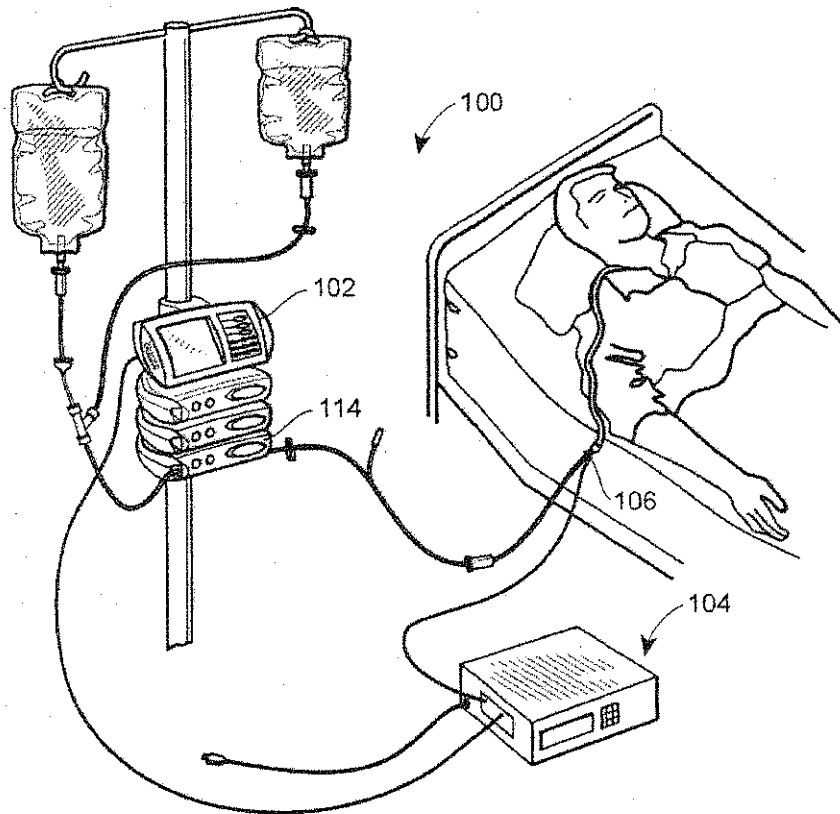


**FIG. 1**

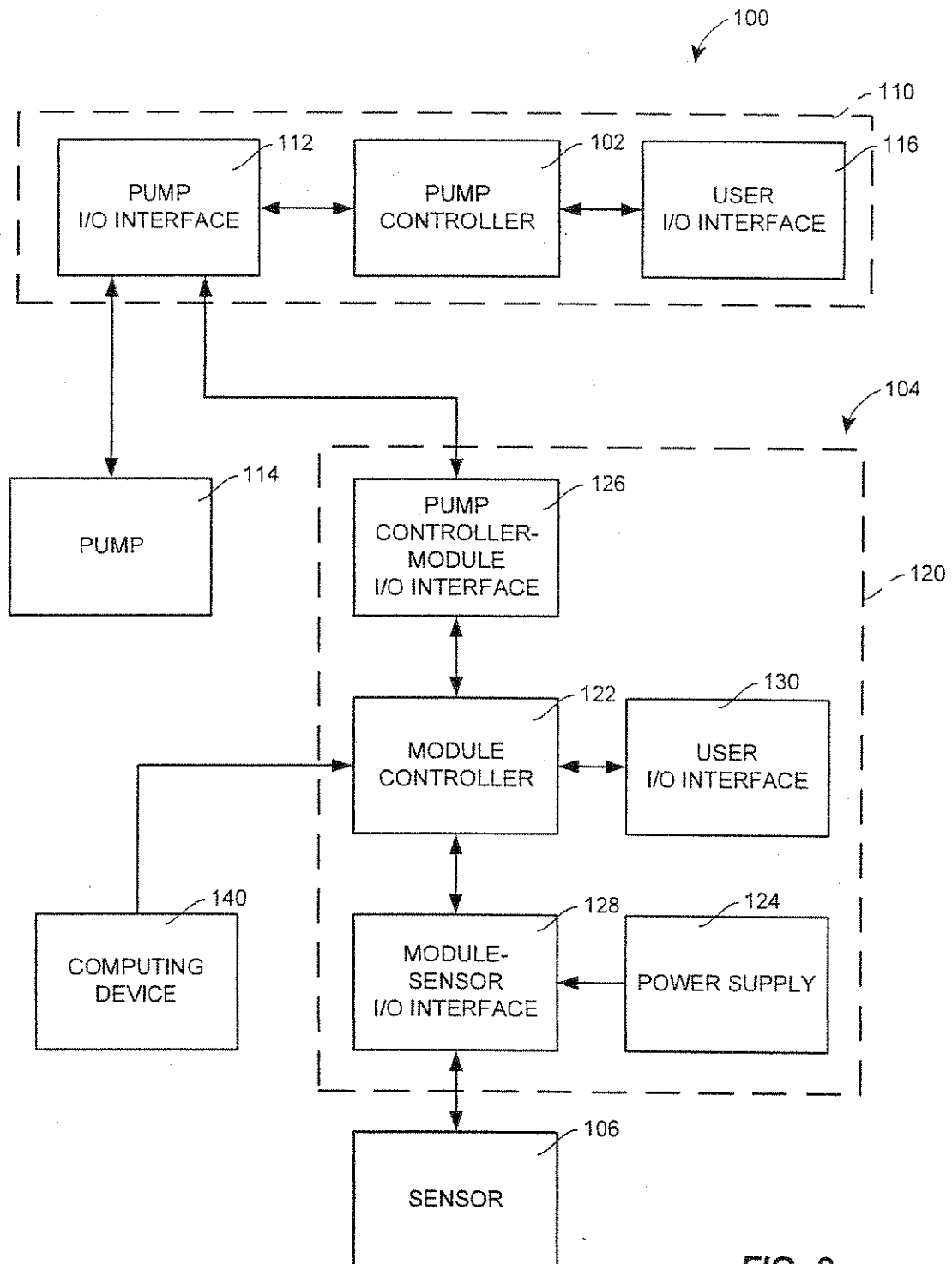
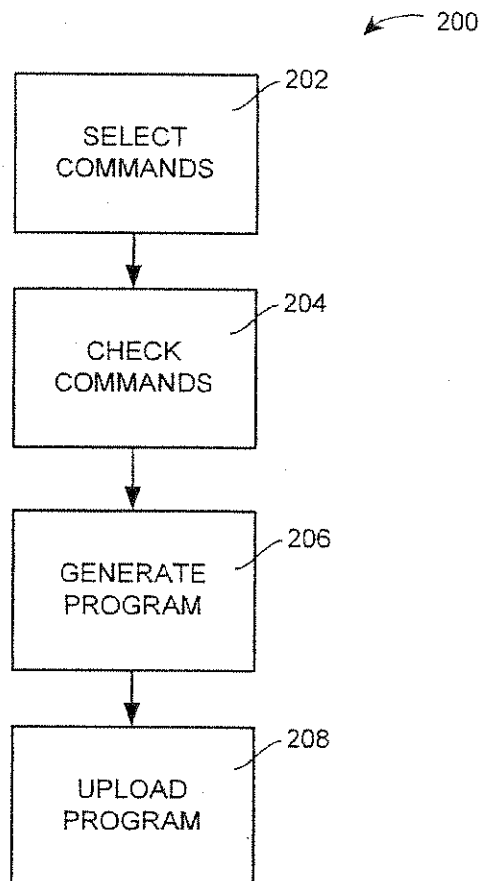


FIG. 2

**FIG. 3**

Therapy Controller

Clinician Control

Display Events: 250

Infusion rate when sensor target reached ☒

Pump History Trending ☒

Flow Rate ☒

Volume Delivered by Infusion ☒

Sensor Target Range

Display Drug Sensitivity ☒
units

Alarm if: 252
Sensor value reaches
Drug Sensitivity changes by more than

Closed Loop Control

Stop infusion if sensor value reaches

Maximize infusion if sensor value reaches

Linear PID 230
Proportional Factor 240
Integral Factor 242
Derivative Factor 244
Display Bode Plots and Stability Criteria ☒ 232

Non-linear Control 234

Model Predictive Control 236
Optimize for

Adaptive Control 238

Fuzzy Logic

Sensor Configuration

Input 260

Voltage ☒
units

Current ☐
units

Impedance ☐
units

Display sensor data 262

Amplified ☒
Unamplified ☐

Filtered ☒
Unfiltered ☐

Signal Gain 264

Sensor Signal Filtering

Low Pass Filter 270

5 pole filter at Hz

4 pole filter at Hz

3 pole filter at Hz

2 pole filter at Hz

1 pole filter at Hz

High Pass Filter 272

5 pole filter at Hz

4 pole filter at Hz

3 pole filter at Hz

2 pole filter at Hz

1 pole filter at Hz

Band Pass Filter 274

pole filter at Hz and

pole filter at Hz

Fast Fourier Transform 276
Use frequency spectrum to:

Cooley-Tukey

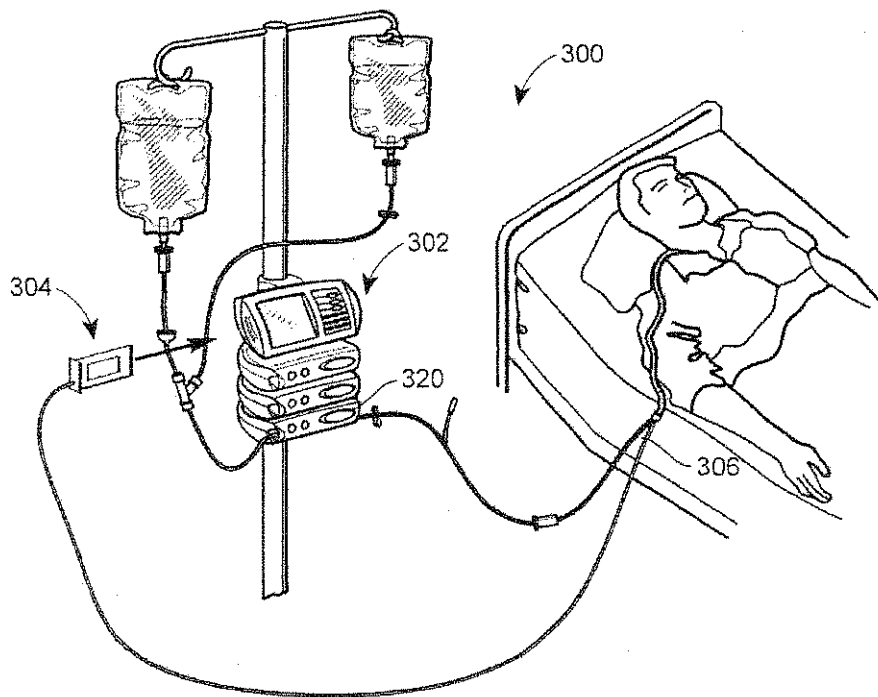
Prime-factor FFT algorithm

Brun's FFT algorithm

Rader's FFT algorithm

Bluestein's FFT algorithm

FIG. 4

**FIG. 5**

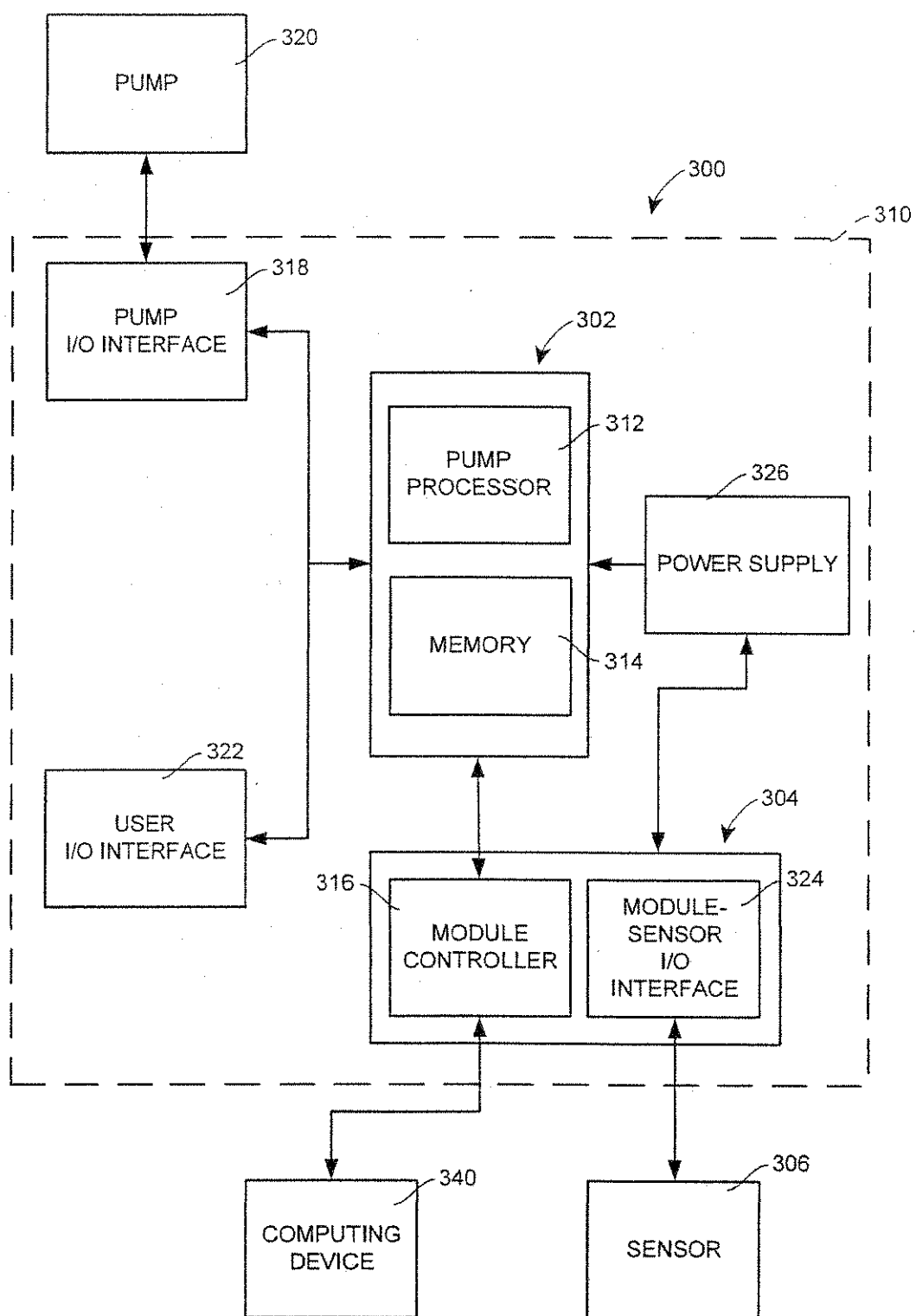
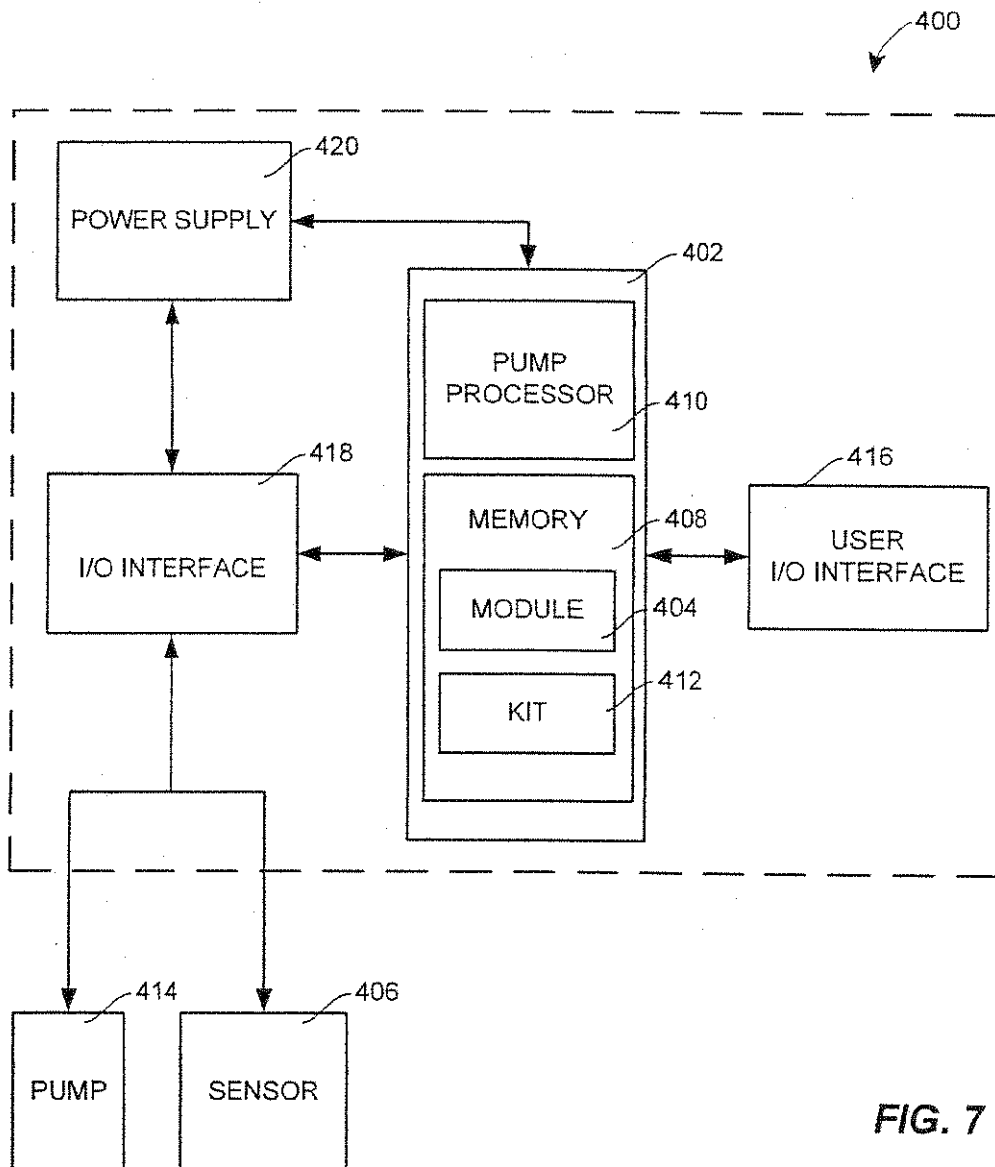
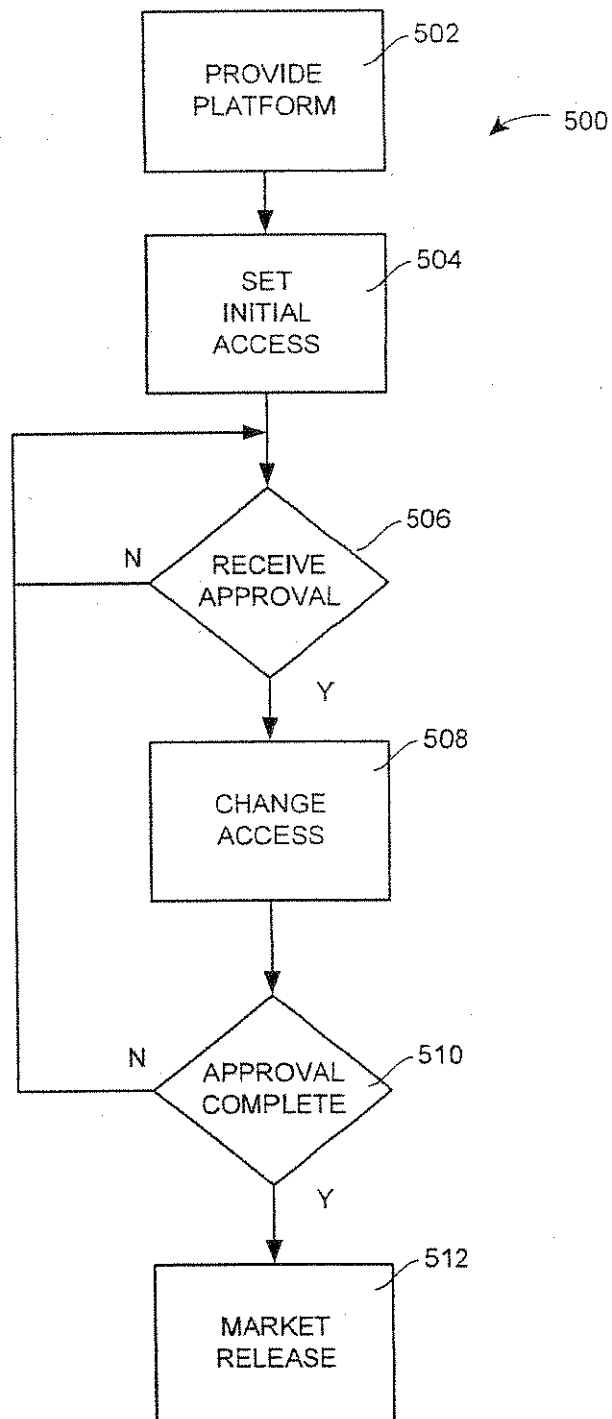


FIG. 6



**FIG. 8**

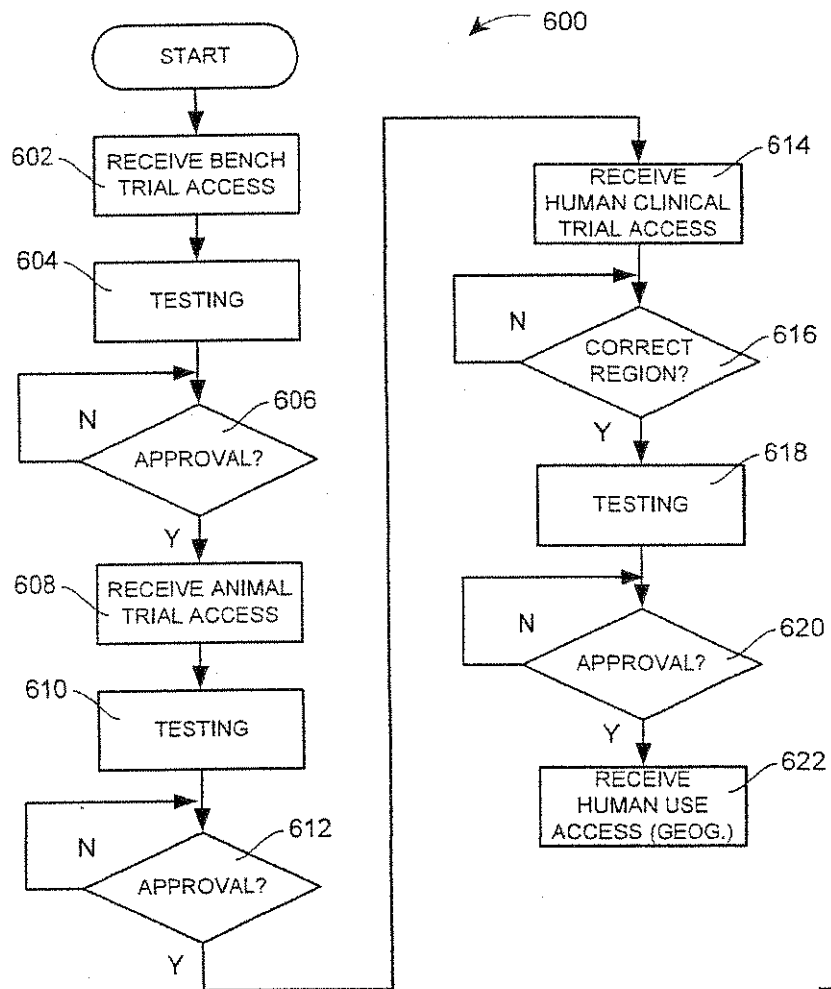
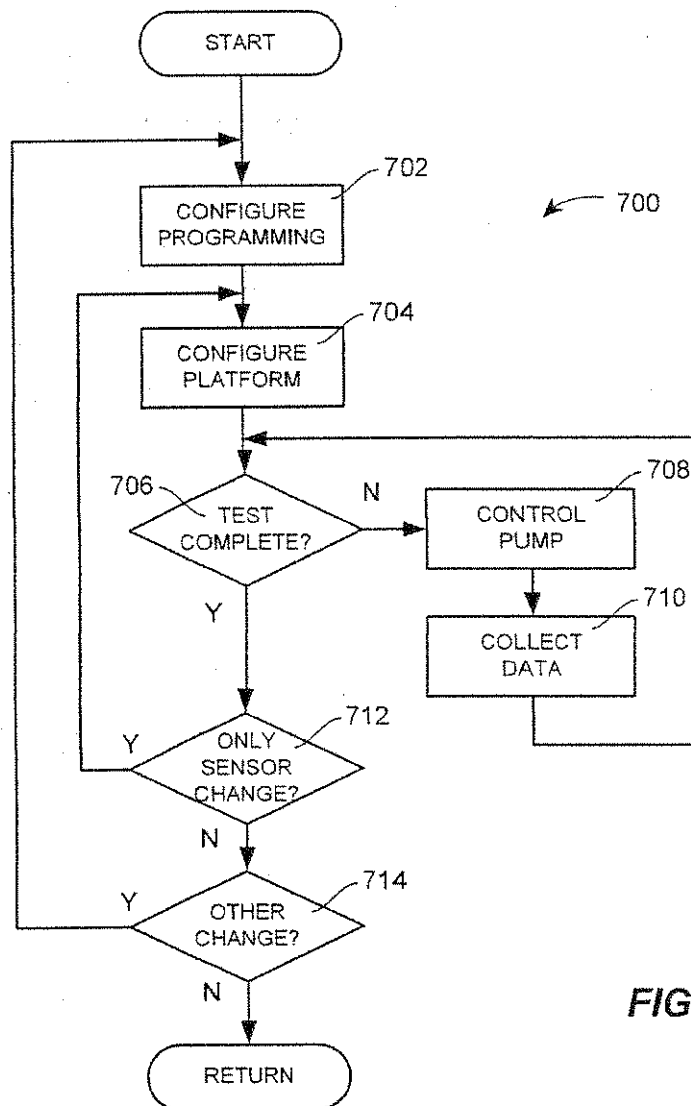


FIG. 9

**FIG. 10**

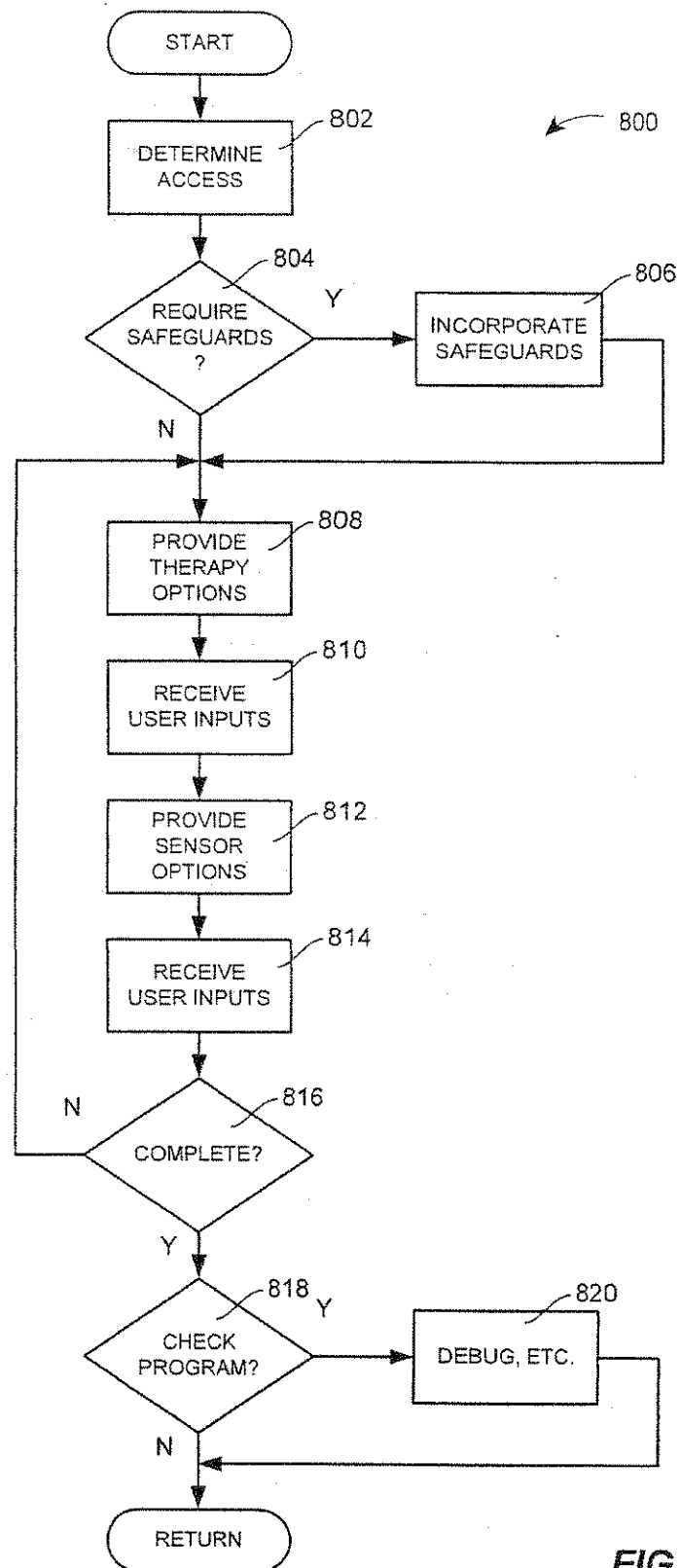


FIG. 11