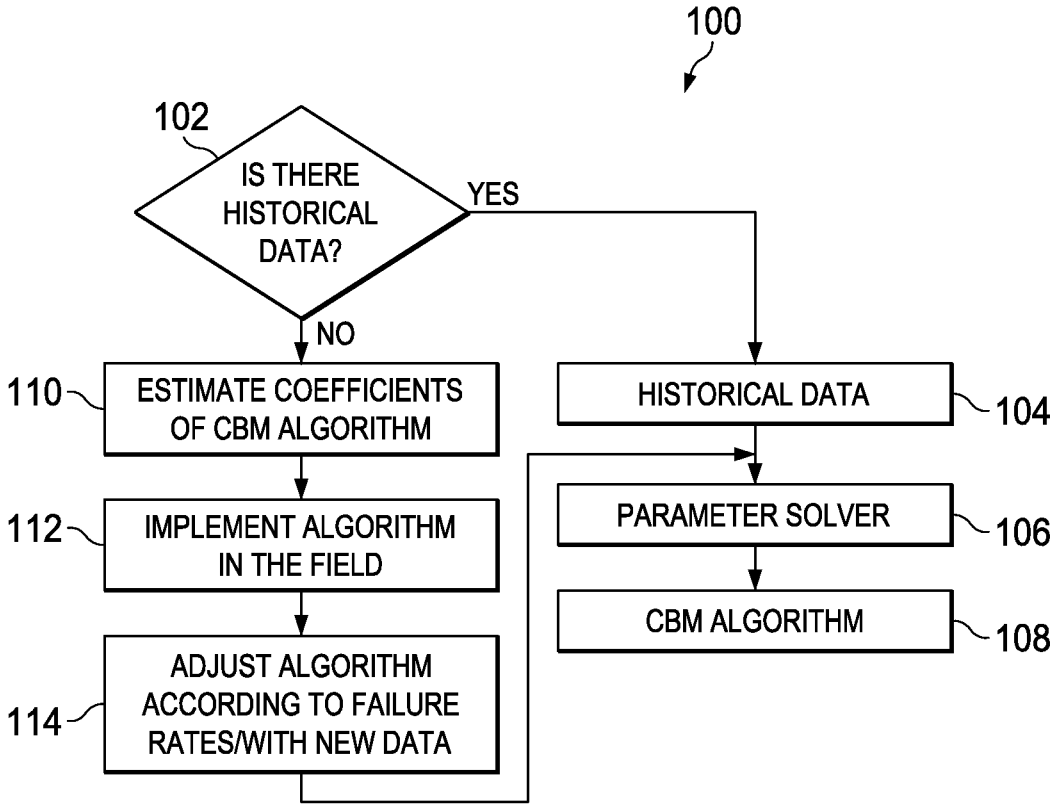
100
102
IS THERE HISTORICAL DATA?
YES
NO
110
ESTIMATE COEFFICIENTS OF CBM ALGORITHM
112
IMPLEMENT ALGORITHM IN THE FIELD
114
ADJUST ALGORITHM ACCORDING TO FAILURE RATES/WITH NEW DATA
HISTORICAL DATA
104
PARAMETER SOLVER
106
CBM ALGORITHM
108

Fig. 1

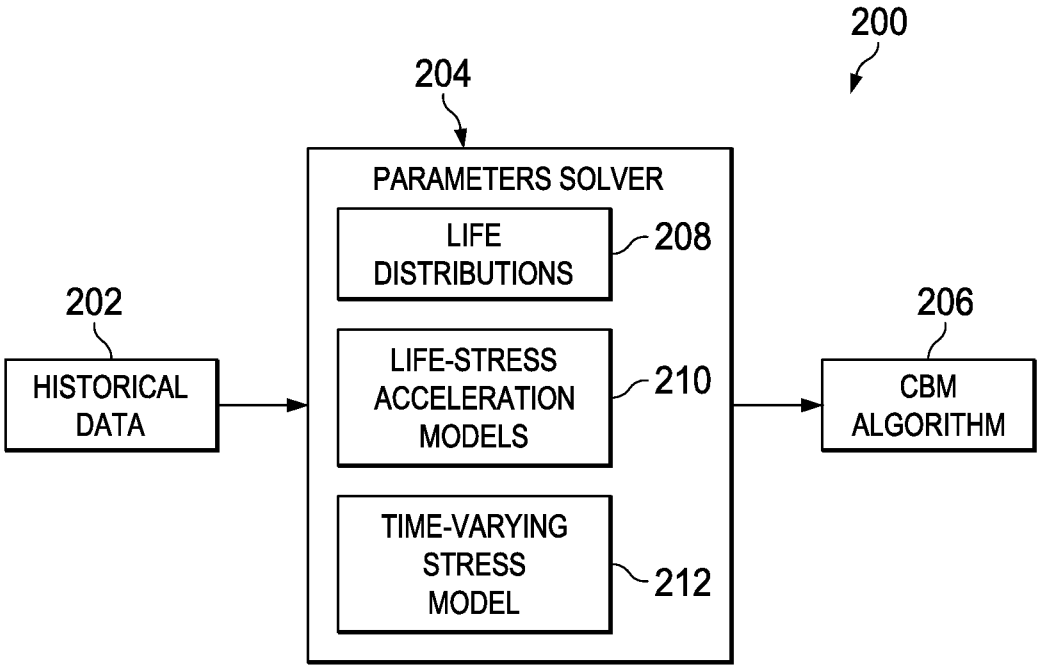
200
204
PARAMETERS SOLVER
LIFE DISTRIBUTIONS
208
LIFE-STRESS ACCELERATION MODELS
210
TIME-VARYING STRESS MODEL
212
202
HISTORICAL DATA
206
CBM ALGORITHM

Fig. 2

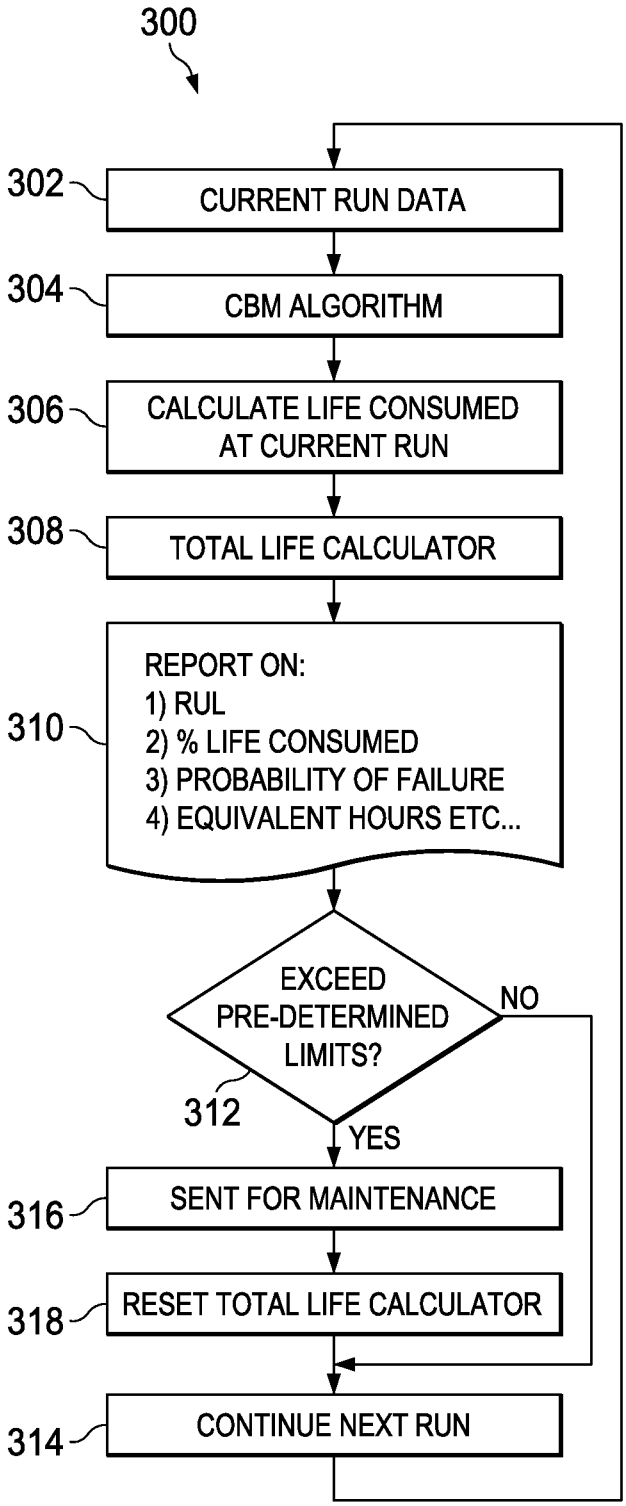
300
302
CURRENT RUN DATA
304
CBM ALGORITHM
306
CALCULATE LIFE CONSUMED AT CURRENT RUN
308
TOTAL LIFE CALCULATOR
310
REPORT ON:
1) RUL
2) % LIFE CONSUMED
3) PROBABILITY OF FAILURE
4) EQUIVALENT HOURS ETC...
EXCEED PRE-DETERMINED LIMITS?
312
NO
YES
316
SENT FOR MAINTENANCE
318
RESET TOTAL LIFE CALCULATOR
314
CONTINUE NEXT RUN

Fig. 3

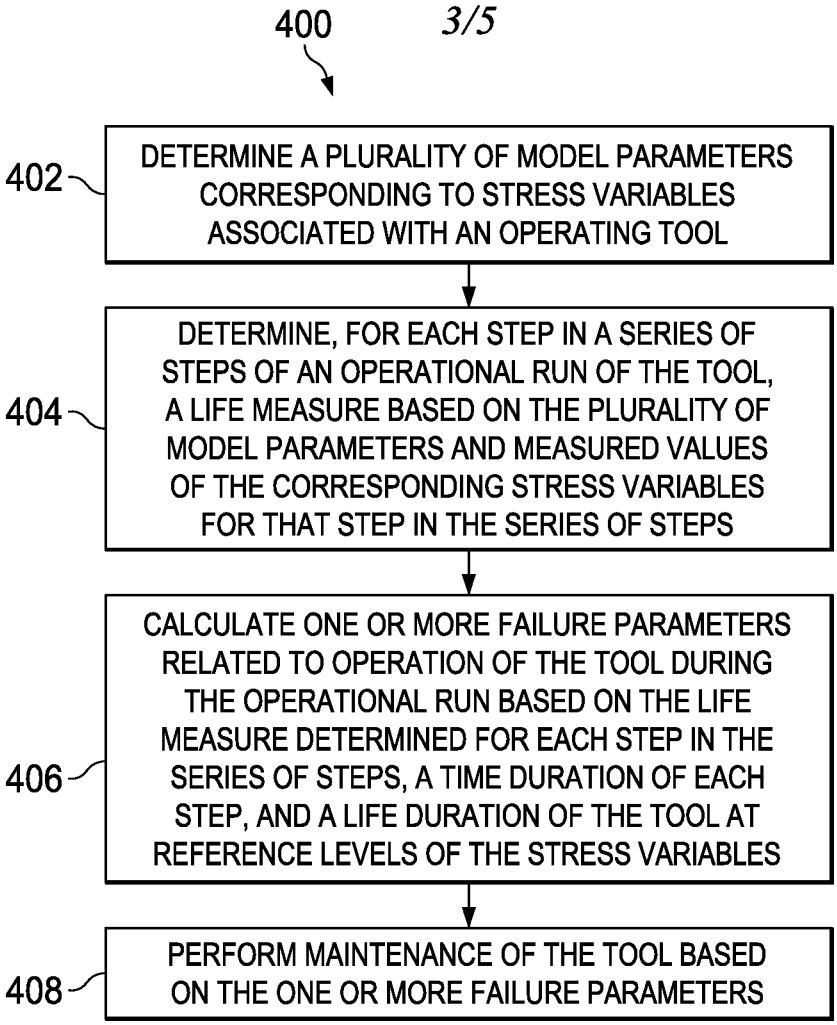
400
402
DETERMINE A PLURALITY OF MODEL PARAMETERS CORRESPONDING TO STRESS VARIABLES ASSOCIATED WITH AN OPERATING TOOL
404
DETERMINE, FOR EACH STEP IN A SERIES OF STEPS OF AN OPERATIONAL RUN OF THE TOOL, A LIFE MEASURE BASED ON THE PLURALITY OF MODEL PARAMETERS AND MEASURED VALUES OF THE CORRESPONDING STRESS VARIABLES FOR THAT STEP IN THE SERIES OF STEPS
406
CALCULATE ONE OR MORE FAILURE PARAMETERS RELATED TO OPERATION OF THE TOOL DURING THE OPERATIONAL RUN BASED ON THE LIFE MEASURE DETERMINED FOR EACH STEP IN THE SERIES OF STEPS, A TIME DURATION OF EACH STEP, AND A LIFE DURATION OF THE TOOL AT REFERENCE LEVELS OF THE STRESS VARIABLES
408
PERFORM MAINTENANCE OF THE TOOL BASED ON THE ONE OR MORE FAILURE PARAMETERS

Fig. 4

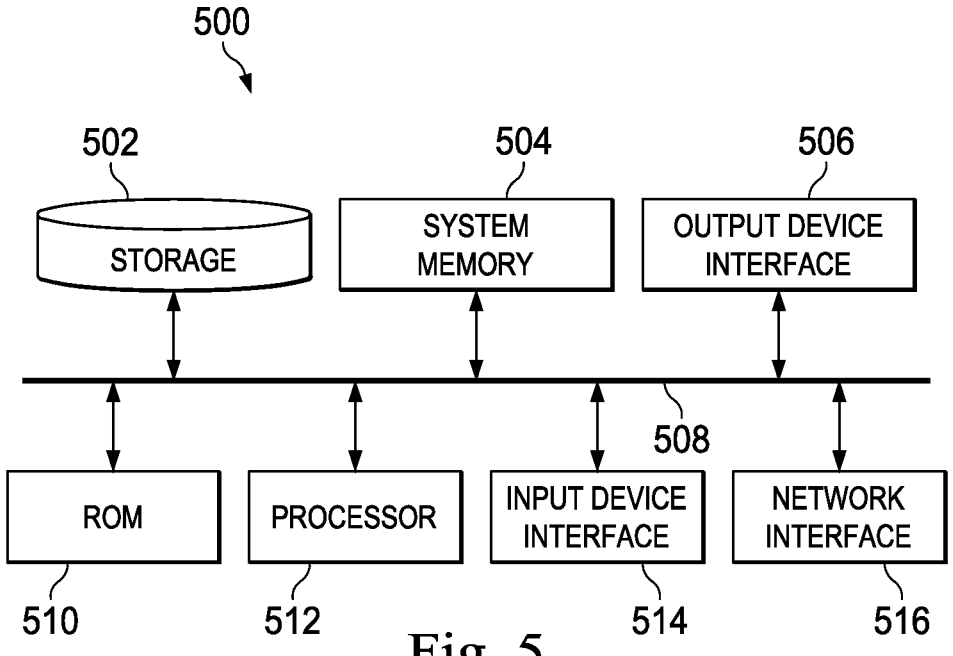
500
502
STORAGE
504
SYSTEM MEMORY
506
OUTPUT DEVICE INTERFACE
508
ROM
510
PROCESSOR
512
INPUT DEVICE INTERFACE
514
NETWORK INTERFACE
516

Fig. 5

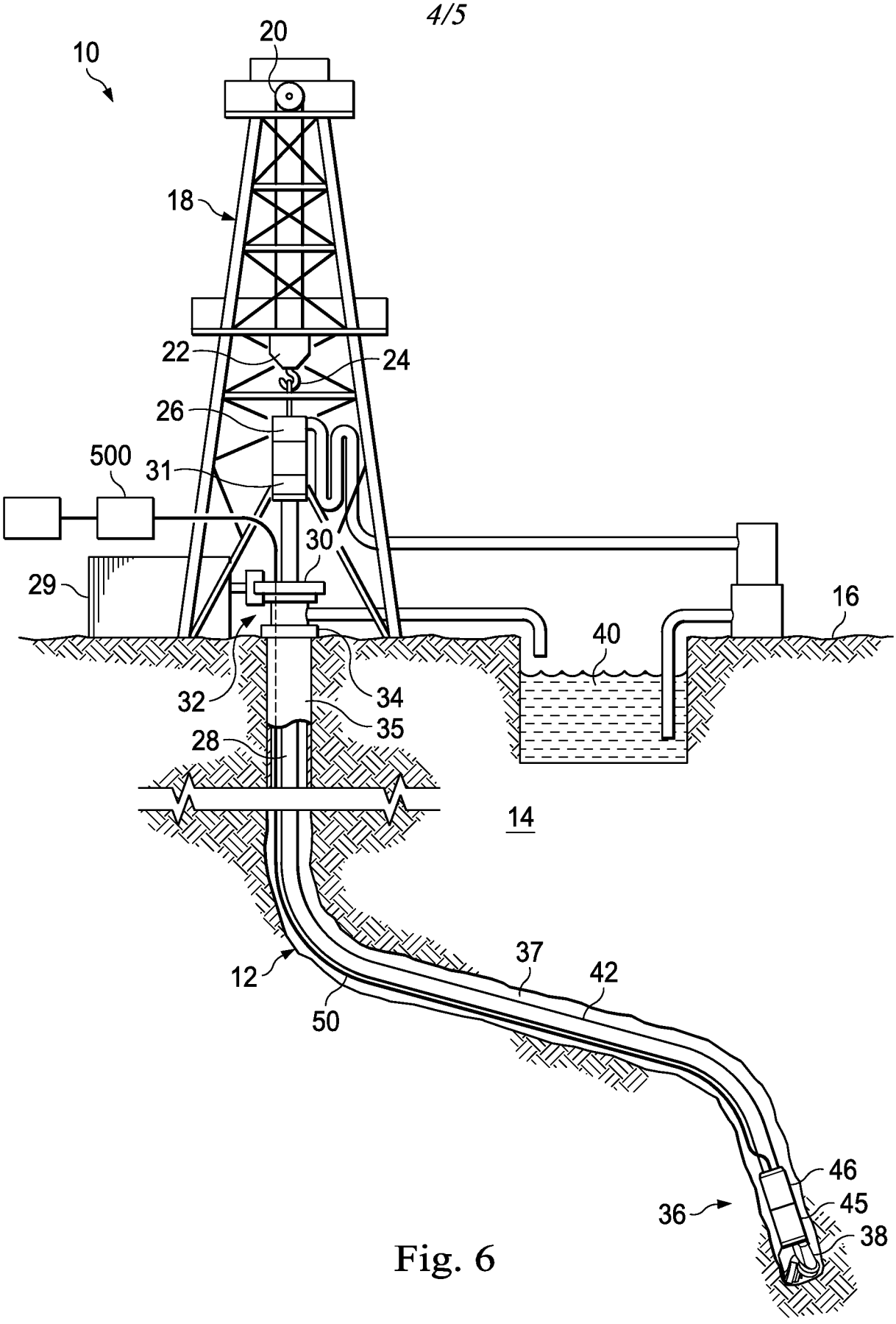
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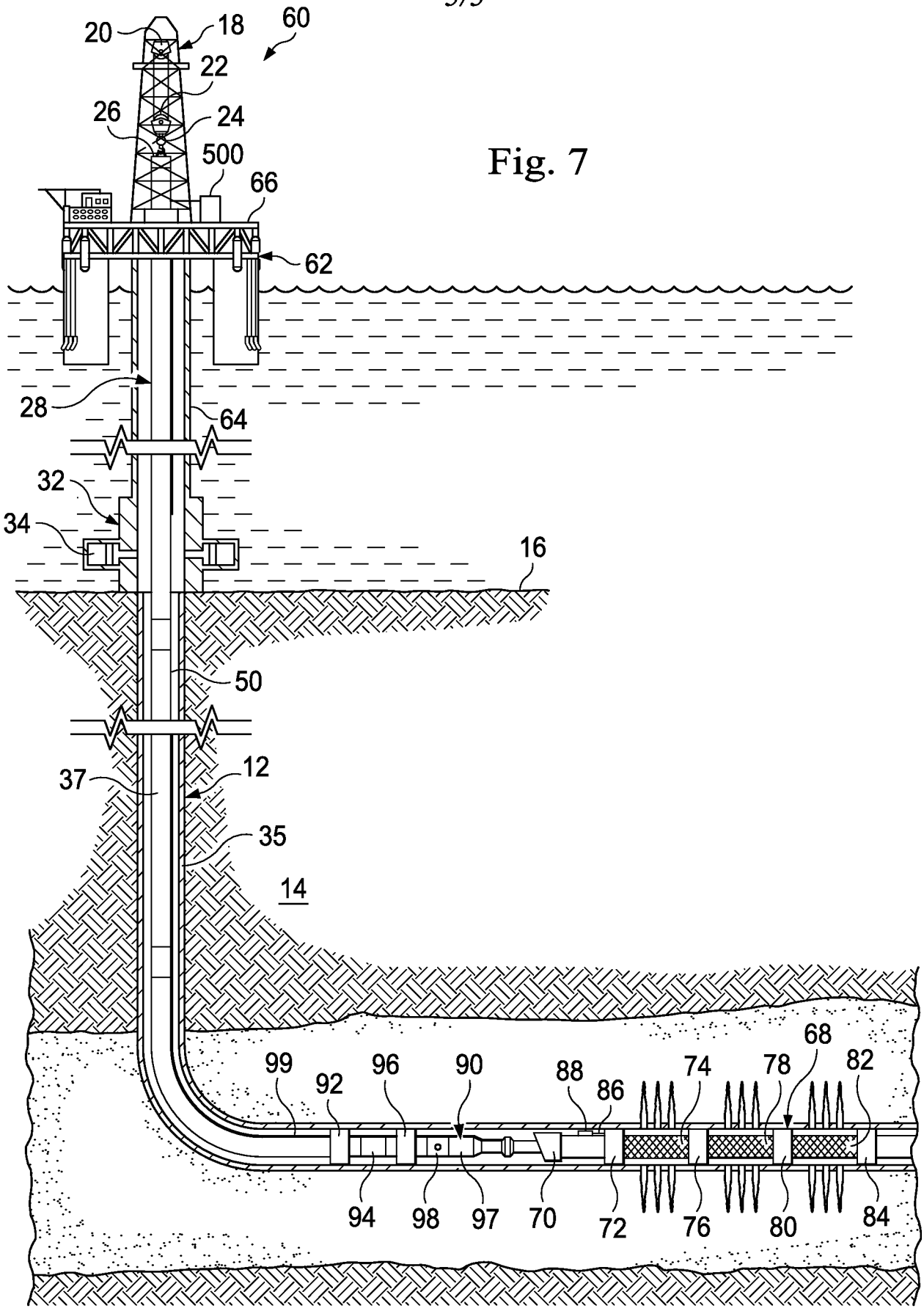
Fig. 6

Fig. 7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