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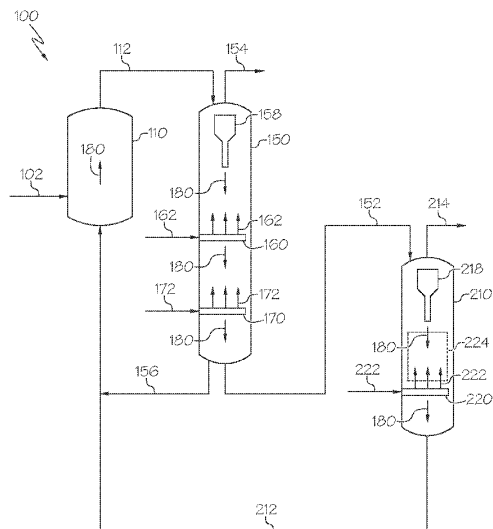


FIG. 1

(57) Abstract: According to one or more embodiments described herein, a method for dehydrogenating hydrocarbons may include contacting a feed stream including one or more hydrocarbons with a particulate solid, which may include an oxygen-carrier material, to form hydrogen and one or more products. At least a portion of the hydrogen may be reacted with oxygen from the oxygen-carrier material to form water and reduce the oxygen content in the oxygen-carrier material. The process may include passing the particulate solid from the dehydrogenation reactor to a processing zone. In the processing zone, a fuel may be injected into the processing zone, and at least a portion of the fuel may react with oxygen from the oxygen-carrier material of the particulate solid. The gases in the processing zone may include less than or equal to 1 mol.% O₂.

[Continued on next page]

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