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(71) Applicant: **IABER S.p.A.**
I-22053 Lecco Como (IT)

(72) Inventor: **Pastorino, Giorgio**
23864 Malgrate (Lecco) (IT)

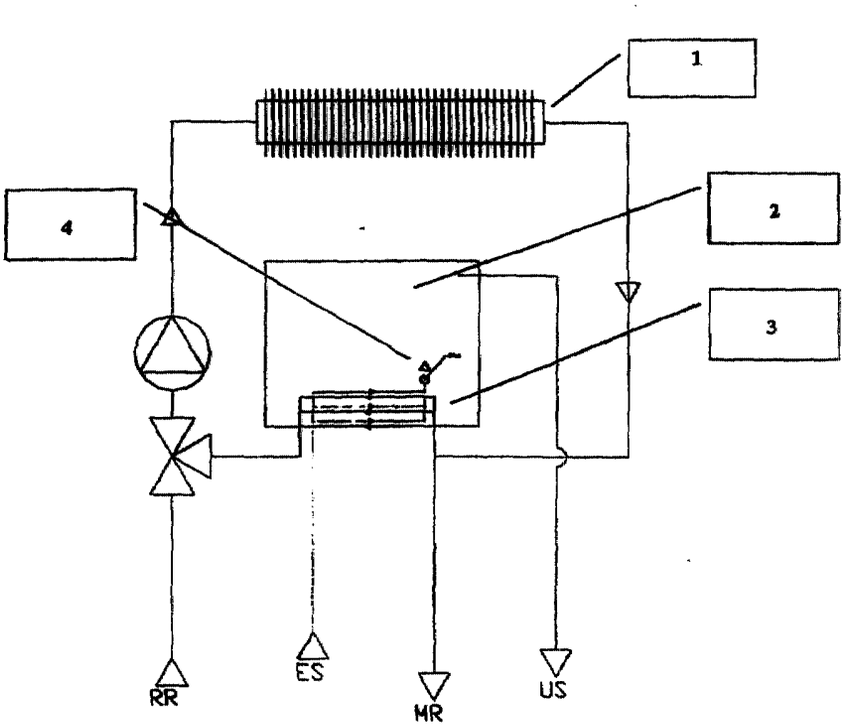
(74) Representative: **Gandini, Claudio**
Via Durini 23
20122 Milano (IT)

(54) Sanitary hot water storage for gas fired wall boilers

(57) The system is composed of a plate-type heat exchanger and of a NTC probe controlling the sanitary hot water temperature, "integrated" inside a properly insulated storage system.

Whenever the water temperature decreases, the system acts to maintain the set water temperature; when water is delivered, the heat exchanger acts to provide for the immediate thermal exchange and, consequently, for the required thermal power values.

As a consequence, the heat losses of the plate-type heat exchanger are optimized, in order to bring the sanitary hot water at the rated temperature and to maintain it; the system presents also construction advantages, making of it a compact and integral system, requiring no connecting pipes.



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Description

1. System description

[0001] The system consists of a plate-type heat exchanger, having a capacity adequate to the boiler's thermal power, "integrated" within a properly insulated, stainless steel, 4.5 Its storage system (see sketch of Figure 1).
The sanitary hot water outlet of the plate-type heat exchanger (where the probe controlling temperature is located) coincides with the water inlet of the storage system.
On the contrary, the storage system outlet (see figure 2) is connected to the boiler's sanitary hot water outlet.
The NTC temperature probe is designed to check the delivery temperature of sanitary hot water, and, at the same time, to maintain the storage temperature.
[0002] To maintain the storage water temperature, the heat, dispersed by the plate-type heat exchanger and otherwise going lost, is recovered.

2. Storage system operation

[0003] When the NTC probe, located within the sanitary water storage system, is not satisfied, boiler's burner goes on and sanitary water is brought to its rated temperature, through the thermal exchange of the outside surfaces of the plate-type sanitary heat exchanger.

a) Storage maintenance system

[0004] Whenever the water temperature decreases, as a consequence of the thermal losses of the storage system, the system acts as when temperature is brought to its rated value, thus keeping the water temperature at its set value.

b) Production of sanitary water with delivery at the various thermal powers

[0005] When the sanitary water is delivered from the storage system, the plate-type .heat exchanger provides immediately the thermal exchange at the required thermal power values. The NTC probe in the storage system, specifically located at the outlet of the plate-type heat exchanger, keeps the delivery temperature steady.

3. Advantages of the system

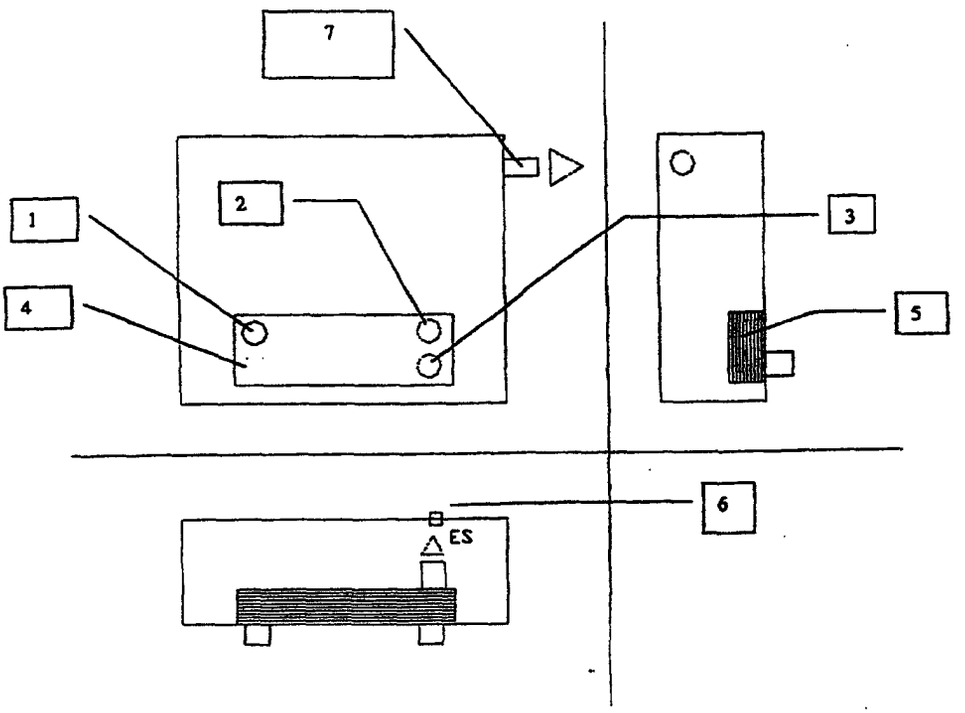
[0006] The system exploits the dispersion of the plate-type heat exchanger, which would otherwise be lost, to bring the sanitary water inside the storage system to the rated temperature and to maintain it. Moreover, one NTC probe only sets and maintains the temperature to its rated value, and adjust it during the delivery of sanitary hot water.

[0007] The system performance advantages are linked to the increased delivery speed of sanitary water and to the improved stability of temperature during delivery.

[0008] The system presents also construction advantages, since it eliminates the need of any additional storage tank, adjacent to the plate-type heat exchanger . The result is a compact and integral system requiring no connecting pipes.

Claims

1. The NTC probe brings the sanitary water to its rated temperature and keeps the delivery temperature steadily adjusted
2. Whenever the water temperature decreases, the system is able to keep it set according to the system requirements
3. The use of the plate-type heat exchanger provides for the immediate thermal exchange
4. Heat losses typical of the plate-type heat exchanger are optimized
5. Delivery of sanitary water is thus quicker
6. Temperature during delivery is more stable
7. Moreover this system presents construction advantages, since it eliminates the need for any additional storage tank and connecting pipe.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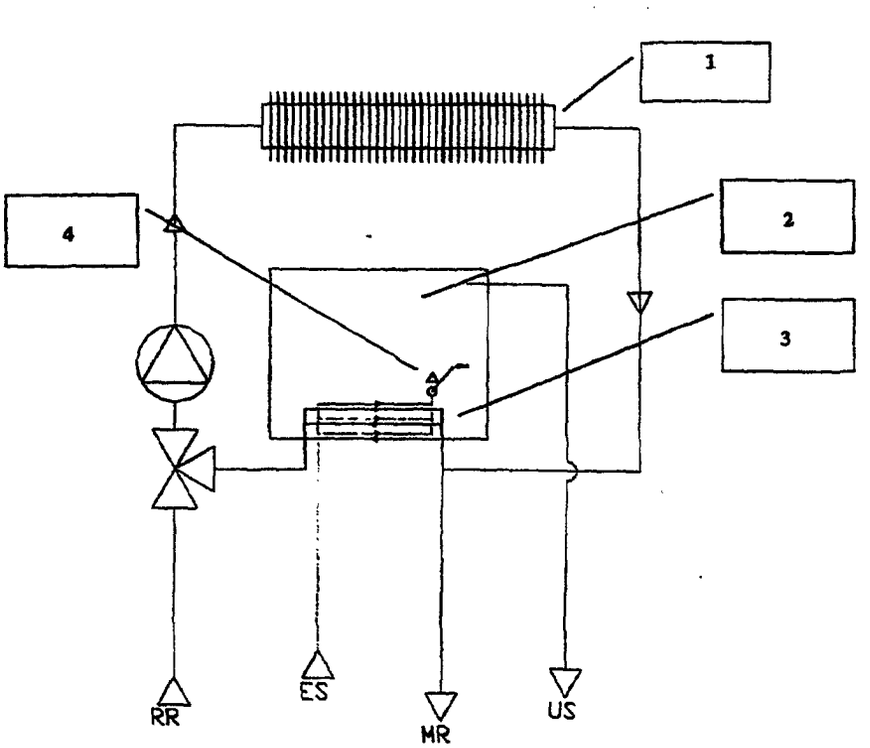
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EUROPEAN SEARCH REPORT

Application Number
EP 00 20 0748

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.7)
X	NL 1 009 638 C (DAALDEROP BV) 18 January 2000 (2000-01-18) * the whole document *	1-7	F24D3/08
X	DE 197 21 745 C (VIESSMANN WERKE KG) 5 November 1998 (1998-11-05) * column 3, line 22 - column 3, line 27; figures *	1-7	
X	EP 0 870 993 A (VRIES METAAL BV) 14 October 1998 (1998-10-14) * abstract; figures *	1-7	
A	DE 32 43 845 A (VAILLANT JOH GMBH & CO) 16 June 1983 (1983-06-16) * page 7, paragraph 3 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

F24D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	2 August 2000	Van Gestel, H

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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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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02-08-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
NL 1009638 C	18-01-2000	NONE	
DE 19721745 C	05-11-1998	NONE	
EP 0870993 A	14-10-1998	NL 1005786 C NL 1007416 C	14-10-1998 28-11-1997
DE 3243845 A	16-06-1983	NONE	

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