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(71) Applicant (for all designated States except US): **SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.** [NL/NL]; Carel van Bylandtlaan 30, 2596 HR THE HAGUE (NL).

(71) Applicant (for US only): **SHELL OIL COMPANY** [US/US]; 150 N. Dairy Ashford, HOUSTON, TX 77079 (US).

(72) Inventors: **URADE, Vikrant, Nanasaheb**; Plot No. 7, Bangalore Hardware Park, Devanahalli Industrial Park, Mahadeva Kodigehalli, Bangalore North 562149 Karnataka (IN). **NARAYAN, Rajeev**; Plot No. 7, Bangalore Hardware Park, Devanahalli Industrial Park, Mahadeva Kodigehalli, Bangalore North 562149 Karnataka (IN). **CHINTAKUNTA, Ganesh**; Plot No. 7, Bangalore Hardware Park, Devanahalli Industrial Park, Mahadeva Kodigehalli, Banga-

lore North 562149 Karnataka (IN). **CHOUDHARI, Harshavardhan, Jayant**; Plot No 7, Bengaluru Hardware Park, Devanahalli Industrial Park, Mahadeva Kodigahalli, Bangalore North 562149 Karnataka (IN). **MEHTA, Dhairya, Dilip**; Plot No 7, Bengaluru Hardware Park, Devanahalli Industrial Park, Mahadeva Kodigahalli, Bangalore North 562149 Karnataka (IN). **NAGARAJAN, Ashwin, Kumar**; Plot No 7, Bengaluru Hardware Park, Devanahalli Industrial Park, Mahadeva Kodigahalli, Bangalore North 562149 Karnataka (IN).

(74) Agent: **SHELL LEGAL SERVICES IP**; PO Box 384, 2501 CJ THE HAGUE (NL).

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(54) Title: FLUIDIZED BED DEVOLATILIZATION AND CRACKING OF SOLID REFINERY RESIDUE

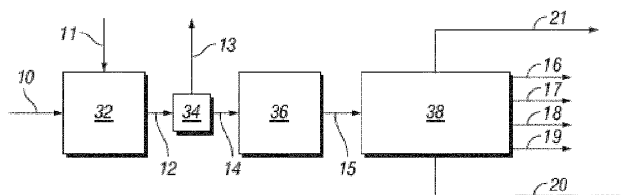


FIG. 2

(57) Abstract: Implementations of the disclosed subject matter provide a process for upgrading refinery residue feedstock. Step a) may include introducing the refinery residue feedstock into a fluidized bed reactor as a solid. In step b), the refinery residue feedstock may be heated to a devolatilizing and thermal cracking temperature in the fluidized bed reactor to produce a product stream comprising gaseous hydrocarbons and solid coke. The gaseous hydrocarbons may be subjected to catalytic hydroprocessing, in step c), in the presence of molecular hydrogen to increase the hydrogen to carbon ratio and lower the average molecular weight of the gaseous hydrocarbons. In step d), the gaseous hydrocarbons may be separated from the solid coke. In step e), the gaseous hydrocarbons from step d) may be subjected to further processing to produce at least one of: C1-C3 hydrocarbons, liquefied petroleum gas, naphtha range hydrocarbons, and middle distillate range hydrocarbons.

[Continued on next page]

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