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Variable power device for a uniform heating of fluids

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A variable power device for a uniform heating of fluids, comprising an outer tube (10), which is connected to a fitting or flange (14) for connecting the power supply and grounding cables (21) and to one or more fluid distribution connectors (24, 26), said outer tube (10) enclosing a first drilled heat sink (13), made of conductive material, within which a first hollow space (11) and a wire-type or layer-type resistor (12), embedded within an insulating layer, are inserted, In this way, the resistor (12) is not directly connected with the fluid, but it is directly connected with said first heat sink (13) and therefore it is possible to distribute heat from said first heat sink (13) to the fluid in correspondence with a large surface, while said first heat sink (13) also maintains a low temperature at the fluid contact surface.

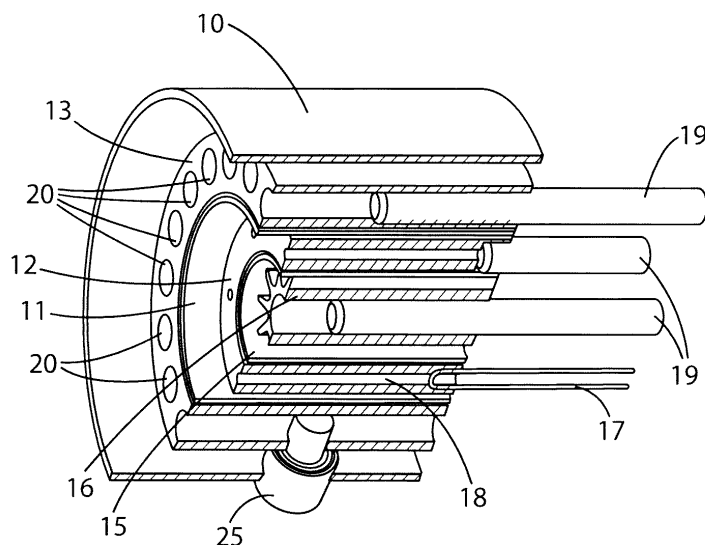


Fig. 4

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 5 265 318 A (SHERO WILLIAM K [US]) 30 November 1993 (1993-11-30) * column 1, line 13 - line 14 * * column 5, line 1 - line 67 * * column 4, line 19 - line 23 * * figure 4 * -----	1-4,6	INV. F24H1/12 H05B3/44
Y	US 4 835 365 A (ETHERIDGE DAVID R [US]) 30 May 1989 (1989-05-30) * column 7, line 11 - line 20; figure 2 * -----	1-4,6	
X	US 2004/264951 A1 (KUEBLER KARL-HEINZ [US] ET AL) 30 December 2004 (2004-12-30) * paragraphs [0126], [0128], [0132], [0137] *	1,3,4 7,8 5	
Y	FR 515 528 A (JEAN FRANCOIS COURTILLET [FR]) 2 April 1921 (1921-04-02) * sentence 1 - sentence 3 * * sentence 45 * * sentence 31 - sentence 41 * * figure 1 *	1,2,6 7,8	TECHNICAL FIELDS SEARCHED (IPC)
A	DE 20 2005 017693 U1 (KO HAO CHIH [TW]; LIN CHEN HENG [TW]) 23 February 2006 (2006-02-23) * figures 1,2 * -----	1	F24H H05B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 March 2015	Examiner Garcia Congosto, M
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	



Application Number

EP 14 42 5140

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-8

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 14 42 5140

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-8

A variable power device for a uniform heating of fluids, wherein said device comprises an outer tube enclosing a first drilled heat sink.

2. claims: 9, 10

A variable power device for a uniform heating of fluids, wherein said device comprises an outer tube enclosing a first heat sink, wherein said first heat sink (13) is constituted by a tube bundle, which includes a plurality of hollow sections, each of which has the same prefixed section and, in particular, a trapezoidal section, so that said sections laterally adhere one to each other, thus obtaining a large contact area.

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

EP 14 42 5140

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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
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02-03-2015

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US 4835365 A	30-05-1989	NONE	
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82