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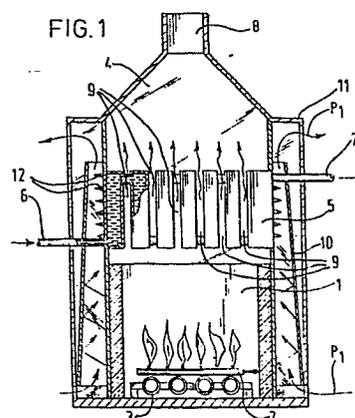
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⑤④ Heating device.

⑤⑦ A heating device, for example a central heating boiler comprising a hearth (1) with a burner (2), a flue channel (4) and a heat exchanger (5) arranged therein for heating a medium, wherein a part of the heat exchanger (5) is located outside the flue channel (4) whereas a guide wall (10) arranged at a distance from one or more sides of the hearth (1) extends towards said part of the heat exchanger (5) in order to guide another heat-transferring medium for instance ambient air towards the heat exchanger (5), so preventing loss of energy due to radiation or convection respectively.



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Heating device

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The invention relates to a heating device, for example, a central heating boiler comprising a hearth with a burner, a flue channel and a heat exchanger arranged therein for heating a medium.

5 It is known for such a heating device that the efficiency is reduced due to heat transport across the walls of the hearth, which heat gets lost due to radiation and convection. It is known in this respect to cool the hearth by means of  
10 a fluid jacket, the fluid being usually the same as the medium to be heated. However, such a constructure is comparatively expensive.

The invention has for its object to provide a heating device which can be constructed  
15 in a simple manner and in which the aforesaid loss of heat is wholly or partly avoided.

The device according to the invention is distinguished in that part of the heat exchanger is located outside the flue channel and a  
20 guide wall arranged at a distance from one or more sides of the hearth extends towards said part of

the heat exchanger in order to guide a heat-transporting other medium towards the heat exchanger.

It is preferred to use as another medium the ambient air around the heating device. It is  
5 furthermore advantageous to use a heat-reflecting guide surface so that an optimum heat transfer to the other medium is achieved.

If the heat exchanger comprises a plurality of sections, the invention proposes to dispose the  
10 guide surface at a distance from and along the outermost surface of the outermost sections.

In the latter embodiment the outer surface of the sectional heat exchanger is preferably provided with protuberances extending towards the guide surface.

15 The invention will be described more fully hereinafter with references to two embodiments.

The drawing shows in

fig.1 a schematic vertical sectional view of a heating device in a first embodiment,

20 fig.2 a sectional view corresponding with that of fig.1 of a second embodiment,

In both figures corresponding component parts of the heating device are designated by the same reference numerals.

25 Each heating device mainly comprises a hearth 1 in which a burner 2 is arranged. The burner shown is suitable for burning gaseous fuel, but an oil burner or the like may be used as well. Reference numeral 3 designates inlet ports for  
30 fresh combustion air. The top side of the hearth 1 is joined by a flue channel 4, in which a heat exchanger 5 is accommodated.

The heat exchanger has an inlet 6 and an outlet 7 for a liquid medium which has to be heated. The  
35 flue channel 4 communicates with a chimney near the outlet 8.

The wall of the hearth is made from refractory material and will retain the major part of the heat produced by the burner 2,

whilst the flue gases can transfer the heat through the channels 9 of the heat exchanger to the fluid contained in the heat exchanger

Nevertheless part of the heat produced  
5 will leak across the hearth wall.

According to the invention a plate 10 is arranged at a distance from the hearth wall as a guide surface, which extends as far as beyond the head side of the heat exchanger 5 (see fig.1).

10 In this way a channel is formed between the plate 10 and the wall of the hearth 1 and the wall of the heat exchanger 5 respectively.

Inlet ports in the lower side and outlet ports in the top side of the boiler jacket 11 ensure that the ambient  
15 air can enter the channel thus formed on the lower side and leave the heater on the top side owing to convection flow. The ambient air is thus used as a transport medium, which absorbs heat outside the hearth 1 and gives it off on the head side of the  
20 heat exchanger 5. This heat transfer may be further improved by means of protuberances 12 on the head side, which extend wholly or partly along the full width of the channel.

The inner surface of the plate 10 operating  
25 as a conducting surface preferably is a reflective surface indicated by the arrows P2.

The embodiment shown in fig.2 is distinguished from that of fig.1 by a different type of heat exchanger 5. Herein a zigzag tube 13 and laminations 14 at  
30 right angles thereto are employed.

The laminations extend in the direction of the flue gases. Also in this case the heat exchanger 5 projects out of the passage of the flue channel 4. The plate 10 is again located at a distance from the outer wall  
35 of the hearth 1 and extends beyond the heat exchanger 5. The boiler jacket is constructed so that a circulation channel 15 is formed so that a gaseous medium can flow on the lower side of the plate 10 along the hearth 1 towards the heat exchanger 5 and downwards on the other

side of the plate 10 as is indicated by the arrows P1.  
In this embodiment any appropriate gaseous medium may  
be used.

The invention is not limited to the embodiments  
5 described above.

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## WHAT IS CLAIMED IS:

1. A heating device, for example, a central heating boiler comprising a hearth with a burner, a flue channel and a heat exchanger arranged in the latter for heating a medium characterized in that part of the heat exchanger is located outside the flue channel and a guide wall arranged at a distance from one or more sides of the hearth extends towards said part of the heat exchanger in order to conduct a heat-transporting other medium towards the heat exchanger.

2. A device as claimed in claim 1, characterized in that, the guide surface has a heat-reflecting structure.

3. A device as claimed in claim 1 or 2, characterized in that the channel formed by the guide surface and the wall of the hearth communicates on the lower side with the ambience.

4. A device as claimed in anyone of the preceding claims comprising a heat exchanger built in sections characterized in that the guide surface is arranged at a distance from and along the outer surface of the outermost sections.

5. A device as claimed in claim 4 characterized in that the outer surface of the heat exchanger is equipped with protuberances extending towards the guide surface.

FIG. 1

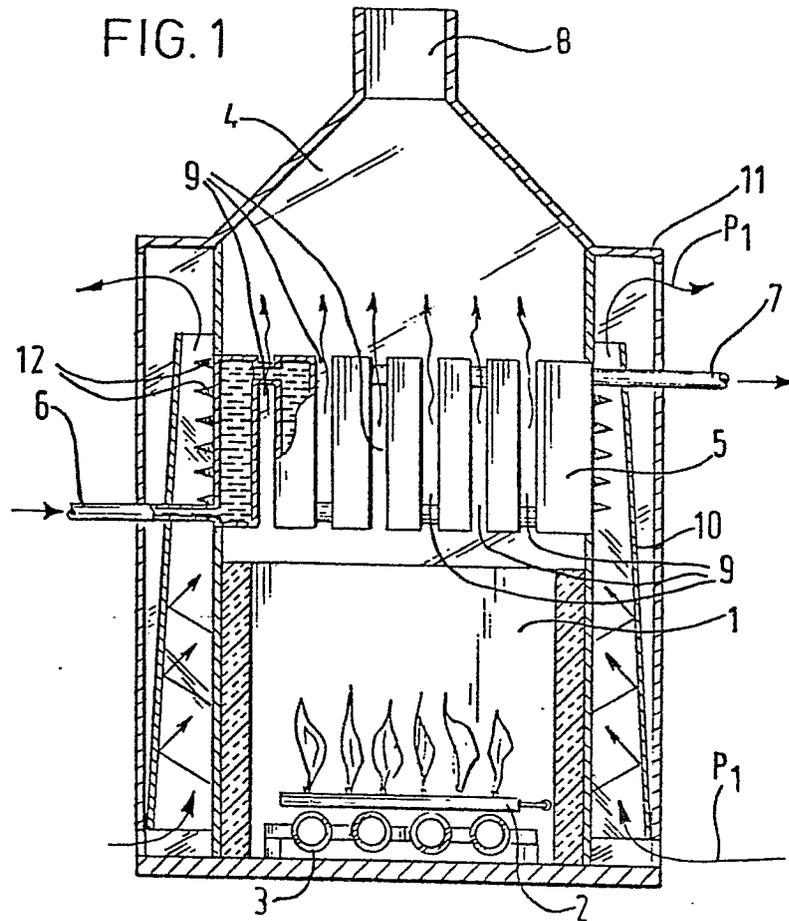
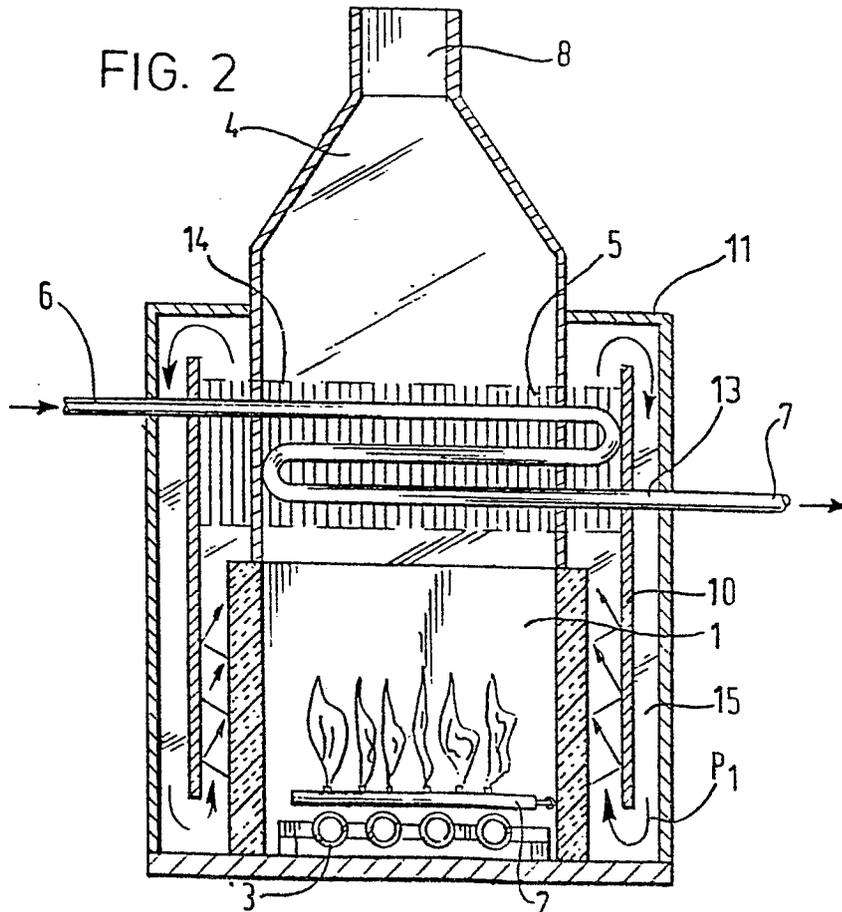


FIG. 2





DOCUMENTS CONSIDERED TO BE RELEVANT		Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. <sup>3</sup> )
Category	Citation of document with indication, where appropriate, of relevant passages		F 24 H 9/00 6/00
	<p><u>DE - A - 1 779 329</u> (BAIER) * Claims 1,3; figure 1 *</p> <p style="text-align: center;">--</p> <p><u>FR - A - 2 340 527</u> (NOWICKI) * Claim 1 *</p> <p style="text-align: center;">-----</p>	<p>1,3,5</p> <p>1,2</p>	<p>TECHNICAL FIELDS SEARCHED (Int.Cl. <sup>3</sup>)</p> <p>F 24 H</p> <p>CATEGORY OF CITED DOCUMENTS</p> <p>X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons</p>
<p><input checked="" type="checkbox"/> The present search report has been drawn up for all claims</p>		<p>&amp; member of the same patent family, corresponding document</p>	
Place of search	Date of completion of the search	Examiner	
The Hague	11-07-1980	CRAB	