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(54) Title: INCORPORATION OF ALKENE HYDROGENATION IN VINYL ACETATE PRODUCTION SYSTEMS AND METHODS

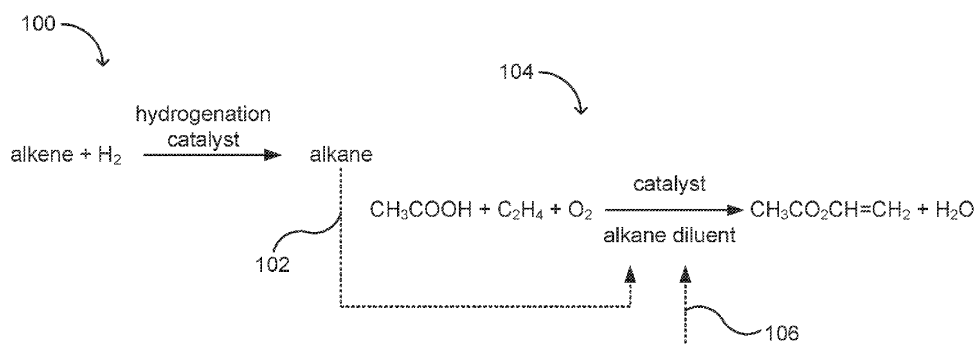


FIG. 1

(57) Abstract: Methods for producing vinyl acetate at higher production rates may be achieved by increasing the flammability limit of the mixture in the vinyl acetate reactor. For example, methane and/or higher carbon alkanes (e.g., alkanes with two or more carbons, also referred to herein as C2+ alkanes) in a diluent in the vinyl acetate reactor may increase the flammability limit. For example, a method of producing vinyl acetate may include the following steps: reacting via a hydrogenation reaction one or more alkenes and hydrogen in the presence of a hydrogenation catalyst to produce one or more alkanes; and reacting via an acetoxylation reaction acetic acid, ethylene, and oxygen in the presence of an acetoxylation catalyst and an alkane diluent to produce vinyl acetate and water, wherein the alkane diluent comprises the one or more alkanes from the hydrogenation reaction.

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