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(54) **Collective heating unit, especially for electric heater**

(57) The invention solves the question of heating unit and is characterized by having a planar barrier 6 placed above the heating body 1, with planar barriers 6 being alternatively shorter than or sectional in relation to the heating body 1.

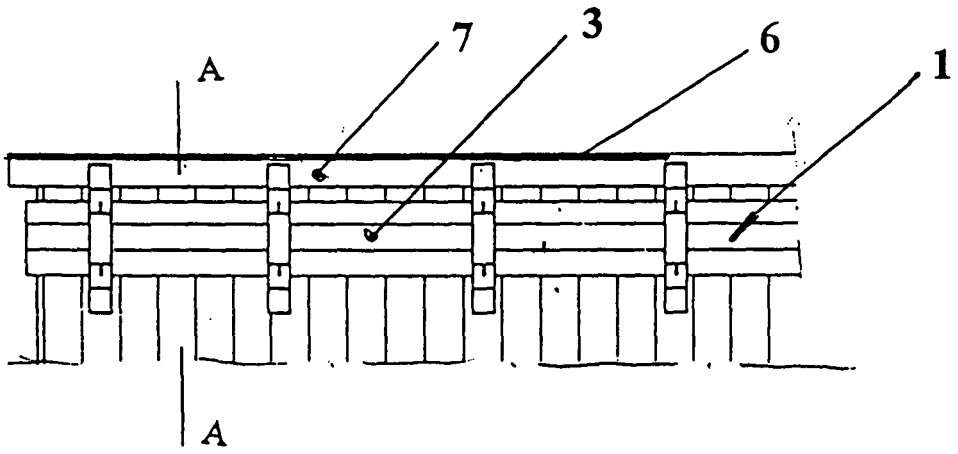

FIG. 1

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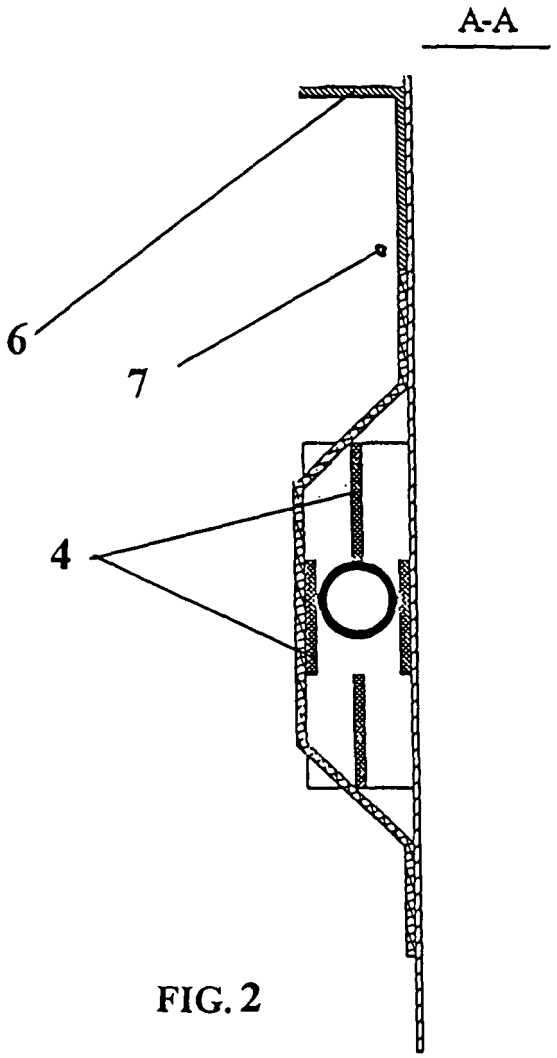

FIG. 2

Description

[0001] The subject of invention is the collective heating unit, especially for electric heater.

[0002] Known is the heating unit from the description of invention No. WO95/02952, where the electric heating system has a resistance heating body in form of a massive body e/g a tube or plate. The body, made of semiconducting material, is the carrying part for the heated object or it leads the said heated object. Resulting from this are vast contact surfaces to transmit the heat and high efficiency.

[0003] The matter of the invention is, that the collective heating unit composed of individual heating units with proper heating bodies is characterized by every single heating unit having planar barrier separated from heating body by free space, and single heating units are placed above each other.

[0004] The heating body is longitudinal heating lead with thermo-insulating material.

[0005] The planar barrier is longitudinal.

[0006] The planar barrier is shorter than the associated heating body.

[0007] The planar barrier is longer than the associated heating body.

[0008] The planar barrier is sectional related to longitudinal heating body.

[0009] The materials insulating the heating lead are based on the mica.

[0010] The planar barrier is in form of an angled section placed at the heating body.

[0011] According to the invention, the collective heating unit allows for the barrier-defined flow of the air, heated in the free space, thus making decidedly higher the efficiency of heating plants.

[0012] The subject of the invention has been visualized in the example shown on the drawing, where fig. 1 shows en face the single heating unit, fastened to the panel wall, fig. 2 shows the cross section of the single heating unit under fig. 1, fig. 3 shows perspective view of the heating lead with thermo-insulating screen, fig. 4 shows the joint of thermo-insulating plates along with heating lead, fig. 5 shows perspective view of the collective heating unit with various single heating units placed on the wall of an electric heater below each other.

[0013] According to the invention, the collective heating unit is composed of single heating units, each of which itself has the proper heating body 1, being e/g a spiral heating lead 2, sheltered by thermo-insulating material 3. The thermo-insulating material 3 are four mica thermo-insulating plates 4. The thermo-insulating plates 4 are fastened with each other by joints 5.

[0014] The heating unit has a planar barrier 6, separated from the heating body 1 by free air space 7.

[0015] Advantageous is placing of angled section being the planar barrier 6 parallel to the heating body 1.

[0016] Planar barriers 6 may be sectional to the heating body 1, with additional free air spaces 8 emerging between barriers 6.

[0017] According to the invention, the single heating units may be fastened above each other, alternatively with use of the sectional planar barrier 6 and the barrier 6 shorter than the heating body 1. The single heating units fastened such way constitute the collective heating unit for the electric heater with high heating efficiency.

Claims

1. Collective heating unit composed of single heating units including proper heating bodies, **characterized by** each one single heating unit having a planar barrier 6 separated from the heating body 1 by the free space 7, with single heating units placed above each other.

2. Collective heating unit acc. to claim 1, **characterized by** heating body 1 being the longitudinal heating lead 2 with thermo-insulating material 3.

3. Collective heating unit acc. to claim 1 or 2, **characterized by** the planar barrier 6 being longitudinal.

4. Collective heating unit acc. to claim 3, **characterized by** the planar barrier 6 being shorter than the associated longitudinal heating body 1.

5. Collective heating unit acc. to claim 3, **characterized by** the planar barrier 6 being longer than the associated longitudinal heating body 1.

6. Collective heating unit acc. to claim 3, **characterized by** the planar barrier 6 being sectional in relation to the associated longitudinal heating body 1.

7. Collective heating unit acc. to claim 2, **characterized by** thermo-insulating material 3 insulating the heating lead 2 being that based on mica.

8. Collective heating unit acc. to claim 1, **characterized by** the planar barrier 6 being an angled section placed at the heating body 1.

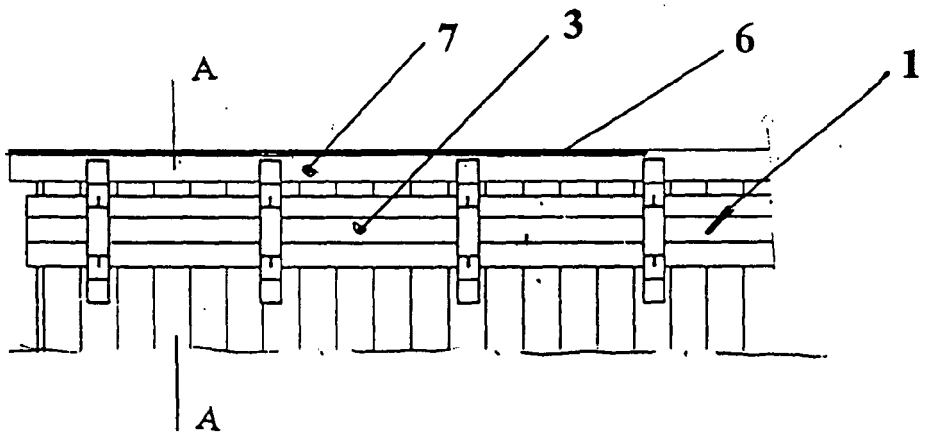

FIG. 1

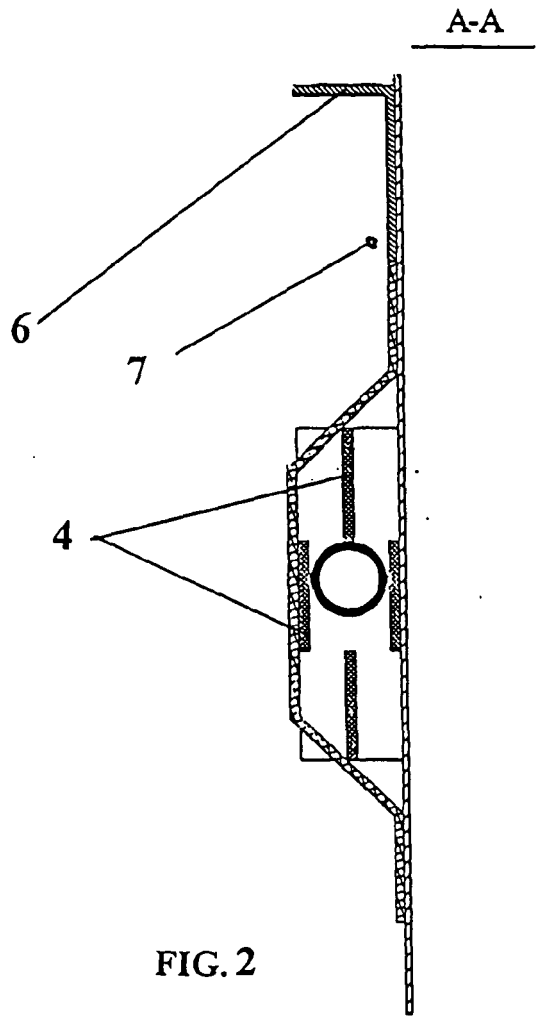

FIG. 2

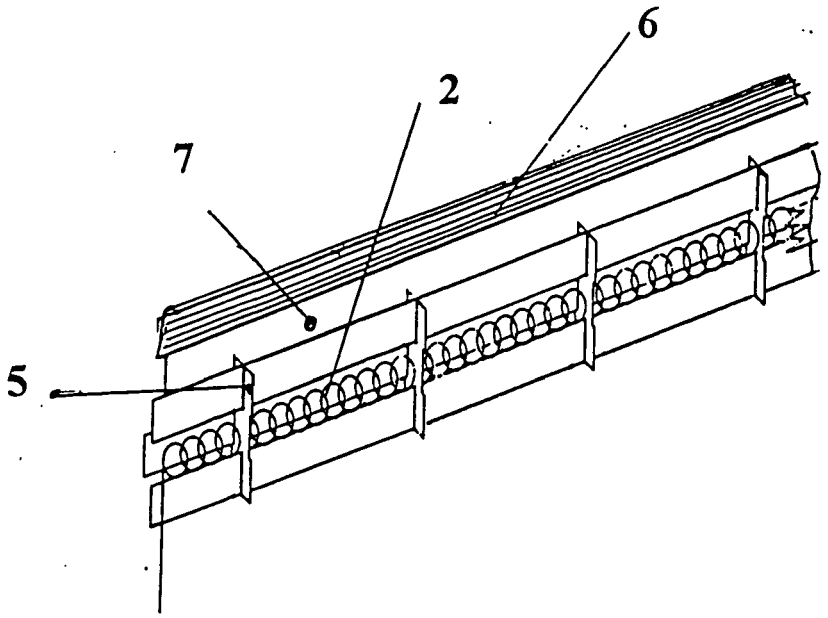

FIG.3

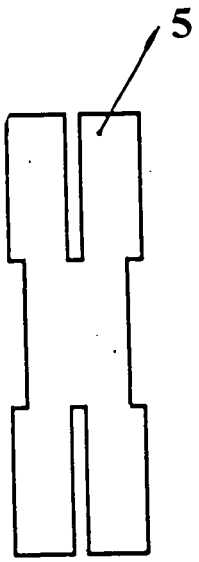

FIG.4

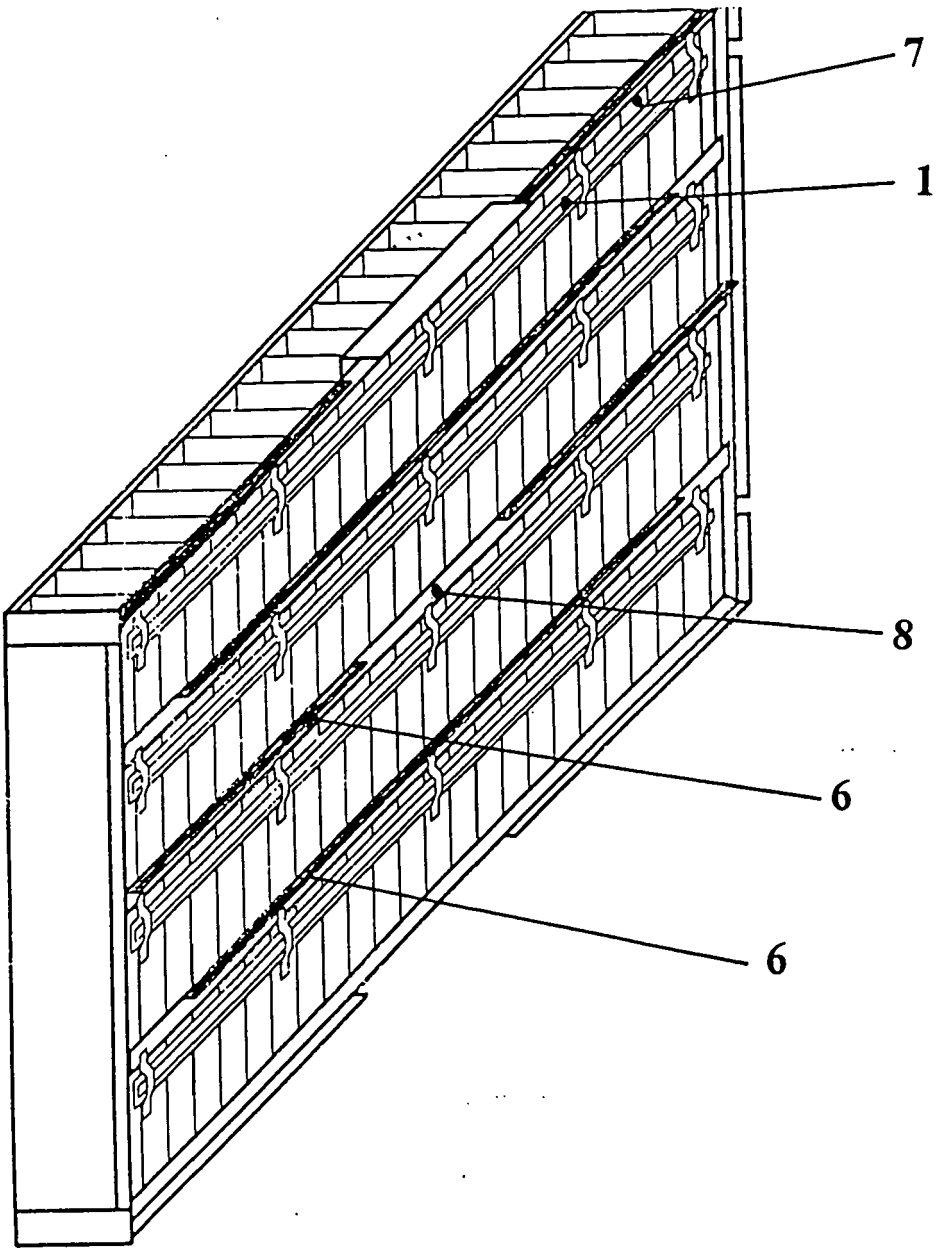

FIG.5

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PARTIAL EUROPEAN SEARCH REPORT

which under Rule 63 of the European Patent Convention shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number EP 08 02 1033

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 2004/182853 A1 (HOWARD H KEITH [US] ET AL) 23 September 2004 (2004-09-23) * figures 5,6,8,9,15 * -----	1-8	INV. H05B3/16 H05B3/50
X	FR 672 022 A (AOYAGI TOYOZO) 21 December 1929 (1929-12-21) * figures 1,5 * -----	1-8	
X	GB 15275 A A.D. 1912 (SIMPLEX CONDUITS LTD; LAURENCE MAXWELL WATERHOUSE; THOMAS BIRKETT) 12 June 1913 (1913-06-12) * figures 8,11,12,14 * -----	1-8	
A	US 3 821 517 A (ERICKSON E ET AL) 28 June 1974 (1974-06-28) * figure 6 * -----	1,2,7	

TECHNICAL FIELDS SEARCHED (IPC)

H05B

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

4

Place of search	Date of completion of the search	Examiner
Munich	30 March 2009	Tasiaux, Baudouin

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

EPO FORM 1503 03.82 (P04E07)

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INCOMPLETE SEARCH
SHEET C

Application Number
EP 08 02 1033

Claim(s) searched completely:
1-5,7

Claim(s) not searched:
6,8

Reason for the limitation of the search:

The wordings "being sectional in relation to ..." or "being an angled section placed at" does not appear to have any meaning in English.

In Claim 8, it is also to be noted that it appears a priory contradictory that a planar object could have an angled section.

It is also contradictory that the planar barrier could have any section placed at the heating body (1) since Claim 1 states that the "planar barrier 6 separated from the heating body 1 by the free space 7", implying a priori that the planar barrier 6 and the heating body 1 are not in direct contact (since separated by a free space).

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 02 1033

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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30-03-2009

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EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 9502952 A **[0002]**