



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 0 932 008 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
10.05.2000 Bulletin 2000/19

(51) Int. Cl.⁷: **F28D 1/053, F28F 1/16**

(43) Date of publication A2:
28.07.1999 Bulletin 1999/30

(21) Application number: **99100364.1**

(22) Date of filing: **15.01.1999**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Niboli, Silvestro**
25078 Vestone (IT)

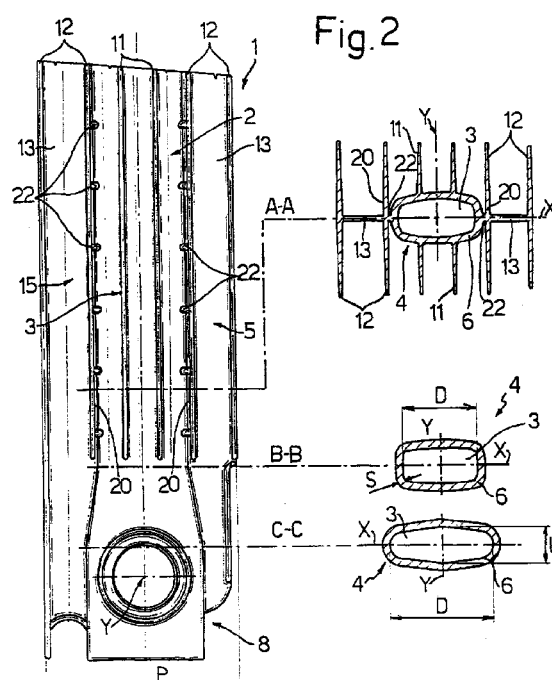
(74) Representative:
Jorio, Paolo, Dr. Ing. et al
Studio Torta S.r.l.,
Via Viotti, 9
10121 Torino (IT)

(30) Priority: **16.01.1998 IT TO980038**

(71) Applicant:
FONDITAL FONDERIE ITALIANE NUOVA
VALSABBIA S.p.A.
25078 Vestone (IT)

(54) **Radiator, in particular for heating systems, with a high resistance to internal pressure**

(57) A radiator (1) having at least one module (2) including: a tubular portion (3) with a flat cross section (4); opposite top and bottom ends (7,8) having respective lateral hydraulic fittings (10) substantially aligned along a minor axis of the cross section; and a finned portion (5) formed integrally in one piece with a lateral wall (13) of the tubular portion (3); the finned portion including first fins (11) originating directly from the tubular portion, and second fins (12) originating transversely from respective front ribs (13) in turn originating from the tubular portion (3) and perpendicular to the first fins (11); the ribs being substantially aligned with a major axis of the cross section; the cross section (4) having a dimension (D), measured along the major axis, smaller than or equal to 45% of the depth (P) of the module (2), also measured along the major axis, and a wall thickness (S) ranging between 2.4 and 4.5mm; and a root portion (20) of each rib (13) having no fins, and having a number of respective ridges (22) connecting the root portion (20) to the lateral wall (6) of the tubular portion (3) and to a second fin immediately adjacent to the tubular portion.



EP 0 932 008 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 10 0364

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	CH 556 523 A (PAVEG ANSTALT) 29 November 1974 (1974-11-29)	1,5	F28D1/053
A	* column 3, line 23 - column 5, line 35; figures *	4	F28F1/16
Y	CH 660 913 A (SCHIEDEL GMBH & CO) 29 May 1987 (1987-05-29)	1,5	
	* page 4, left-hand column, line 38 - line 65; figure 1 *		
A	DE 27 03 632 A (SCHIEDEL KG) 10 August 1978 (1978-08-10)	1,4-6	
	* column 3, line 52 - column 5, line 28; figures *		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F28F F28D
Place of search		Date of completion of the search	Examiner
THE HAGUE		17 March 2000	Van Dooren, M
<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</p> <p>& : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P4/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 10 0364

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

17-03-2000

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
CH 556523	A	29-11-1974	NONE	
CH 660913	A	29-05-1987	AT 392534 B	25-04-1991
			AT 381383 B	10-10-1986
			CH 658904 A	15-12-1986
			DE 3229757 A	26-05-1983
			DE 3229759 A	24-03-1983
DE 2703632	A	10-08-1978	NONE	