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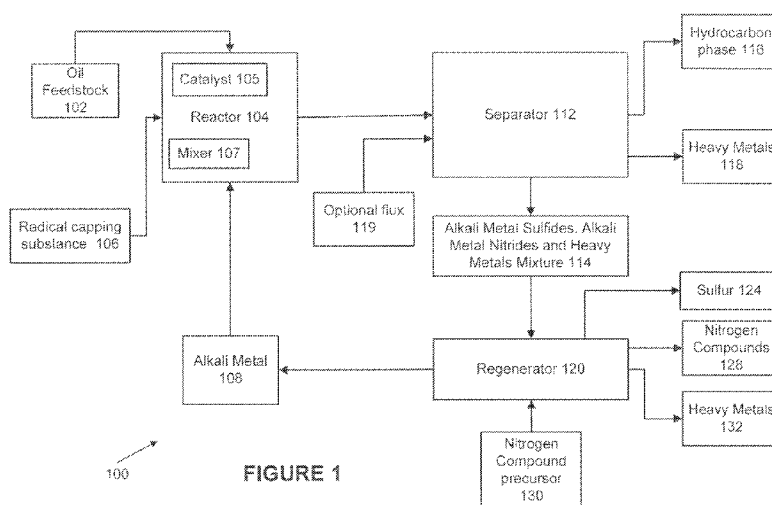


FIGURE 1

(57) Abstract: A process for removing sulfur, nitrogen or metals from an oil feedstock (102) (such as heavy oil, bitumen, shale oil, etc.) The method involves reacting the oil (102) feedstock with an alkali metal (108) and a radical capping substance (106). The alkali metal (108) reacts with the metal, sulfur or nitrogen content to form one or more inorganic products and the radical capping substance (106) reacts with the carbon and hydrogen content to form a hydrocarbon phase. The inorganic products may then be separated out from the hydrocarbon phase (116).