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(54) **Boiler for electrical generator based on external boiler with improved yield**

(57) A boiler (236) for an electrical generator (203) of the external-boiler type is proposed. The boiler includes a furnace (242) for producing heat through combustion of a fuel. The boiler is provided with an input (315) for receiving a process fluid. A heat exchanger (248) causes the process fluid to flow close to the furnace (so that it is heated by the heat produced by the furnace). The boiler is also provided with an output (320) for sup-

plying the heated process fluid to the electrical generator. In the solution according to an embodiment of the invention, the heat exchanger includes a plurality of ducts (415-435) being connected in parallel between the input and the output (for partitioning the flow of the process fluid); the ducts are arranged as a tunnel (430-435) around the furnace along a flow direction (245) of combustion smokes being produced by the furnace.

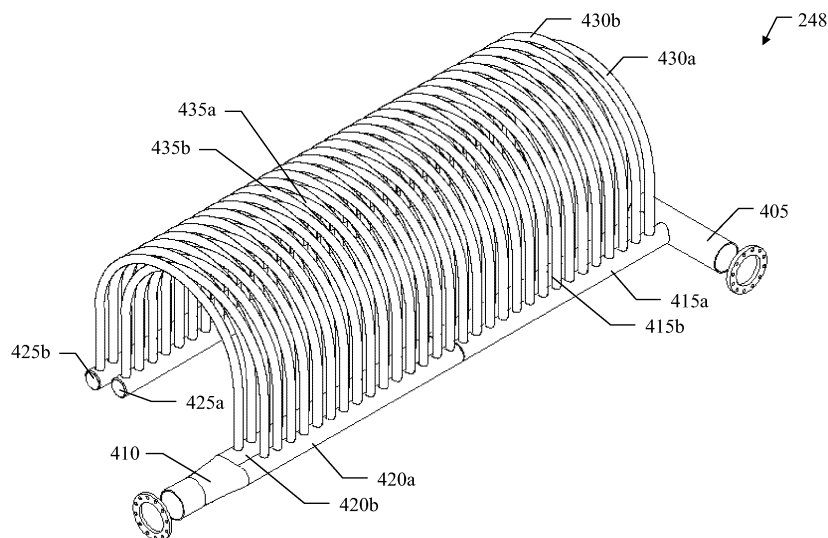


FIG.4



EUROPEAN SEARCH REPORT

Application Number
EP 09 16 3632

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 244 326 A (JACKSON DENNIS H) 13 January 1981 (1981-01-13) * figures 1-5 * * column 2, line 20 - column 3, line 30 * -----	1,11,12	INV. F22B7/04 F22B7/06 F22B7/08
X	US 6 718 915 B1 (ALBRECHT MELVIN J [US] ET AL) 13 April 2004 (2004-04-13) * figure 2 * * column 4, line 5 - line 19 * * claim 1 * -----	1,11,12	
X	US 2003/192684 A1 (ROBERTS JOSH [US] ET AL) 16 October 2003 (2003-10-16) * paragraphs [0001], [0007], [0008]; figures 1-6 * * paragraphs [0030] - [0032] * -----	1,11,12	
X	GB 634 750 A (ANDRE HUET) 29 March 1950 (1950-03-29) * figures 1-3 * * page 2, line 41 - line 97 * -----	1,11,12	TECHNICAL FIELDS SEARCHED (IPC)
A	US 3 920 067 A (SCHINDLER HERBERT ET AL) 18 November 1975 (1975-11-18) * figures 1,2 * * column 3, line 60 - column 6, line 39 * -----	1-15	F22B F24H
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 October 2010	Examiner Röberg, Andreas
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	

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EPO FORM 1503 03.82 (P04C01)



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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:
- see additional sheet(s)
- ☐ 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

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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: 1-15

A boiler with an inlet header connected through a group of ducts to an intermediate header and an outlet header connected through another group of ducts to the intermediate header. The inlet and outlet headers being positioned on the same side of the heat exchanger and the intermediate header being positioned on the opposite side of the heat exchanger. Claims 6 - 15 as comprising the subject-matter of claim 2.

2. claims: 1, 6-15

A boiler including a furnace with a first heat exchanger and a further heat exchanger for heating a combustion gas to be supplied to the furnace.

3. claims: 1, 12-15

An energy generation installation including an electrical generator and a boiler, further including means for adding at least part of the process fluid being exhausted by the electrical generator to a combustion gas to be supplied to the boiler. Claims 14 and 15 as comprising the subject-matter of claim 13.

4. claims: 1, 12(completely); 14, 15(partially)

An energy generation installation including an electrical generator and a boiler, wherein the electrical generator is a gas turbine. This invention includes claims 14 and 15 comprising the first part of claim 14, thereby excluding the optional feature of "at least part of the process fluid being exhausted by the electrical generator".

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

EP 09 16 3632

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.

20-10-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4244326	A	13-01-1981	NONE	
US 6718915	B1	13-04-2004	CN 1521447 A	18-08-2004
US 2003192684	A1	16-10-2003	CA 2424465 A1	16-10-2003
GB 634750	A	29-03-1950	NONE	
US 3920067	A	18-11-1975	NONE	