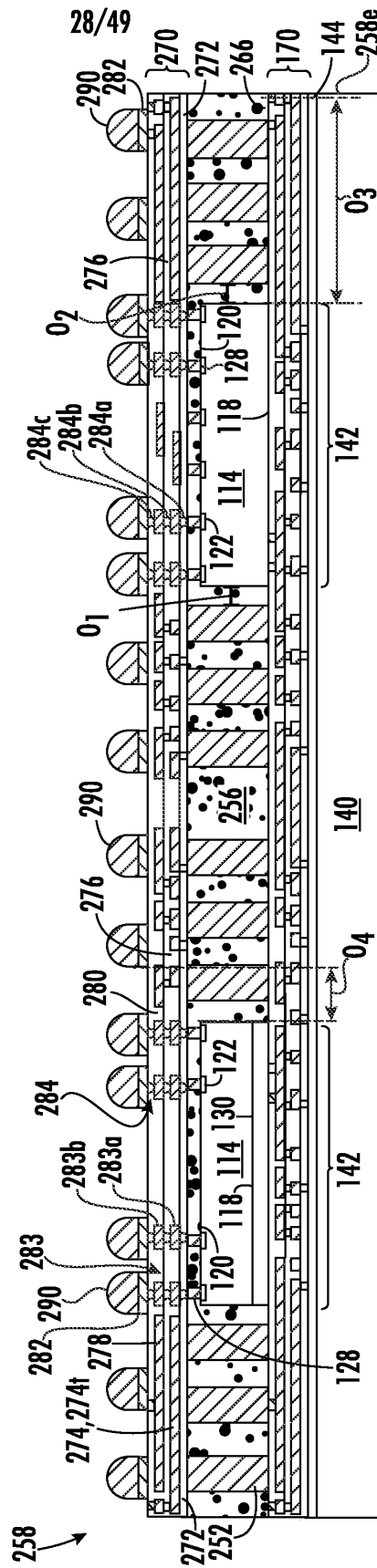


FIG. 8F



**FIG. 8G**

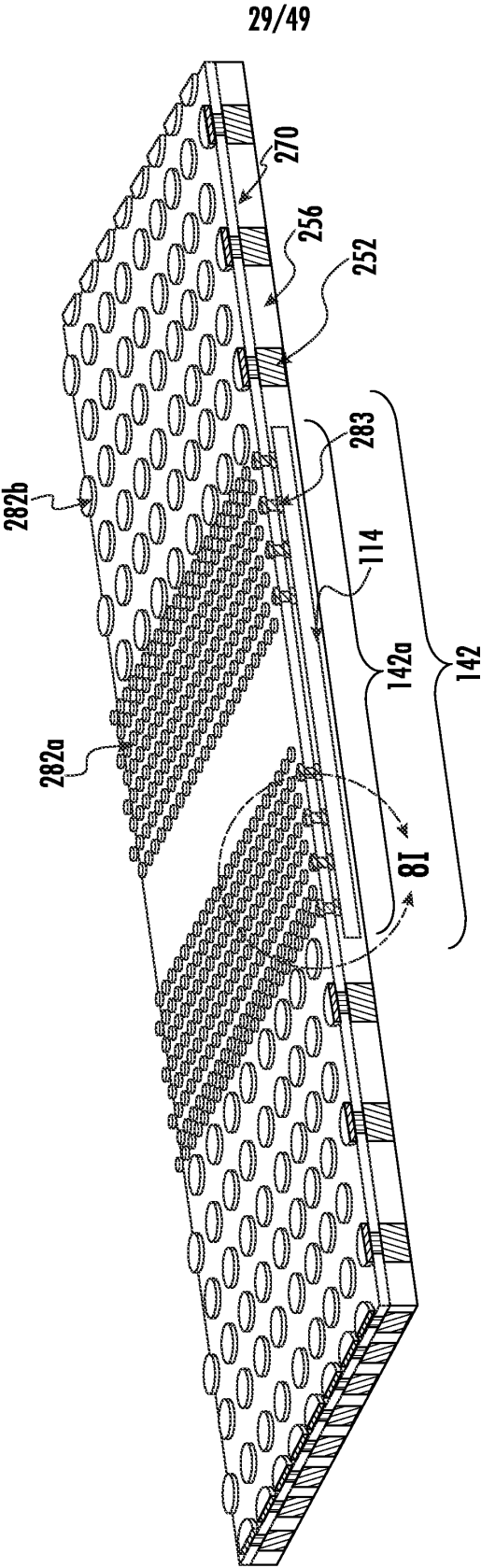


FIG. 8H

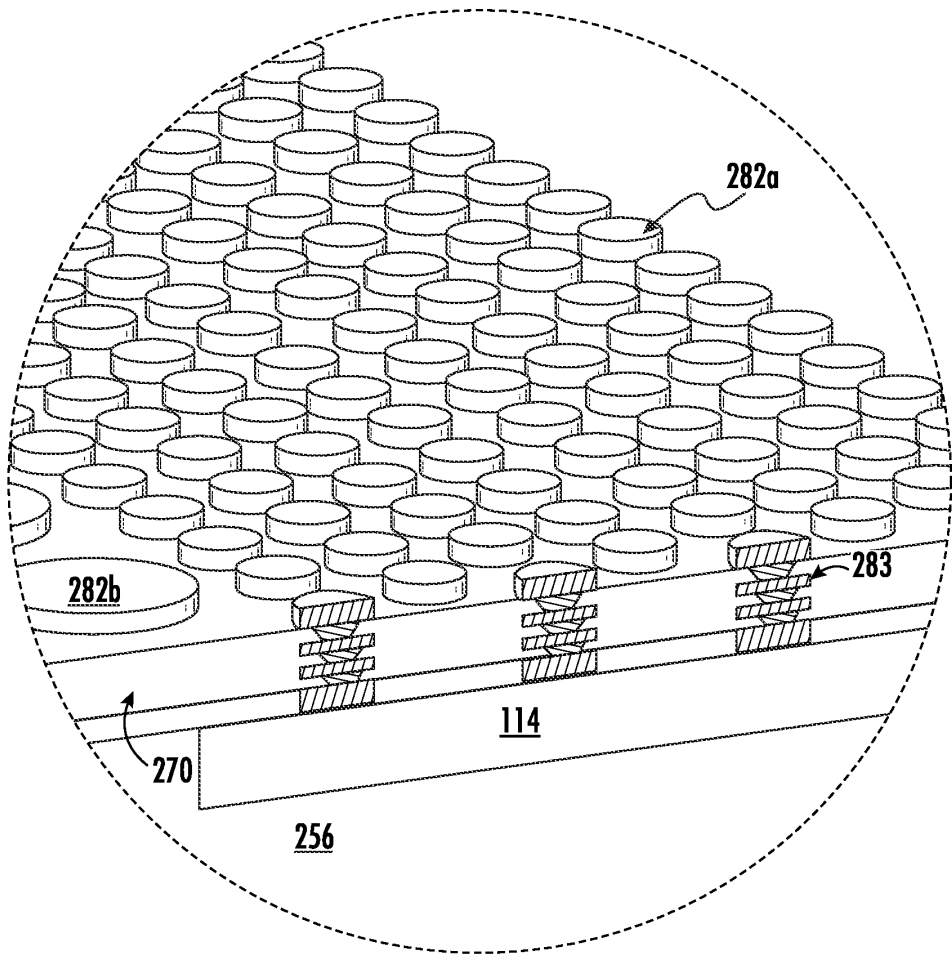
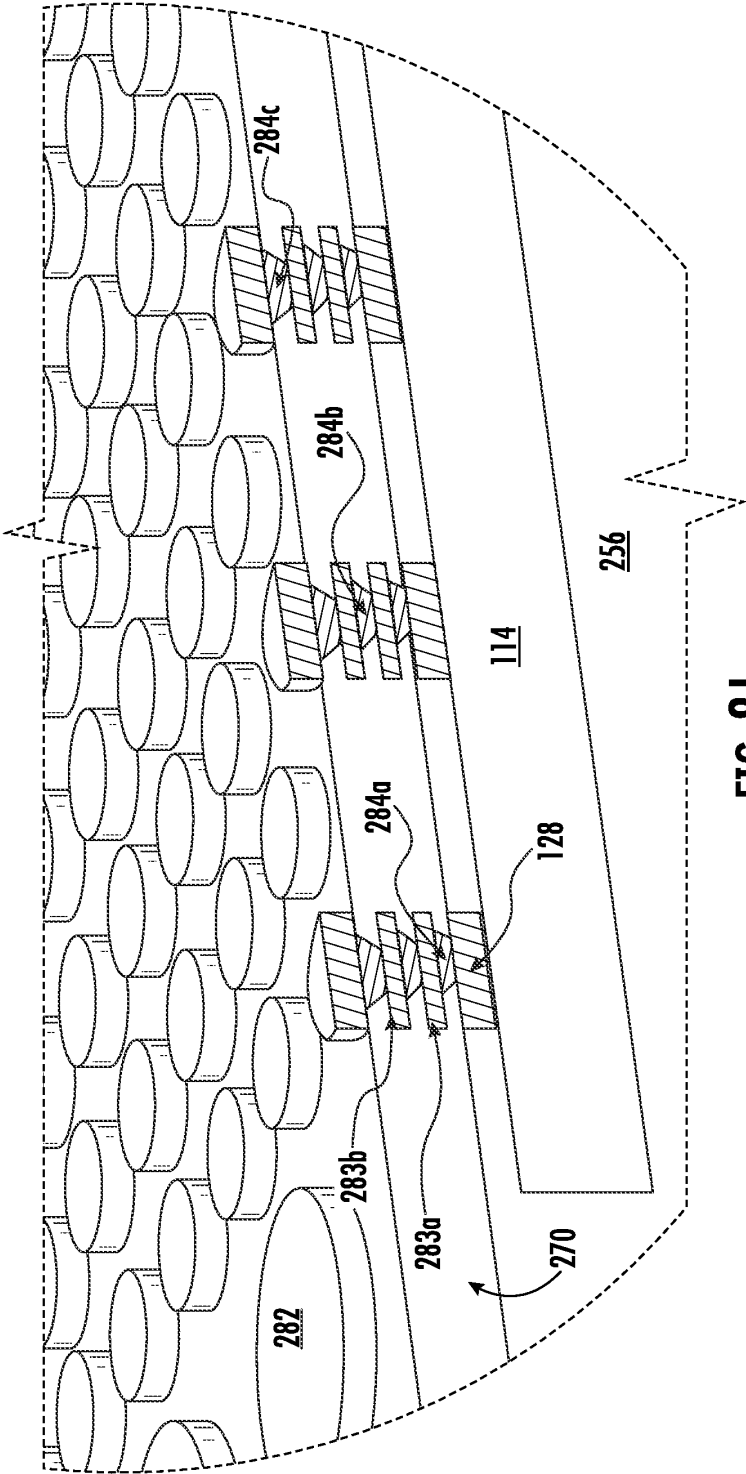


FIG. 8I



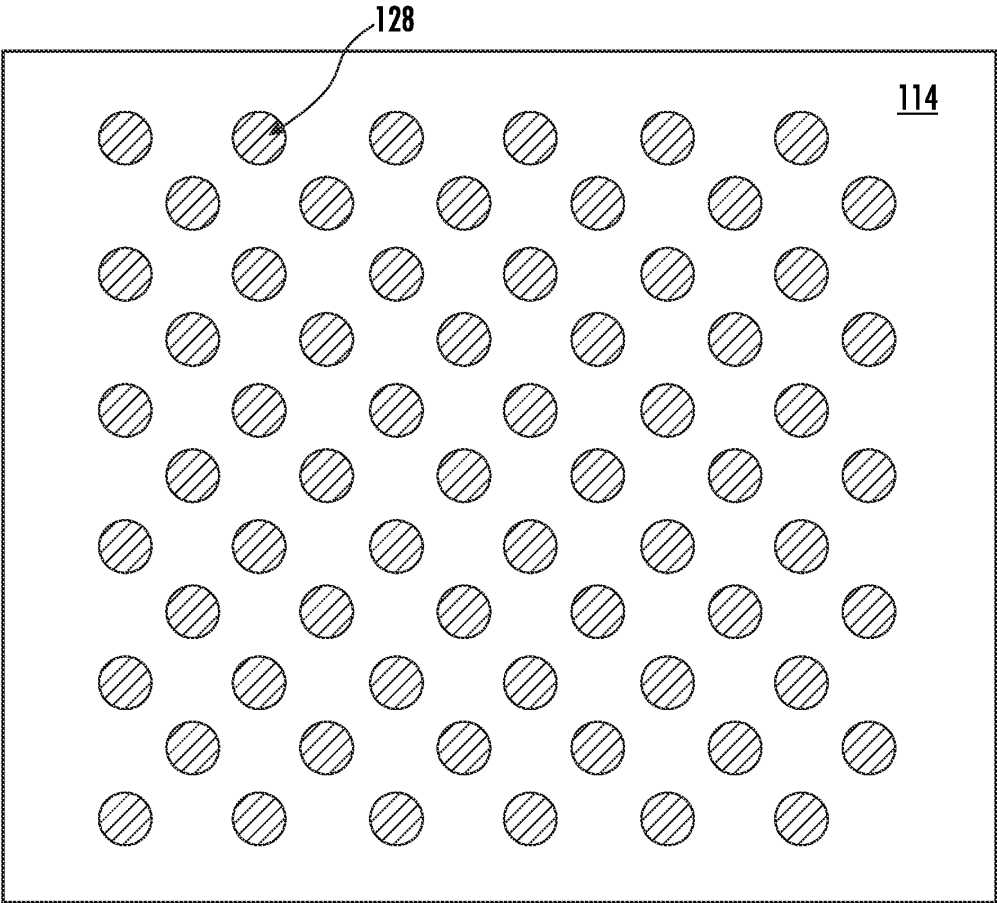
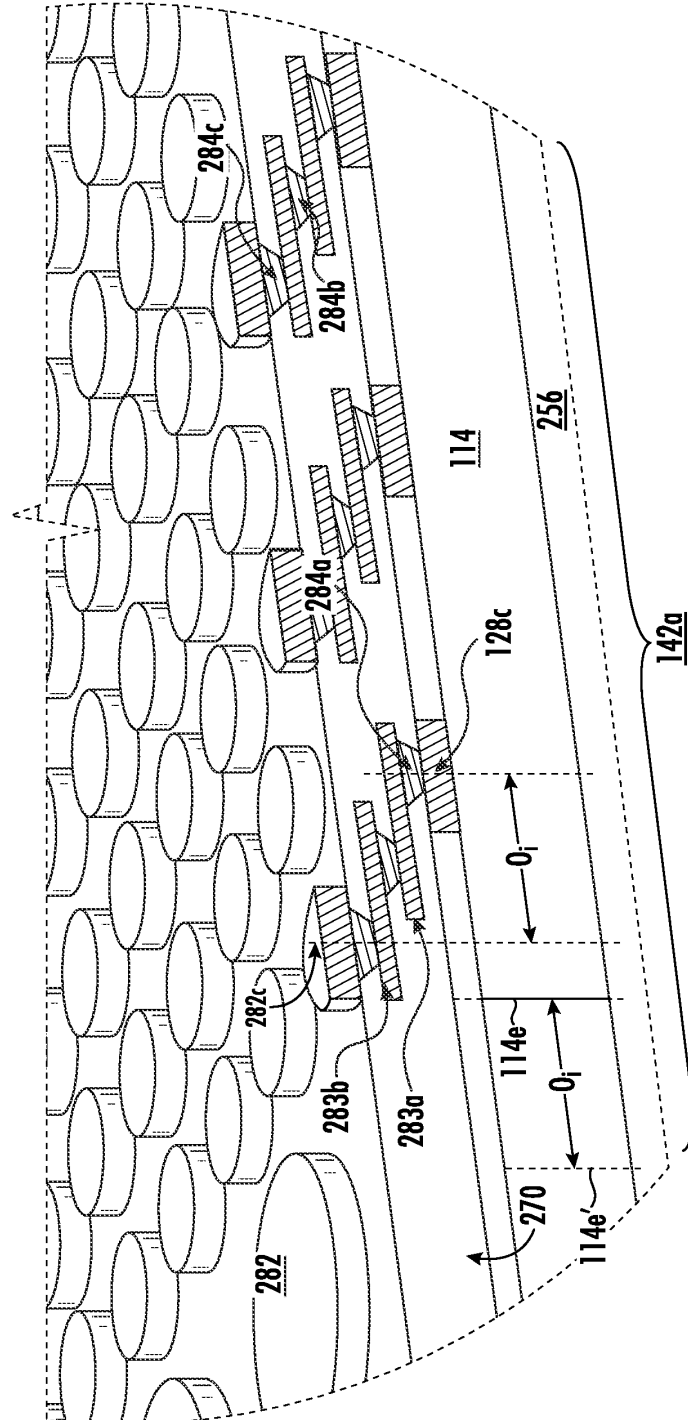


FIG. 8K



**FIG. 8L**

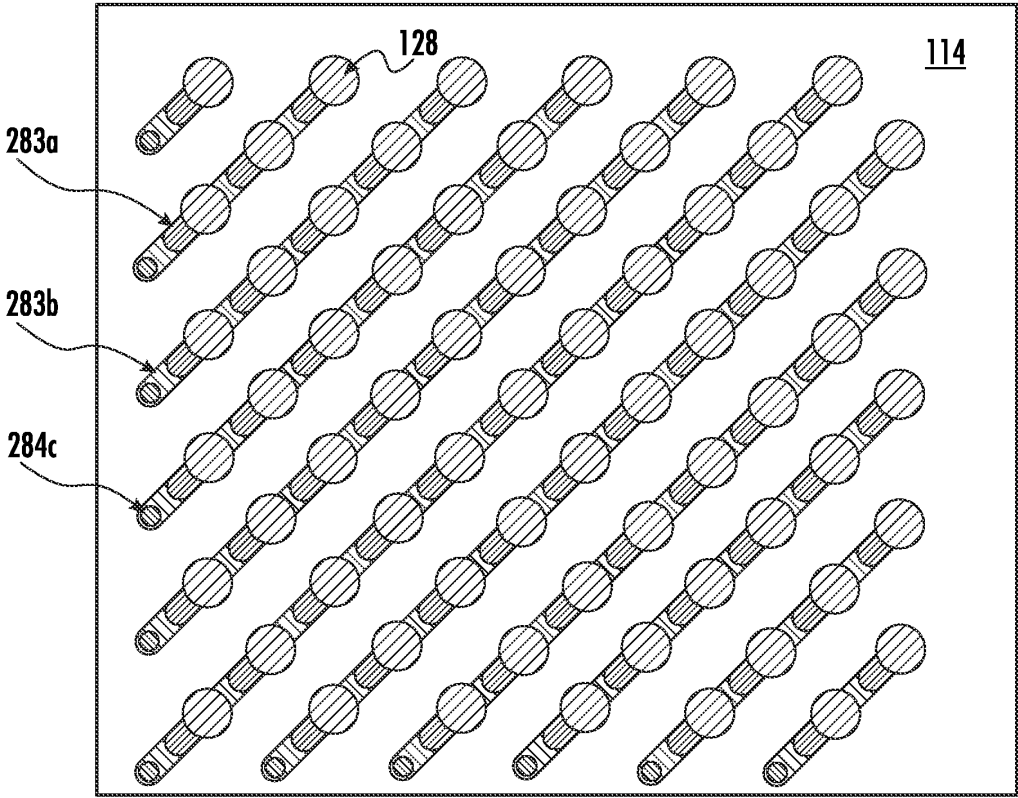
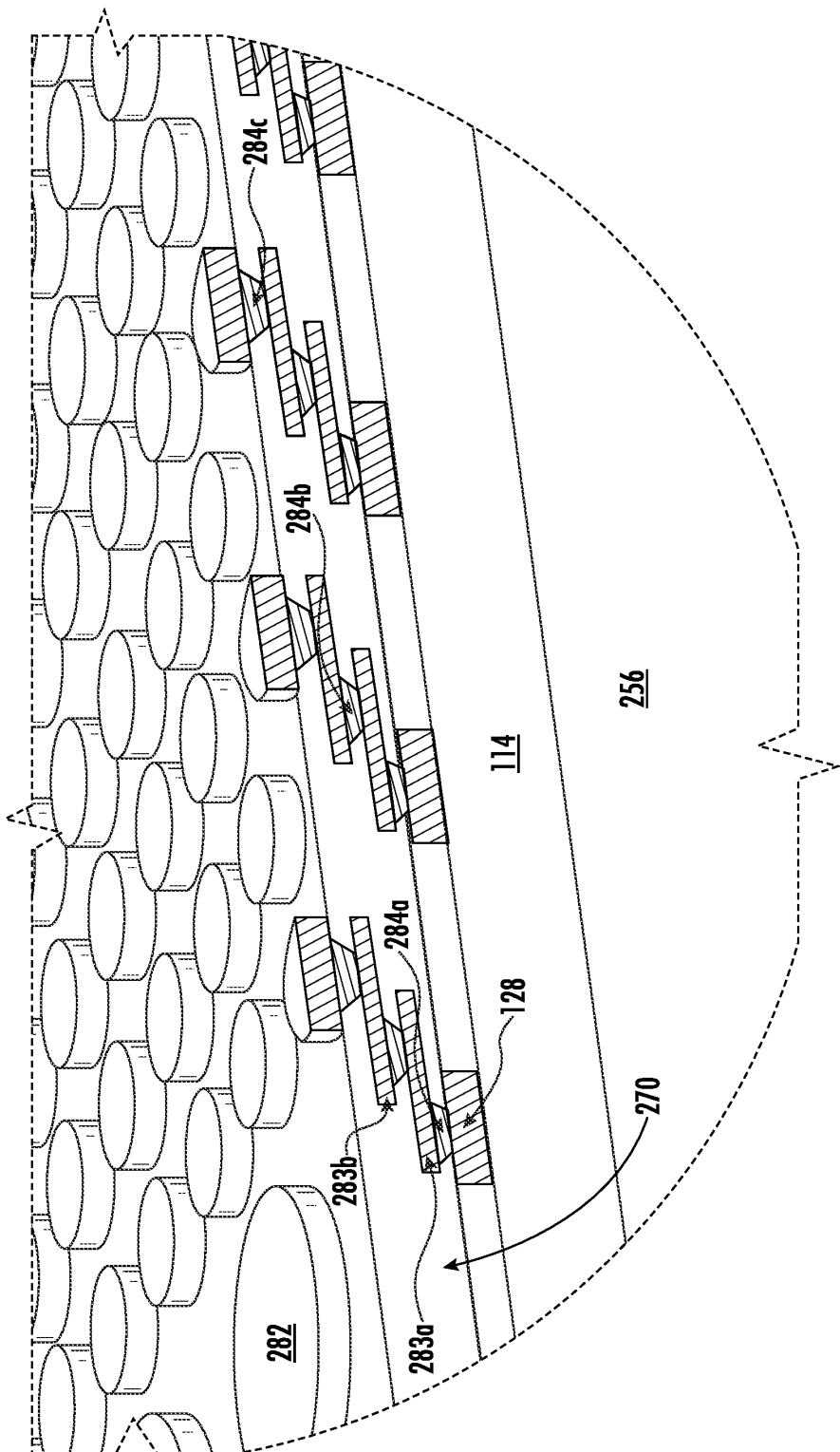


FIG. 8M



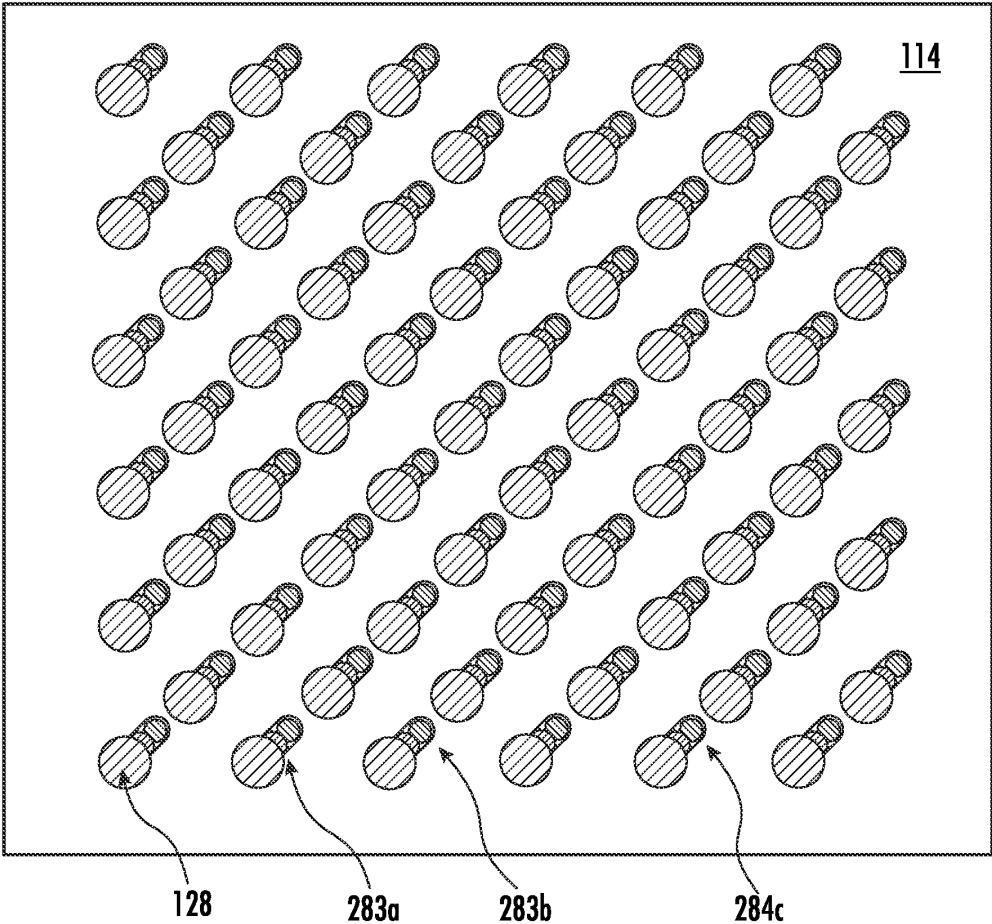


FIG. 80

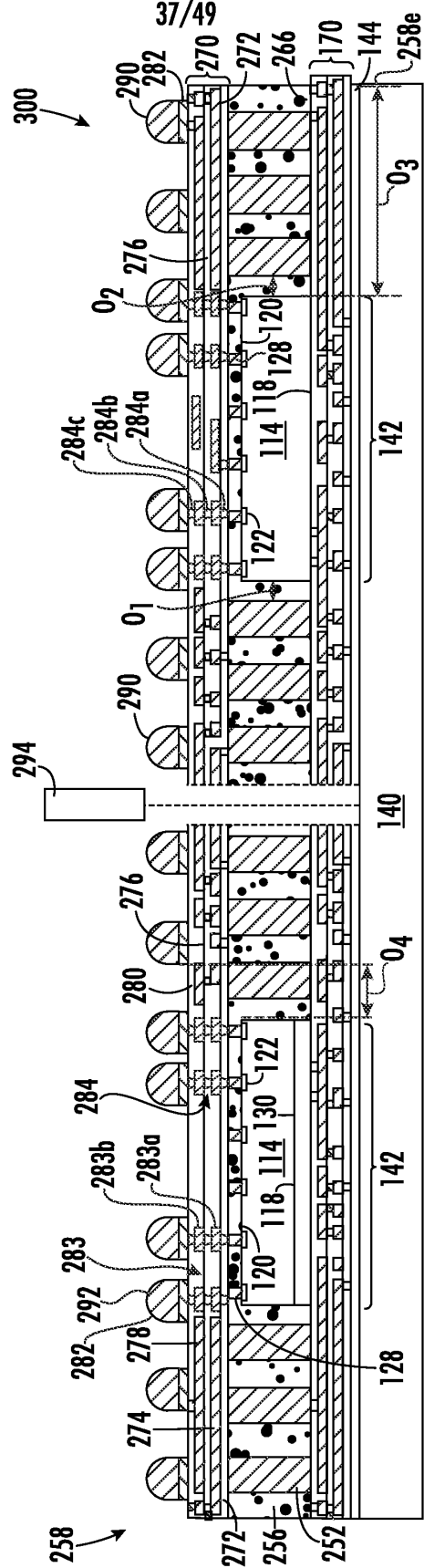


FIG. 8P

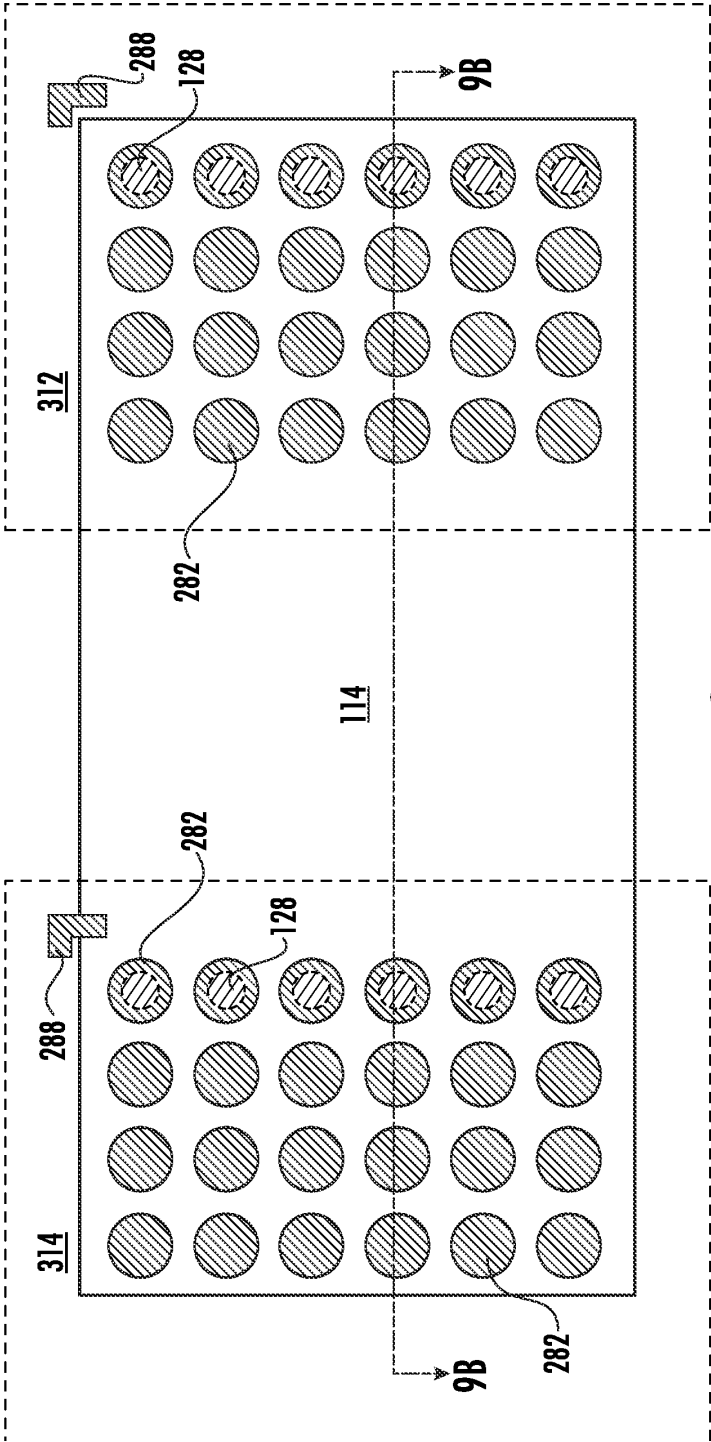


FIG. 9A

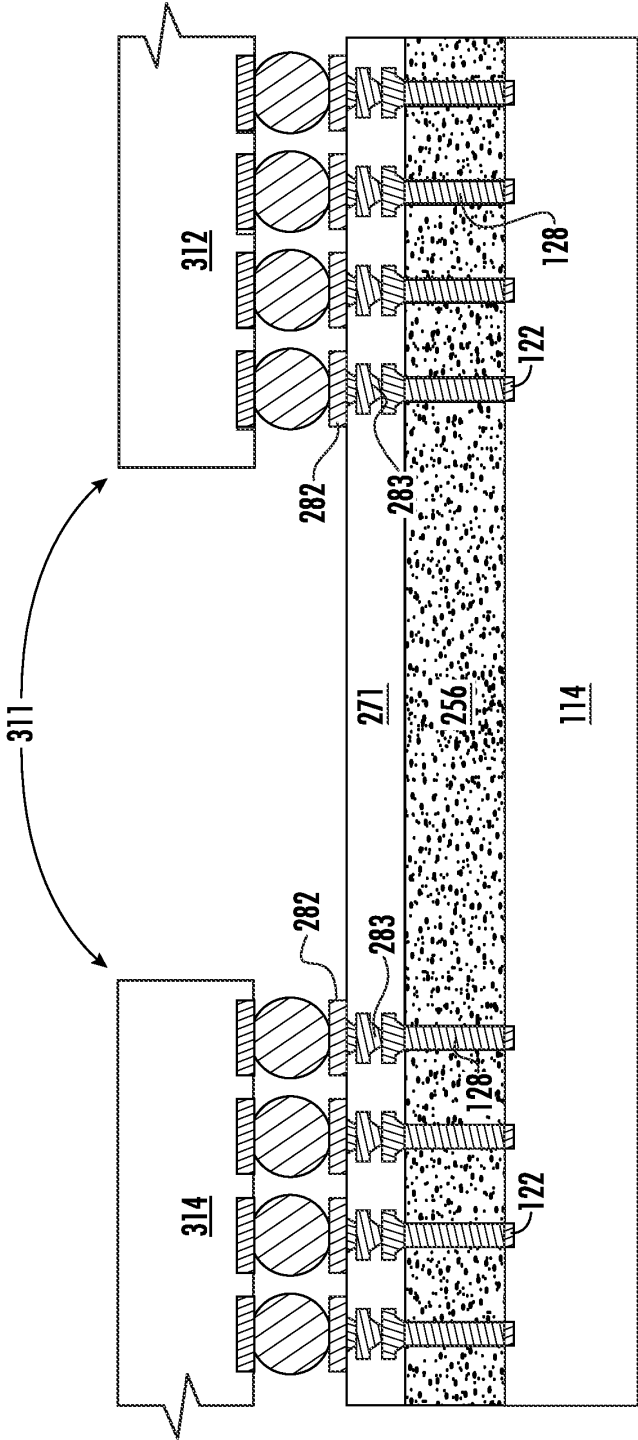


FIG. 9B

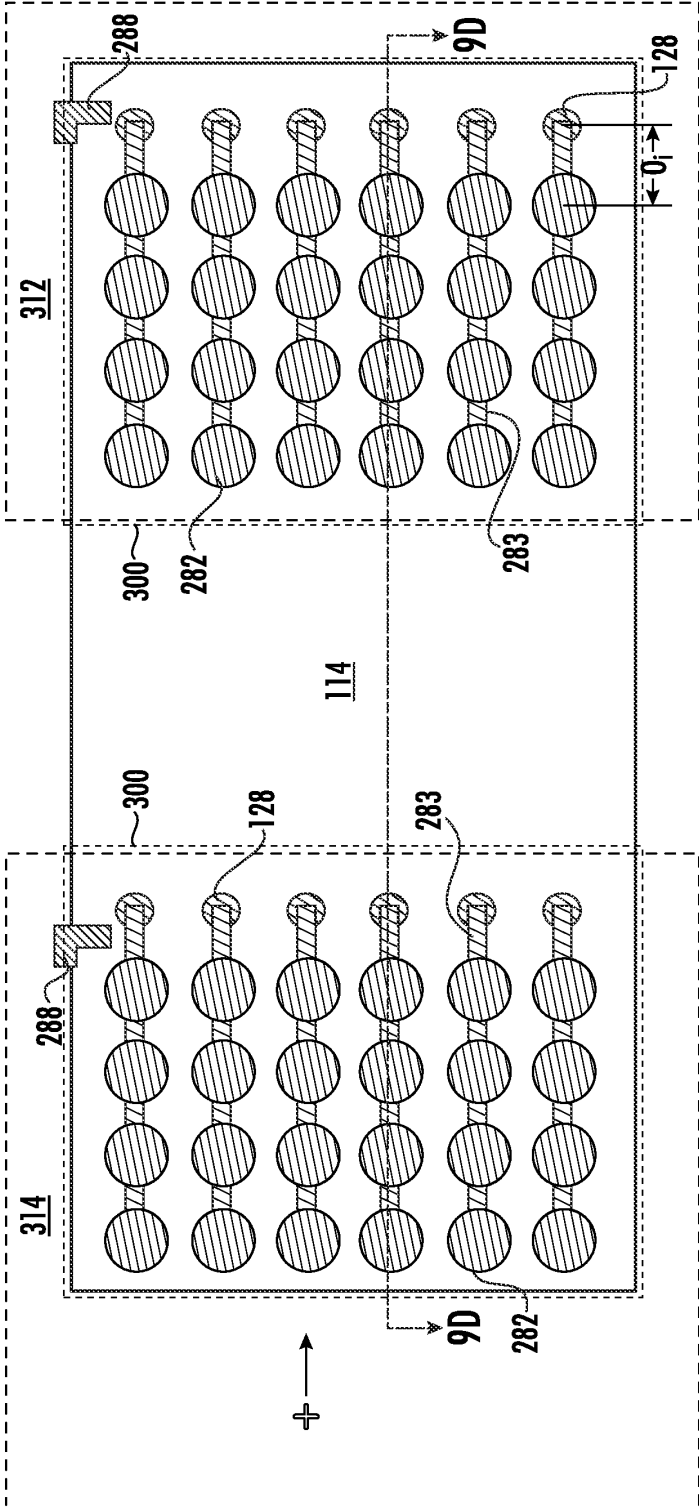


FIG. 9C

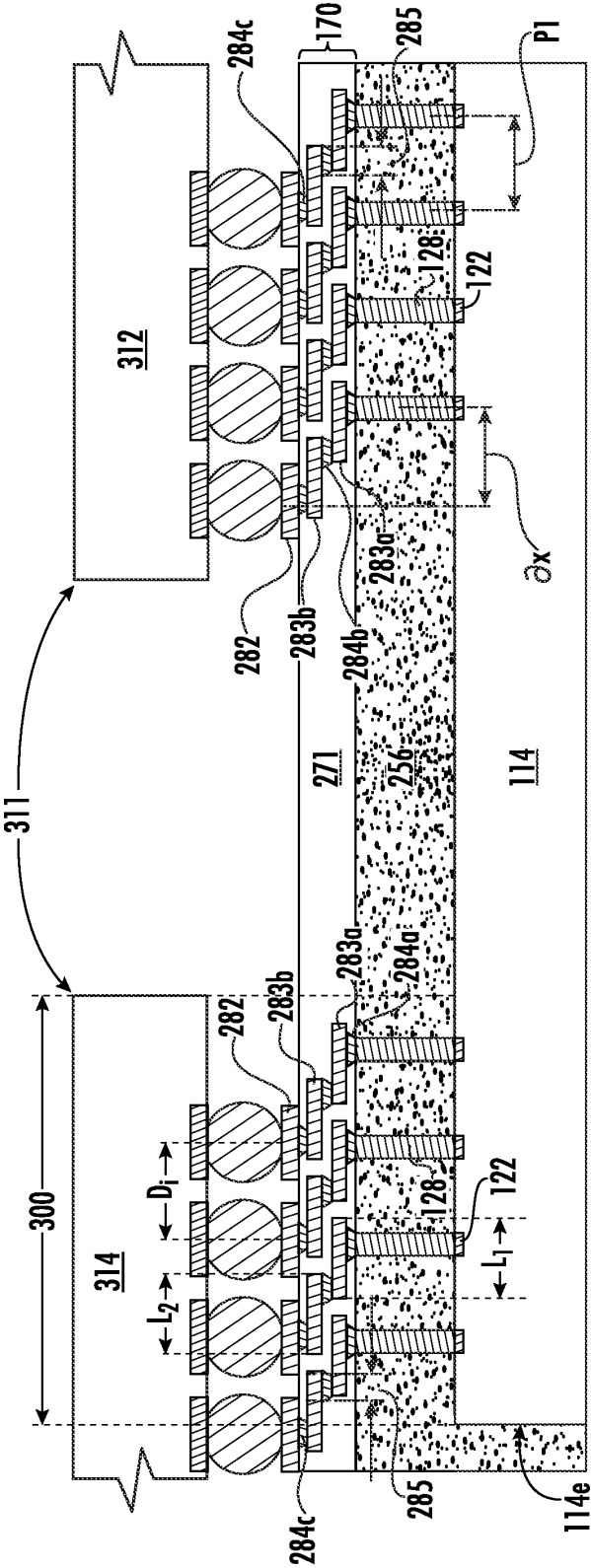


FIG. 9D

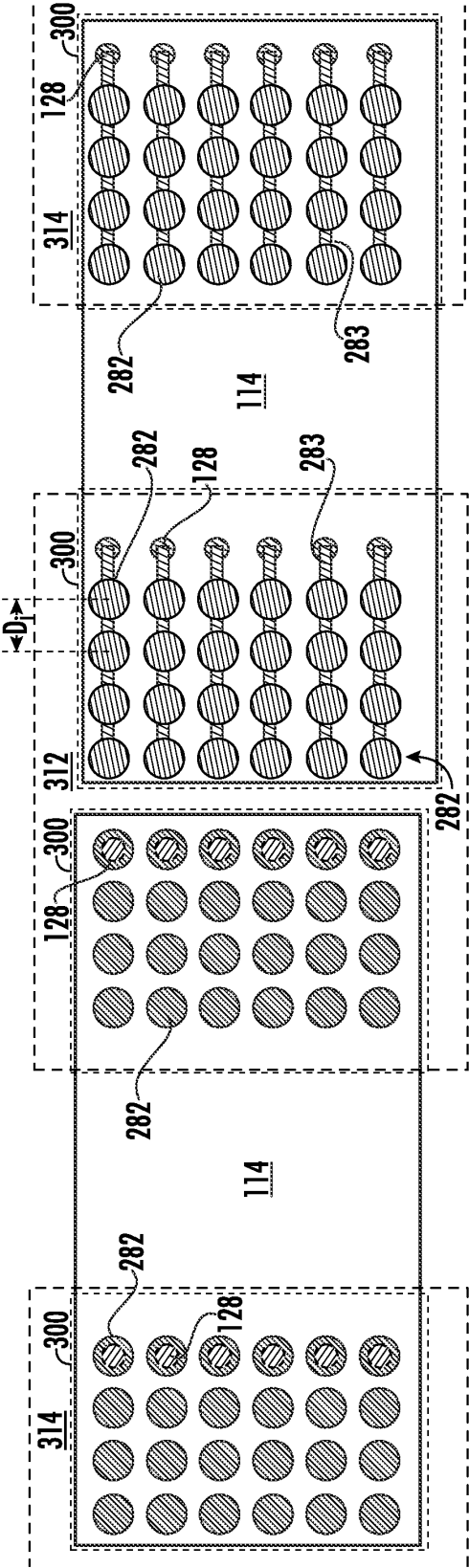
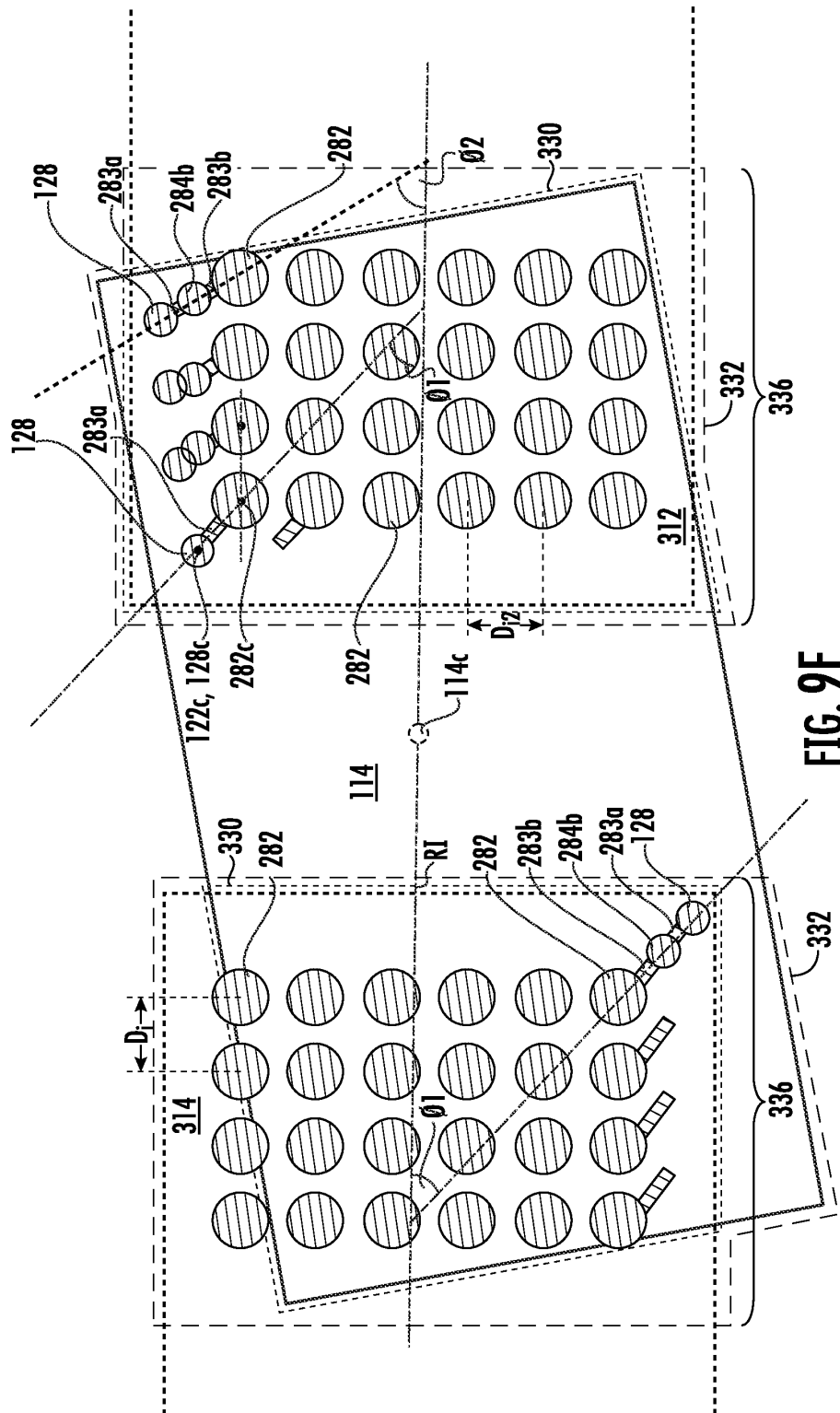
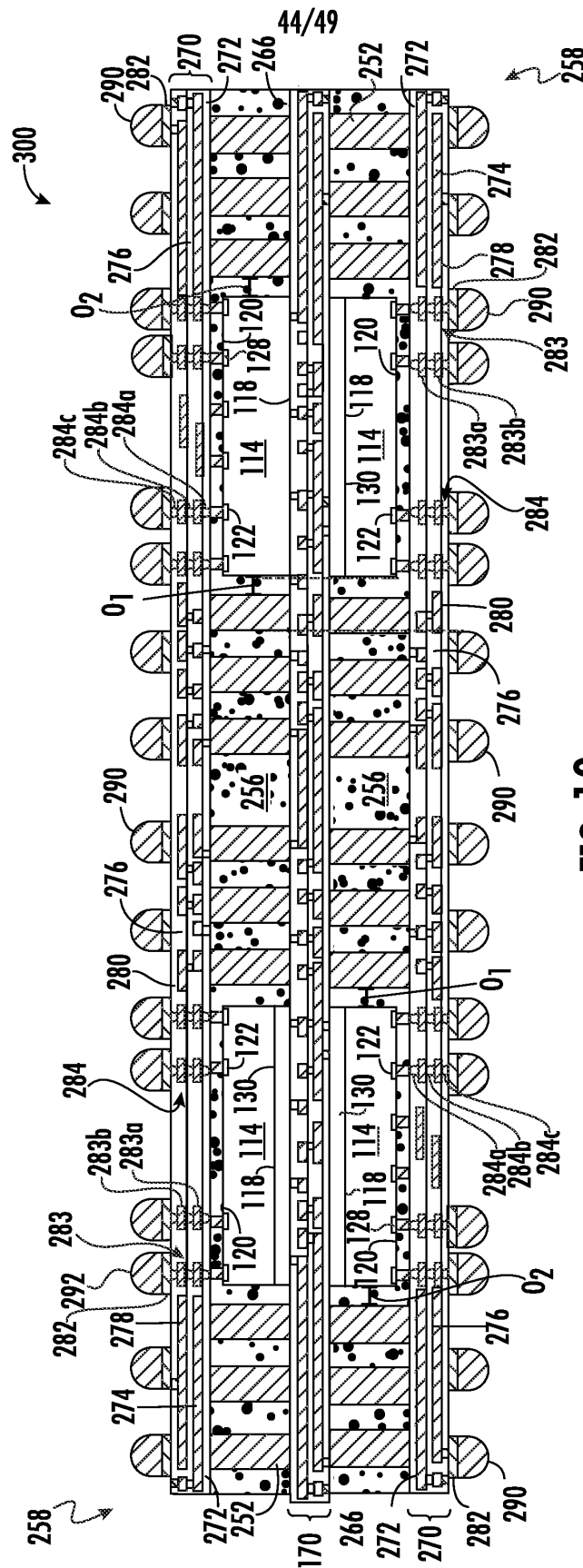


FIG. 9E





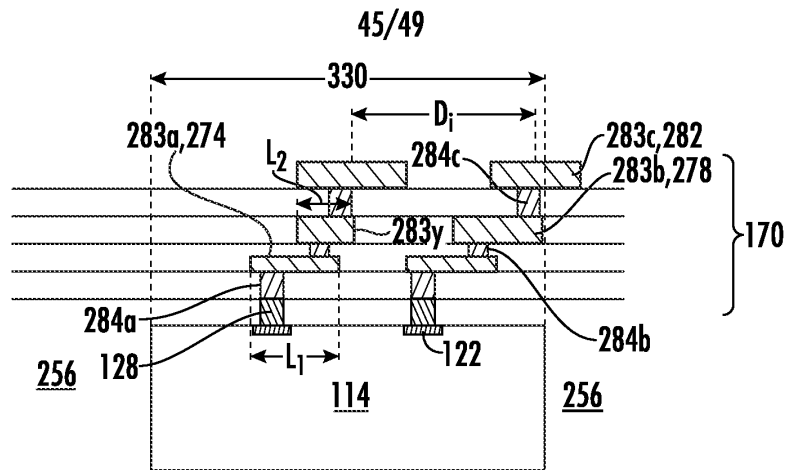
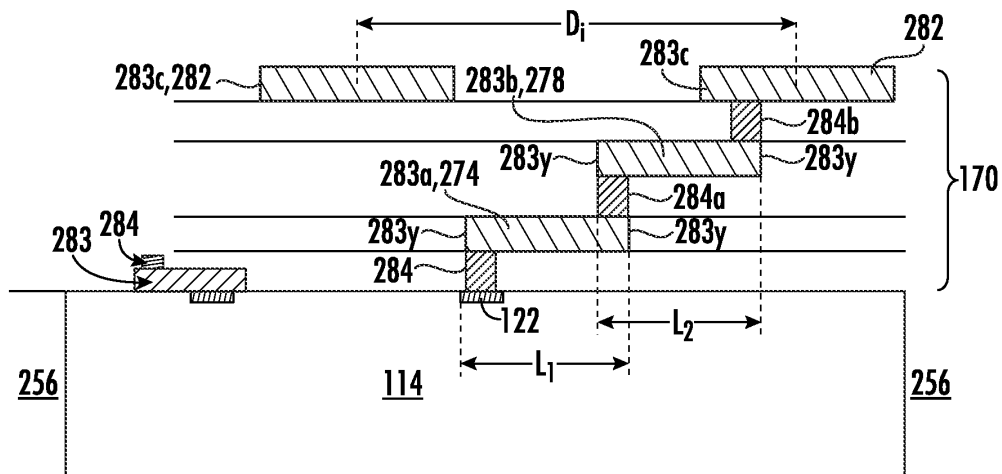


FIG. 11A



**FIG. 11B**

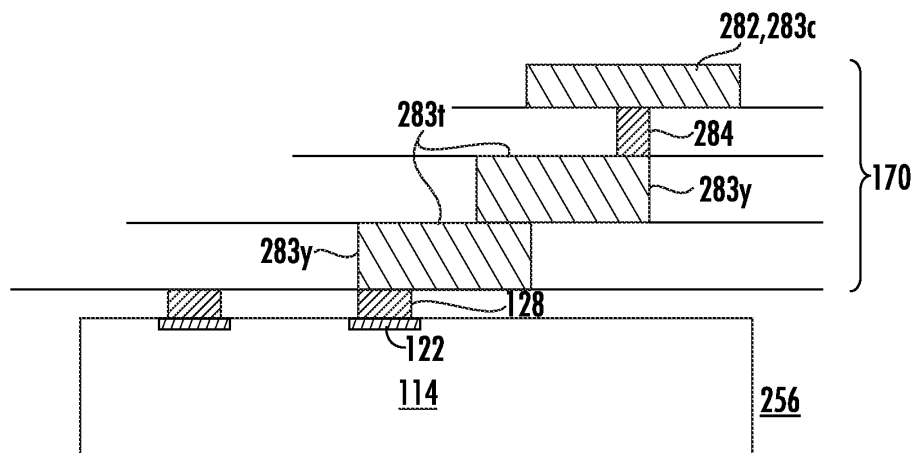


FIG. 11C

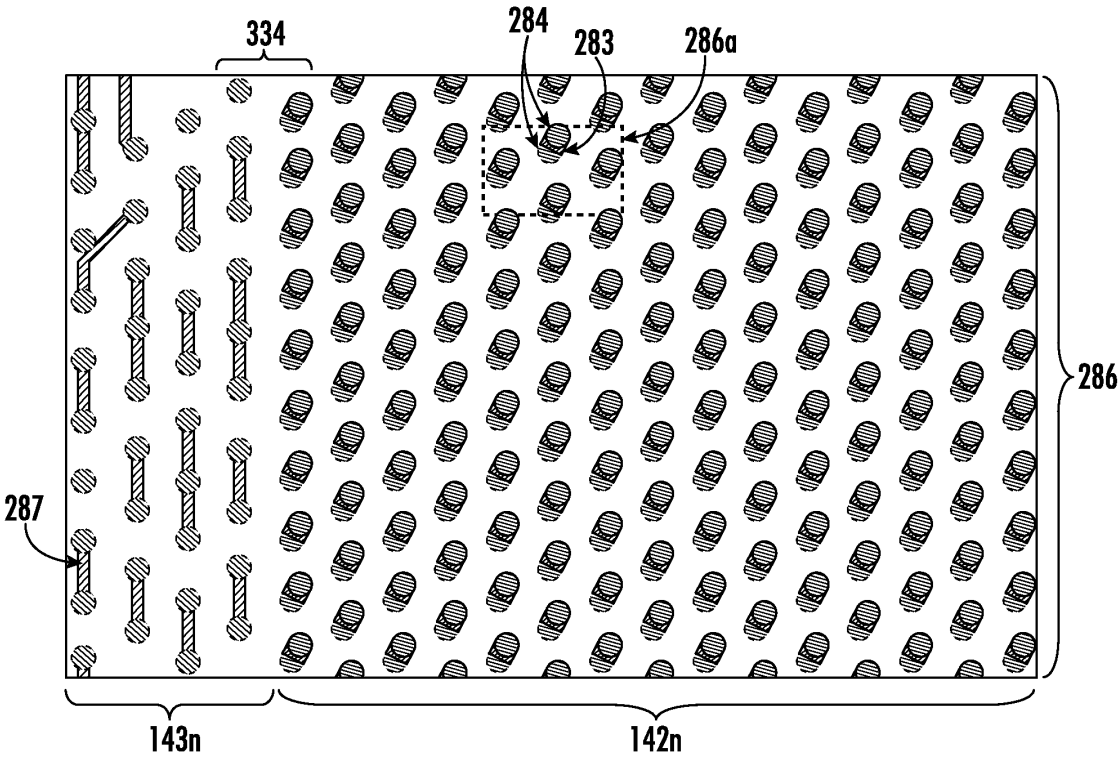


FIG. 12

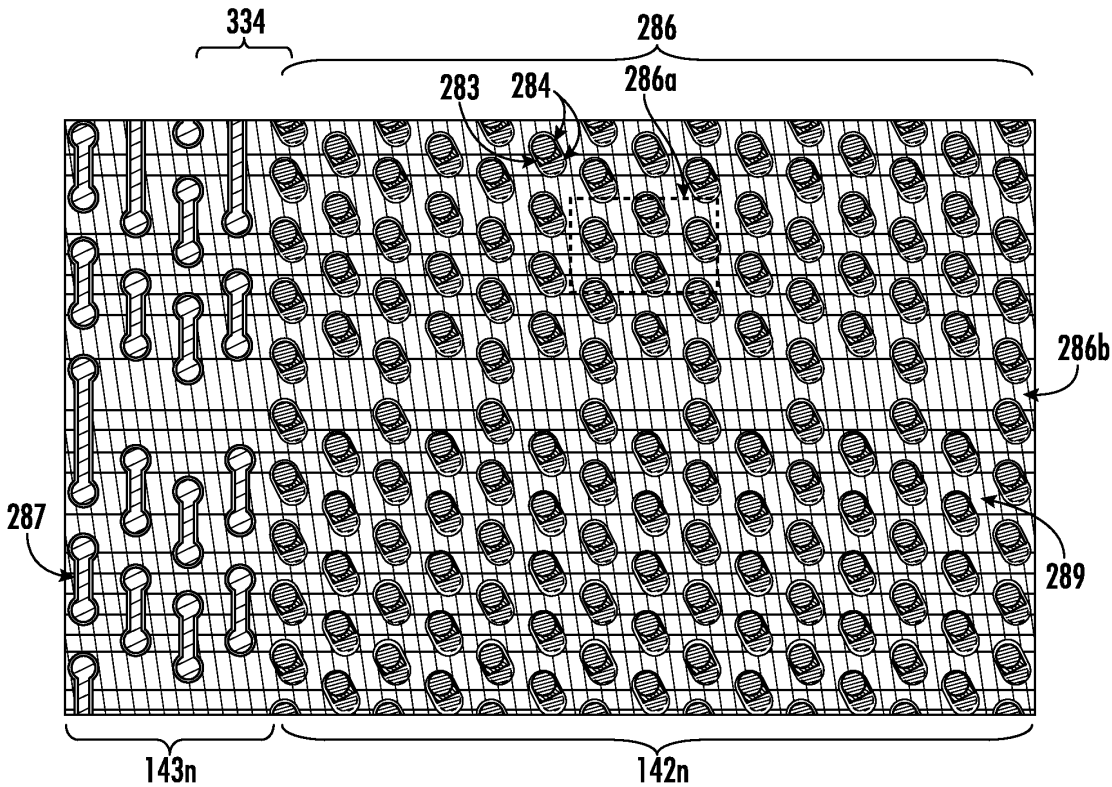


FIG. 13

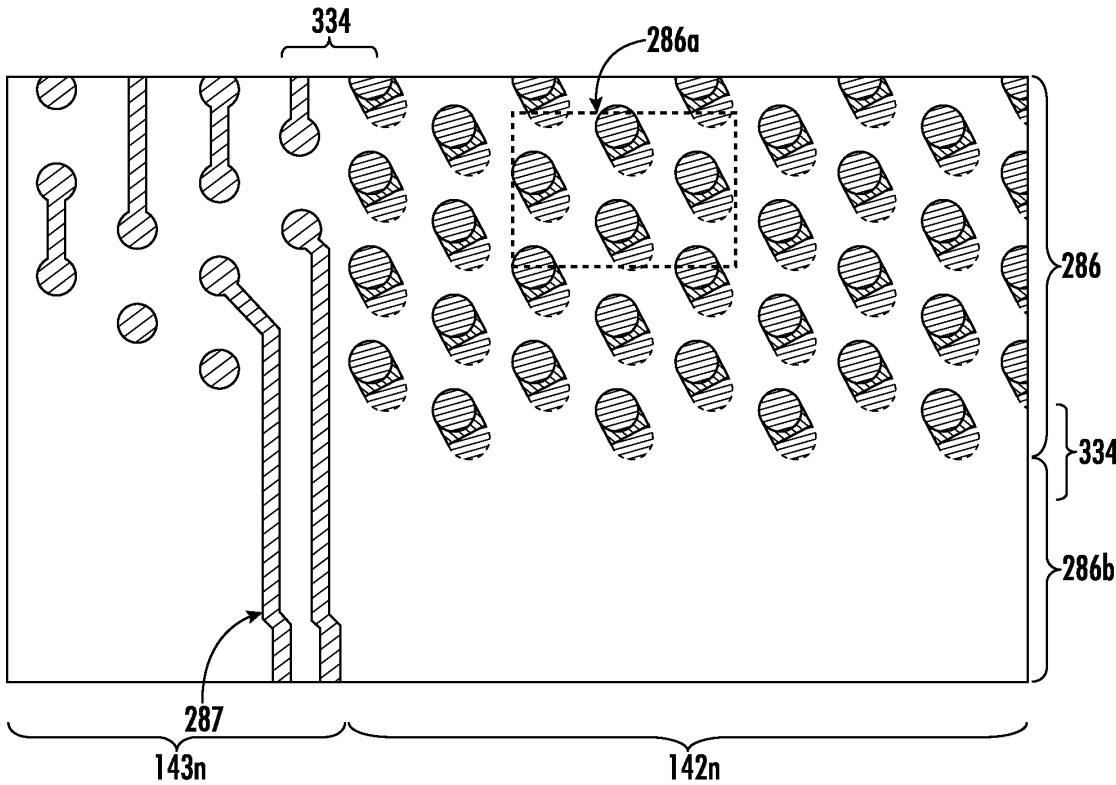


FIG. 14

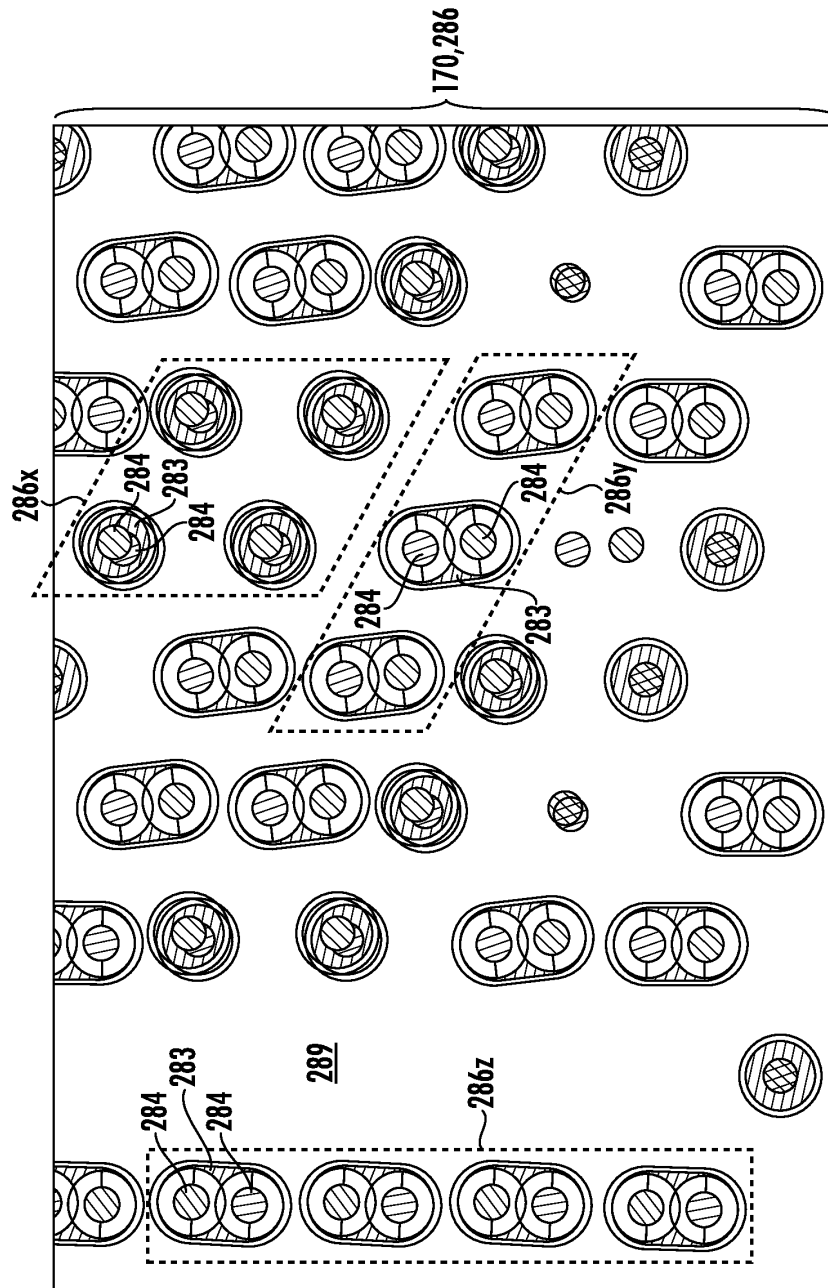


FIG. 15