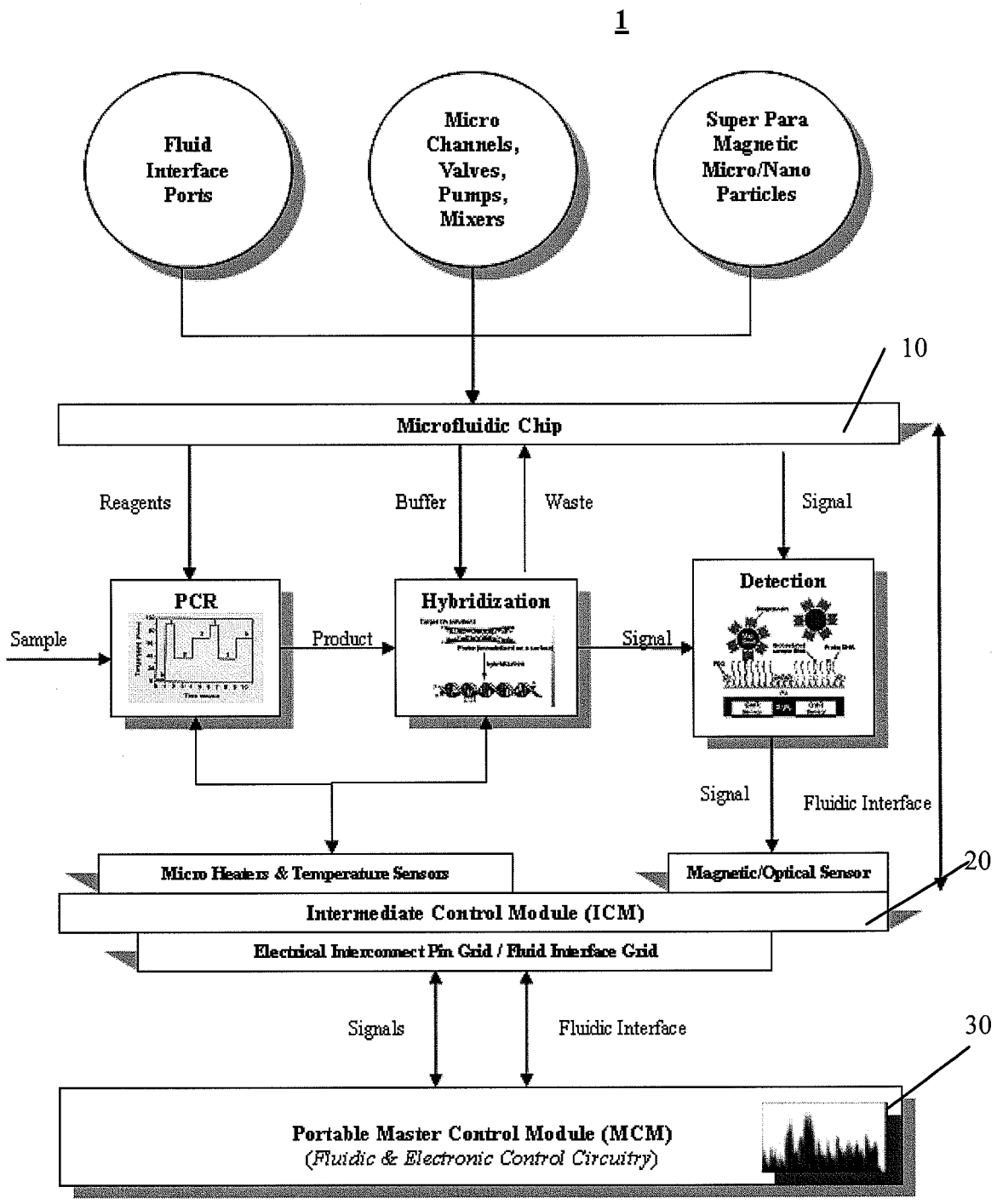
1
Fluid Interface Ports
Micro Channels, Valves, Pumps, Mixers
Super Para Magnetic Micro/Nano Particles
10
Microfluidic Chip
Reagents
Buffer
Waste
Signal
PCR
Hybridization
Detection
Sample
Product
Signal
Signal
Fluidic Interface
Micro Heaters & Temperature Sensors
Magnetic/Optical Sensor
20
Intermediate Control Module (ICM)
Electrical Interconnect Pin Grid / Fluid Interface Grid
Signals
Fluidic Interface
30
Portable Master Control Module (MCM)
(Fluidic & Electronic Control Circuitry)

FIG 1

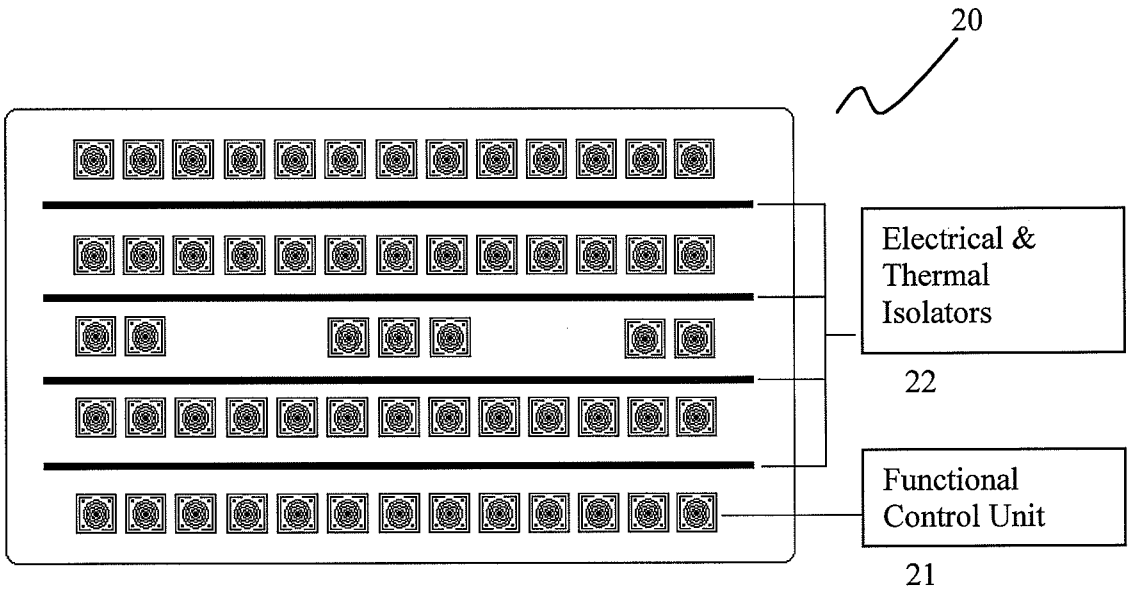
20
Electrical &
Thermal
Isolators
22
Functional
Control Unit
21

FIG 2

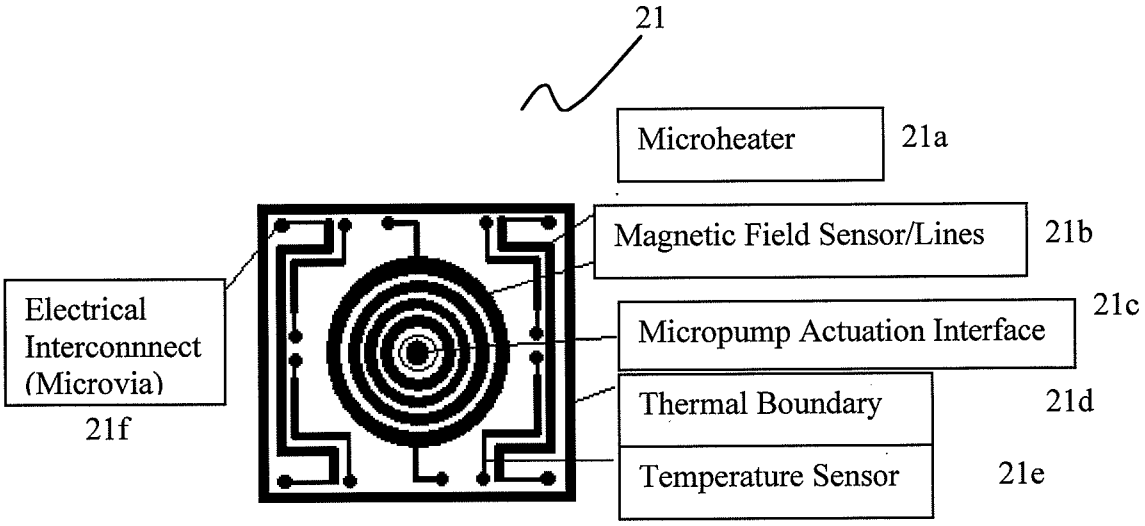
21
Microheater
21a
Magnetic Field Sensor/Lines
21b
Micropump Actuation Interface
21c
Thermal Boundary
21d
Temperature Sensor
21e
Electrical
Interconnnect
(Microvia)
21f

FIG 3

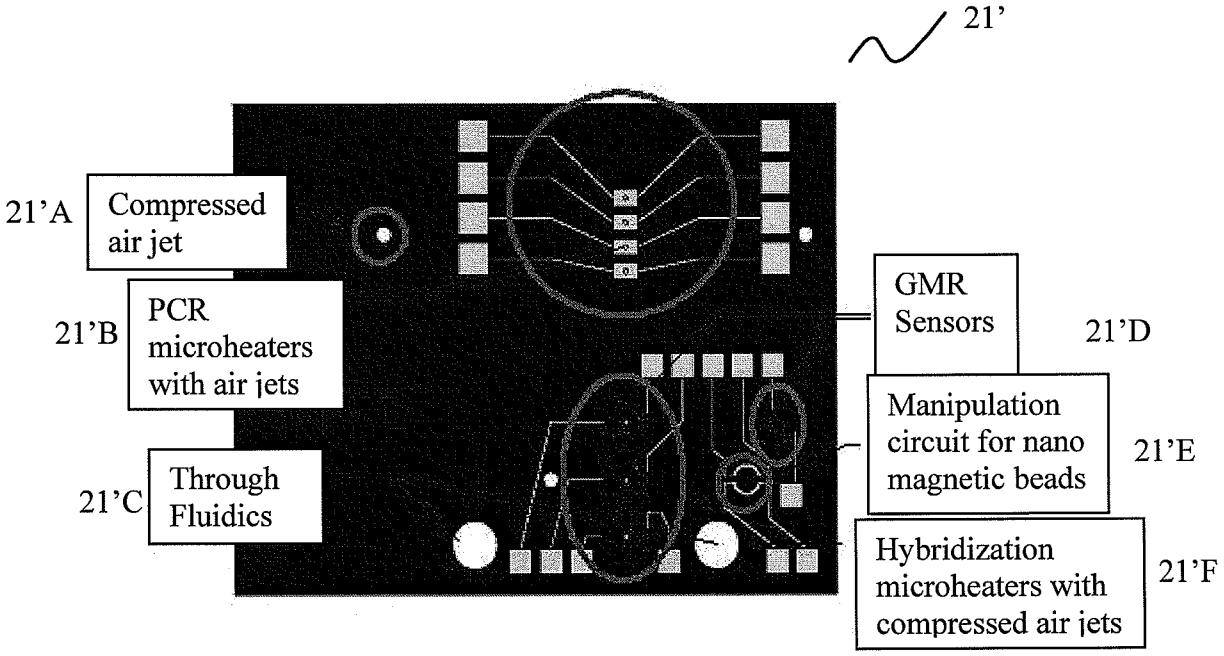
21'
21'A
Compressed air jet
21'B
PCR microheaters with air jets
21'C
Through Fluidics
GMR Sensors
21'D
Manipulation circuit for nano magnetic beads
21'E
Hybridization microheaters with compressed air jets
21'F

FIG 4A

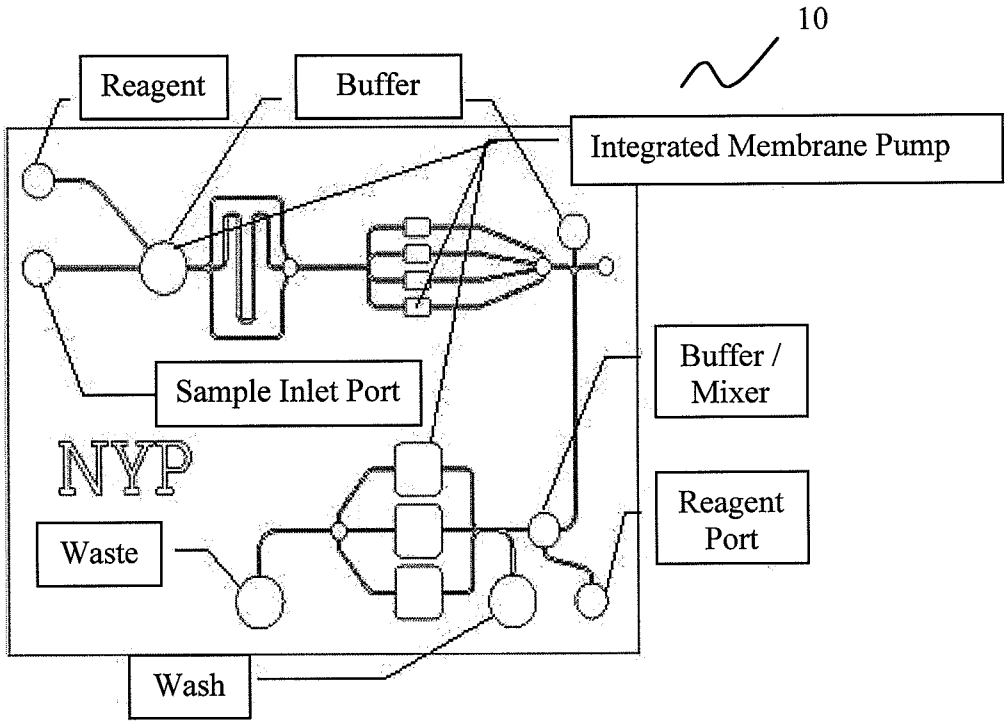
10
Reagent
Buffer
Integrated Membrane Pump
Sample Inlet Port
Buffer / Mixer
NYP
Waste
Reagent Port
Wash

FIG 4B

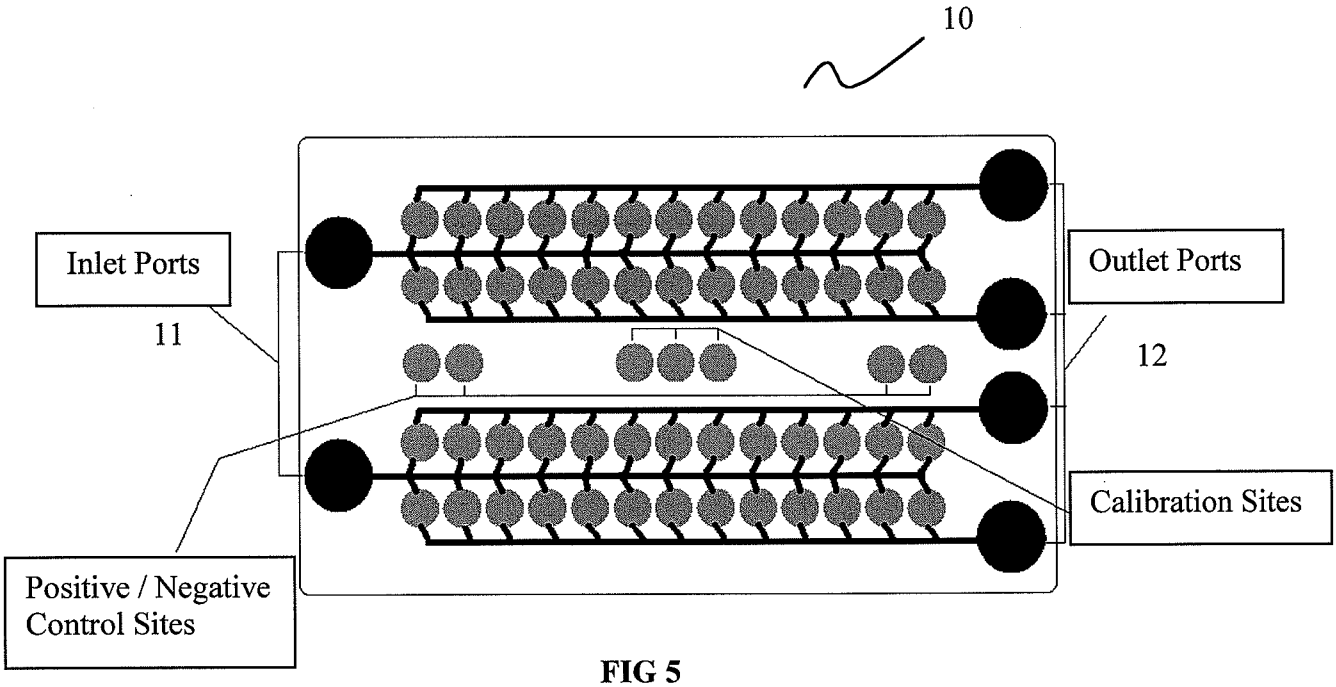
10
Inlet Ports
11
Outlet Ports
12
Calibration Sites
Positive / Negative
Control Sites

FIG 5

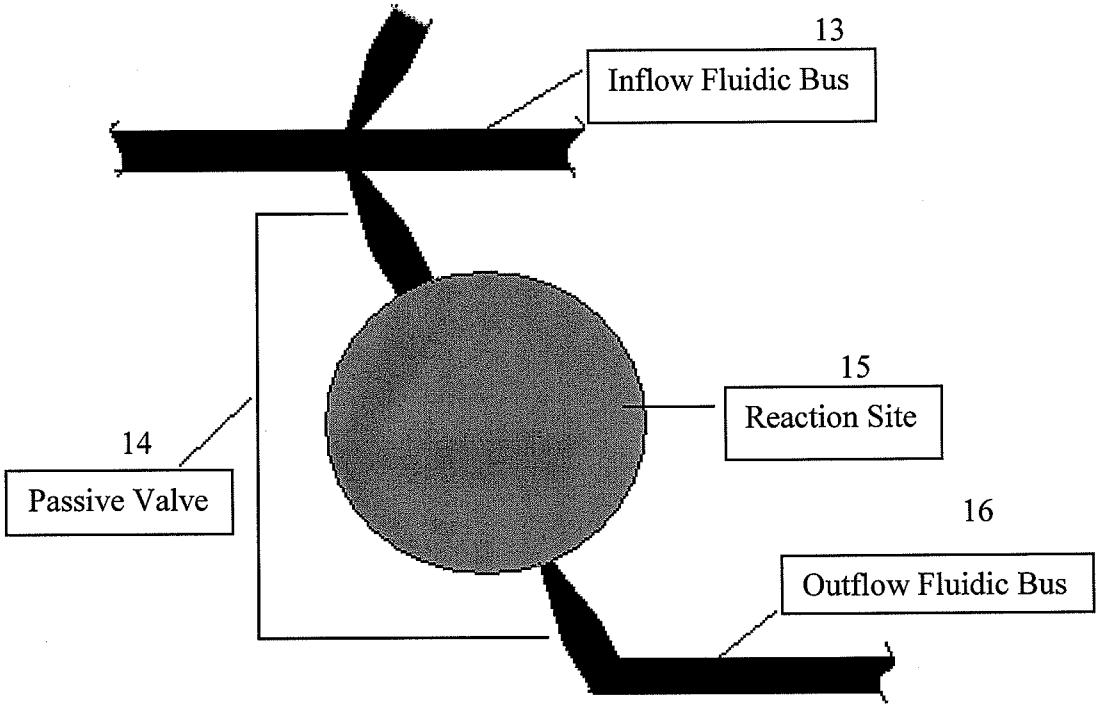
13
Inflow Fluidic Bus
15
Reaction Site
14
Passive Valve
16
Outflow Fluidic Bus

FIG 6

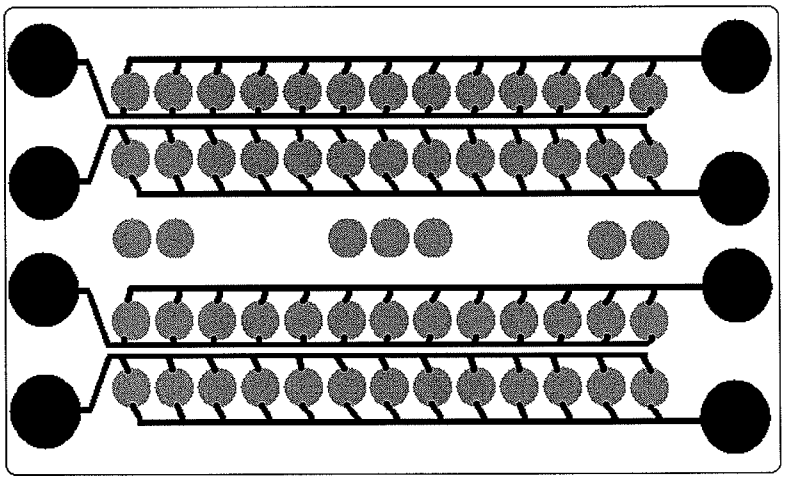

FIG 7

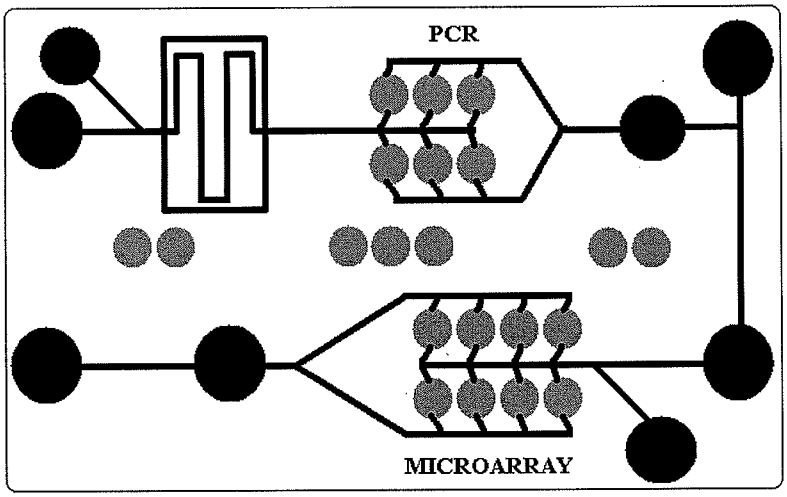

FIG 8