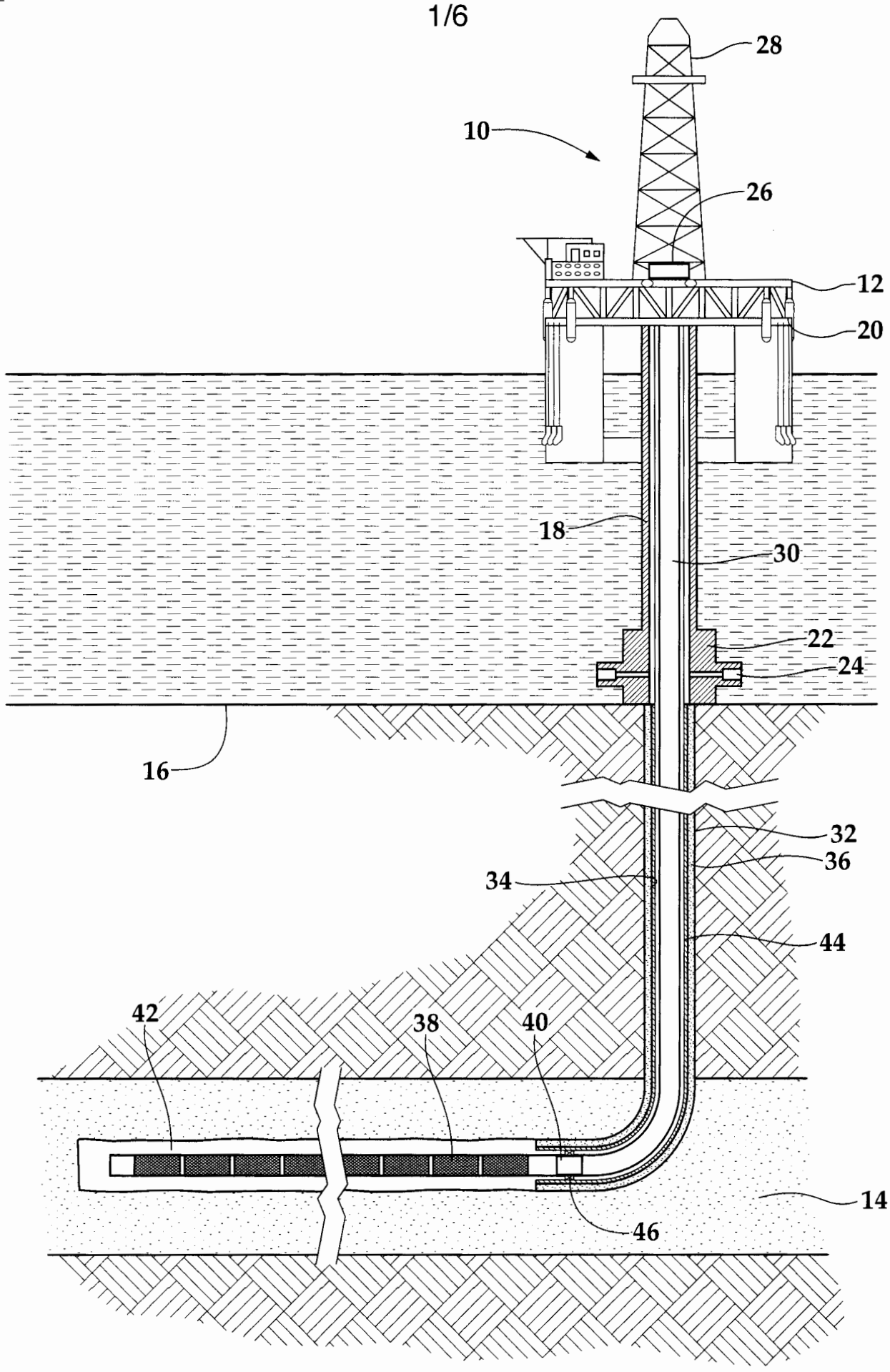


Fig.1

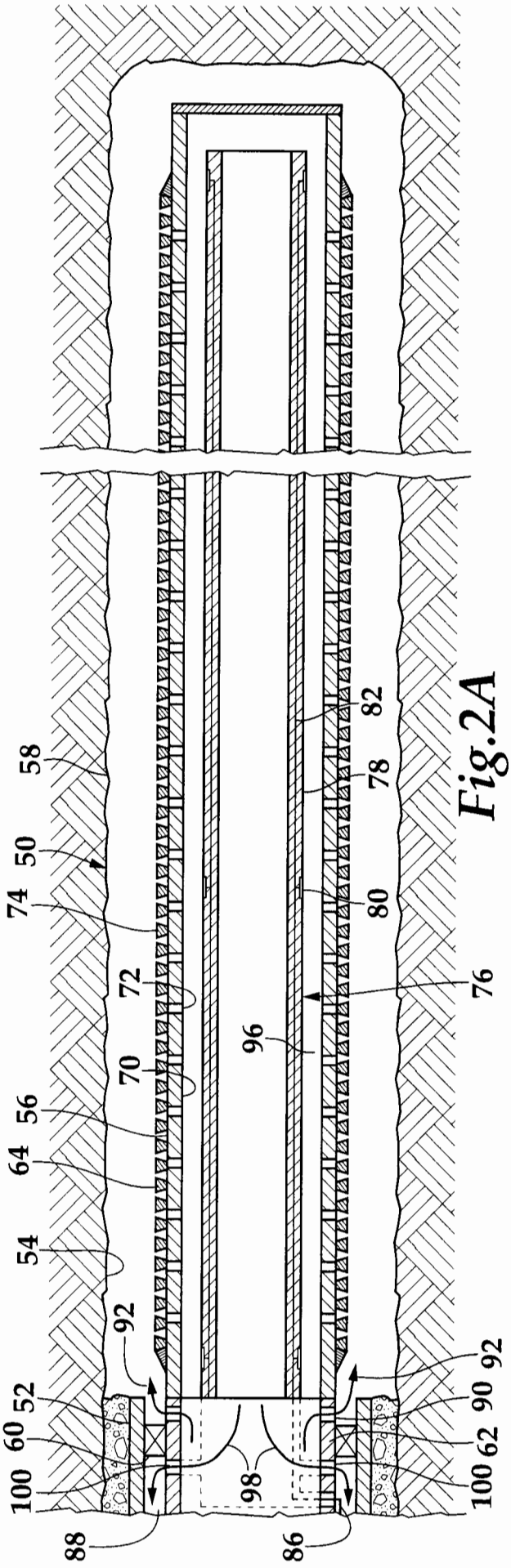

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Fig.2A

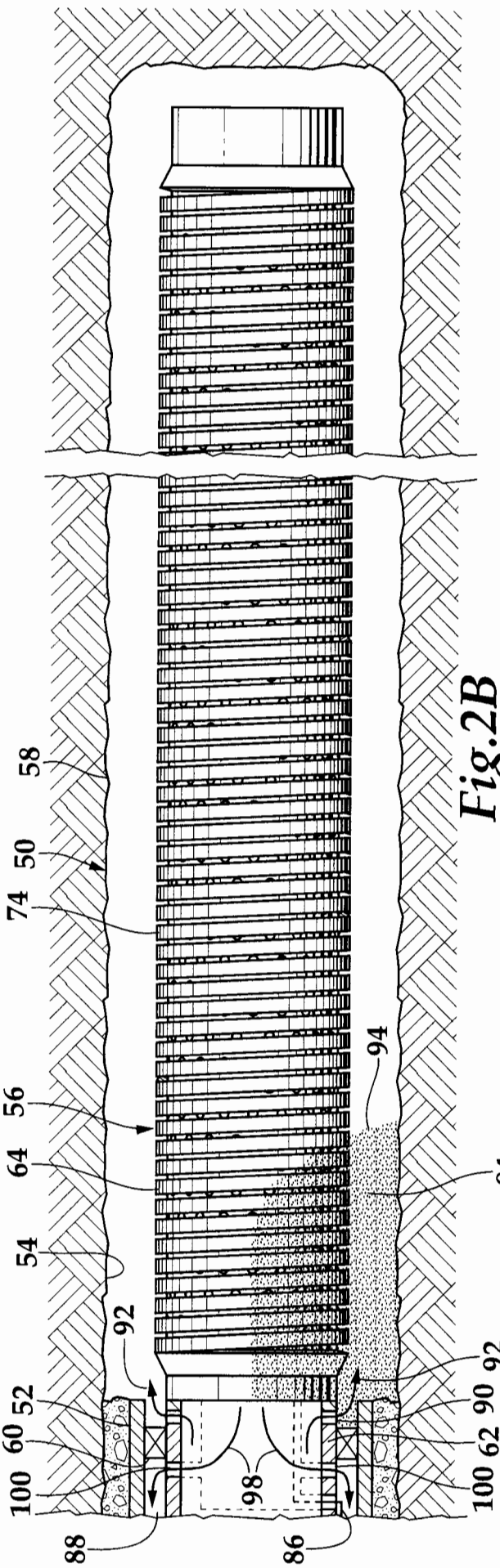

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Fig.2B

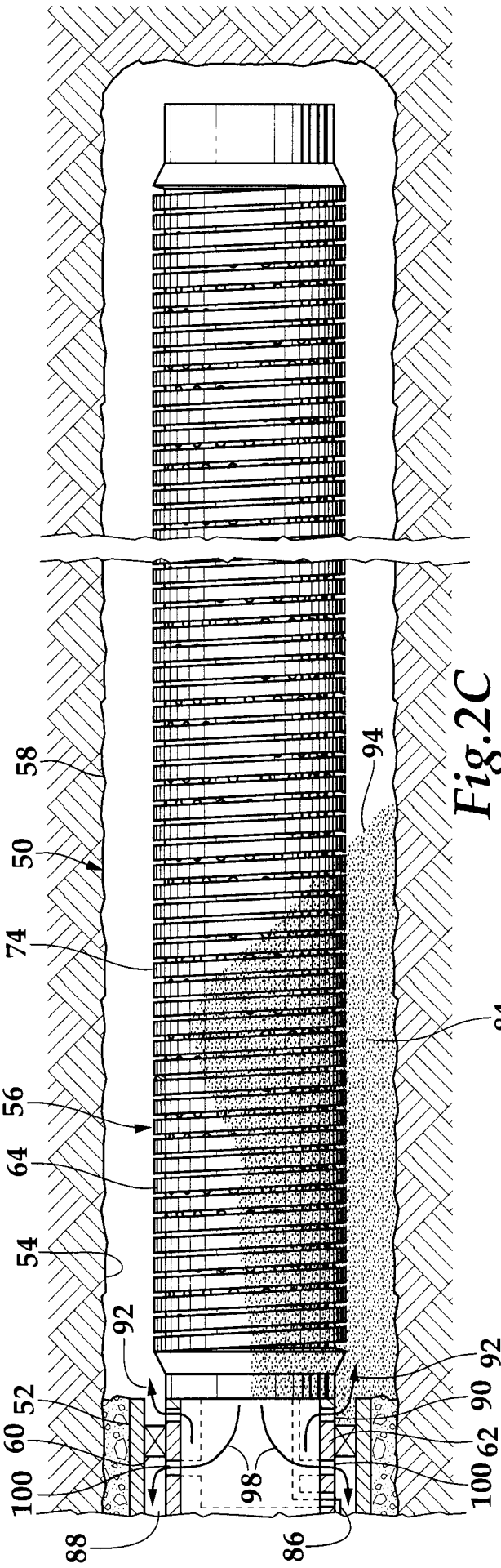

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Fig.2C

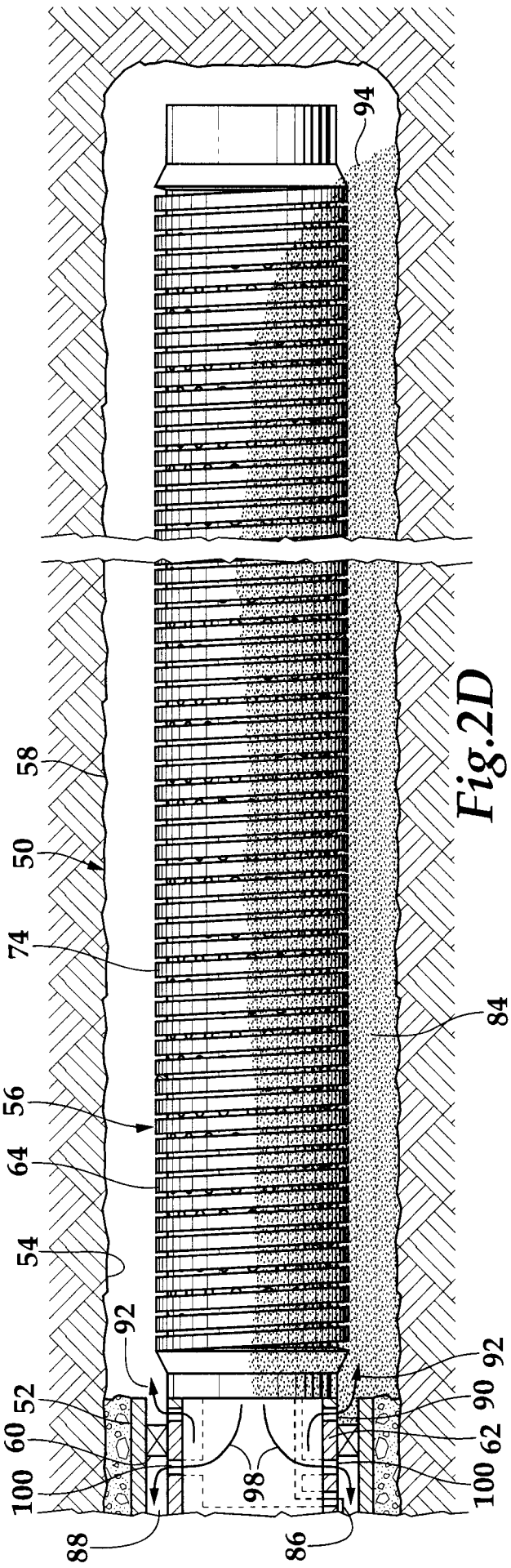

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Fig.2D

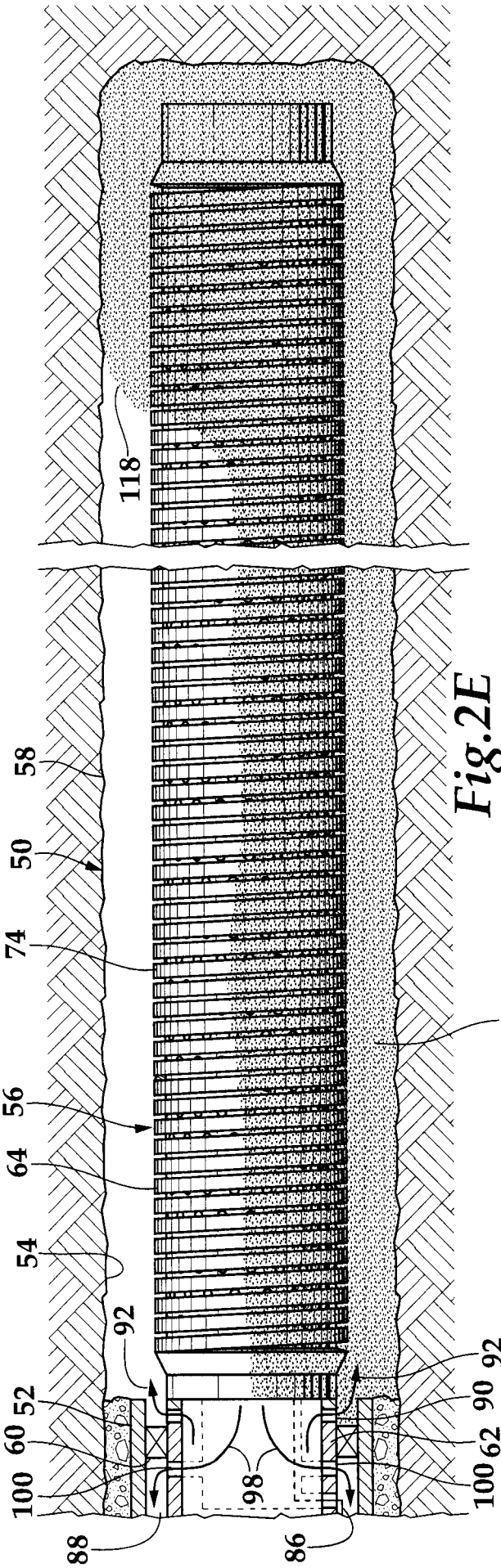

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Fig.2E

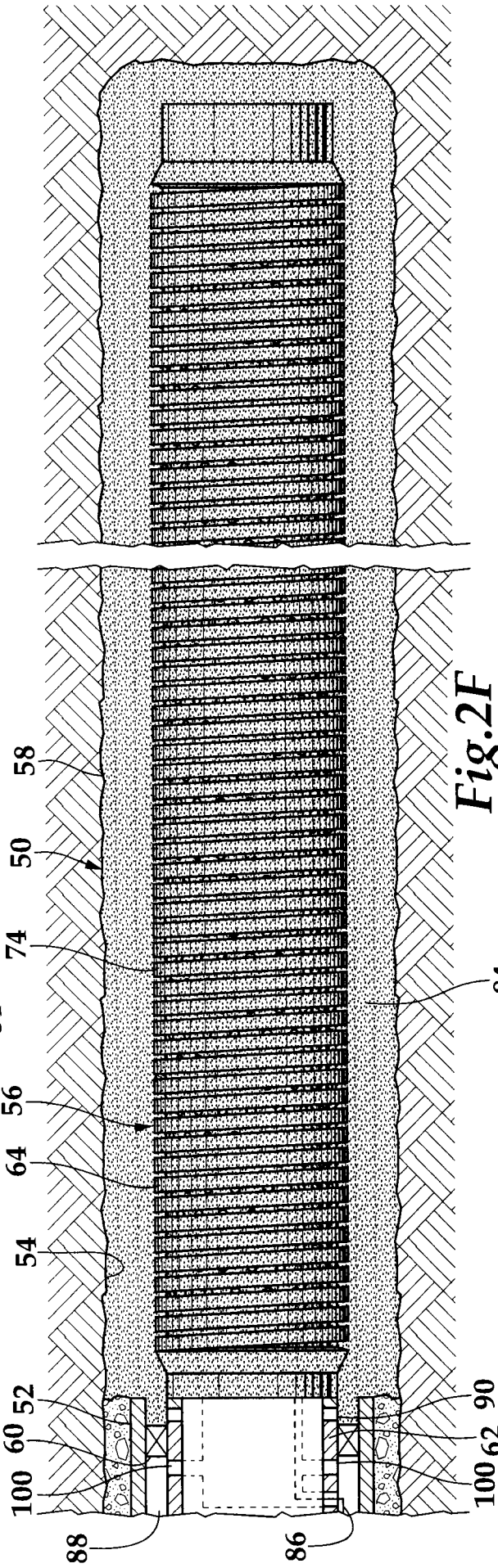

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Fig.2F

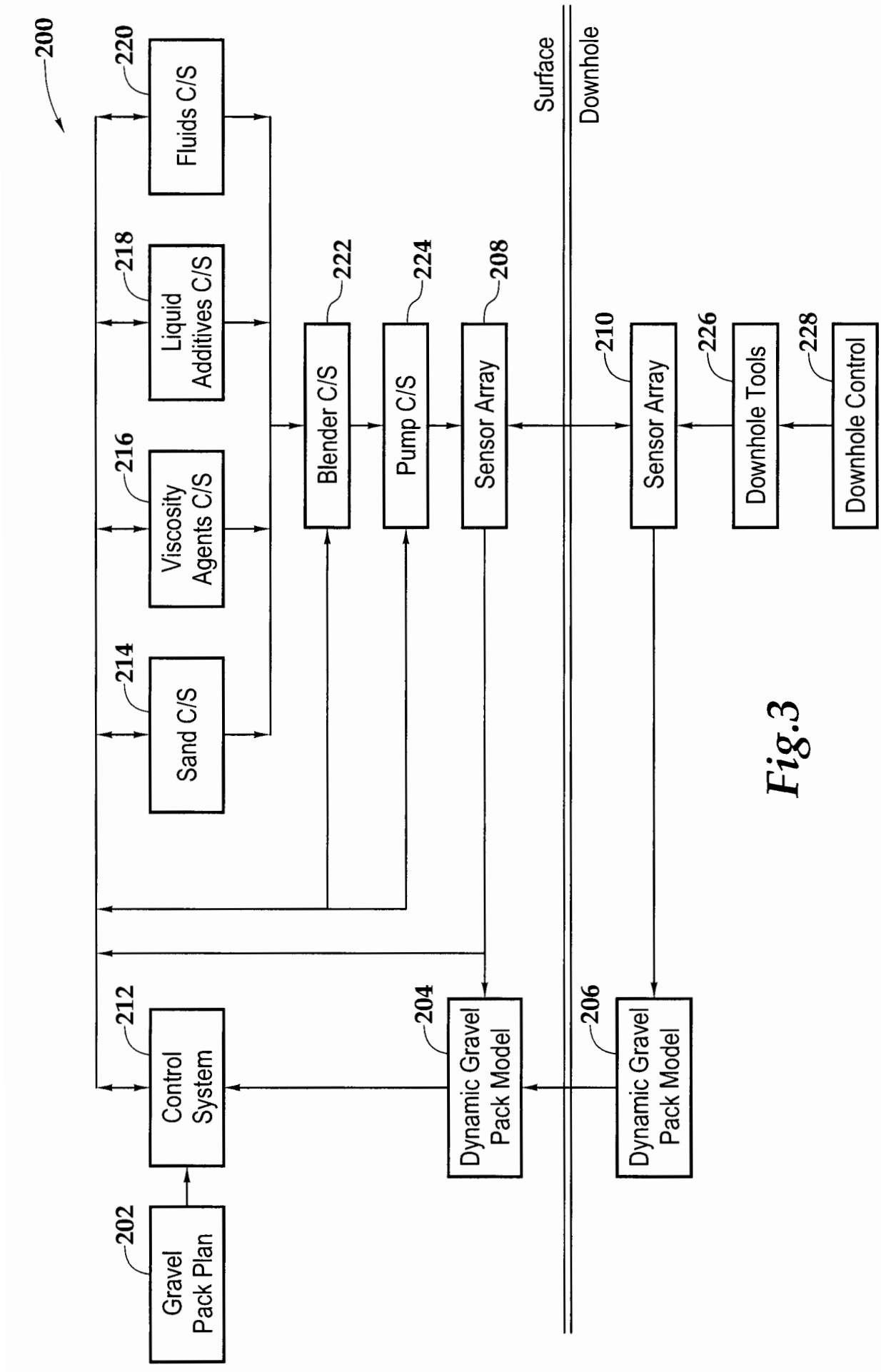

200
Surface
Downhole
Fluids C/S
220
Liquid Additives C/S
218
Viscosity Agents C/S
216
Sand C/S
214
Blender C/S
222
Pump C/S
224
Sensor Array
208
Sensor Array
210
Downhole Tools
226
Downhole Control
228
Control System
212
Dynamic Gravel Pack Model
204
Dynamic Gravel Pack Model
206
Gravel Pack Plan
202

Fig.3

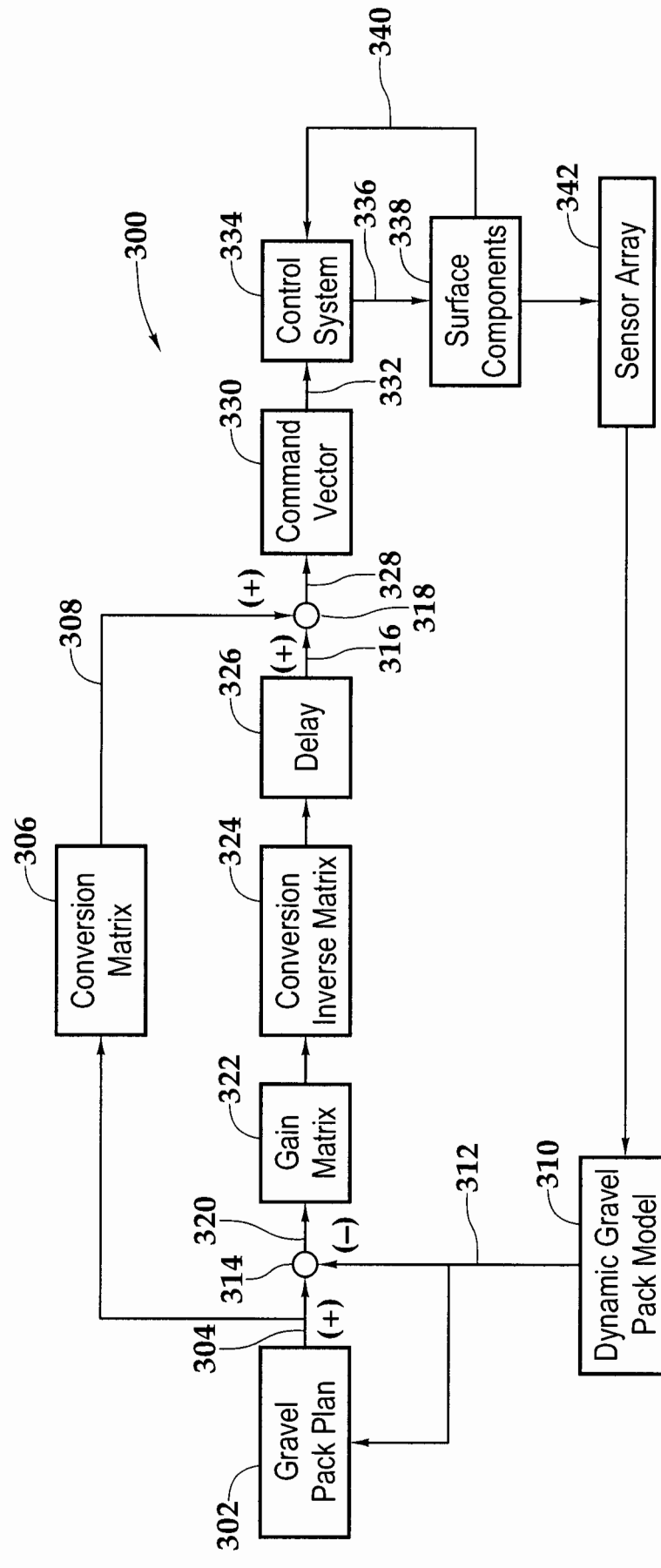

300
302
Gravel Pack Plan
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306
Conversion Matrix
308
310
Dynamic Gravel Pack Model
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314
320
(+)
(−)
322
Gain Matrix
324
Conversion Inverse Matrix
326
Delay
316
318
328
(+)
(+)
330
Command Vector
332
334
Control System
336
338
Surface Components
340
342
Sensor Array

Fig.4