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(54) **Gas turbine engine fuel/air premixers with variable geometry exit and method for controlling exit velocities**

(57) Apparatus (1430) for premixing fuel and air to provide a fuel/air mixture includes a mixing tube (1434) configured for receiving fuel and air, a mixing tube axis (1442), and a mixing tube exit (1454) for discharging a fuel/air mixture. The apparatus further includes a mixture valve (1444) associated with the mixing tube exit (1454) and including inner and outer valve members that define an exit flow area (1402). The defined exit flow area includes at least two segmented, substantially op-

posed area portions with respect to angular position about the mixing tube axis provided by contours in the outer valve member for directing the mixture flow, and at least one of the inner and outer valve members is movable relative to the other of the valve members to selectively vary the defined exit flow area with respect to time. In a gas turbine gas generator or engine application, a separate controllable combustion air valve can be used with a fuel valve to provide controlled fuel/air ratios for the mixture.

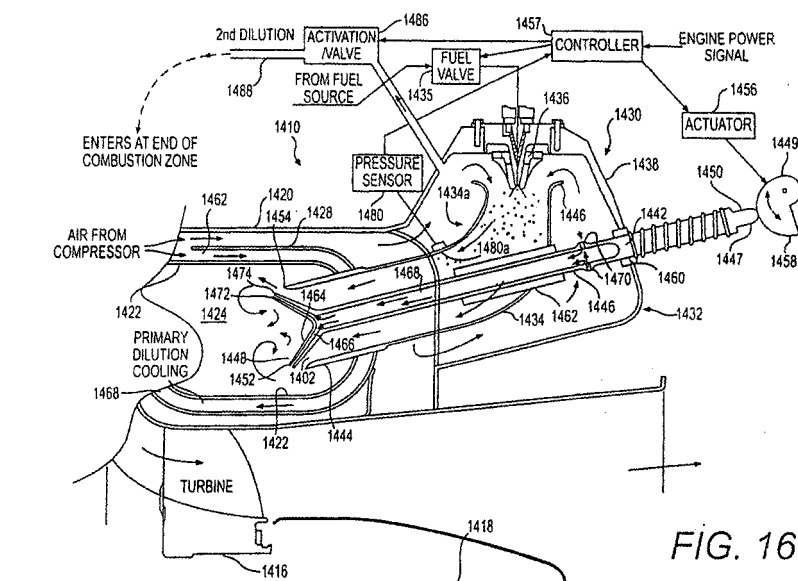


FIG. 16



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 02 02 7665

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 1 036 988 A (MOWILL ROLF JAN) 20 September 2000 (2000-09-20) * column 35, paragraph 0115 - column 46, paragraph 0155; figures 16-20 *	1-7	F23R3/28
A	EP 0 831 275 A (MITSUBISHI HEAVY IND LTD) 25 March 1998 (1998-03-25) * the whole document *		
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			F23R F23D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 16 March 2004	Examiner Theis, G
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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