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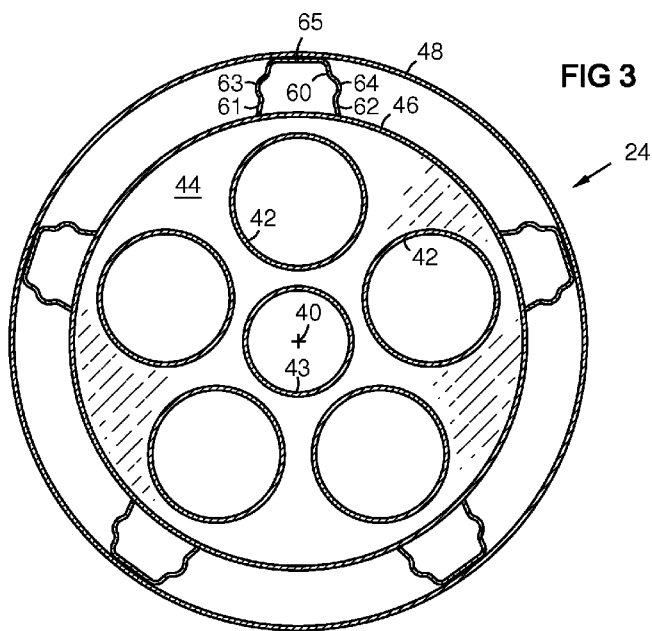
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[Continued on next page]

(54) Title: THERMALLY COMPLIANT SUPPORT FOR A COMBUSTION SYSTEM



(57) Abstract: A support structure in a gas turbine combustor end cap (24) including a bracket (60) with a first leg (61) and a second leg (62) forming a generally trapezoidal geometry. Each leg has a first end (61A, 62A) attached to an inner concentric ring (46), and a second end (61B, 62B) attached to a crossbar (65). The crossbar is attached to an outer concentric ring (48). A circular array of such brackets interconnects the two concentric rings (46, 48). Each leg has at least one curved middle portion (63, 64), such as an arcuate or sinusoidal curve at a midpoint on the length of each leg. This shape provides flexibility in a radial direction that accommodates differential thermal expansion of the concentric rings while providing a rigid connection in an axial direction.

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SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
 INV. F23R3/60 F23R3/10 F23R3/46
 ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 F23R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 031 303 A1 (SNECMA [FR]) 4 March 2009 (2009-03-04) paragraphs [0005], [0014], [0020], [0041], [0042]; figures 6,7 -----	1-10
A	EP 1 577 505 A2 (SNECMA [FR]) 21 September 2005 (2005-09-21) abstract -----	1-10

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2031303	A1	04-03-2009	CA 2639214 A1 28-02-2009
			EP 2031303 A1 04-03-2009
			FR 2920524 A1 06-03-2009
			JP 5051391 B2 17-10-2012
			JP 2009057971 A 19-03-2009
			US 2009056337 A1 05-03-2009

EP 1577505	A2	21-09-2005	EP 1577505 A2 21-09-2005
			FR 2867507 A1 16-09-2005
			JP 4630697 B2 09-02-2011
			JP 2005273660 A 06-10-2005
			RU 2364730 C2 20-08-2009
			US 2006038064 A1 23-02-2006
