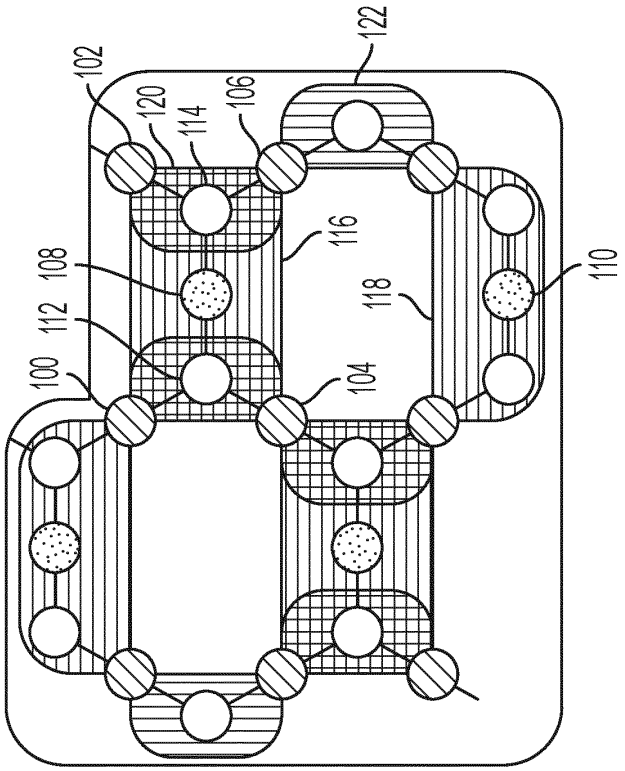

FIG. 1

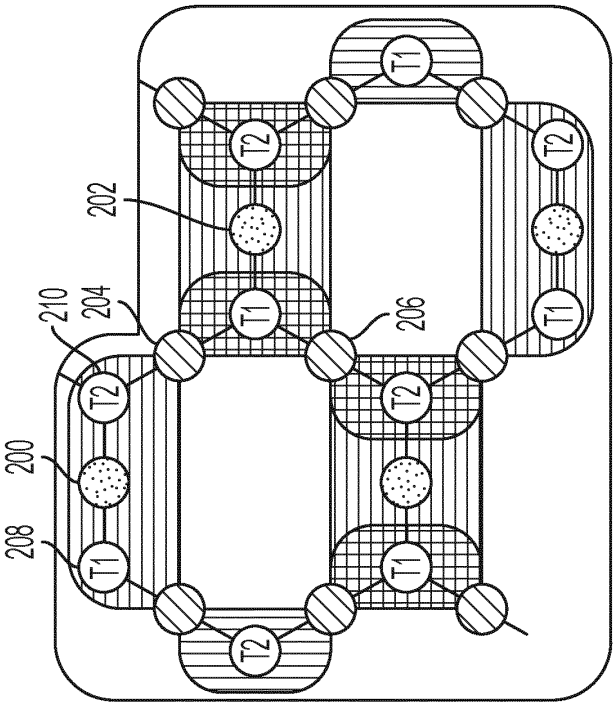

FIG. 2

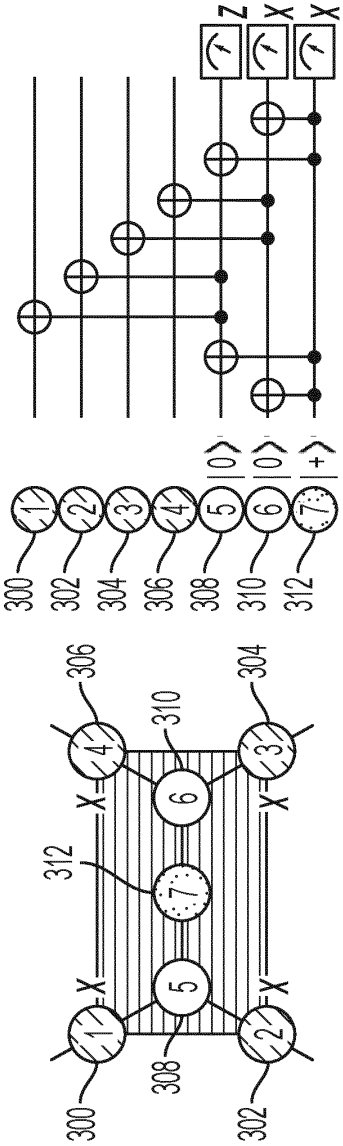
Z
X
X
|0⟩
|0⟩
|+⟩
1
2
3
4
5
6
7
300
302
304
306
308
310
312
X
X
X
X

FIG. 3

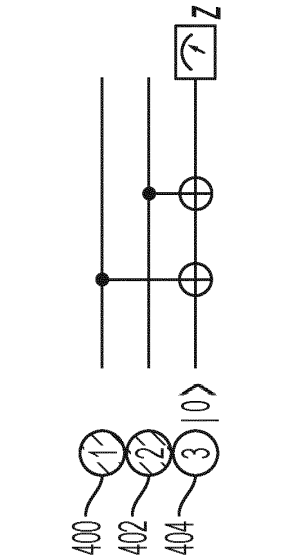
Z
|0⟩
1
2
3
400
402
404
data
Z
Z

FIG. 4

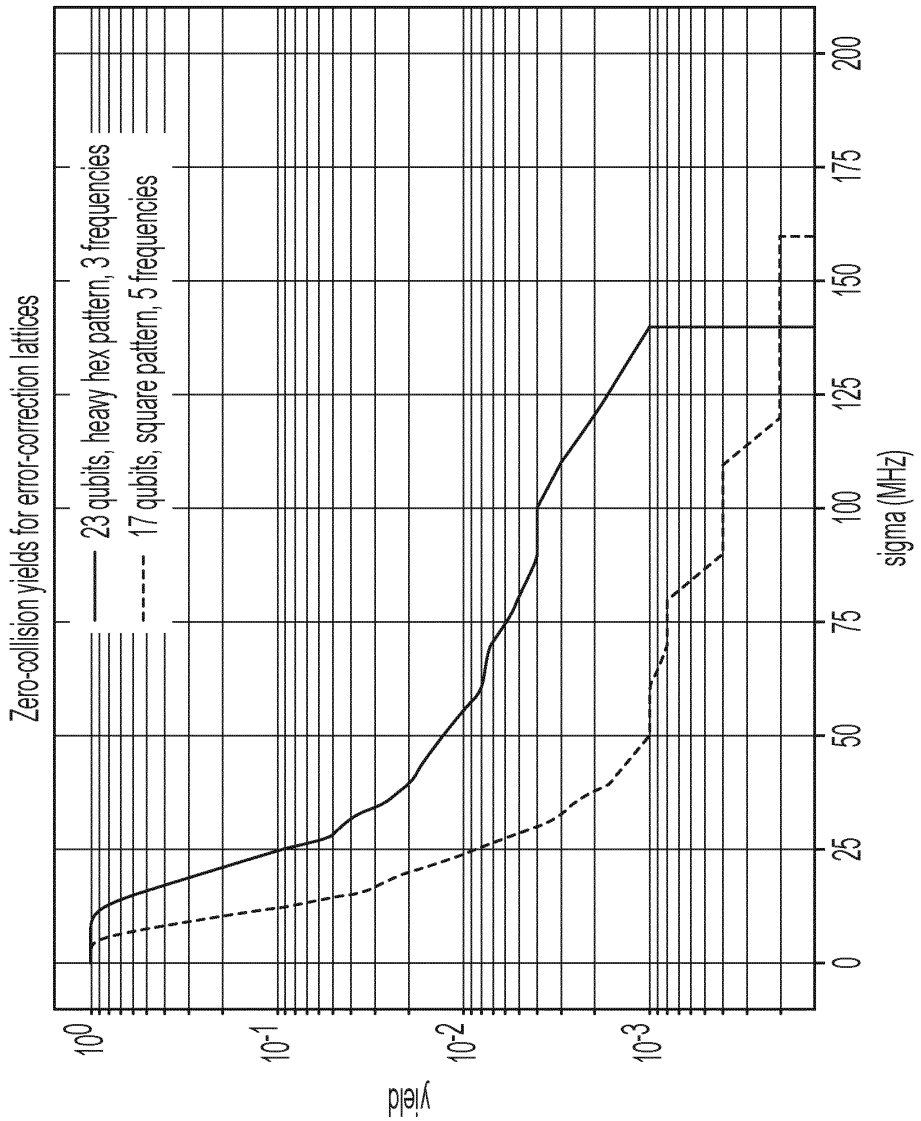
Zero-collision yields for error-correction lattices
23 qubits, heavy hex pattern, 3 frequencies
17 qubits, square pattern, 5 frequencies
yield
10^{0}
10^{-1}
10^{-2}
10^{-3}
0
25
50
75
100
125
150
175
200
sigma (MHz)

FIG. 5

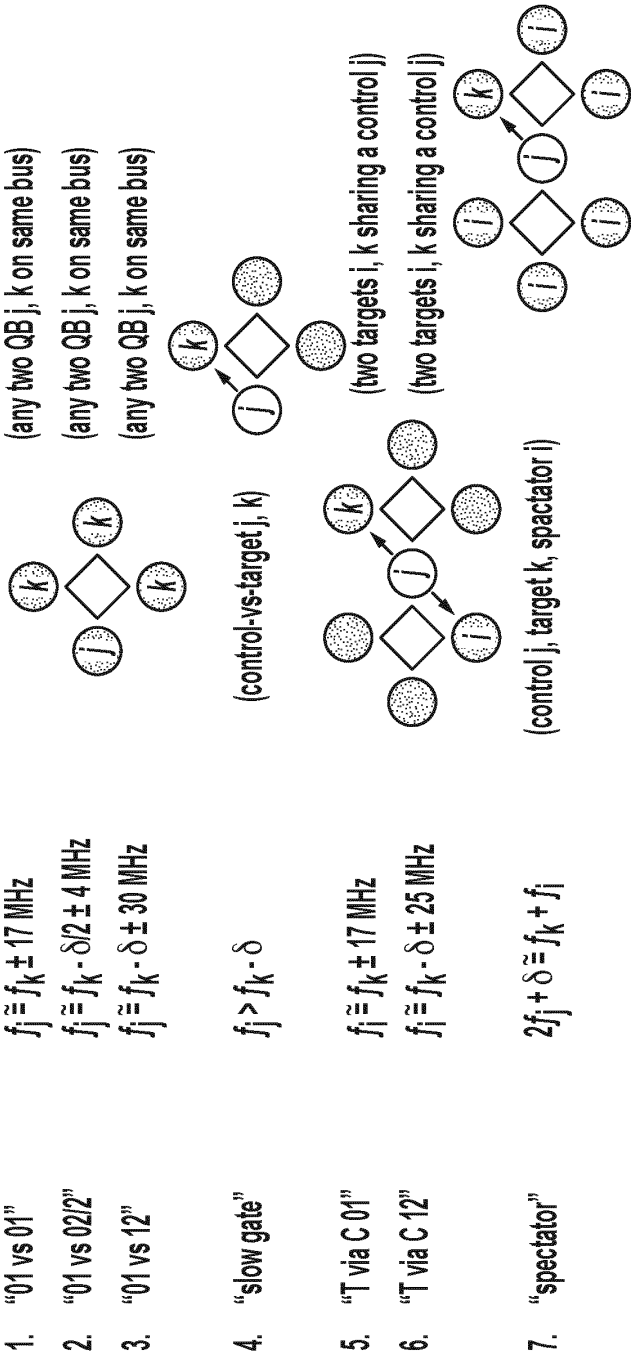
1. "01 vs 01" $f_j \tilde{=} f_k \pm 17$ MHz (any two QB j, k on same bus)
2. "01 vs 02/2" $f_j \tilde{=} f_k - \delta/2 \pm 4$ MHz (any two QB j, k on same bus)
3. "01 vs 12" $f_j \tilde{=} f_k - \delta \pm 30$ MHz (any two QB j, k on same bus)
4. "slow gate" $f_j > f_k - \delta$ (control-vs-target j, k)
5. "T via C 01" $f_i \tilde{=} f_k \pm 17$ MHz (two targets i, k sharing a control j)
6. "T via C 12" $f_i \tilde{=} f_k - \delta \pm 25$ MHz (two targets i, k sharing a control j)
7. "spectator" $2f_j + \delta \tilde{=} f_k + f_i$ (control j, target k, spactator i)

FIG. 6

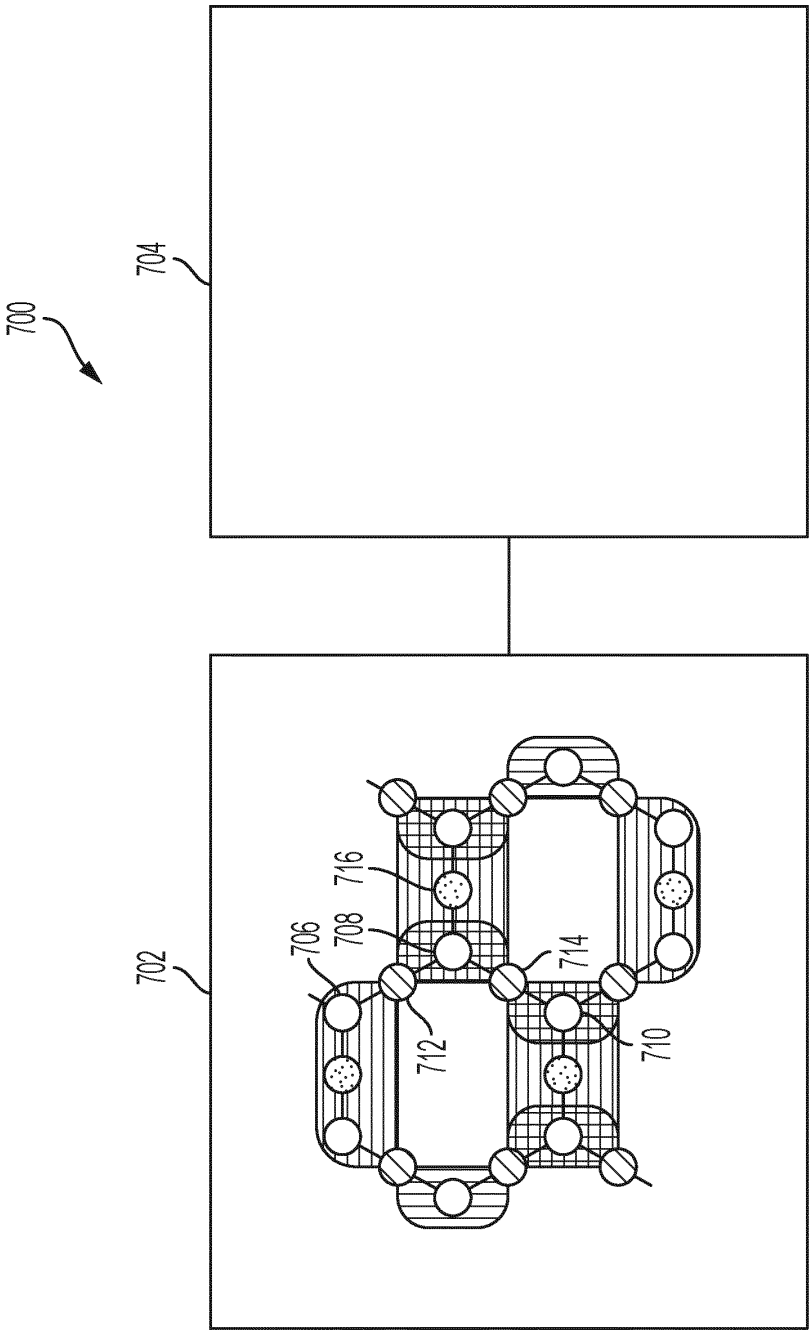

FIG. 7

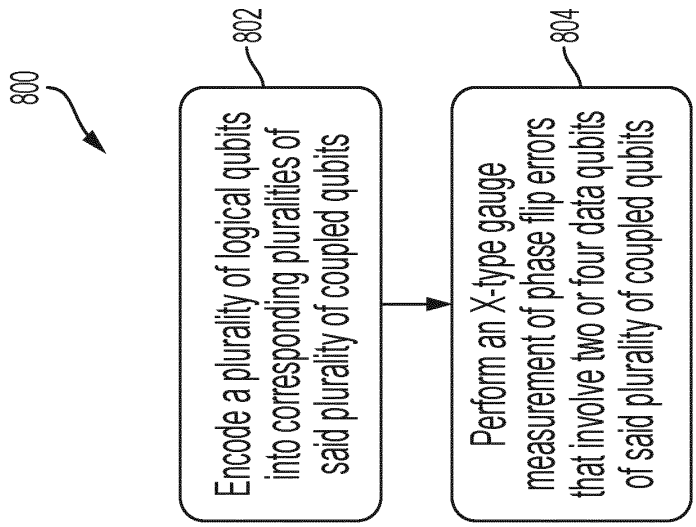
800
802
Encode a plurality of logical qubits into corresponding pluralities of said plurality of coupled qubits
804
Perform an X-type gauge measurement of phase flip errors that involve two or four data qubits of said plurality of coupled qubits

FIG. 8