

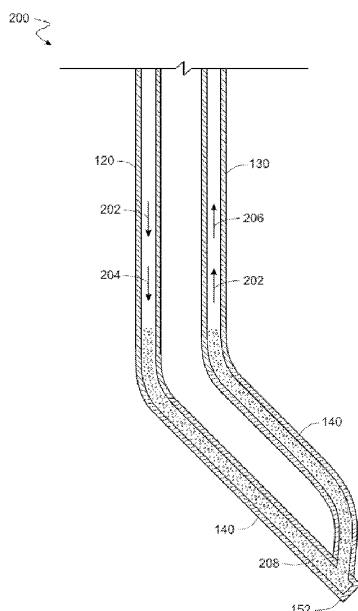


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- (54) **Title:** GEOTHERMAL REACTOR WELL



(57) **Abstract:** A geothermal reactor well system includes a closed-loop well coupled to one or more sources of reactants. The closed-loop well includes a first surface wellbore extending from a terranean surface to a geothermal subterranean zone and a second surface wellbore extending from the surface to the zone. A plurality of connecting wellbores connect the first surface wellbore to the second surface wellbore. At least a portion of the connecting wellbores are sealed against communication of fluids with the surrounding geothermal subterranean zone. A carrier fluid is disposed within the closed-loop well. The closed-loop well is configured so heat energy from the geothermal subterranean zone and/or reaction of reactants in the closed-loop well drives the fluids in the closed-loop well to circulate by thermosiphon and to thereby carry the reactants through the closed-loop well for the reaction and carry a product of the reaction through the closed-loop well for collection.

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