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(54) **Side walls of combustion chamber in fin heat exchanger**

(57) The invention solves the problem of construction of the side walls of the heat exchanger, which is characterised by the fact that the external edges of the lamel plates (1) are formed as an inseparably overlapping angle, and creates a leaktight external surface for the side walls of the combustion chamber (2). Inside the side walls of the combustion chamber (2) there are flow channels (3) for the heated medium.

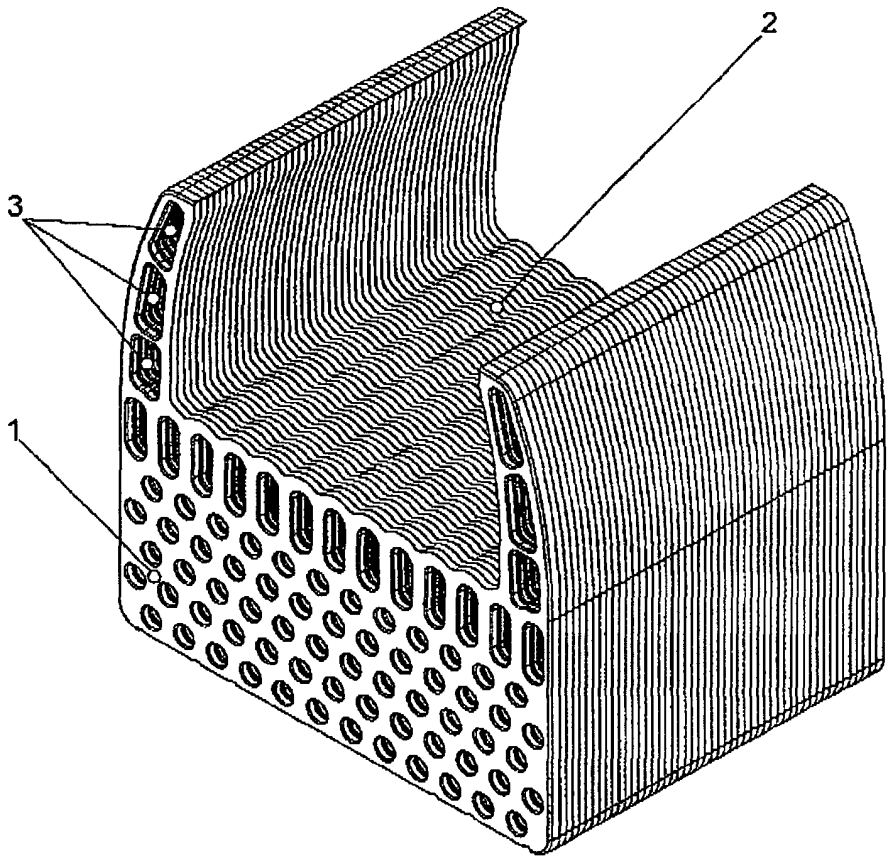

Fig.1

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Description

[0001] The subject of the invention is the side walls of the combustion chamber in a lamel heat exchanger, most advantageous in applications in condensation gas furnaces as a heat exchanger with a closed combustion chamber.

[0002] In this field of technology there are already some heat exchanging solutions with combustion chambers combining the functions of a primary heat exchanger with that of an economiser function.

[0003] Such an example is the construction of a heat exchanger and a combustion chamber made by Randamax B.V, of a plate structure, in which two media flow in the exchanger in parallel layers, divided by corrugated walls. In these exchangers the lamel plates are distanced from each other by means of sealing spacers screwed to each other in a stiff structure with a screw connection creating leaktight side walls for the combustion chamber and the heat exchanger.

[0004] The disadvantage of such a known solution is the possibility of lamel plate deformation as a result of over-tightening of the screws, which unfavourably influences the heat exchange process. Moreover, the screw connections do not guarantee the required connection leaktightness, which at the same time causes the risk of uncontrolled self-unscrewing.

[0005] The essence of the invention is the development of the side walls of a combustion chamber in a lamel heat exchanger to eliminate the above disadvantages.

[0006] The task was achieved using a solution where the external edges of the lamel plates where formed into an angle, joined inseparably by overlapping and hence creating a leaktight external surface of the side walls of the combustion chamber. Inside the side walls of the combustion chamber are flow channels for the heated medium.

[0007] In the solution, according to the invention, the structure of the side walls of the combustion chamber in a lamel heat exchanger eliminates the necessity to build an additional shield for the combustion chamber and the flow channels to eliminate the necessity to install additional thermal insulation, and which ensures achieving very good operational parameters and a high heating efficiency.

[0008] The subject of the invention is shown as an example in the attached picture, where figure 1 presents the axonometric view of the heat exchanger as well as the side walls, while figure 2 presents a part of the longitudinal intersection of the inseparable and overlapping connection of the external edges of lamel plates.

[0009] The lamel heat exchanger including the side walls, as in the invention, is built of lamel plates 1 creating the exchanger packet after connecting. The internal edges of lamel plates 1 define the space of the combustion chamber exchanger 2,of which the side walls in the internal space have the formed flow channels 3 shaped from inseparably joined necks 4 of openings made in the lamel plates 1, creating spaces 5 between the individual lamel plates 1.

Claims

1. The side walls of the combustion chamber in a lamel heat exchanger formed from lamel plates creating a heat exchanger packet, being an integrated heat exchanging surface, is significant in the fact that the external edges of the lamel plates (1) shaped into an angle, are joined inseparably by overlapping, and hence creating a leaktight external surface for the side walls of the combustion chamber (2) and inside the side walls of the combustion chamber (2) there are flow channels (3) for the heated medium.

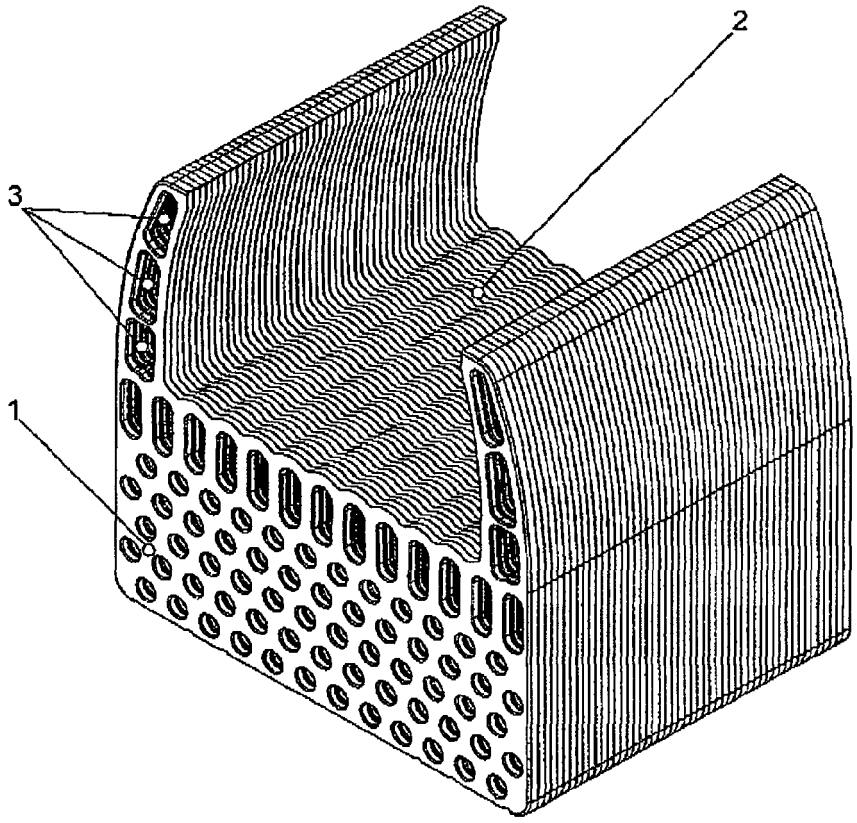

Fig.1

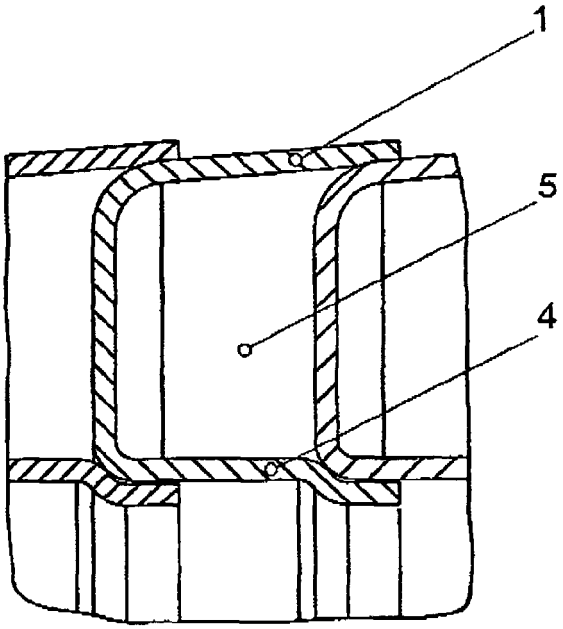

Fig.2

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EUROPEAN SEARCH REPORT

Application Number
EP 08 00 1005

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	NL 8 802 695 A (RENDAMAX BV) 1 June 1990 (1990-06-01) * page 4, line 32 - page 8, line 36; figures 1-3 * -----	1	INV. F24H1/40 F28F1/28
A	DE 681 176 C (EDUARD AHLBORN AKT GES) 16 September 1939 (1939-09-16) * figure 1 * -----	1	

TECHNICAL FIELDS SEARCHED (IPC)

F24H
F28F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 July 2008	Arndt, Markus

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
O : non-written disclosure
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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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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10-07-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
NL 8802695 A	01-06-1990	NONE	
DE 681176 C	16-09-1939	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82