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(54) Title: PROCESS FOR HEAVY OIL UPGRADING IN A DOUBLE-WALL REACTOR

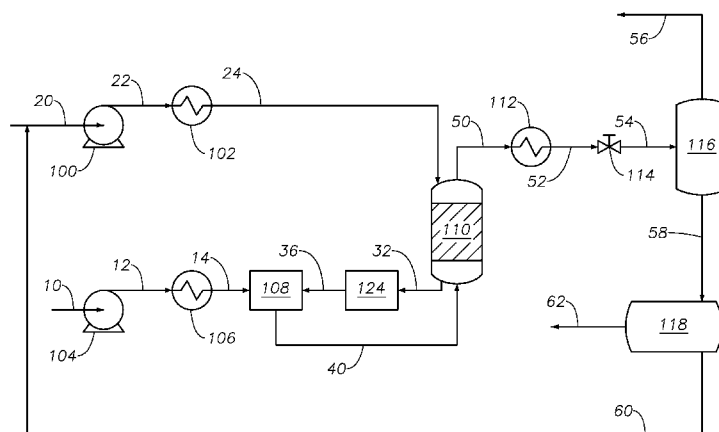


FIG. 1

(57) Abstract: A process for reducing coke formation during hydrocarbon upgrading reactions using a double-wall reactor comprising the steps of feeding a heated feed water to a shell-side volume of the double-wall reactor to produce a heat transfer stream, the double-wall reactor comprising an exterior wall and an interior wall, a reaction section volume, a heating element configured to heat the heat transfer stream, wherein heat is transferred from the heat transfer stream to the reaction section volume, feeding the hot water return exiting the shell-side volume through a filter; mixing the filtered water stream with a heated hydrocarbon feedstock; feeding the mixed stream to the reaction section volume in a configuration counter-current to the heat transfer stream; reacting the reaction flow stream at a reaction temperature, wherein the heat transferred to the reaction section volume is operable to maintain the reaction temperature above the critical temperature of water.

