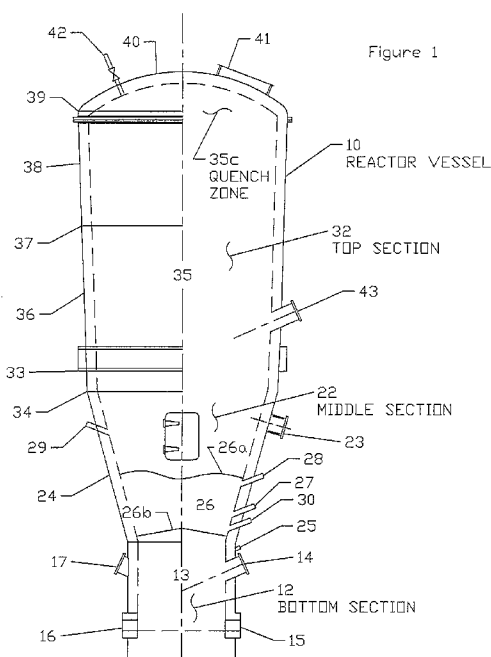




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[Continued on next page]

(54) **Title:** ENHANCED PLASMA GASIFIERS FOR PRODUCING SYNGAS

(57) **Abstract:** A plasma gasification reactor, and process for its operation, with one or both of, first, a quench zone within an upper part of a top section of the reactor and, second, feed ports through a lateral wall of a middle section of the reactor for supplying feed material to a feed bed within the middle section and the feed ports located proximate the feed bed. The quench zone is provided with nozzles for introducing a fluid to reduce the temperature of molten solid bits sufficiently to minimize their sticking within external ductwork. The middle section feed port arrangement assists in more thorough reaction of light particles in the feed material that may otherwise exit with gaseous products. Among feed port arrangements, they may be located above a feed bed and angled upwardly to allow close proximity to the upper feed bed surface without severe radiation heating or they may be located at a level to feed material laterally directly into a feed bed, in which case a cooling arrangement may be provided, as well as a feed mechanism, to facilitate passage of feed material.

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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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