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## EUROPEAN PATENT APPLICATION

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(72) Inventor: **Pastorini, Giorgio Ing.**  
**Malgrate, Lecco (IT)**

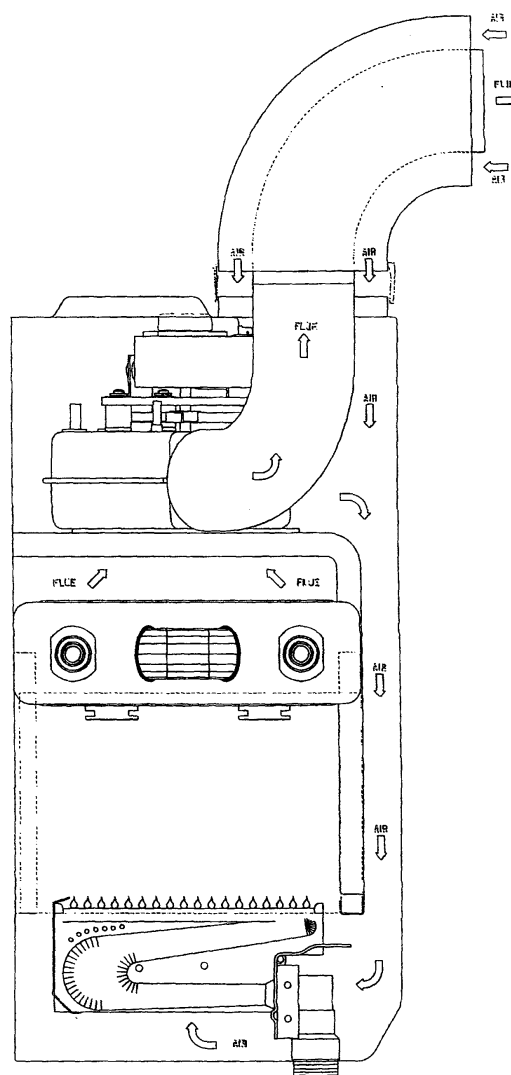
(74) Representative: **Gandini, Claudio**  
**Via Durini 23**  
**20122 Milano (IT)**

(71) Applicant: **IABER S.p.A.**

**I-22053 Lecco Como (IT)**

(54) **Basic boiler combustion chamber**

(57) This new design enables to draw the air supporting combustion from outside through a pipe, letting it directly into the combustion area, without leaving it free to flow.



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## Description

**[0001]** The new Basic boiler, we are presently designing, features innovative characteristics as compared to the traditional closed chamber boilers, essentially as follows :

- Air chamber
- Airtight terminal flanges of the bi-thermal exchanger on the combustion chamber
- Burner's support without brackets
- Possibility to exhaust flue gas vertically or on the rear by rotating the fan exhaust elbow

**[0002]** Hereafter please find a description of the above characteristics :

### AIR CHAMBER

**[0003]** In tight chamber boilers, the combustion chamber and the air chamber are completely separated from the room where the boiler is installed. The air required for combustion is drawn from outside through a pipe, is let into the top of the boiler air chamber and through this chamber is brought to the combustion area.

**[0004]** Normally in standard boilers, the air flows along all four sides of the combustion chamber: with the new Basic boiler, the air is always let in the top of the air chamber, but it flows to a channel on the rear of the combustion chamber to reach the exact spot where its is required, namely in the burner's venturi area (see attached drawings).

### TIGHTNESS OF THE EXCHANGER FLANGES ON THE COMBUSTION CHAMBER

**[0005]** As said above, the sides of the combustion chamber are not enclosed into the air chamber, tightness must therefore be assured by the connection between the exchanger and the combustion chamber.

**[0006]** To provide such tightness, the sheet of the combustion chamber is formed above and under the exchanger with C-shaped folds filling the area between the semi-header and the terminal fin of the exchanger. Moreover to assure such tightness the C-shaped lip of the combustion chamber is pushed against the terminal fin of the combustion chamber by pins inserted between the edge of the semi-header and the C-shaped lip of the combustion chamber.

### BURNER'S SUPPORT WITHOUT BRACKETS

**[0007]** The gas burner-header assembly is the element providing gas distribution to the various burner's ducts through nozzles, mixing gas with the air supporting combustion, and burning the resulting air-gas mixture. The alignment of the distributing nozzles with the burner's ducts must be perfect in order not to impair their

operation.

**[0008]** This assembly is normally fastened to the combustion chamber by means of brackets welded on the header and screwed on the back of the combustion chamber.

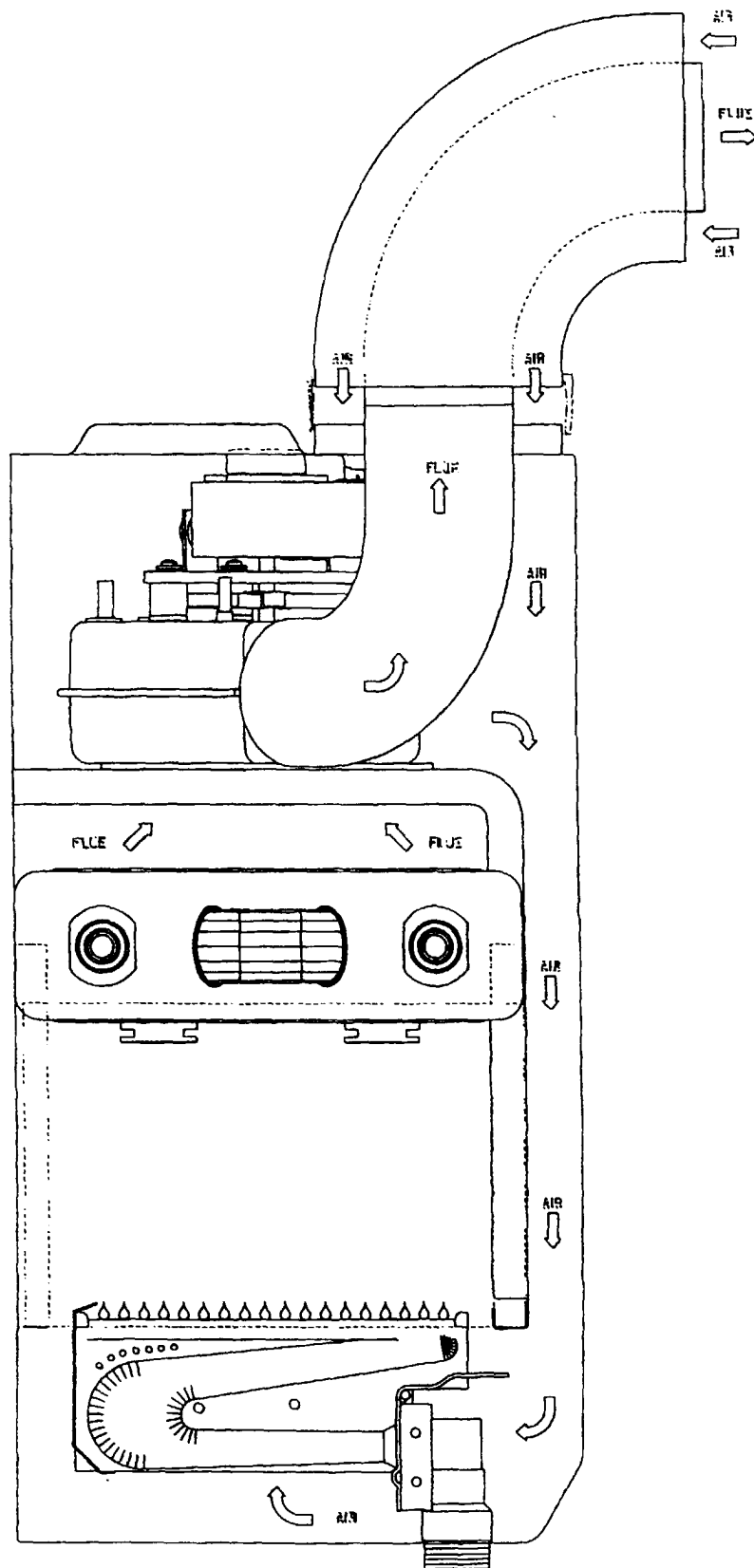
**[0009]** The novelty of the header-burner assembly fastening system used on Basic boilers lays in the fact that brackets have been eliminated and the whole assembly is fixed to the combustion chamber by rectangular seats lodging the distributor ends (see drawing): fastening of the assembly is then completed by securing the gas piping on the bottom of the combustion chamber by means of a nut.

### EXHAUST OF GAS FLUES ON THE REAR OR UPWARD

**[0010]** At present in labor boilers gas flues are exhausted only upward. The basic boiler will also provide the possibility to have gas flues exhausted toward the wall on which the boiler is mounted. Such new direction will be obtained by rotating the exhaust pipe keyed on the fan delivery orifice.

## Claims

1. In Basic boiler the air let into the top of the air chamber flows into a channel located on the rear of the combustion chamber and reaches the exact spot where it is required, that is in the area of the burner's venturis.
2. The tightness of the combustion chamber to the air chamber is assured by a fastening system consisting of C-shaped folds.
3. The burner-header assembly is fastened to the combustion chamber by means of rectangular seats lodging the distributor ends.
4. The new labor boilers provide the possibility to exhaust gas flues directly on the wall where the boiler is mounted, by rotating the exhaust pipe keyed on the delivery orifice of the fan.





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## EUROPEAN SEARCH REPORT

Application Number  
EP 99 83 0056

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)
X	EP 0 806 616 A (FAGOR S COOP) 12 November 1997 (1997-11-12) * abstract; figures 2,3 *	1	F24H9/00 F24H9/18
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			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F24H
-The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		22 June 1999	VAN GESTEL, H
<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  &amp; : member of the same patent family, corresponding document</p>			

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### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims 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 the first ten claims.

### 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:

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**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. Claim : 1

Location of the combustion air inlet

2. Claim : 2

Fastening of the combustion chamber wall

3. Claim : 3

Mounting of the burner

4. Claim : 4

Adjusting of the flue gas channel

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

EP 99 83 0056

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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22-06-1999

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