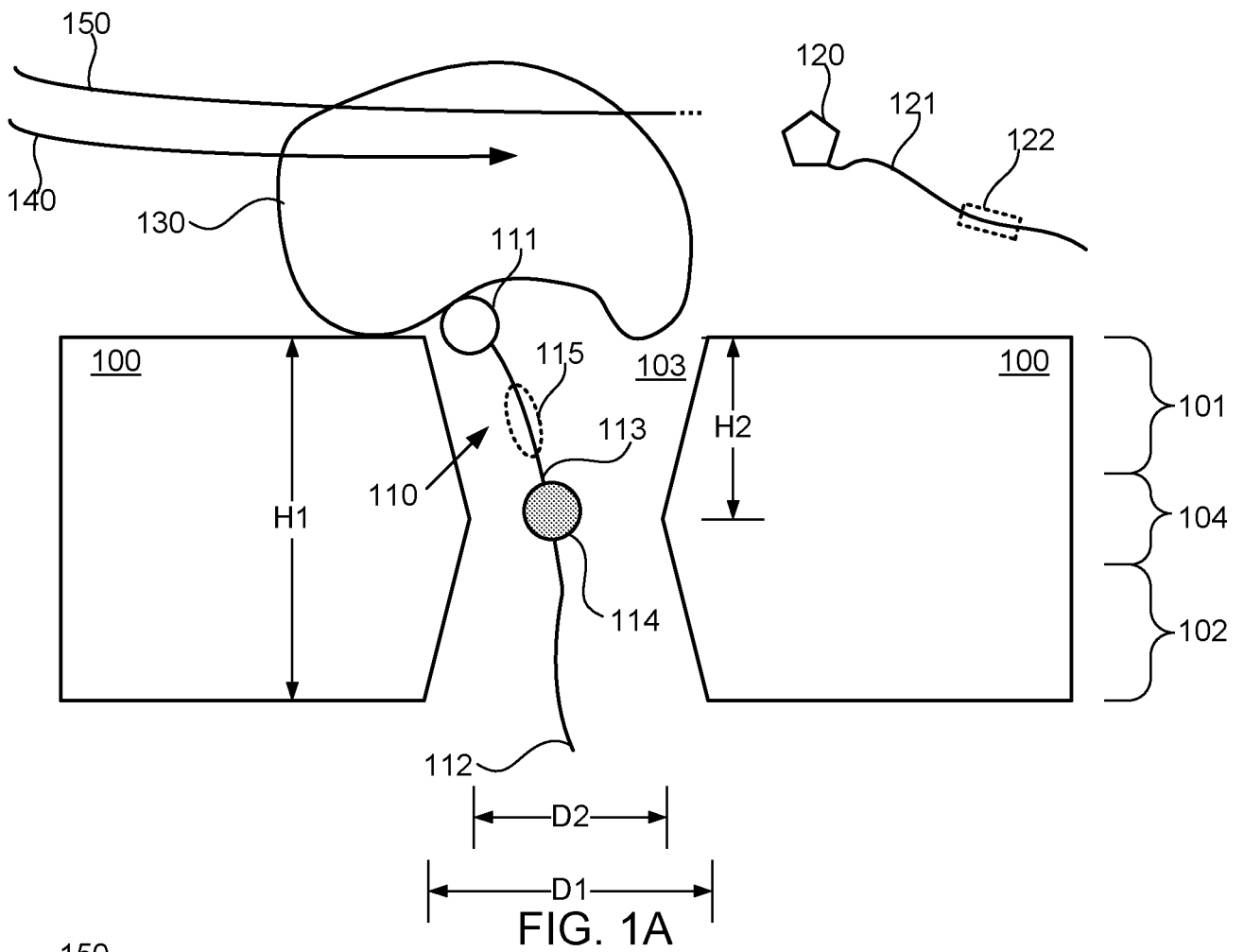
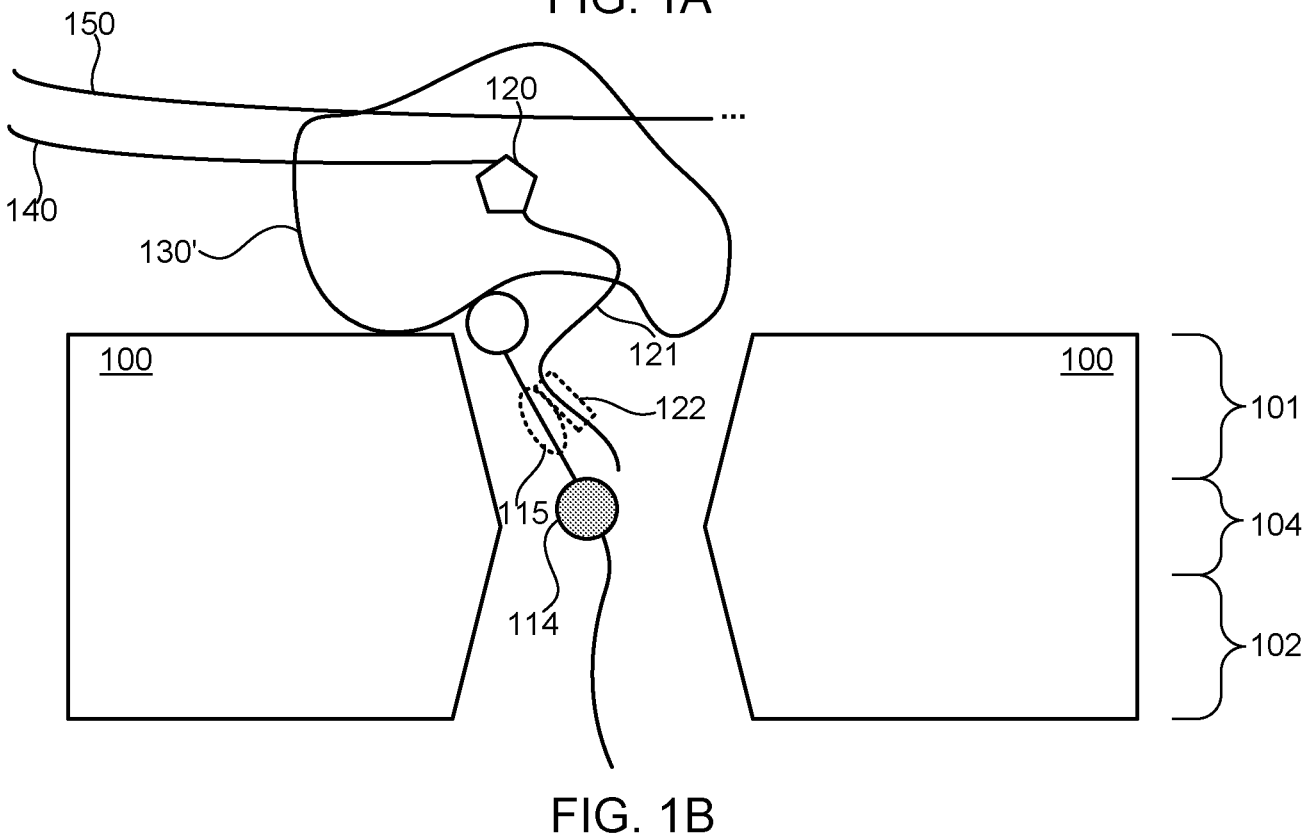


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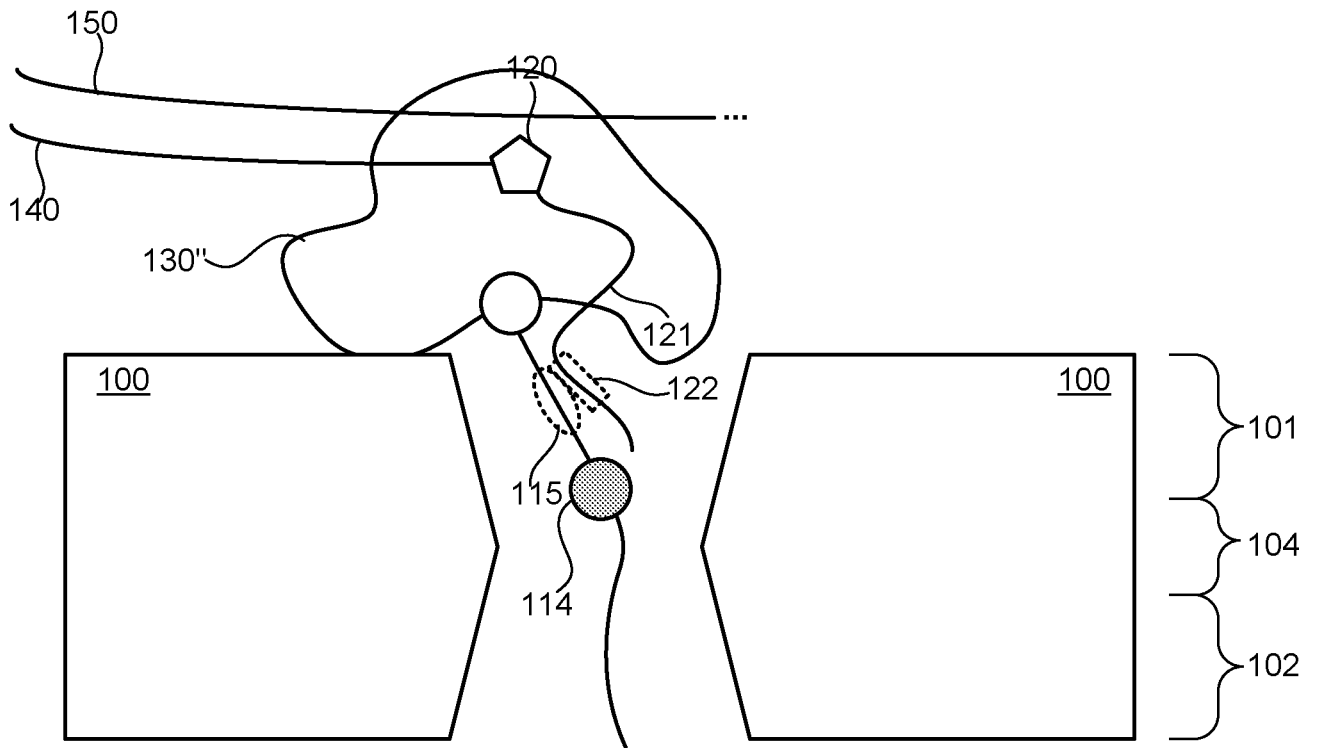


FIG. 1C

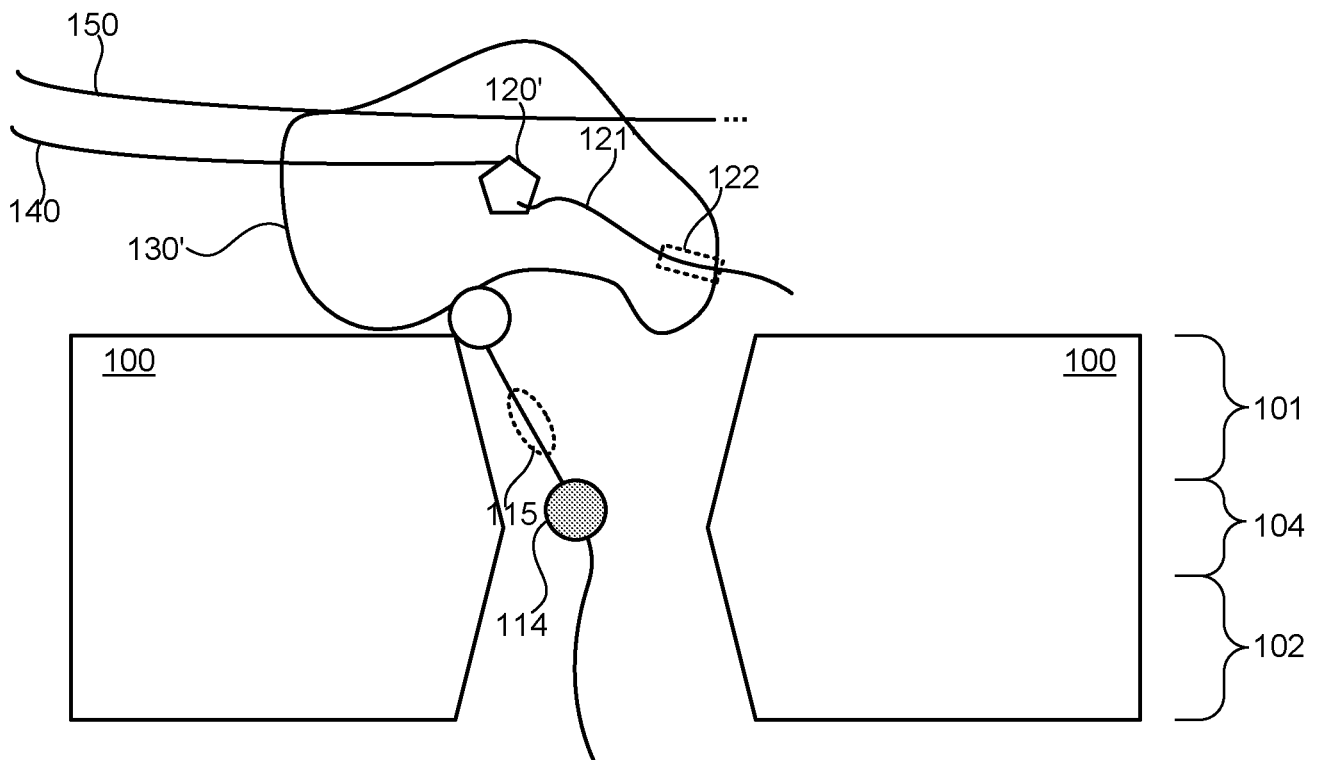
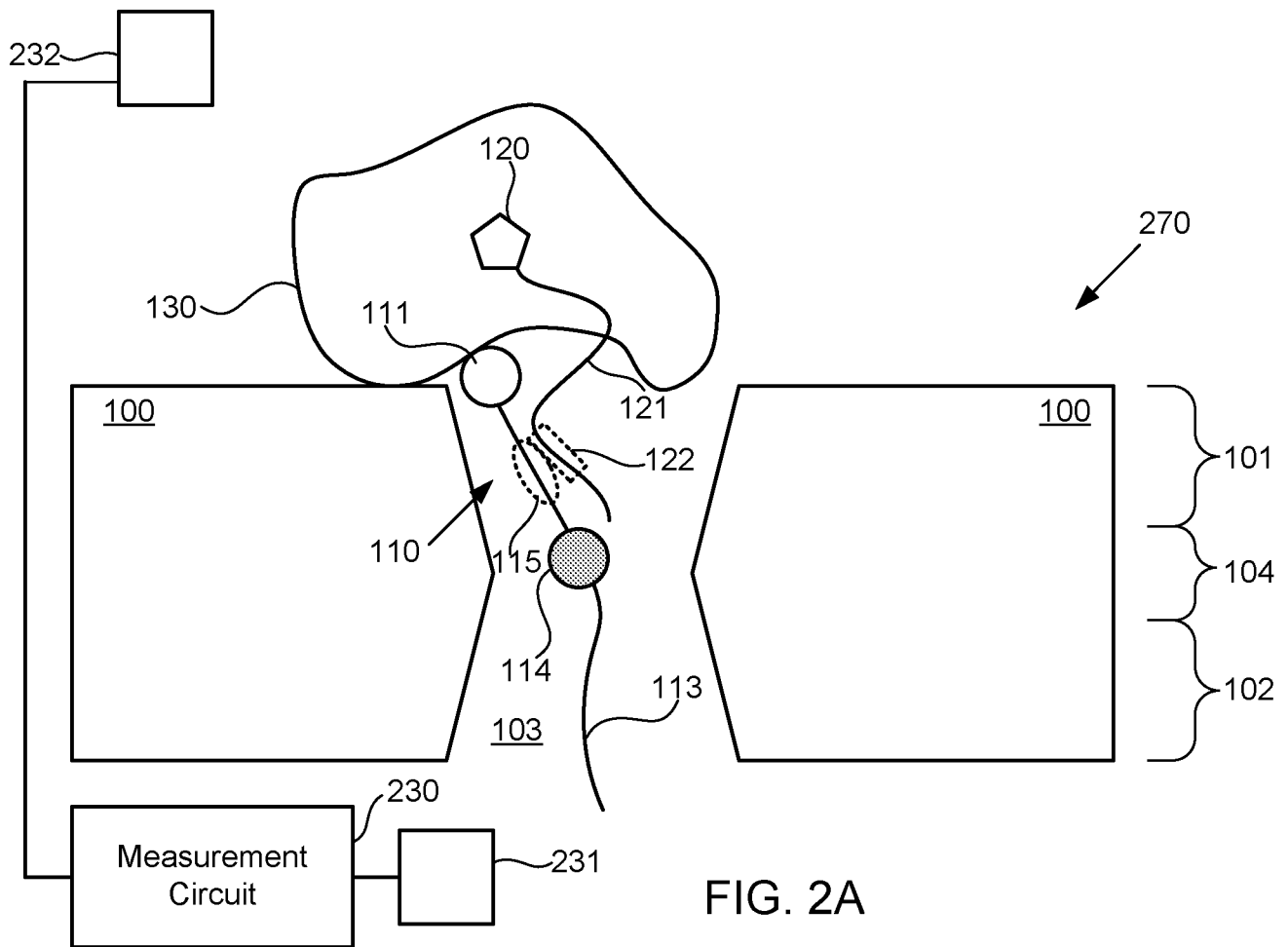
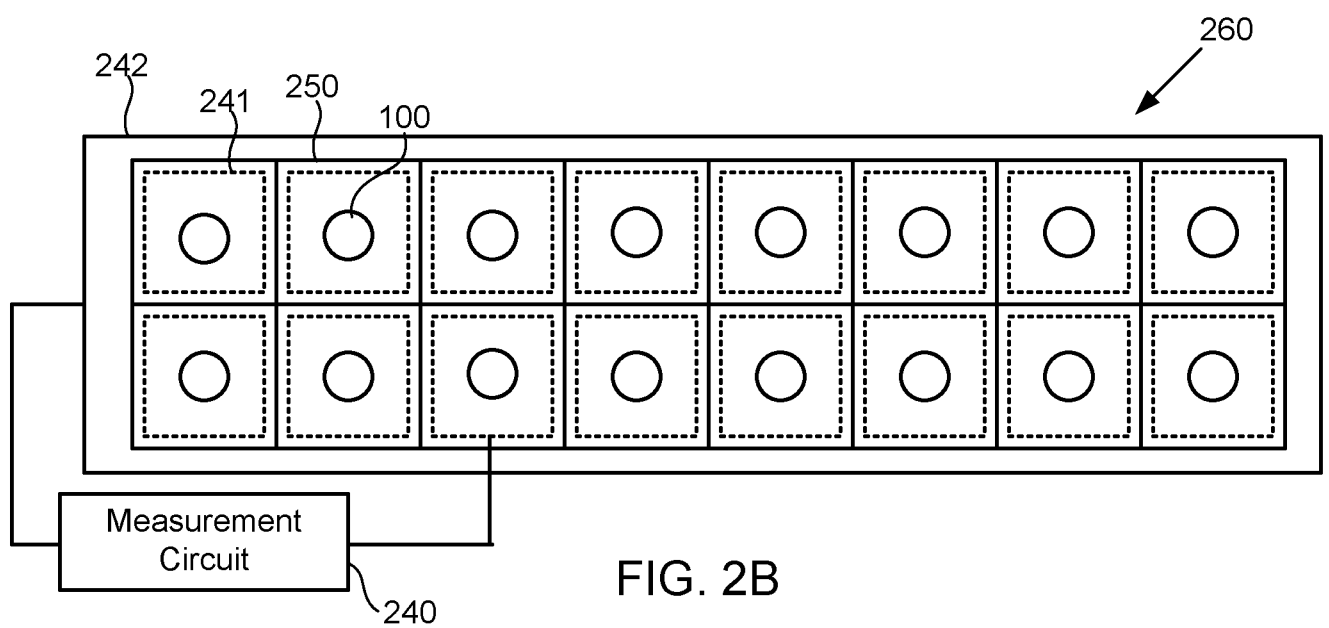


FIG. 1D



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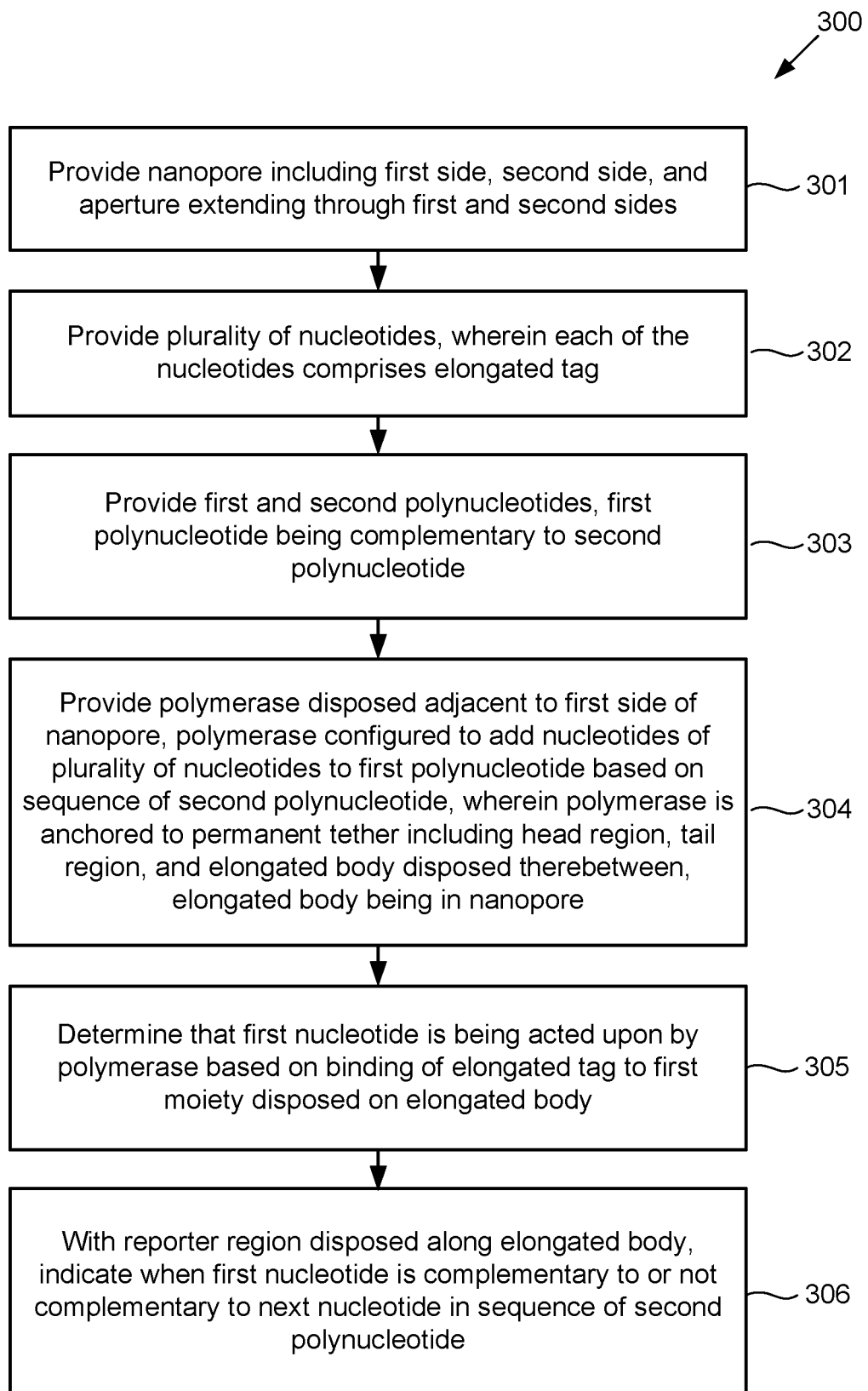


FIG. 3

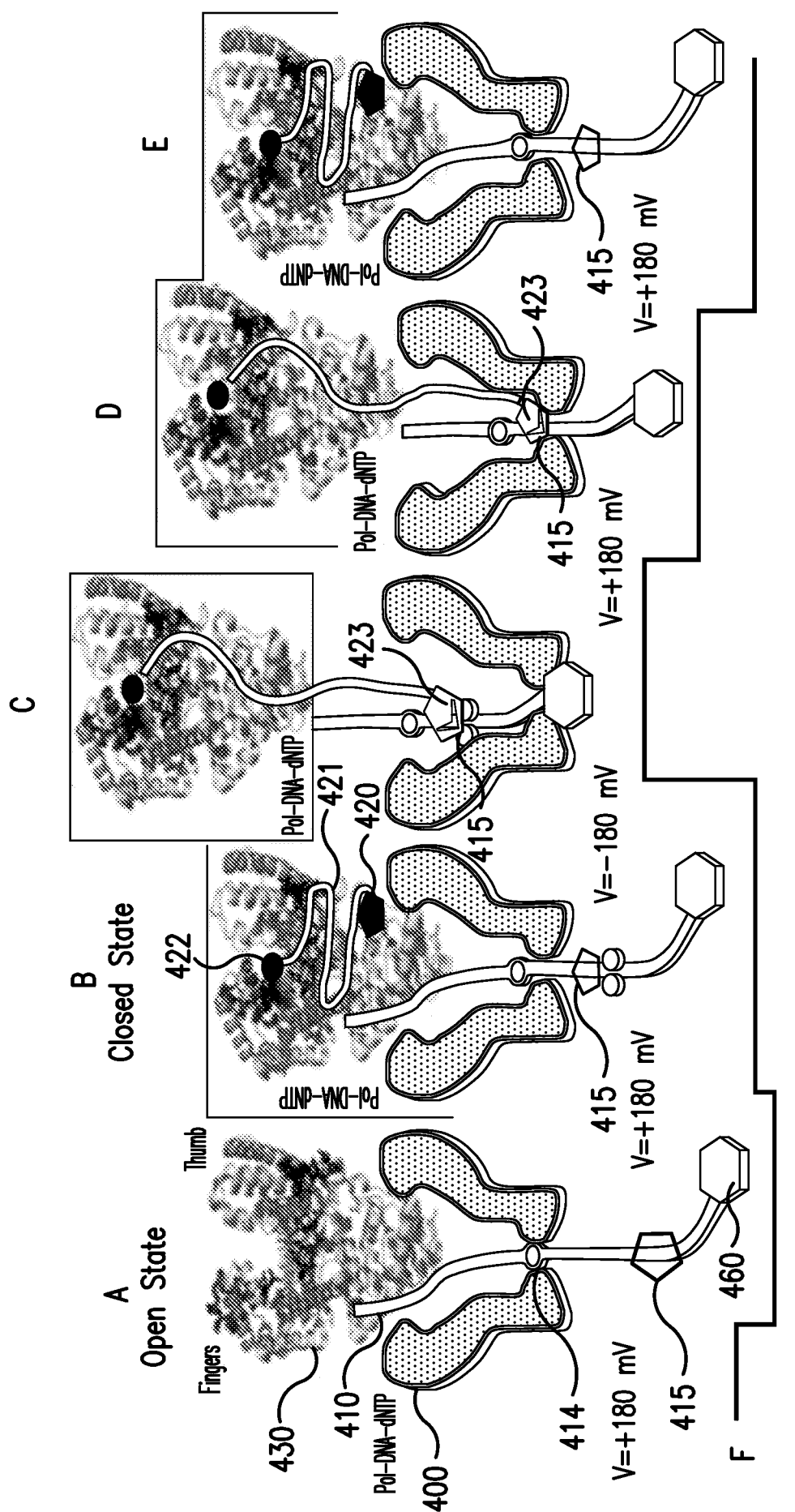


FIG. 4

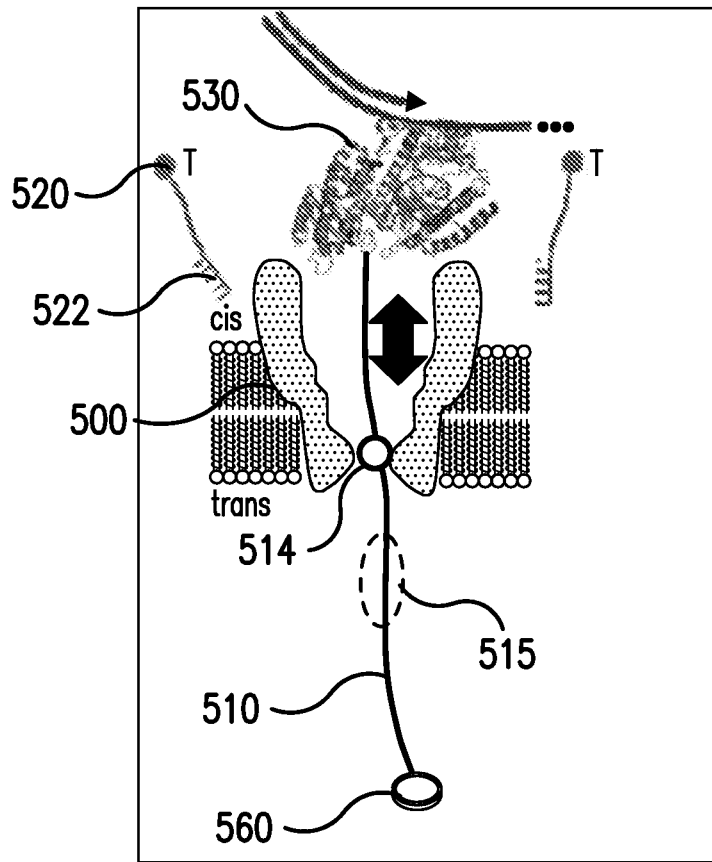


FIG. 5A

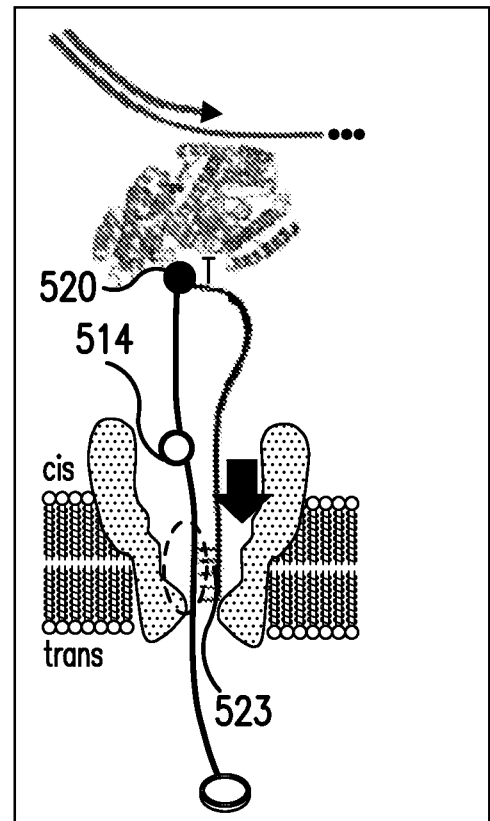


FIG. 5B

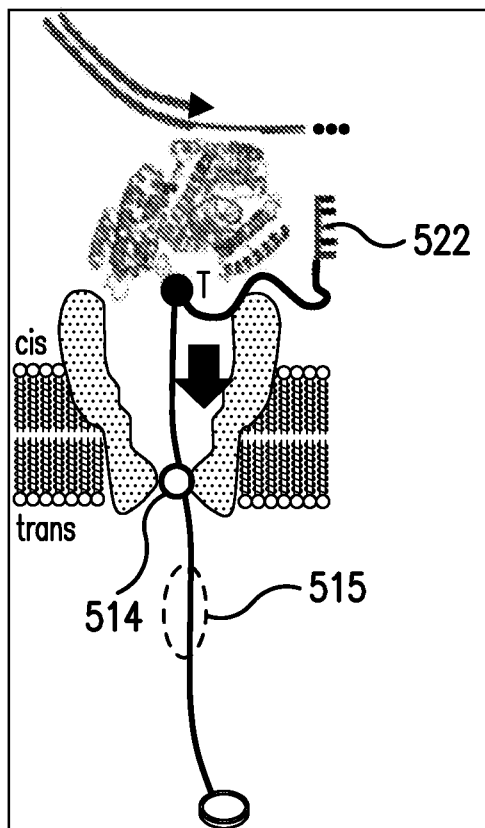


FIG. 5C

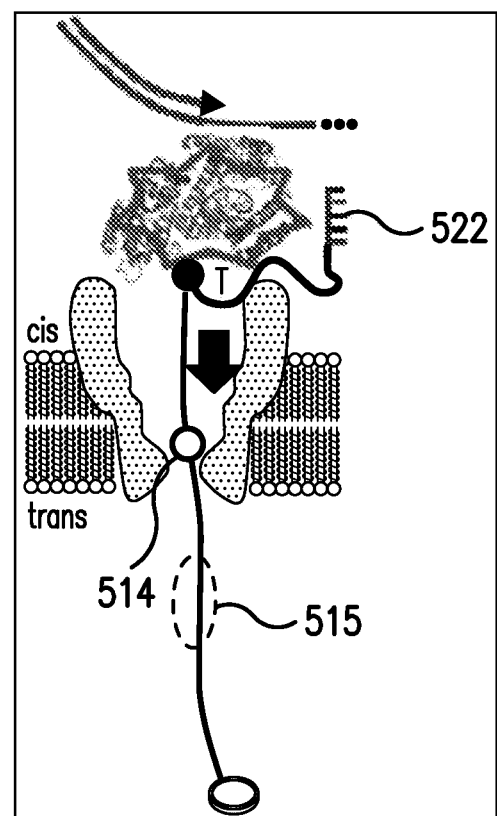


FIG. 5D

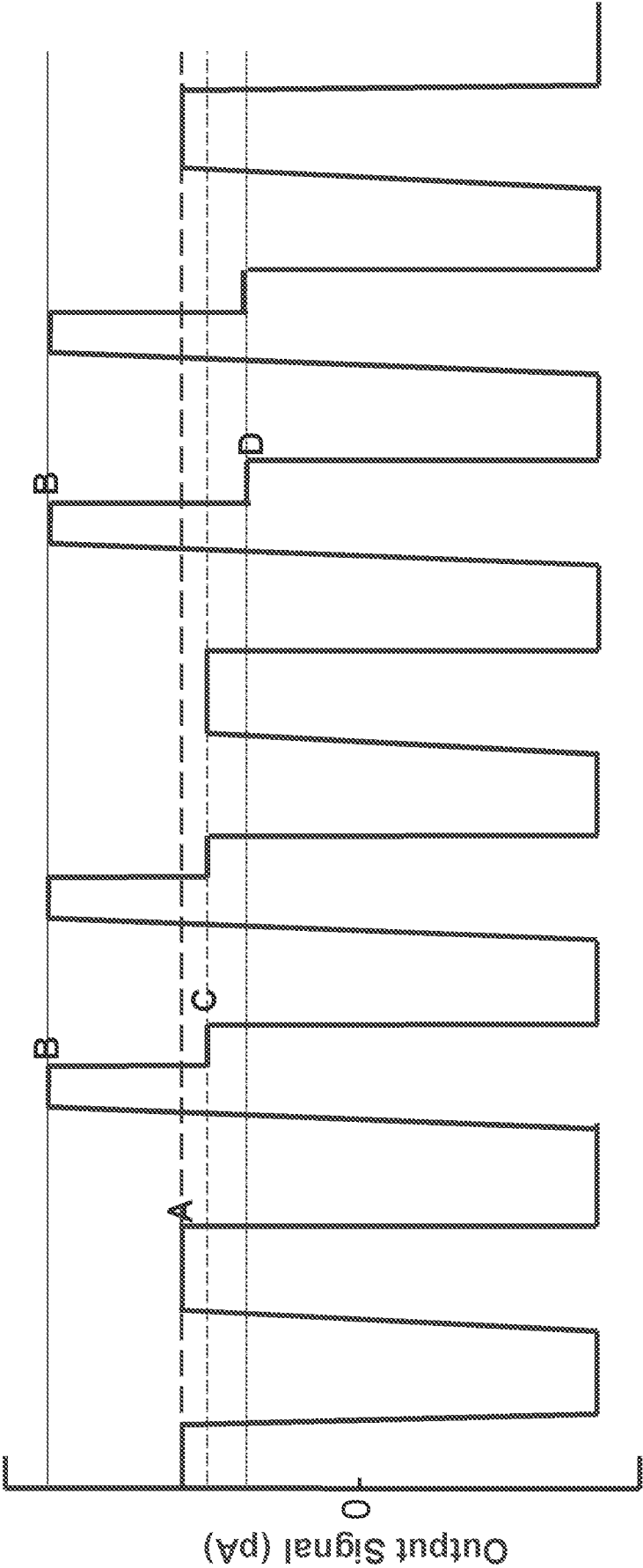
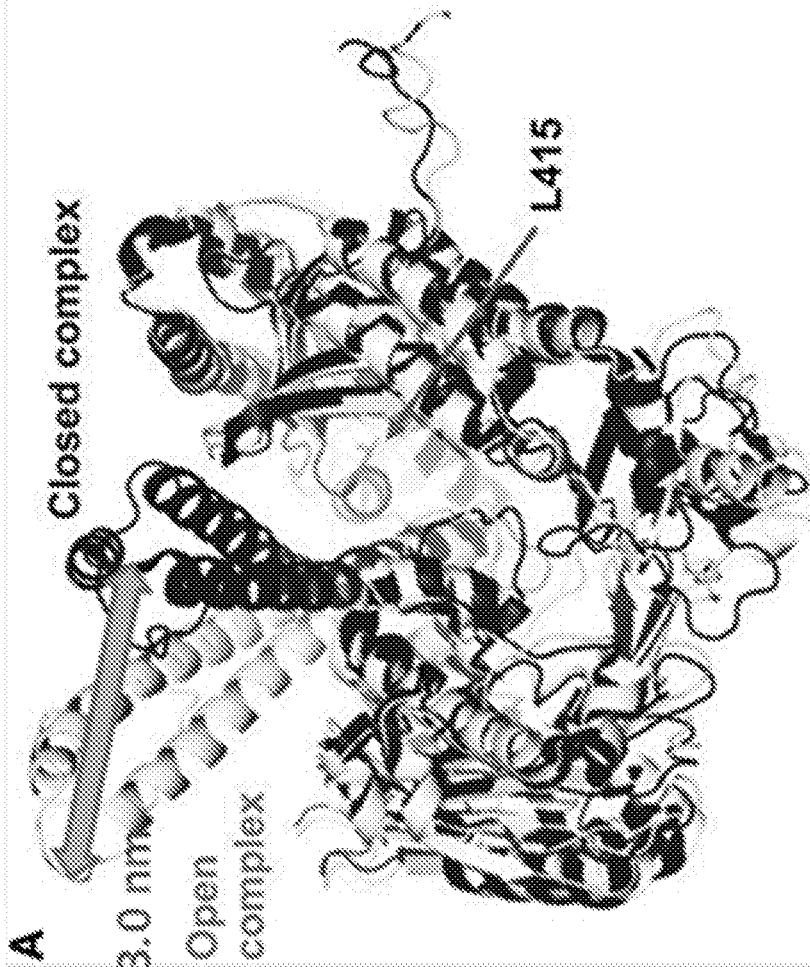


FIG. 6



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FIG. 7A

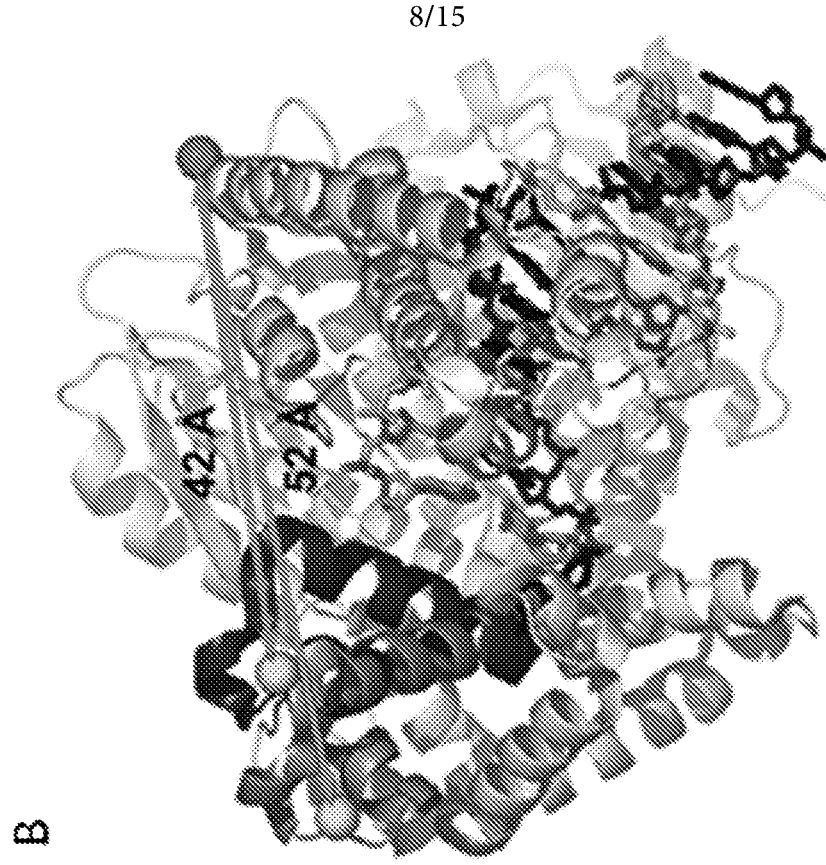


FIG. 7B

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# Open State

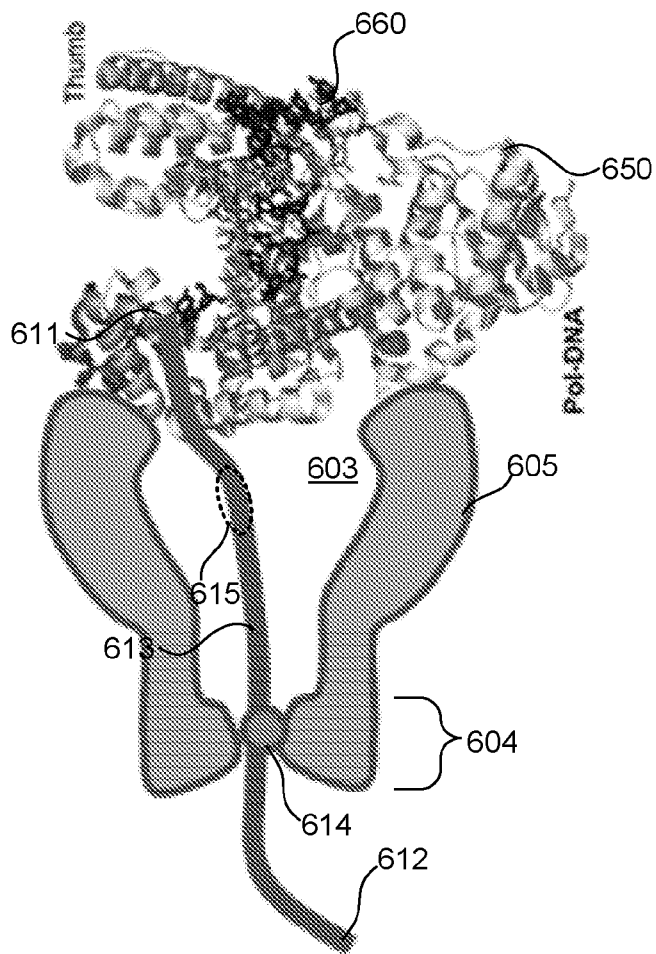


FIG. 7C

# Closed State

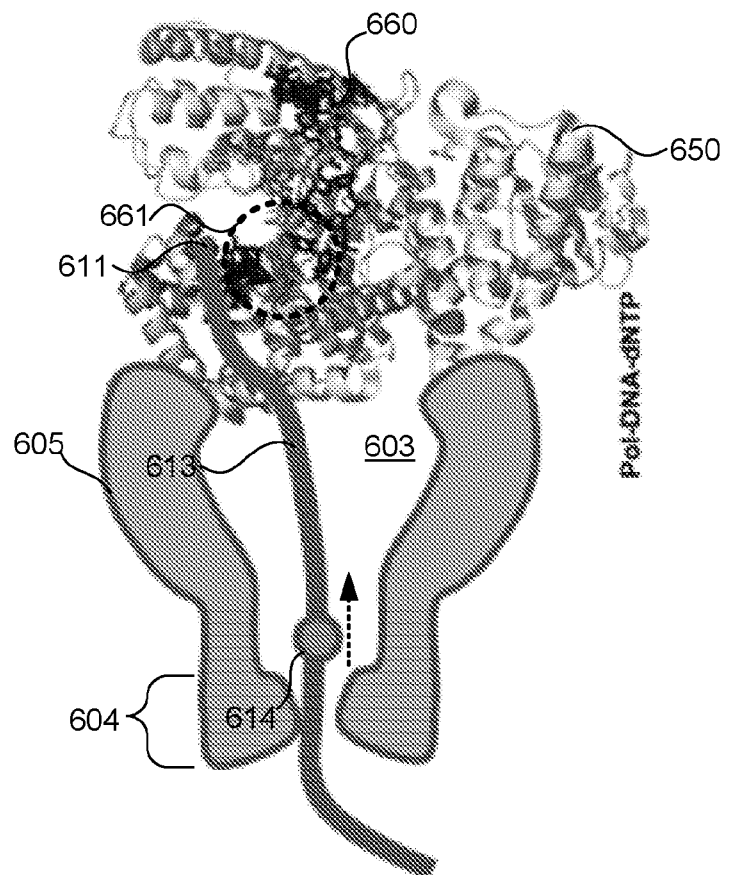
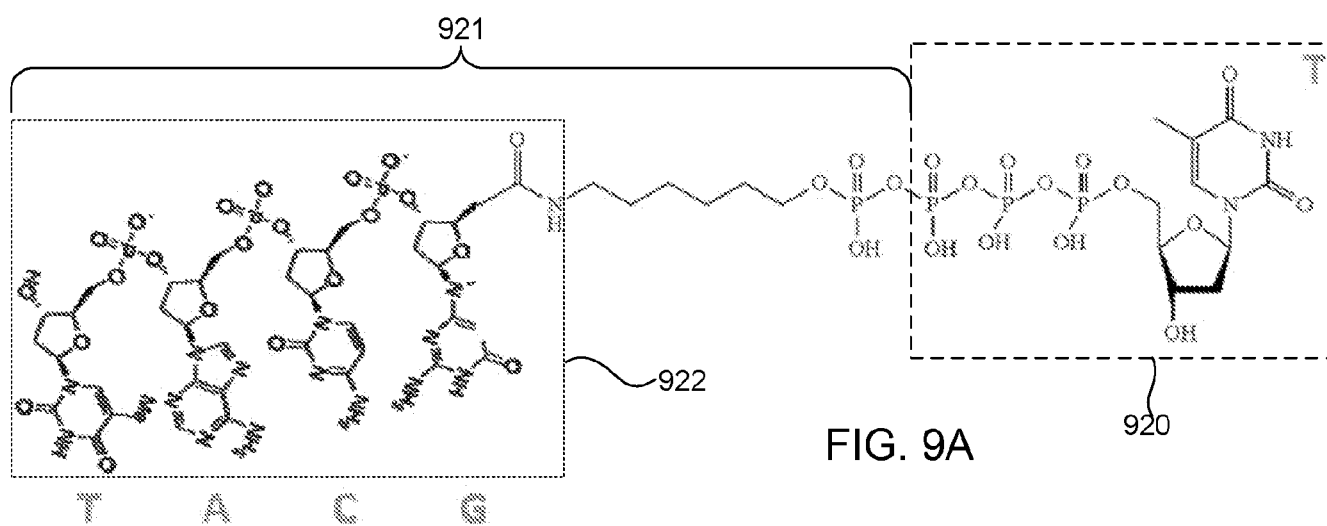


FIG. 7D

|                          | Reaction Parameters                                                                                                                                                                                                                                                                                                                                                  | Tag Dwell Time (usec) |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Reaction Scheme          | $\begin{array}{ccccccc} ED_n + dNTP & \xrightleftharpoons{K_1} & ED_n dNTP & \xrightleftharpoons[k_{-2}]{k_2} & FD_n dNTP & \xrightleftharpoons[k_{-3}]{k_3} & FD_n PP_i \xrightarrow{fast} ED_{n+1} + PP_i \\ \text{open} & & \text{open} & & \text{closed} & & \text{closed} & & \text{open} \end{array}$                                                          | $1/(k_{-2} + k_{-3})$ |
| Perfect Match Nucleotide | $\begin{array}{ccccccc} ED_n + dNTP & \xrightleftharpoons{28 \mu M} & ED_n dNTP & \xrightleftharpoons[1.6 \text{ s}^{-1}]{660 \text{ s}^{-1}} & FD_n dNTP & \xrightleftharpoons[360 \text{ s}^{-1}]{\text{fast}} & FD_n PP_i \xrightarrow{fast} ED_{n+1} + PP_i \\ \text{open} & & \text{open} & & \text{closed} & & \text{closed} & & \text{open} \end{array}$      | 2760                  |
| Mismatch Nucleotide      | $\begin{array}{ccccccc} ED_n + dNTP & \xrightleftharpoons{200 \mu M} & ED_n dNTP & \xrightleftharpoons[420 \text{ s}^{-1}]{220 \text{ s}^{-1}} & GD_n dNTP & \xrightleftharpoons[0.3 \text{ s}^{-1}]{\text{fast}} & GD_n PP_i \xrightarrow{fast} ED_{n+1} + PP_i \\ \text{open} & & \text{open} & & \text{mismatch} & & \text{mismatch} & & \text{open} \end{array}$ | 2380                  |

FIG. 8

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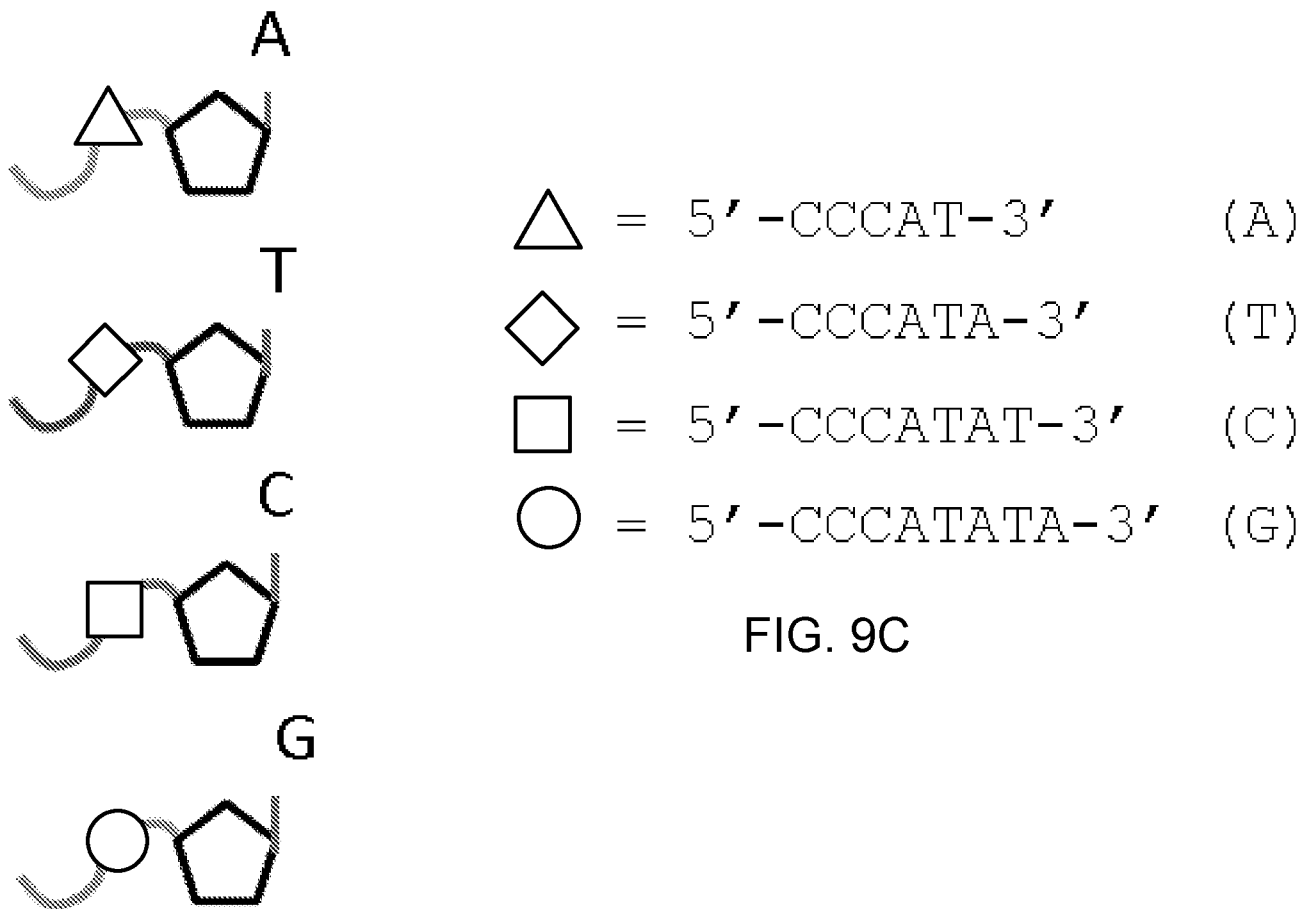


FIG. 9C

FIG. 9B

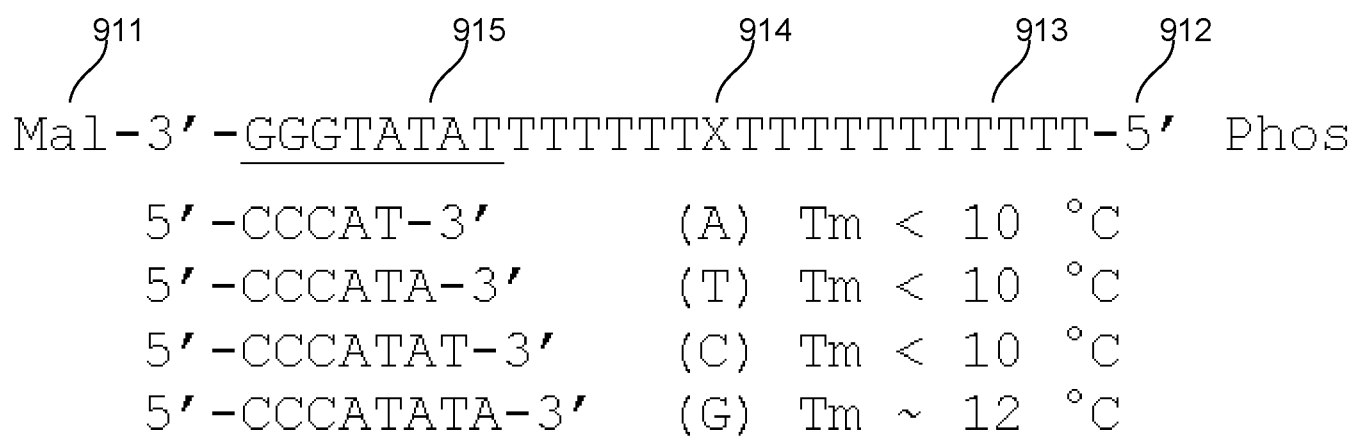
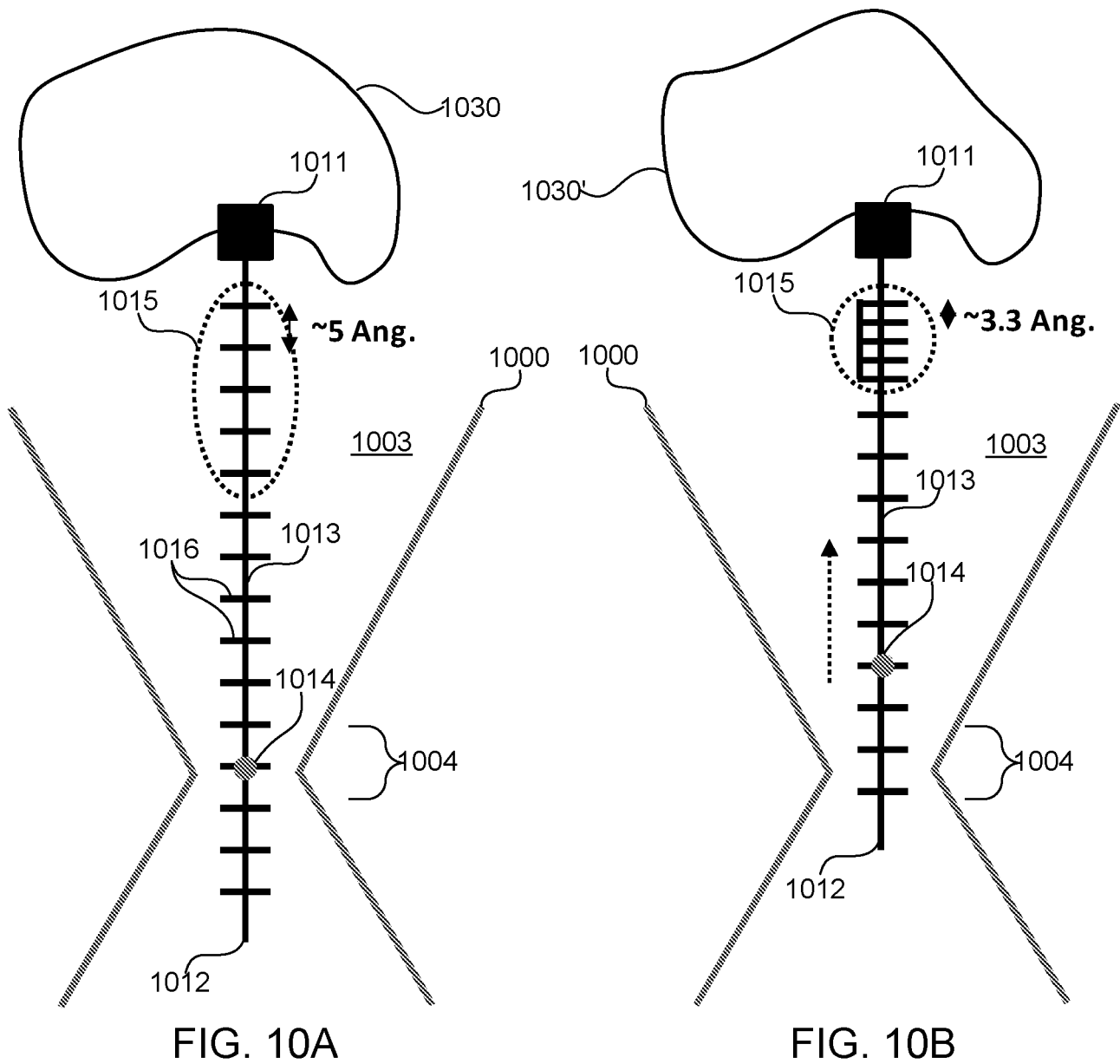


FIG. 9D



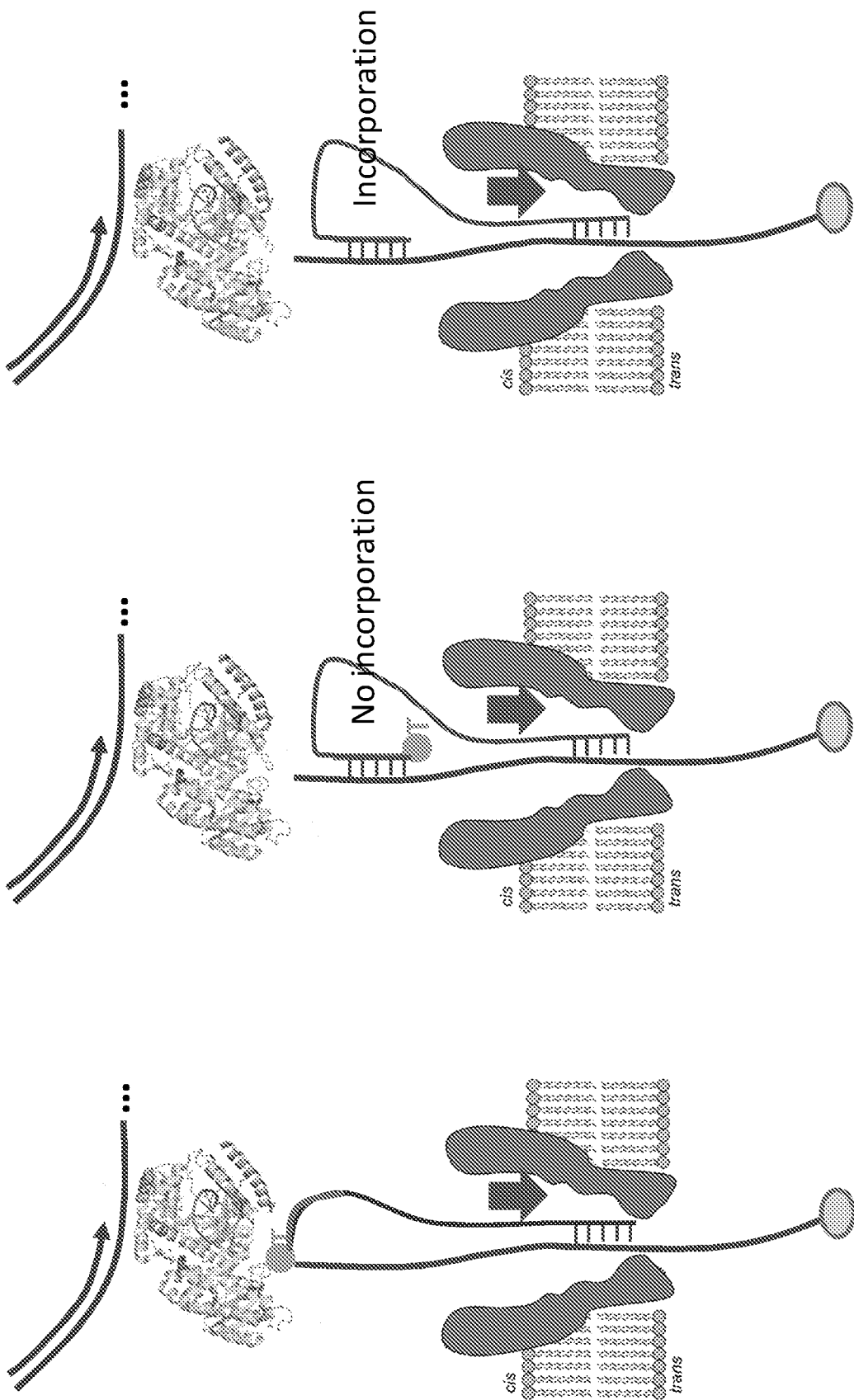


FIG. 11C

FIG. 11B

FIG. 11A

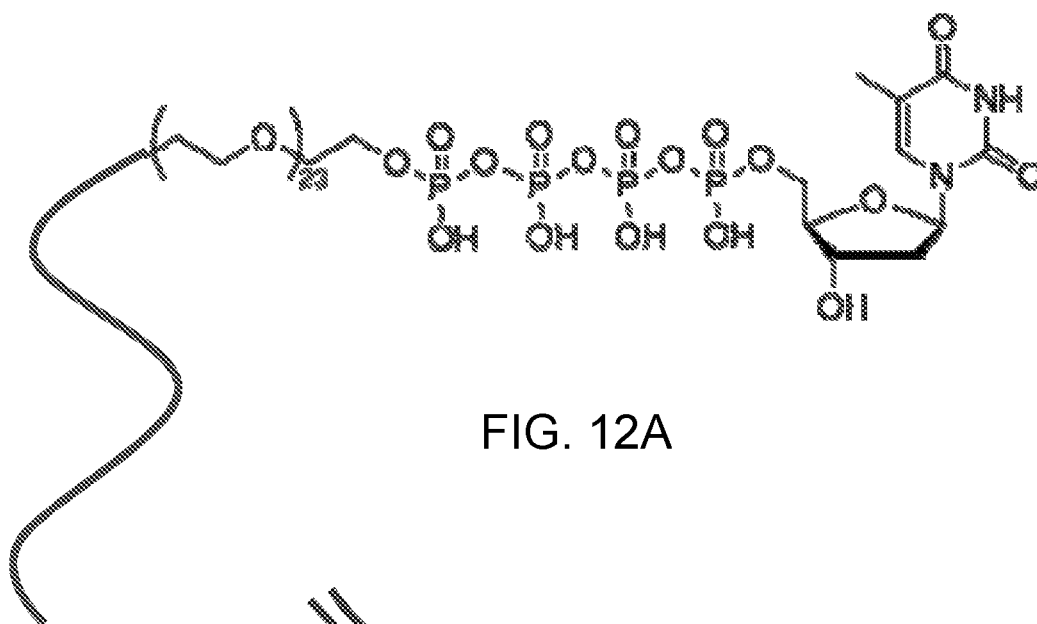


FIG. 12A

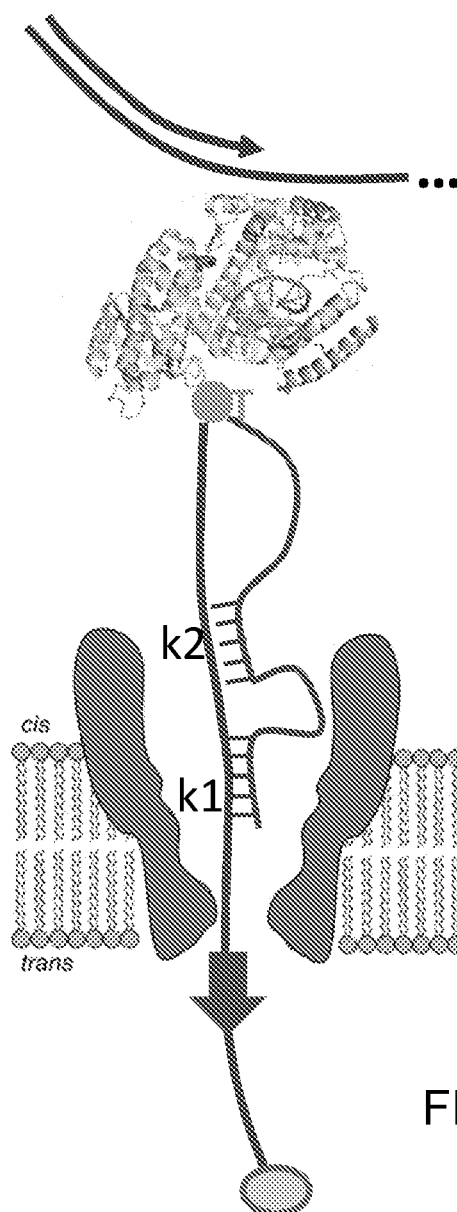


FIG. 12B