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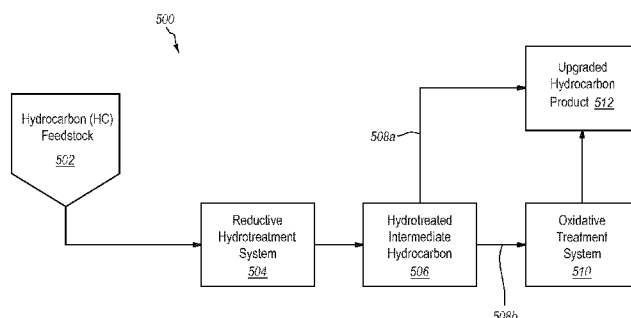


FIG. 5

(57) **Abstract:** A method for combined reductive and oxidative treatment of liquid hydrocarbon feedstock to form upgraded liquid fuel having increased cetane number and reduced sulfur content. The yield of upgraded liquid fuel having a given cetane number is higher than processes than only increase cetane number by oxidative treatment. The feedstock can be initially hydrotreated to reduce sulfur content followed by oxidative treatment to increase cetane number. A first portion of a hydrotreated intermediate stream can be oxidatively treated to yield high cetane number blending stock, which is combined with a second portion of the hydrotreated intermediate stream to yield upgraded liquid fuel having increased cetane number and reduced sulfur content. Combining hydrotreatment with oxidative treatment facilitated by high energy cavitation maximizes yield and fuel quality.