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H09 J09

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DOW CHEMICAL CO

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Improved burner nozzle for synthesis-fuel gas prodn. - from solid carbonaceous fuel slurries having concentric passageways exiting through tungsten silicon carbide water cooled orifice

C86-121103 E(BE DE FR GB)

H(6-A, 9-C) J(9-B)

conc. slurry to partially or completely plug annular passageways in the nozzle.

BURNER NOZZLE DESIGN

Burner nozzle (10) includes a central conduit (1) forming a passageway (4); a second coaxial annular conduit (2) forming an annular passageway (5); and a third annular conduit (3) forming an annular passageway (6). The passageway (5) is supported between passageways (4,6) by spacers (17).

Passageways (4,5,6) are closed at their upstream ends by walls (7a,7b,7c) in which inlets (15,16) are provided for slurry and gas feedstreams. Distribution chamber (18) uniformly transports the slurry feedstream into annular passageway (5). Tube (19) provides open communication between passageways (4,6) for the transport of the gas feedstream.

Nozzle diffuser (9) has a converging surface (9a) for impinging the slurry passing through passageway (5), and an elongate exit orifice (11) to transport the mixture of slurry and oxygen-containing gas into the reactor at an accelerated velocity. Diffuser (9) is a continuing extension of conduit (3), and is preferably made of tungsten carbide or silicon carbide

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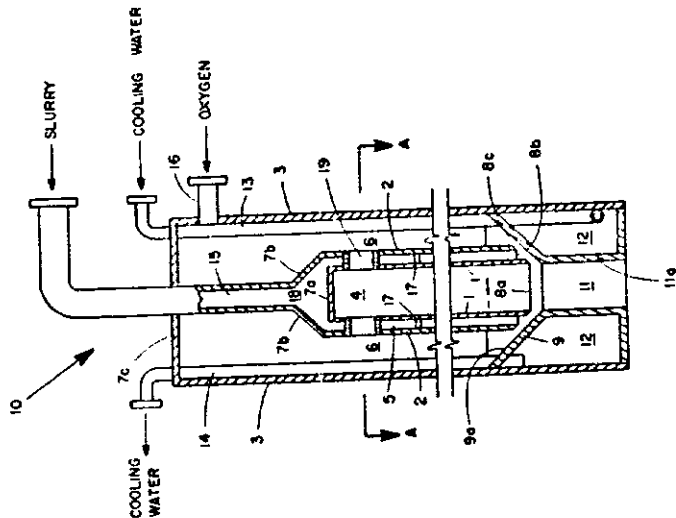
Improved burner nozzle and process are claimed for making synthesis gas or fuel gas mixt. contg. hydrogen and carbon monoxide by the partial oxidn. of a slurry of solid carbonaceous fuel in a liquid carrier admixed with a gas contg. free oxygen, the partial oxidn. occurring in a free-flowing hollow reactor.

By means of the burner nozzle, the slurry and oxygen-contg. gas are admixed, atomised and introduced into the reactor which operates at a temp. of 1700-3500°F and a pressure of atmos. to 3500 psi. By-product gases such as nitrogen, carbon dioxide and hydrogen sulphide, as well as inorganic slag, may also be produced.

ADVANTAGE

Nozzle provides an efficient and uniform admixture of a slurry having a high concn. of finely divided solids with a gas while, at the same time, reducing the tendency of such a

whereas the remainder of the nozzle can be fabricated from stainless steel, preferably with a water jacket (12) to cool diffuser (9) and walls (11a) of the orifice (11).
 (25pp1684RHDwgNo1/4)
 (E)ISR: No Search Report



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