FIG. 16

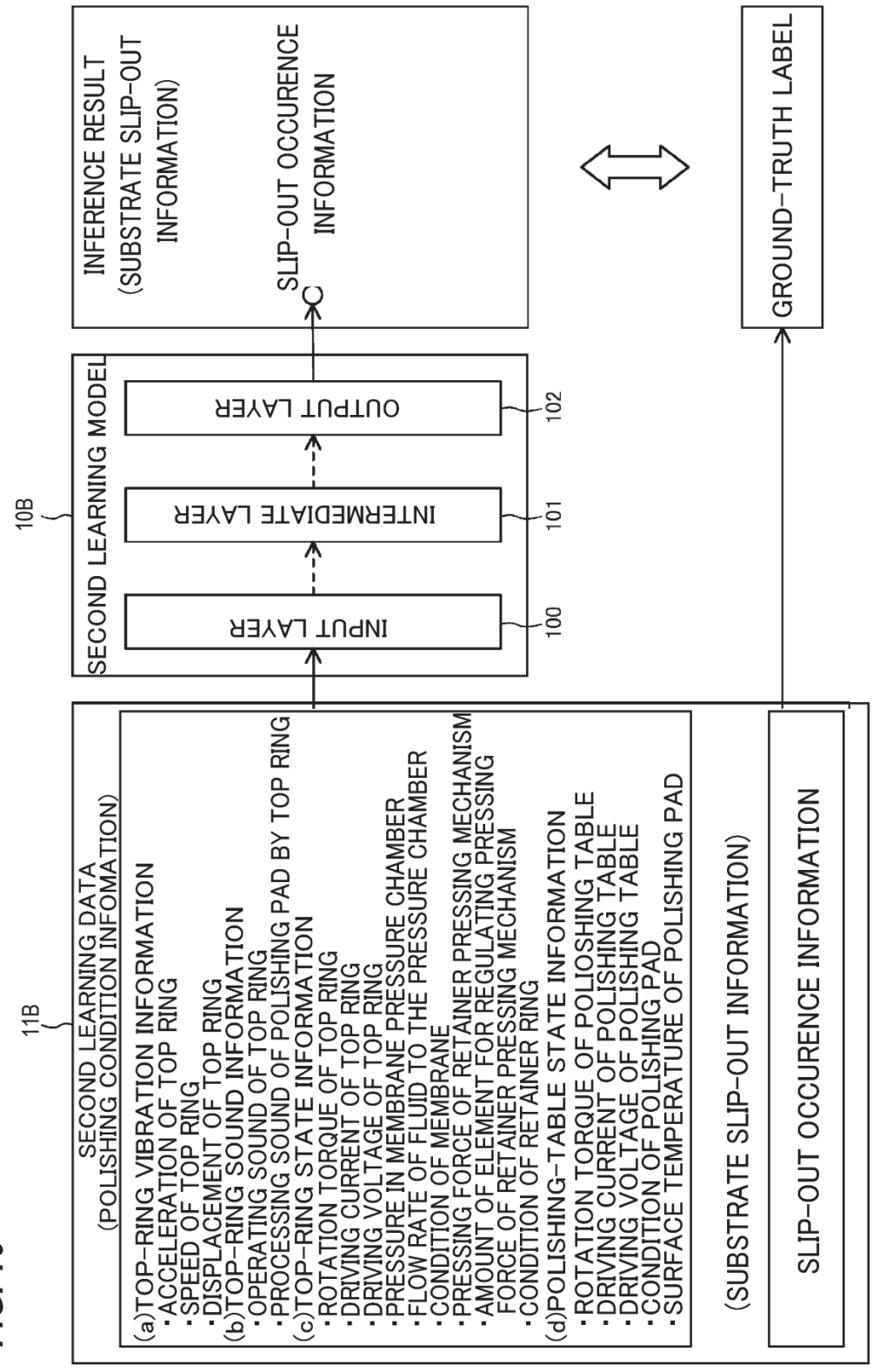
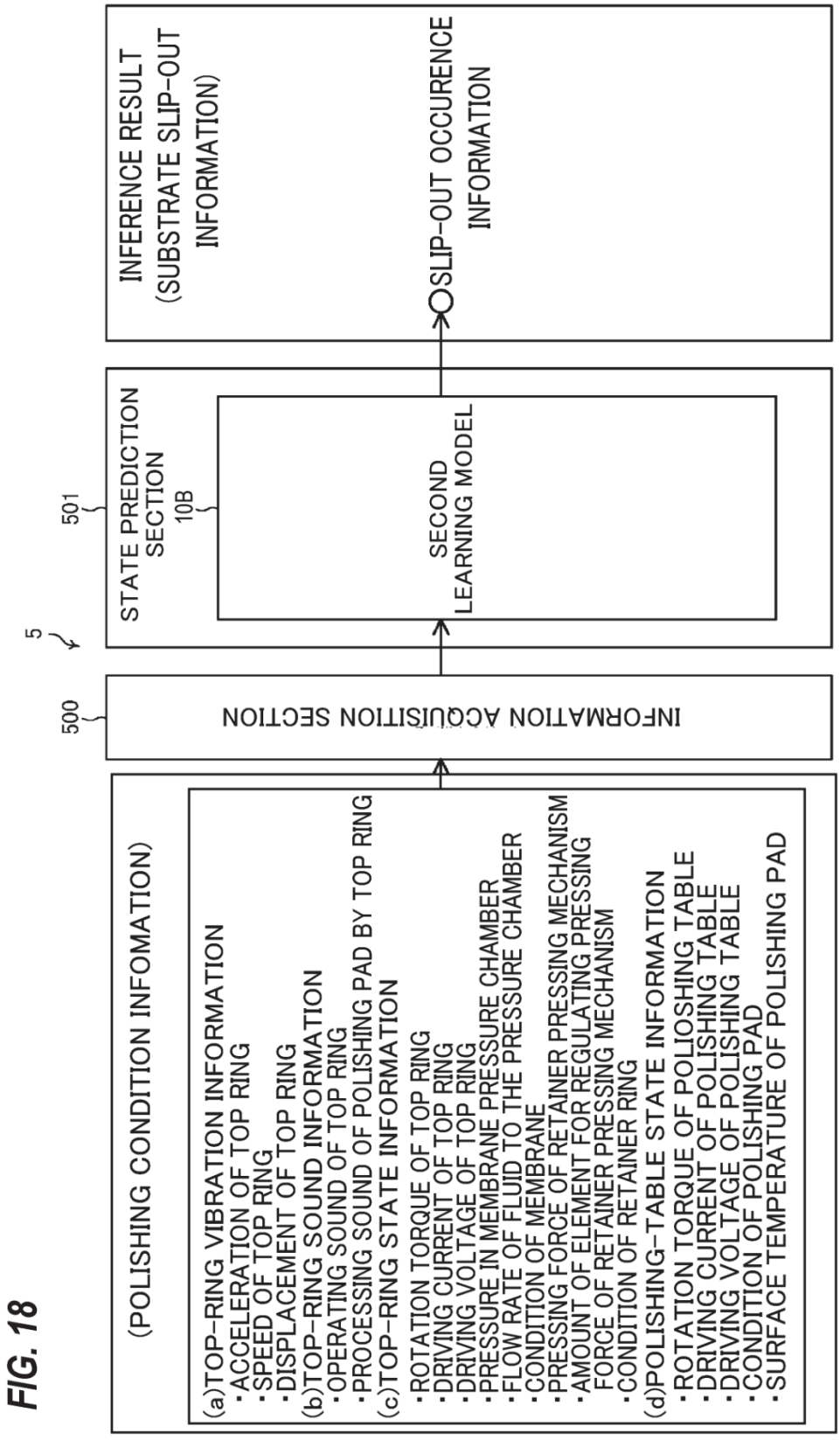

11B
SECOND LEARNING DATA
(POLISHING CONDITION INFOMATION)
(a)TOP-RING VIBRATION INFORMATION
・ACCELERATION OF TOP RING
・SPEED OF TOP RING
・DISPLACEMENT OF TOP RING
(b)TOP-RING SOUND INFORMATION
・OPERATING SOUND OF TOP RING
・PROCESSING SOUND OF POLISHING PAD BY TOP RING
(c)TOP-RING STATE INFORMATION
・ROTATION TORQUE OF TOP RING
・DRIVING CURRENT OF TOP RING
・DRIVING VOLTAGE OF TOP RING
・PRESSURE IN MEMBRANE PRESSURE CHAMBER
・FLOW RATE OF FLUID TO THE PRESSURE CHAMBER
・CONDITION OF MEMBRANE
・PRESSING FORCE OF RETAINER PRESSING MECHANISM
・AMOUNT OF ELEMENT FOR REGULATING PRESSING FORCE OF RETAINER PRESSING MECHANISM
・CONDITION OF RETAINER RING
(d)POLISHING-TABLE STATE INFORMATION
・ROTATION TORQUE OF POLIOSHING TABLE
・DRIVING CURRENT OF POLISHING TABLE
・DRIVING VOLTAGE OF POLISHING TABLE
・CONDITION OF POLISHING PAD
・SURFACE TEMPERATURE OF POLISHING PAD
(SUBSTRATE SLIP-OUT INFORMATION)
SLIP-OUT OCCURENCE INFORMATION
10B
SECOND LEARNING MODEL
INPUT LAYER
100
INTERMEDIATE LAYER
101
OUTPUT LAYER
102
INFERENCE RESULT
(SUBSTRATE SLIP-OUT INFORMATION)
SLIP-OUT OCCURENCE INFORMATION
GROUND-TRUTH LABEL

FIG. 18


(POLISHING CONDITION INFOMATION)
(a)TOP-RING VIBRATION INFORMATION
・ACCELERATION OF TOP RING
・SPEED OF TOP RING
・DISPLACEMENT OF TOP RING
(b)TOP-RING SOUND INFORMATION
・OPERATING SOUND OF TOP RING
・PROCESSING SOUND OF POLISHING PAD BY TOP RING
(c)TOP-RING STATE INFORMATION
・ROTATION TORQUE OF TOP RING
・DRIVING CURRENT OF TOP RING
・DRIVING VOLTAGE OF TOP RING
・PRESSURE IN MEMBRANE PRESSURE CHAMBER
・FLOW RATE OF FLUID TO THE PRESSURE CHAMBER
・CONDITION OF MEMBRANE
・PRESSING FORCE OF RETAINER PRESSING MECHANISM
・AMOUNT OF ELEMENT FOR REGULATING PRESSING FORCE OF RETAINER PRESSING MECHANISM
・CONDITION OF RETAINER RING
(d)POLISHING-TABLE STATE INFORMATION
・ROTATION TORQUE OF POLIOSHING TABLE
・DRIVING CURRENT OF POLISHING TABLE
・DRIVING VOLTAGE OF POLISHING TABLE
・CONDITION OF POLISHING PAD
・SURFACE TEMPERATURE OF POLISHING PAD
500
INFORMATION ACQUISITION SECTION
5
501
STATE PREDICTION SECTION
10B
SECOND LEARNING MODEL
SLIP-OUT OCCURENCE INFORMATION
INFERENCE RESULT (SUBSTRATE SLIP-OUT INFORMATION)