(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 156 093**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **84830096.8**

(22) Date of filing: **30.03.84**

(51) Int. Cl.⁴: **F 28 F 21/04**
F 28 D 1/02, B 28 B 1/26

(43) Date of publication of application:
02.10.85 Bulletin 85/40

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI NL SE

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(54) Ceramic structure thermal radiator, and process for constructing it.

(57) A thermal radiator comprising a perimeter structure (3) of constant thickness ceramic material, surrounding internal spaces (1, 2) with an advantageous ratio between the outer radiating surfaces and the volume of hot water contained in them:

said inner spaces (1, 2) are prepared by removal of the ceramic material in its liquid state while said perimeter structures (3) are realized by dehydrating the liquid cast in the plaster forms arranged inside during construction.

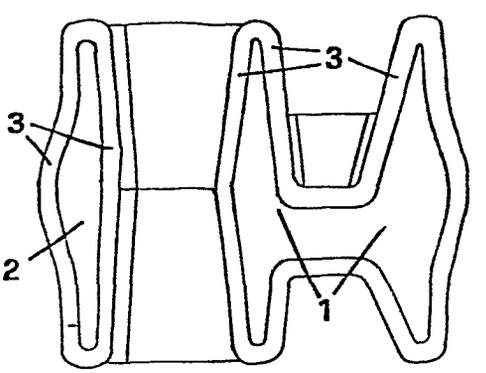

FIG.1

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Ceramic structure thermal radiator, and process for constructing it

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The invention concerns a radiator for space heating characterized by a high yield completely ceramic structure, prepared by utilizing the thermal properties of the construction process.

It is known that metal radiatiors of every type present the problem on construction of realizing the internal spaces for the circulation of hot water, which are prepared by using occlusion cores which are then removed after casting.

However, this process prevents the formation of large cavities with small inner volumes, to increase the exchange surface between the hot water and the environment. In fact, the thermal yield of a radiator depends substantially on the ratio between the radiating surfaces and the volume of water; at the limits of the mechanical strength of the structure, the optimization of the yield requires the presence of very large surfaces at the edges so that a small volume of hot water moving on the inside may radiate.

The aim of the invention is to realize radiators with

high yield, striking mechanical strength and long operational life, with no particular maintenance requirements.

This aim is achieved with radiators prepared by casting ceramic materials of any type in plaster forms, designed so that the water in the mixture is absorbed for a limited thickness so as to leave in the liquid state the material inside the dehydrated and so solidified perimeter structure, and so that when the liquid is removed inner spaces are created in large precise shapes.

It is evident that the subsequent processing of the resulting ceramic radiators (that is, drying, painting and then firing in ceramic kilns) affords products with strength properties analogous to those of metal radiators and with much higher yields.

In fact, the advantages of ceramic radiators are:

- very smooth inner surfaces of the spaces and outer surfaces of the radiating areas, due to the perfect fusion of the paint with the ceramic mixture, upon firing at high temperature;
- less loss of water moving through the inner spaces, due to the lack of roughness on the surfaces, with less strain on the pump;

- faster movement of air on the outer suffaces, and so increased thermal exchange;
- absolute hygiene, due to the constituent material, ahalogous to that of bathroom fixtures;
- high thermal yield, due to the advantageous ratio between radiating surfaces and water volume;
- good pressure resistance.

The invention is shown in an exemplifying non-limiting preferred embodiment in the attached figures 1 and 2, which show, respectively:

- a horizontal section of the structure of some tubes of a radiator;
- a portion of an external axonometric view.

With reference to the details the figures show the internal spaces 1 and 2, with even complex shapes, surrounded by the structure of constant thickness ceramic material 3, easily realized even around small volumes like space 2, because it is prepared by absorption of the water present in the casting mixture by the plaster forms placed there, while said spaces derive simply from removal of the ceramic mixture, said barbotine, which in any case remains in the liquid or semi-liquid state since the water in it has not been removed.

The radiators according to the invention may be made

of any of the following materials, as a variant: faience of any type, pottery, sandstone, porcelain (hard, semi-hard or even soft), with analogous results.

Claims

1. Radiator for space heating comprising a constant thickness perimeter structure of ceramic material with spaces for the hot water formed by the internal shapes of said structure.

2. Process for the construction of radiators according to claim 1 characterized by the fact that said perimeter structures 3 are prepared by absorption of water by the plaster forms around the fluid mixture of ceramic material cast therein.

3. Process for the construction of radiators according to claim 1 characterized by the fact that the spaces 1 and 2 are prepared by removing the mixture remaining in the liquid state on the inside of the solidified structures 3.

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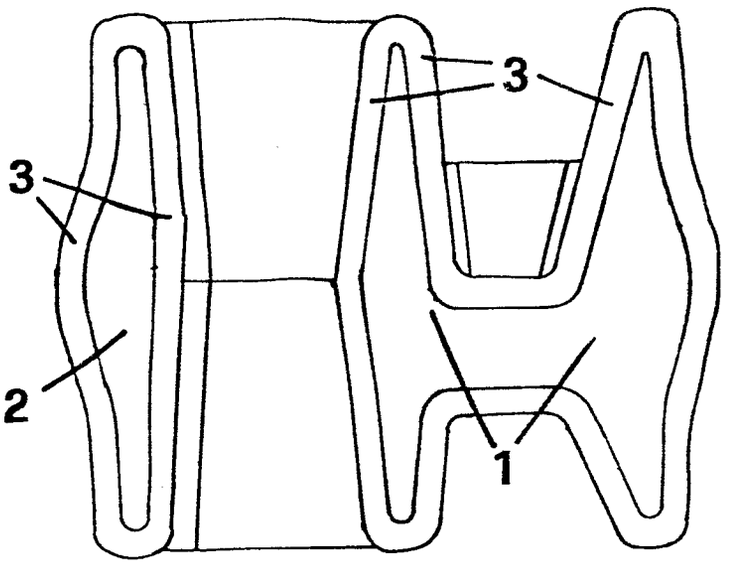
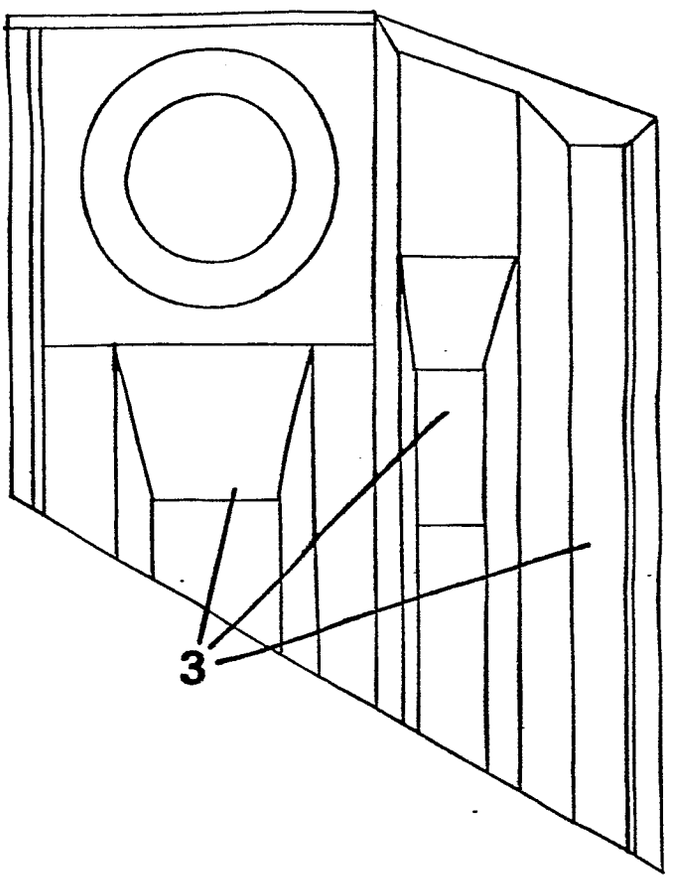


FIG. 1

FIG. 2



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EUROPEAN SEARCH REPORT

0156093

Application number

EP 84 83 0096

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 4)
X	NL-C- 57 977 (KERAMISCHE INDUSTRIE) * Whole document * ---	1-3	F 28 F 21/24 F 28 D 1/02 B 28 B 1/26
A	F. SINGER et al.: "Industrial Ceramics", 1963, pages 754-771, Chapman and Hall, London, GB; * Page 762; figures 8.32 and 8.33 * ---	2,3	
A	DE-C- 318 911 (STEINGUTFABRIKEN) -----		

TECHNICAL FIELDS SEARCHED (Int. Cl 4)

F 28 F
F 28 D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15-11-1984	FILTRI G.

CATEGORY OF CITED DOCUMENTS

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