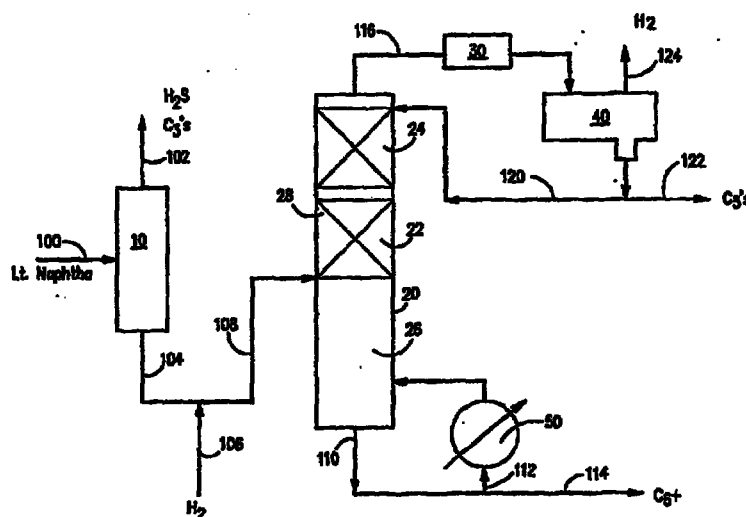


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(54) Title: **IMPROVED PROCESS FOR SELECTIVE HYDROGENATION OF HIGHLY UNSATURATED COMPOUNDS AND ISOMERIZATION OF OLEFINS IN HYDROCARBON STREAMS**

(57) Abstract

A process for treating C₃ to C₁₂ petroleum fractions, such as a light cracked naphtha to be used as an etherification feed stock in which H₂S is removed by distillation of at least the C₃ fraction and mercaptans and diolefins are removed simultaneously in a distillation column reactor (20) using a dual catalyst bed (22, 24). The mercaptans and H₂S are reacted with the diolefins in the presence of a reduced nickel catalyst (22) to form sulfides which are higher boiling than the portion of the feed which is fractionated to an upper hydrogenation catalyst bed of palladium (24) for hydrogenating diolefins and acetylenes. The higher boiling sulfides are removed as bottoms (110) along with heavier materials. Any diolefins not converted to sulfides and acetylenes are selectively hydrogenated to mono-olefins in the presence of a palladium oxide catalyst in an upper bed (24), producing overheads (116), substantially free of sulfur compounds, diolefins and acetylenes.