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(54) Title: HYDROPROCESSING REACTOR AND PROCESS HAVING STAGED REACTION ZONES**(57) Abstract**

A method and reactor for catalytic hydroprocessing liquid hydrocarbon feedstock at elevated temperatures and pressures for producing a liquid hydrocarbon product involves introducing the feedstock into a reactor having upper and lower reaction zones (12, 16) with each reaction zone having a hydroprocessing catalyst bed therein. The feedstock (22) is introduced at the top of the lower reaction zone (16) for downward flow through and reaction within the catalyst bed therein. A partially reacted liquid effluent (34) from the lower reaction zone (16) is collected and pumped to and introduced it at the top of the upper reaction zone (12) for downward flow through and reaction with the catalyst bed therein. Hydrogen gas (38) is also introduced at the top of the upper reaction zone (12) for flow downwardly and sequentially through and over the catalyst beds in the upper and lower reaction zones (12, 16) in co-current contact with the liquid in the reaction zones, the hydrogen reacting with the liquid in the reaction zones whereby the liquid effluent from the upper reaction zone (12) comprises a liquid hydrocarbon product (40). The liquid hydrocarbon effluent product from the upper reaction zone is collected and recovered.

