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

(11) **EP 2 520 731 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
07.11.2012 Bulletin 2012/45

(21) Application number: **10840621.6**

(22) Date of filing: **21.12.2010**

(51) Int Cl.:
E04B 2/10 *(2006.01)* ***E04C 1/00*** *(2006.01)*

(86) International application number:
PCT/ES2010/070860

(87) International publication number:
WO 2011/080369 (07.07.2011 Gazette 2011/27)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **28.12.2009 AR P090105139**

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(54) BRICK COUPLING SYSTEM

(57) The invention relates to a system for coupling bricks, of the type used in the construction of dwellings in general. According to the invention, the system comprises at least one brick having a main face and a secondary face opposite the main face, the main face including perpendicular projections and the secondary face including cavities that are axially aligned with the projections.

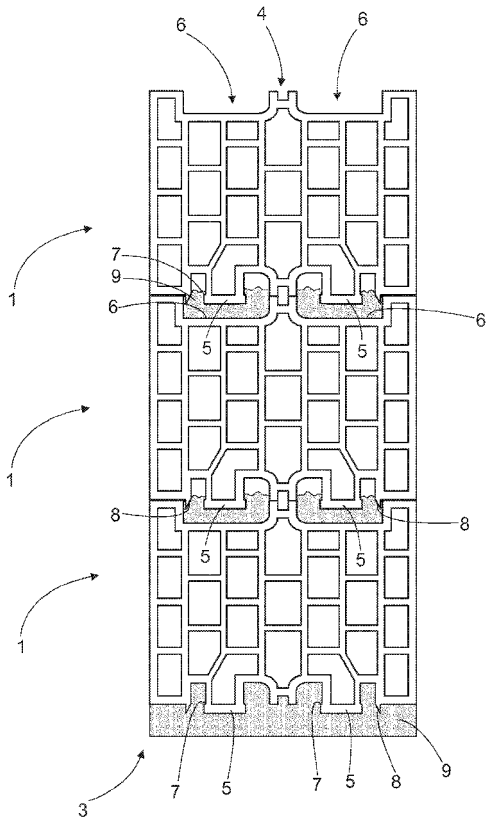

Fig. 2

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Description

Object of the invention

[0001] This invention refers to a brick coupling system of the type used in the construction of dwellings, which yields important savings in the building of the walls and permits at the same time to obtain better thermal coefficients.

Background of the invention

[0002] As is well known, for masonry works (usually designated as masonry) mainly stone materials are used, such as: clay bricks, cement mortar blocks, stone and other materials of the same or similar origin to those mentioned. The bricks are used in the building of closing walls, façades and partition walls. They are preferably used to build walls or separating walls. Although they may be assembled without any binding product, usually they are bound with a mortar mass. The arrangement of the bricks in the wall is called brick layout and a wide variety of forms of bricks layout are known in this field. In the construction industry, under the name mortar, it is to be understood a combination of binding materials and agglomerates formed by cement, fine aggregates and water. Generally, mortar is used in masonry works as binding material, coating for walls, etc.

[0003] The traditional binding between bricks for a non supporting wall is based on the application of mortar on all the surfaces of contact of the bricks. This mass of cement is much more heat conducting than the same bricks, thus generating a thermal bridge through said mass between the internal coating and the external coating of the wall which are at different temperatures. For this reason, the desired insulating effect is substantially reduced, with the subsequent detriment to energy conservation. All of this generates pathologies in the internal coating such as cracks, changes in the colour of the wall in the area of the joints, and even the spreading of fungus.

[0004] On the other side, the tendencies and potential rules for building in different weather areas will favour the saving and conservation of energy. However, until now known, no solutions have been found which permit to optimize the use of mortar as well as to maintain the heat insulation characteristics.

Description of the invention

[0005] It is therefore an object of the invention to provide a system for the binding of bricks of the type used for the building of dwellings in general, wherein the system comprises at least one brick having a main face and a secondary face opposite the main face, the main face including perpendicular projections and the secondary face including cavities that are axially aligned with said projections.

[0006] For better understanding of the object of the invention, various explanatory figures of drawings have been annexed showing one of the preferred forms of embodiment of the invention, in which:

Brief description of the drawings

[0007]

Figure 1 is a front elevation view of the system which is the object of the invention showing the brick which is the subject of the same; and

Figure 2 is a front elevation view of the system of figure 1 as used in the construction field.

Description of a preferred embodiment

[0008] According to the figures, the system for joining bricks has been shown with the general reference number 1. Said joining system 1 comprises at least one brick 2 that in this particular embodiment is a brick of the type called thermal brick. The thermal concrete brick is a prefabricated body with the form of a straight prism made out of light aggregates, for its use in the construction of walls. It is made out of light aggregates from volcanic origin which confer higher thermal characteristics than those of the red baked bricks and normal concrete blocks.

[0009] Due to the fact that the thermal bricks are manufactured using light aggregates, a final product is obtained that given its light weight, has excellent thermal characteristics as compared to the traditional systems for the construction of walls (blocks and baked bricks). Its main application consists in the construction of walls for dwellings, commercial buildings, etc. in which an objective is to obtain thermal efficiency.

[0010] However, all experts in the matter will understand that the reach of the invention is not determined by the type of brick to be used as this may be substituted by any type of brick permitting to apply the characteristics defined in the annexed claims.

[0011] As a consequence, the brick 2 has a main face 3 and a secondary face 4 opposite the main face. It is possible to define as well, according to the use to be given to the system of the invention, that the main and secondary faces may be the lower and upper faces respectively or viceversa, depending on the arrangement of the brick 1 at the moment of being applied to the construction. It is to be remarked as well that it is possible to define said faces as male face and female face, due to its embedding together at the moment of application of the system of the present invention.

[0012] The main face 3 has perpendicular projections 5 which define a means for the displacement of material. As an additional characteristic, each of the perpendicular projections 5 has a substantially rectangular geometrical shape having in its end portions small widenings 7. These widenings 7 define means for holding the displaced ma-

terial. On the other side, in said main face or male face 3 some means for delimitation of the displacement will be provided, which means are defined by the lengthwise protrusions 8.

[0013] To the secondary face 4 comprises corresponding cavities 6 which define a means for the location of the displaced material.

[0014] For better understanding of the subject of the present invention, a description of the use of the brick binding system will be made in reference to the annexed figures of drawings. Thus, at the time of building a wall, as shown in figure 2, the operator will place the brick 1 with its main face directed downwards, so that the whole brick will be immersed within a bed of mortar 9. Said bed of mortar 9 should be sufficiently thick in order that when locating the brick 1 and exerting pressure in the downwards direction, the mortar shifts towards all of the cavities, obtaining in this way a correct binding. Afterwards, the operator will continue the application of mortar within cavities 6 in a flushing manner, taking care that the applied mortar covers all of said cavities 6.

[0015] However, when locating the second brick 1, the operator should place the main face 2 opposite to the secondary face 3 of the first brick. After locating one brick on the other and due to the fact that the projections 5 stand out slightly, the same cause the mortar 9 to start displacing entering within the cavities 6, as shown in figure 2. Afterwards, the pressure is continued until both bricks contact each other by its internal faces. Additionally, the lengthwise protrusions 8 maintain the alignment of the wall, preventing the bricks to laterally offset.

[0016] In this manner, the mortar 9 shifts towards the cavity 6 in the same volume generated by the projections 5. Is to be remarked that the shape of the projections 5, more precisely its widening 7, permits to obtain the anchoring of the structure when the mortar sets.

[0017] The form in which the material has been applied prevents direct contact between the internal and external coatings of the dwelling, improving the thermal characteristics of the joints and making the building of the walls more economical for preventing waste during the application of the mortar, as it usually happens in the constructions according to the state of the art.

Claims

1. Brick coupling system of the type used for the building of dwellings in general, the system being **characterised in that** it comprises at least one brick, which has a main face and a secondary face opposite to the main face, this latter having perpendicular projections while the secondary face comprises corresponding cavities axially aligned with said projections.

2. System according to claim 1, **characterised in that** said perpendicular projections of said main face define a material displacement means.

3. System according to claim 1, **characterised in that** said cavities arranged on said secondary face define a means for locating the displaced material.

4. System according to claim 1, **characterised in that** said perpendicular projections have a substantially rectangular geometrical shape which end portions show slight widenings.

5. System according to claim 4, **characterised in that** said slight widenings define means for retaining the displaced material.

6. System according to claim 1, **characterised in that** said main face has lengthwise protruding means to limitate the displacement.

7. System according to claims 1, 3 and 6, **characterised in that** said displacement limitation means are arranged so that they coincide with the external edges of the cavities in said secondary face.

8. System according to any of the previous claims **characterised in that** said main face of a first brick is arranged on said secondary face of a second brick, thus defining a fixation means.

Amended claims in accordance with Rule 137(2) EPC.

1. Brick coupling system of the type used for the building of dwellings in general, the system being **characterised in that** it comprises at least one brick (1), which has a main face (3) and a secondary face (4) opposite to the main face (3), wherein said main face (3) has perpendicular projections (5) while the secondary face includes corresponding cavities (6) axially aligned with said perpendicular projections (5), said perpendicular projections (5) having a substantially rectangular geometric shape, at which end portions slight widenings (7) are provided.

2. System, according to claim 1, **characterised in that** said main face has means to limitate the displacement of the lengthwise protrusion (8).

3. System, according to claim 1, **characterised in that** said means for the limitation of the displacement of the lengthwise protrusion (8) coincide with the external edges of the cavities (6) of the secondary face (4).

4. Brick coupling system of the type used for the building of dwellings in general, the system being **characterised in that** in the binding of the bricks the

main face (3) of a first brick is arranged on the secondary face (4) of the second brick by means of the penetration of the perpendicular projections (5) and the means for the limitation of the displacement of the lengthwise protrusion (8) within the cavities (6) due to the displacement of the mortar (9) within said cavity (6).

5. System according to claim 4, **characterised in that** said perpendicular projections (5) displace the mortar (9) until the main face (3) of the brick (1) contacts the secondary face (4) of the adjacent brick.

6. System according to claim 4, **characterised in that** said cavities (6), located on the secondary face (4), support the mortar mass (9).

7. System according to claim 4, **characterised in that** the slight widenings (7) permit the anchoring of the structure upon the setting of the mortar (9).

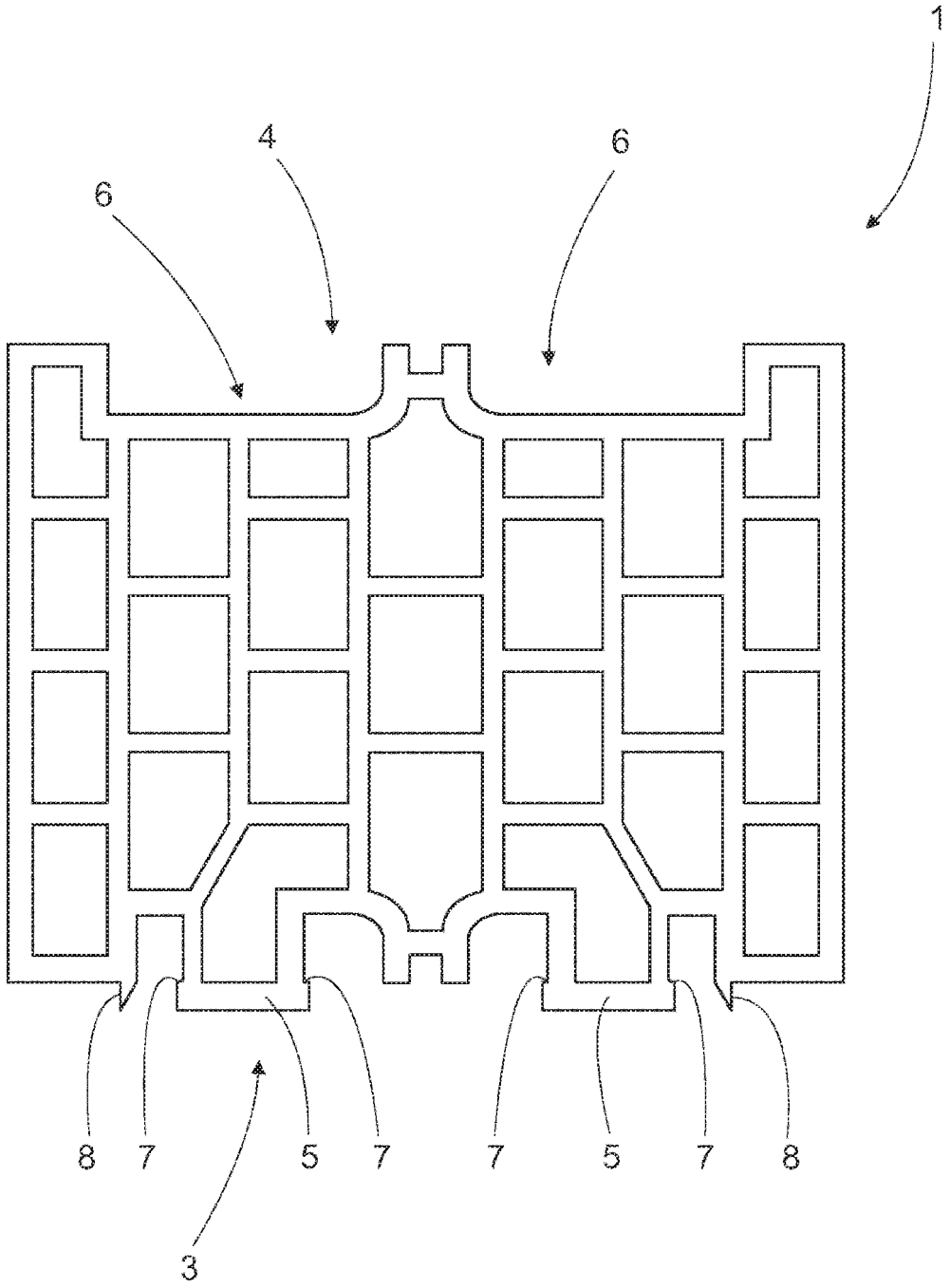

Fig. 1

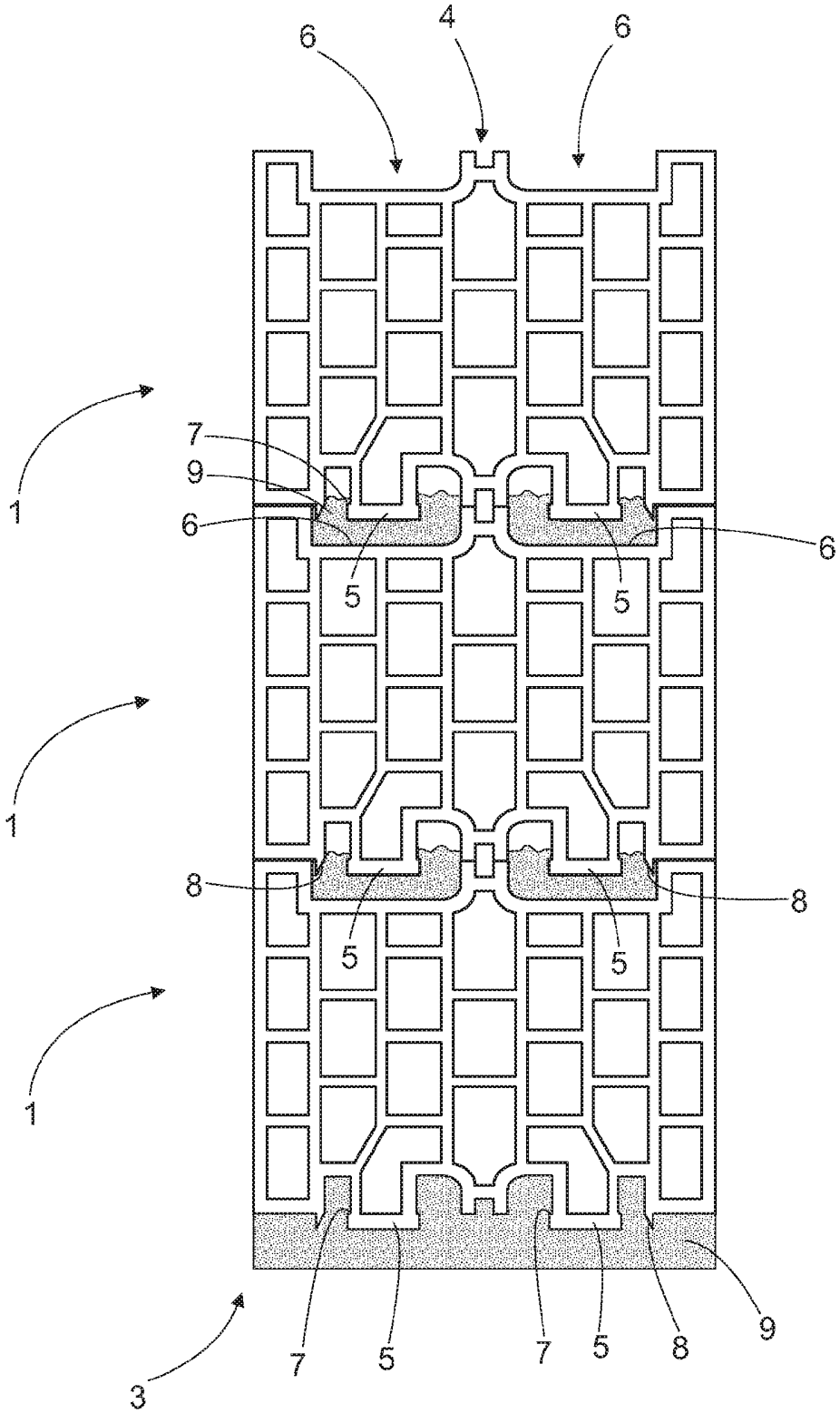

Fig. 2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2010/070860

A. CLASSIFICATION OF SUBJECT MATTER

E04B2/10 (2006.01)
E04C1/00 (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
E04B, E04C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	GB 191323011 A (HARDONCOURT ARTHUR) 05/03/1914, page 3, lines 2 - 43; figures.	1,4-8
X	GB 852813 A (JOHN BERNARD STUART UNDERWOOD) 02/11/1960, page 1, lines 11 - 47; page 1, line 61 - page 2, line 1; page 2, lines 14 - 48; figures.	1-3,6-8
X	FR 1271506 A (VIGOUROUX) 15/09/1961, page 1, line 83 - page 2, line 32; page 2, lines 61 - 74; figures.	1,6-8

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
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Date of the actual completion of the international search	Date of mailing of the international search report
06/04/2011	**(24/05/2011)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer R. Peñaranda Sanzo Telephone No. 91 3493051

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2010/070860

C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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