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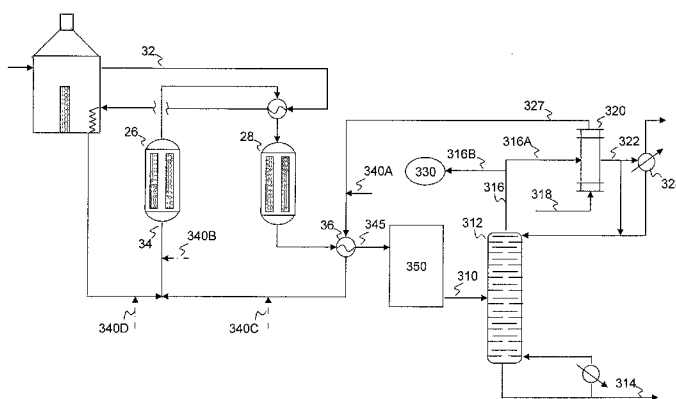
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(54) Title: PRODUCTION OF STYRENE FROM ETHYLBENZENE USING AZEOTROPIC VAPORIZATION AND LOW OVERALL WATER TO ETHYLBENZENE RATIOS

Figure 4



(57) Abstract: A process for dehydrogenation of alkylaromatic hydrocarbon, including: contacting a reactant vapor stream, comprising an alkylaromatic hydrocarbon and steam and having a first steam to alkylaromatic hydrocarbon ratio, with a dehydrogenation catalyst to form a vapor phase effluent comprising a product hydrocarbon, the steam, and unreacted alkylaromatic hydrocarbon; feeding at least a portion of the effluent to a splitter to separate the product hydrocarbon from the unreacted alkylaromatic hydrocarbon; recovered from the splitter as bottoms and overheads fractions, respectively; recovering heat from a first portion of said overheads fraction by indirect heat exchange with a mixture comprising alkylaromatic hydrocarbon and water to at least partially condense said portion and to form an azeotropic vaporization product comprising alkylaromatic vapor and steam having a second steam to alkylaromatic hydrocarbon ratio; and combining the azeotropic vaporization product with additional alkylaromatic hydrocarbon and additional steam, together or separately, to form the reactant vapor stream.



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