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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

[Continued on next page]

- (54) **Title:** MORE ENERGY EFFICIENT C5 HYDROGENATION PROCESS

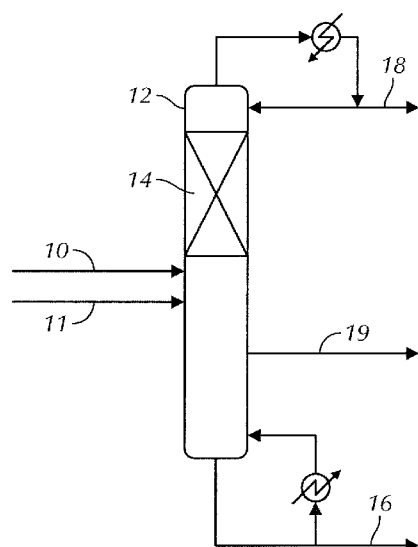


FIG. 1

(57) **Abstract:** A process for the conversion of linear pentenes to propylene is disclosed. The process may include feeding hydrogen and a C5-olefin containing stream comprising linear pentenes, dienes, acetylenes, and cyclopentene to a catalytic distillation reactor system. Concurrently in the catalytic distillation reactor system, the acetylenes and dienes may be hydrogenated and the C5-olefin containing stream may be fractionated, thereby recovering an overheads fraction comprising the linear pentenes, a side draw fraction comprising the cyclopentene, and a bottoms fraction. In some embodiments, at least a portion of the overheads fraction may then be fed to a metathesis reactor for converting the linear pentenes to propylene.

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