

CLAIMS:



1. A hydrocarbon synthesis process which comprises:

(a) injecting a synthesis gas comprising a mixture of H_2 and CO up into a slurry which comprises a solid, particulate hydrocarbon synthesis catalyst and gas bubbles in a hydrocarbon slurry liquid, wherein said synthesis gas is injected up into the bottom of said slurry by means of a gas distribution grid located at the bottom thereof which comprises a plurality of gas injectors horizontally arrayed across, and extending vertically through, an otherwise gas and liquid impervious plate, said injectors each comprising an elongated, hollow, first gas expansion zone open at both ends and having a pressure reducing bore at one end, which is the entrance end and with the other end opening into the bottom end of an upward and outward extending, hollow second gas expansion zone open at both ends, with a flow diverting means located proximate the junction of said first and second zones for imparting a radially inward flow direction to liquid slurry flowing from said second zone towards said first zone, and

(b) reacting said H_2 and CO in the presence of said catalyst in said slurry at reaction conditions effective to form hydrocarbons, at least a portion of which are liquid at said reaction conditions and wherein said slurry hydrocarbon liquid comprises said synthesized liquid hydrocarbons.

2. A process according to claim 1 wherein said catalyst comprises a Fischer-Tropsch catalyst.

3. A process according to claim 1 wherein said bore has a diameter smaller than that of said first expansion zone and wherein the aspect ratio of said first expansion zone is less than 10:1.



4. A process according to claim 3 wherein the aspect ratio of said first zone of said injectors is greater than 2:1.

5. A process according to claim 4 wherein the longitudinal axis of said bore and said first and second zones of said injectors are all coaxial.

6. A process according to claim 5 wherein said second zone does not extend above the top surface of said top plate.

7. A process according to claim 6 wherein flat space eliminators are present on flat surfaces at the top of said grid.

8. A process according to any previous claim wherein said hydrocarbon liquids are upgraded to more valuable product by one or more hydroconversion operations.