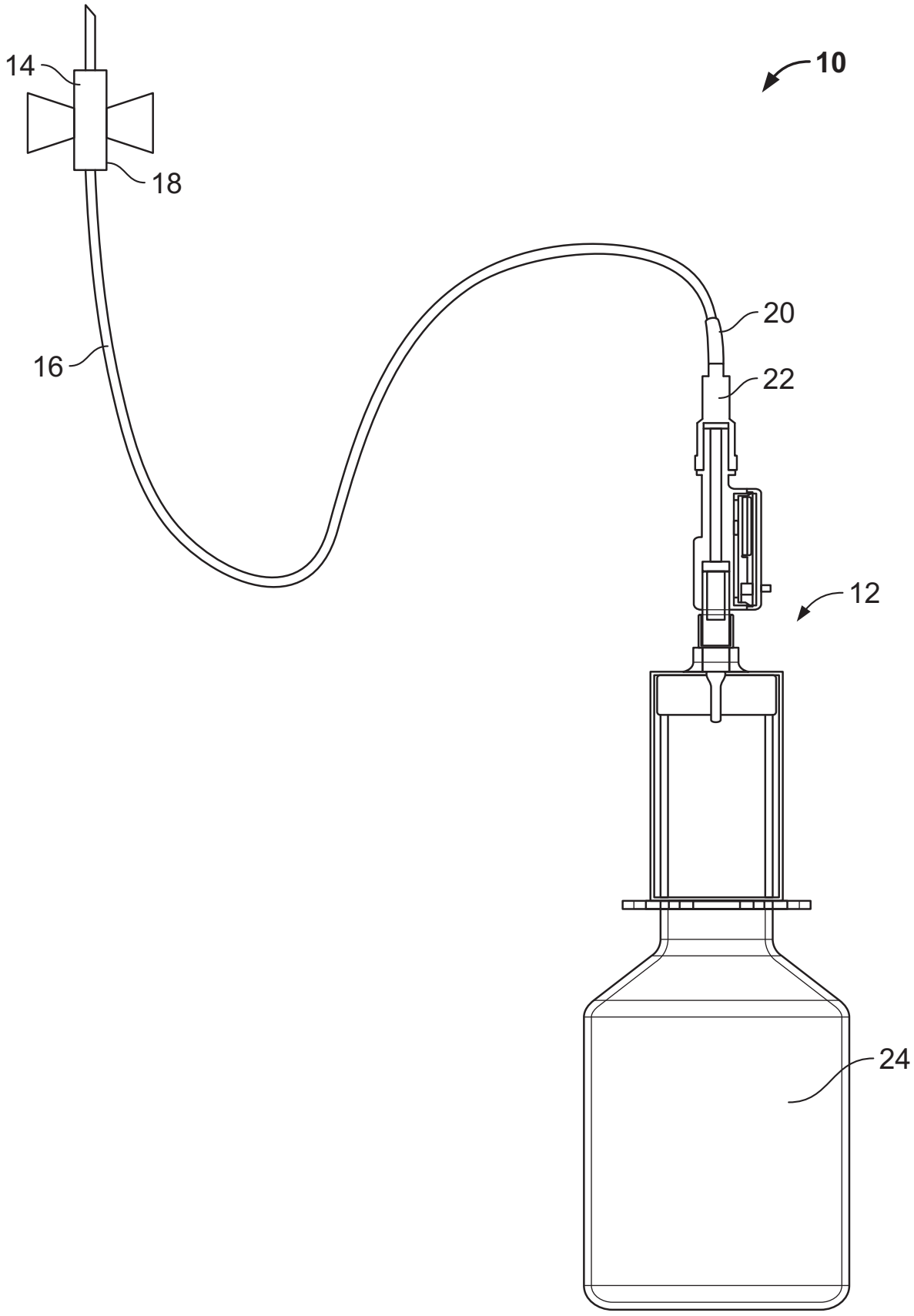



FIG. 1

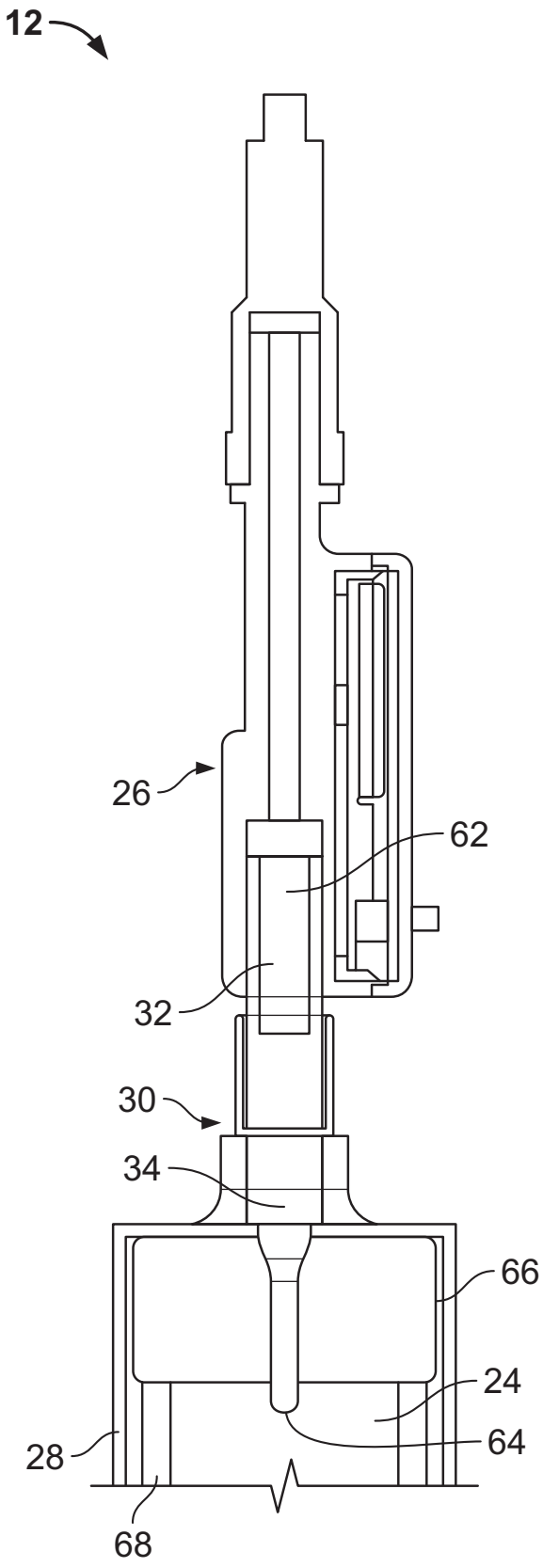



FIG. 2

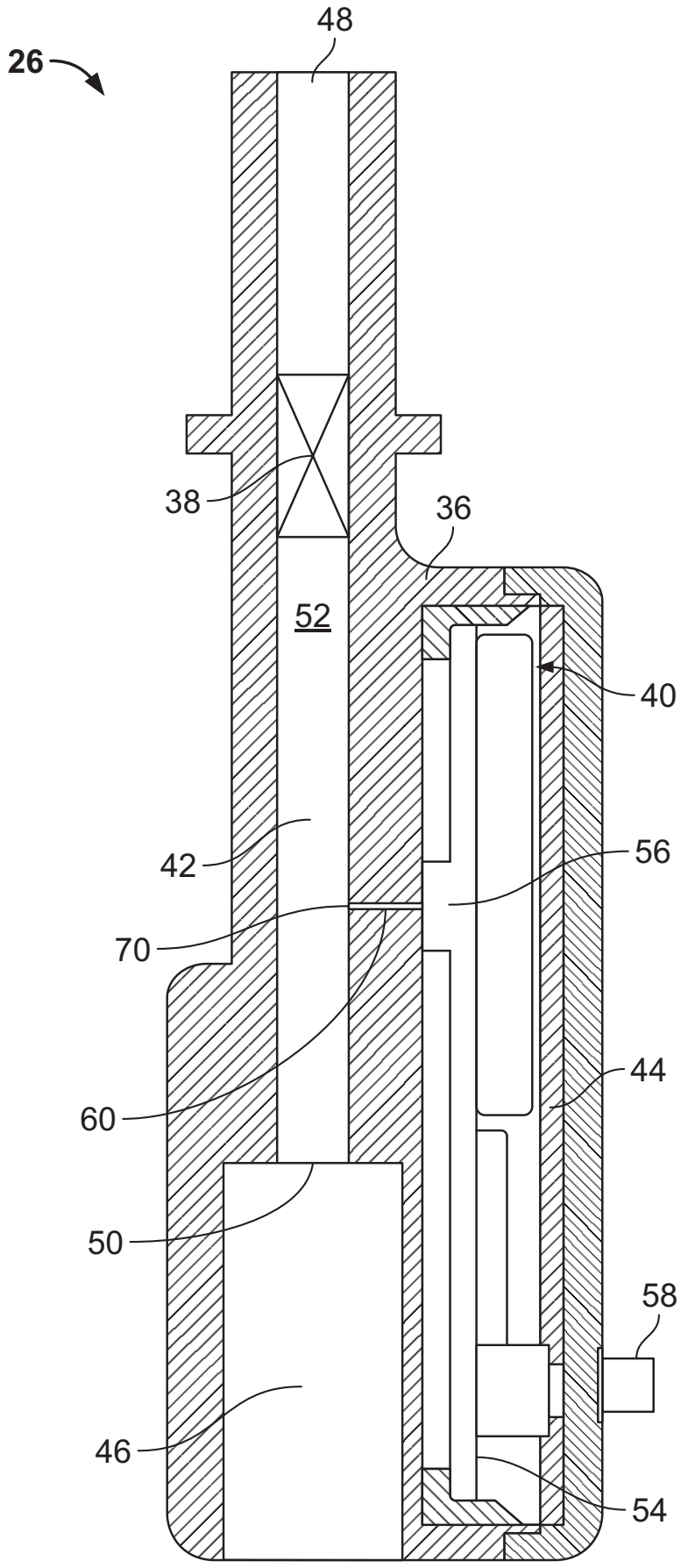



FIG. 3

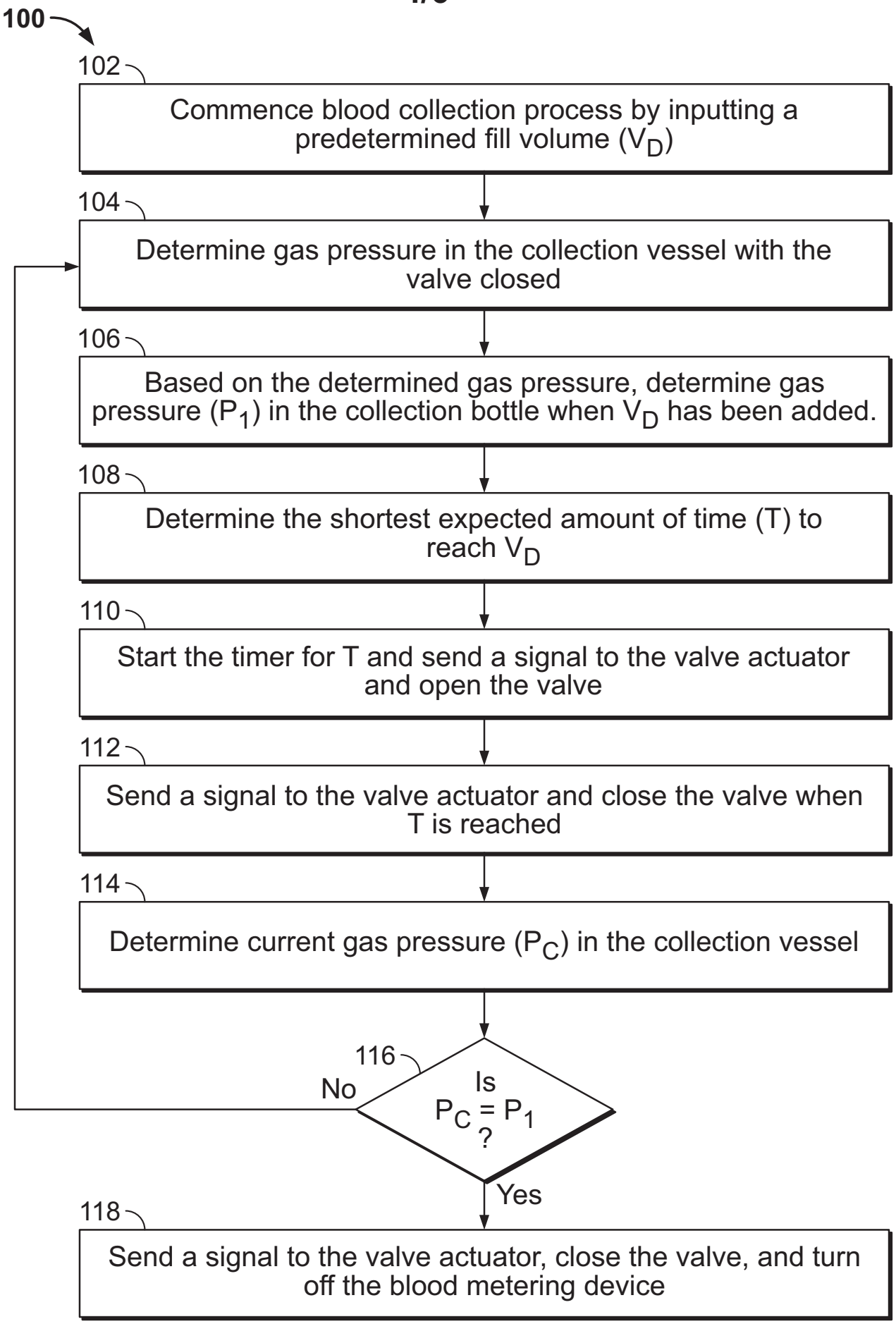

100
102
Commence blood collection process by inputting a predetermined fill volume ($V_D$)
104
Determine gas pressure in the collection vessel with the valve closed
106
Based on the determined gas pressure, determine gas pressure ($P_1$) in the collection bottle when $V_D$ has been added.
108
Determine the shortest expected amount of time (T) to reach $V_D$
110
Start the timer for T and send a signal to the valve actuator and open the valve
112
Send a signal to the valve actuator and close the valve when T is reached
114
Determine current gas pressure ($P_C$) in the collection vessel
116
Is $P_C = P_1$ ?
No
Yes
118
Send a signal to the valve actuator, close the valve, and turn off the blood metering device

FIG. 4

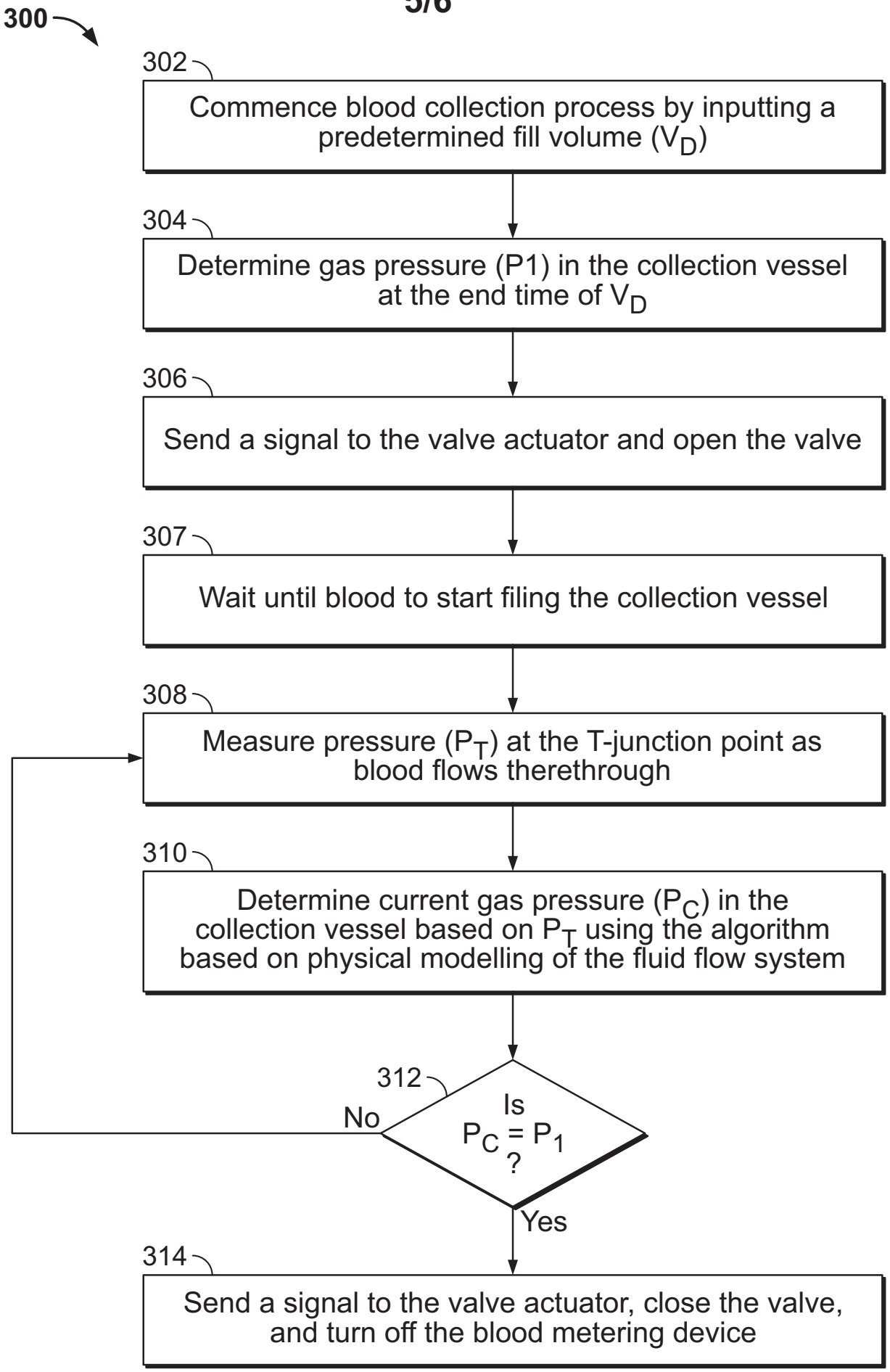

300
302
Commence blood collection process by inputting a predetermined fill volume ($V_D$)
304
Determine gas pressure (P1) in the collection vessel at the end time of $V_D$
306
Send a signal to the valve actuator and open the valve
307
Wait until blood to start filing the collection vessel
308
Measure pressure ($P_T$) at the T-junction point as blood flows therethrough
310
Determine current gas pressure ($P_C$) in the collection vessel based on $P_T$ using the algorithm based on physical modelling of the fluid flow system
312
Is $P_C = P_1$ ?
No
Yes
314
Send a signal to the valve actuator, close the valve, and turn off the blood metering device

FIG. 5

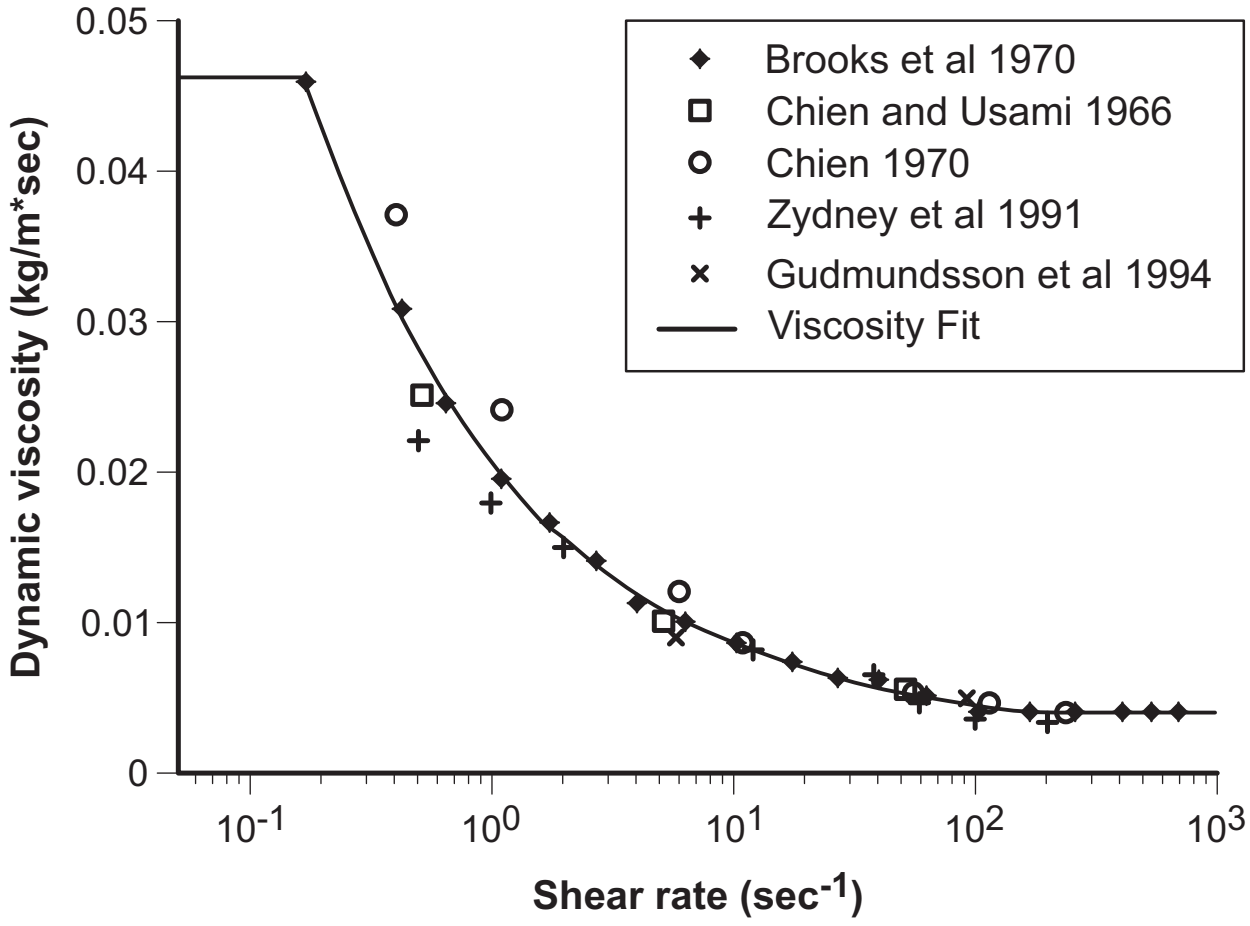

0.05
0.04
0.03
0.02
0.01
0
Dynamic viscosity (kg/m*sec)
Brooks et al 1970
Chien and Usami 1966
Chien 1970
Zydney et al 1991
Gudmundsson et al 1994
Viscosity Fit
10-1
100
101
102
103
Shear rate (sec-1)

FIG. 6