



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**26.10.2005 Bulletin 2005/43**

(51) Int Cl.7: **F24D 3/10**

(43) Date of publication A2:  
**10.03.2004 Bulletin 2004/11**

(21) Application number: **03018704.1**

(22) Date of filing: **25.08.2003**

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

(72) Inventor: **Castelletti, Luigi**  
**37036 San Martino Buon Albergo (Verona) (IT)**

(30) Priority: **06.09.2002 IT VR20020087**

(74) Representative: **Savi, Alberto**  
**c/o CON LOR SPA,**  
**Via Amatore Sciesa, 9**  
**37122 Verona (IT)**

(71) Applicant: **Castelletti, Luigi**  
**37036 San Martino Buon Albergo (Verona) (IT)**

(54) **Modular housing with multiple inlets and outlets for primary and / or secondary circuits in heating and cooling plants**

(57) In comparison with the known solutions, the housing according to the present invention is very advantageous because it is modular and is provided with centred or offset connections, threaded groove-and-tongue joints, flanged connections or other kind of connections of various sizes and shapes while previously, components with soldered or fused connections were used, which were fixed in the sense of direction and had a predetermined number of inlets and outlets.

Basically, the housing (1) includes a plurality of modular elements (2) which are placed between two bottom elements or bottoms (3). The shape of each modular elements is substantially cylindrical. The modular elements (2) project from the body of pipe-fittings or connections (4). The arrangement of the said connections (4) is orthogonal to the housing axis and tangential to the housing circumference so as to allow the inner flow of the liquid to form inner whirl flows. These inner flows permit a better mixing with a better stratification and separation of the microbubbles.

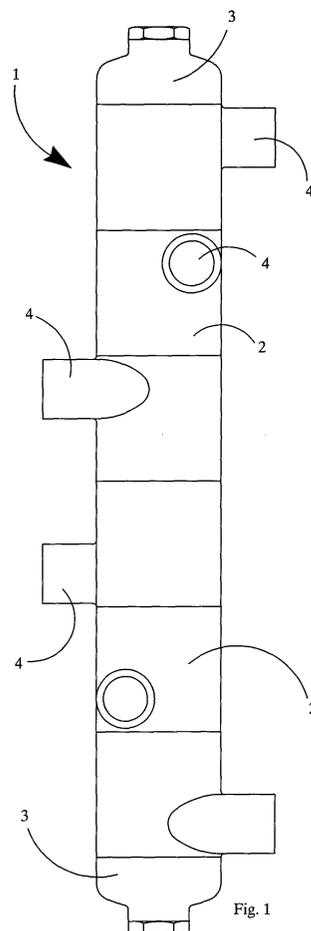


Fig. 1



European Patent  
Office

EUROPEAN SEARCH REPORT

Application Number  
EP 03 01 8704

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.7)
X	US 6 220 520 B1 (GIBBS DONALD R) 24 April 2001 (2001-04-24) * figures 1,3-7,10,11 *	1,6	F24D3/10
X	DE 28 29 216 A1 (HEWING KG; HEWING KG, 4434 OCHTRUP, DE) 17 January 1980 (1980-01-17) * the whole document *	1-6	
X	DE 16 79 567 B1 (ORIGINAL HANAU QUARZLAMPEN [DE]) 13 January 1972 (1972-01-13) combi fron EP0351155 * page 1; figure 1 *	1,2,5,6	
Y	* figures 4,6 *	4	
X	DE 27 31 819 A1 (HEWING,BERND; HAGEMANN,FRANZ-JOSEF) 1 February 1979 (1979-02-01) * the whole document *	1-3,5,6	
Y		4	
X	EP 0 351 155 A (MIDTEC, INC. OF AMERICA) 17 January 1990 (1990-01-17) * abstract; figures 5,7 *	1,2,5,6	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A		4	F24D
X	US 4 770 341 A (DRAKE ET AL) 13 September 1988 (1988-09-13) * figure 2 *	1,2,6	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 September 2005	Examiner García Moncayo, O
CATEGORY OF CITED DOCUMENTS 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		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	

1

EPO FORM 1505 03 82 (F04C01)

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

EP 03 01 8704

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.

02-09-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date		
US 6220520	B1	24-04-2001	DE 10106531 A1	22-08-2002	
			GB 2373320 A ,B	18-09-2002	
			CA 2327121 A1	23-06-2001	
-----					
DE 2829216	A1	17-01-1980	NONE		
-----					
DE 1679567	B1	13-01-1972	NONE		
-----					
DE 2731819	A1	01-02-1979	NONE		
-----					
EP 0351155	A	17-01-1990	US 4848391 A	18-07-1989	
			AT 117415 T	15-02-1995	
			AU 627749 B2	03-09-1992	
			AU 3803489 A	18-01-1990	
			CA 1315644 C	06-04-1993	
			DE 68920649 D1	02-03-1995	
			DE 68920649 T2	31-08-1995	
			EP 0351155 A2	17-01-1990	
			ES 2067542 T3	01-04-1995	
			HK 63295 A	05-05-1995	
			JP 2225899 A	07-09-1990	
			JP 2779841 B2	23-07-1998	
			MX 167155 B	08-03-1993	
NZ 229885 A	27-11-1990				
SG 9590636 A2	01-09-1995				
-----					
US 4770341	A	13-09-1988	AU 2133888 A	13-02-1989	
			CA 1298757 C	14-04-1992	
			DK 9190 A	12-01-1990	
			EP 0375697 A1	04-07-1990	
			JP 2504666 T	27-12-1990	
			NO 900171 A	13-03-1990	
			NZ 225407 A	27-11-1990	
			WO 8900663 A1	26-01-1989	
-----					