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(71) Applicant (for all designated States except US):
CHEVRON U.S.A. INC. [US/US]; 6001 Bollinger Canyon Road, San Ramon, CA 94583 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **BHADURI, Rahul, Shankar** [IN/US]; 6001 Bollinger Canyon Road, San Ramon, CA 94583 (US).

(74) Agents: **PHAM, Hanh, T.** et al.; Chevron Corporation, Law Department, Post Office Box 6006, San Ramon, CA 94583-0806 (US).

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(54) Title: PROCESS FOR SEPARATING AND RECOVERING METALS

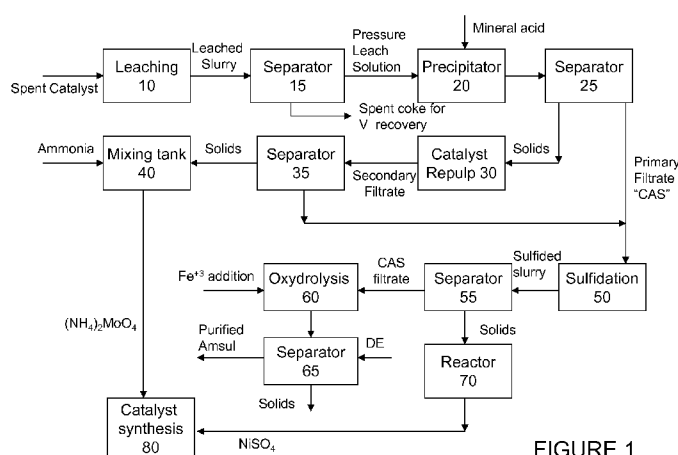


FIGURE 1

(57) Abstract: A process for treating spent catalyst containing heavy metals, e.g., Group VIB metals and Group VIII metals is provided. In one embodiment after deoiling, the spent catalyst is treated with an ammonia leach solution under conditions sufficient to dissolve the group VIB metal and the Group VIII metal into the leaching solution, forming a leach slurry. After solid-liquid separation to recover a leach solution, chemical precipitation and solids repulping is carried out to obtain an effluent stream containing ammonium sulfate (Amsul), ammonium sulfamate, Group VB, Group VIB and Group VIII metals. Following sulfidation, the Group VIII metal is fully removed and Group VB and Group VI metals are partially removed from the Amsul stream. In the additional steps of oxyhydrolysis and iron precipitation, an effective amount of ferric ion at a pre-select pH is added to form insoluble complexes with the Group VB and Group VIB metals, which upon liquid-solid separation produces an effluent ammonium sulfate stream containing less than 10 ppm each of the Group VB and Group VIB metals.