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(54) **PARTITION BUILDING BLOCK AND METHOD OF USE**

(57) The present invention discloses a block with rectangular shape and consisting of two parts, which upon joining with mortar or preferably with a resilient material, form the final block with vertical and horizontal drilling, so as to make the phase construction and the efficient incorporation of the infrastructures possible. The block has an innovative shape and geometry for dividing walls, without structural function, and is adaptable to walls with reinforcement function. The walls can be used for new constructions or as a solution for rehabilitation purposes,

thus being possible to manufacture the block with gypsum composite material, black granulated cork and cloth fibbers. The block might also be manufactured with other materials, such as light concrete (with expanded clay or another light material, including black granulated cork), as long as being compatible with a weight allowing an easy on-site handling and with strengths associated to the non-structural functions thereof.

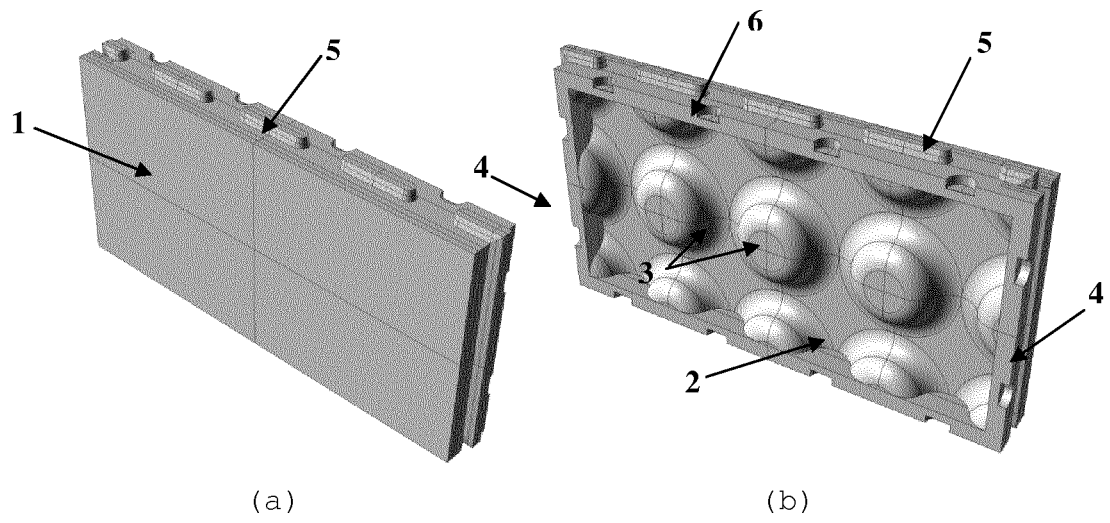


Figure 1

Description

Field of the Invention

[0001] The present invention is applicable on building industry, consisting of a system of blocks for the construction of dividing walls.

Background of the invention

[0002] The climatic changes and the awareness towards the fact that energy resources and materials are limited have contributed for the search of new products, techniques and more sustainable constructive solutions.

[0003] Buildings represent a considerable part of the environmental impact at a global scale, a need therefore existing towards the development of products and solutions which are more environmentally friendly than those currently in use. In order to achieve such object, constructive solutions may be found based on new materials that privilege the use of raw-material in the manufacture thereof, thus promoting for example forest protection, and which are effective in terms of energy saving and simultaneously maintaining or even improving the current comfort standards of the user. New products and construction methods may be conceived which promote a more effective power yield and a reduction of on-site building waste. An example is based on the proposal of new geometries for dividing wall blocks, which represent an important percentage on the volume of building construction.

[0004] In fact, in spite of the innovation in building industry being partly focused on the development of new materials, the definition of more effective constructive solutions promoting an increase on constructive process speed as well as a decrease on residues from structure implementation may also aid on achieving the goal towards a more sustainable construction. Presently, there are different systems for the construction of interior dividing walls, which by way of example may be divided into groups as conventional partitions and prefab-associated partitions (with solid or drilled blocks having different dimensions).

[0005] Among the several existing solutions, this section presents a description of patent documents related to dividing walls. As a result of the state of the art research on dividing walls, reference is made to US1981324 which discloses a constructive system for dividing walls with drilled blocks. The later may be composed of gypsum or any other light material capable of being moulded. The blocks are designed with the shape of an L and have discontinuous tongue and groove fittings on the vertical and horizontal joints and further comprise a trapezoidal section. This block has the particular feature of a vertical and horizontal drilling only allowing the passage of the electrical system within the wall. The assembly of the wall takes place without resorting to mortar or any other adhesive to join the blocks given that the document refers

that the tongue and groove fitting is sufficient for the stability thereof. The first step in the assembly procedures of the wall consists in placing a guide which is laid onto the pavement with a section allowing a tongue and groove fitting with the first row of blocks. The second step consists in placing square blocks on the lower corners of the wall. Subsequently, the L-shaped blocks will be placed which are combined with rectangular blocks (with framework function). The covering of the block can act as final finishing of the wall solution.

[0006] WO/2006/061450 claims a rectangular solid gypsum block for dividing wall construction and simultaneously the mould used for the production thereof. The metal mould with a separator allows producing two blocks at the same time for manual or automatic withdrawal. The block has trapezoidal tongue and groove fittings mainly on the horizontal joints. According to this document, the volume of the tongue fitting is smaller than the volume of the groove fitting. This difference cannot be excessive therefore avoiding a deviation from the guide fitting concept. The bevelled trapezoidal edges aid the on-site placement of the block and, according to the description in said patent document, they avoid cracks caused by structural settlement due to construction weight. Since the block is not drilled, the placement of assemblies is therefore not foreseen.

[0007] CN 201176660 refers to a rectangular gypsum block with horizontal drilling. It further includes tongue and groove fitting to aid the connection on the horizontal joint. The block is simplified by drillings which reduces raw-material use and translates into a final cost-effectiveness. In spite of the block having drills, the document does not indicate whether it is suitable for the settlement of any infrastructure. No reference is made to the use of mortar.

[0008] FR2219633 refers to a block that might be composed of any conventional material (such as gypsum or cement with fibber blend) and to the mould used for the manufacture thereof. It should be mentioned that the geometry and the fitting system of the block are very similar to those of the block disclosed in WO/2006/061450. The said block has discontinuous tongue and groove fittings with trapezoidal section on all edges of the border. Additionally to the groove fitting and so as to simplify the assembly, there are flanks with certain spacing in the tongue fittings. The bevelled trapezoidal edges simplify the on-site placement of the block. The connection among blocks needs to be complemented by an adhesive material. The integration of infrastructures is not foreseen.

[0009] CN 201343815 refers to a gypsum monoblock for application in interior dividing walls. The fitting among blocks is of the tongue and groove type, which may have different shapes, namely the shape of an arch, rectangle or trapeze. No use of mortar is mentioned to join the blocks together. The block has vertical and horizontal drillings. These drillings are destined to provide a fast drying during the manufacture of the block and reduce

the weight thereof.

[0010] ES 2170612 refers to a small gypsum panel, which may be compared to a masonry block, and is destined to the construction of non-structural walls. The small panel consists of two rectangular boards with different thickness, which are joined by hardening elements (composed of flexible material) and white glue. This allows defining vertical cells, through which electrical systems may pass. The constituent material of the panel is a mixture of gypsum, granulated cork, expanded polystyrene and fibreglass. The thickness dissimilarity among the boards forming the double panel allows an optimal solution as far as acoustics is concerned. This panel differs from that of the present invention in terms of the type of fitting among panels and particularly in terms of the inner geometry of the boards forming the double panel. In order to undertake the connection among panels the use of mortar is refrained.

[0011] BRMU8900518 refers to the manufacture of a pre-moulded cement block, using thick sand, cement, water and a catalyst. This block is rectangular with vertical drilling and wherein two rectangular side boards stand out having a narrow thickness for fitting purposes. The fittings are of the tongue and groove type having a rectangular section on the horizontal and vertical joints and which refrain from the use of plaster and mortar for settlement purposes, the use of glue being one possibility for the joining thereof. The vertical drillings give way to wires, cables and piping the grooving of the wall not being needed for the passage thereof. However, this drilling type does not allow the integration of assemblies in the horizontal direction.

[0012] For the wall corners, half of a block is foreseen thus avoiding a whole block to be cut for finishing purposes. The said block discards a finishing procedure giving way for a possible direct paint or coating application not resorting to plaster.

[0013] From the documents studied, which are closest to the present invention it has been found that they do not simultaneously gather the technical characteristics of the present invention. No solution simultaneously discloses vertical and horizontal drilling for infrastructure integration, and in those cases wherein drilling is foreseen, the infrastructures may be placed either mainly on the horizontal direction or mainly on the vertical direction. In all solutions previously mentioned, the constructive process is not clearly described, and therefore no reference to the possible phase construction is made so as to facilitate the integration of infrastructures without the previously drilling of holes within the walls.

[0014] Finally, it was found that the possibility to benefit from a base composite material for the manufacture of the blocks resulting from the mixture of different industrial by-products represents an advantage since it significantly increases the environmental and economical sustainability of the invention.

Summary

[0015] The objective of the present invention is to describe a block for the construction of dividing walls comprising two half-parts having the same geometry, each half-part having a core (2) of variable thickness consisting of alternate concave and convex curvilinear shapes (3), bevelled tongue and groove fittings (7, 8) and circular drillings for the passage of infrastructures and an outer rectangular part having constant thickness.

[0016] In a preferred embodiment of the block for the construction of dividing walls, the joining of the two half-parts may be carried out by applying gypsum mortar and/or polymeric mortar on the border of the inner part (4) which consists of a continuous edge, the final block being thus formed with vertical and horizontal drilling.

[0017] In another preferred embodiment of the block for the construction of dividing walls, the tongue and groove fittings (7, 8) have a trapezoidal shape the outlying points being rounded.

[0018] In another preferred embodiment of the block for the construction of dividing walls, the tongue and groove fittings (7, 8) which are arranged on the vertical edge are continuous and the fittings on the horizontal edge are discontinuous.

[0019] In another preferred embodiment of the block for the construction of dividing walls, the contact surfaces between the blocks at the level of the vertical and horizontal joints comprise pre-drillings for the passage of infrastructures.

[0020] In a still more preferred embodiment, the block for the construction of dividing walls comprises polymeric pieces for the interconnection of both half-parts.

[0021] In another preferred embodiment of the block for the construction of dividing walls, an insulation is applied between the two half-parts of the block.

[0022] In another preferred embodiment, the block for the construction of dividing walls can be manufactured from gypsum composite material, black granulated cork and cloth fibbers or light concrete (with expanded clay or another light material, including black granulated cork).

[0023] Still in another preferred embodiment, the block for the construction of dividing walls may consist of composite material from the combination of materials considered as by-products from tire recycling industry, from cork industry and from thermal power stations.

[0024] In another preferred embodiment, the block for the construction of dividing walls may be designed with an L shape, without fittings or core (2) consisting of concave and convex shapes (3).

[0025] In another preferred embodiment, the block for the construction of dividing walls has a joint between the L-shaped block and a block of conventional shape, which is carried out by means of a metal sheet with a "groove" fitting (8) having drillings on one end, on the surface contacting the structural element so as to undertake a joining by screws.

[0026] In the present invention the process for the ap-

plication of the block for the construction of dividing walls is further described comprising the following steps:

- a) placing and laying a half-part of the block so that the flat part consists of the outer surface of the wall up to a height considered as suitable for structure placement procedures making use of a polymeric mortar or gypsum adhesive applied onto the horizontal joints on the concave parts (3);
- b) placing the infrastructures;
- c) placing and laying the second half-part of the block, thus joining it to the first half-part by means of applying a bounding material, which might be setting material applied onto the horizontal joints.

[0027] In still another preferred embodiment of the process previously described for the application of the block for the construction of dividing walls, the interconnection of the blocks is carried out by supplementary polymeric pieces.

General description of the invention

[0028] The present invention consists of a block with innovative shape and geometry for dividing walls, without structural function, and adaptable to walls with resistive function. The walls can be used for new construction or as a solution for rehabilitation purposes, thus being possible to manufacture the block with gypsum composite material, black granulated cork and cloth fibbers. The block might also be manufactured with other materials, such as light concrete (with expanded clay or another light material, including black granulated cork), as long as being compatible with a weight allowing an easy on-site handling and with strengths associated to the non-structural functions thereof. Notwithstanding the material used, the developed solution shall always be based on the sustainability of the final solution.

[0029] The geometry of the constructive system of walls is based on the following objectives: (1) obtaining of a light block leading to a higher work yield; (2) simplifying the construction technology so as to produce the wall mainly as the simple assembly of fitting pieces; (3) simplifying the incorporation of the systems (electrical, communication, water supply), which generally implies the opening of holes, so as to reduce material waste (4) and improving the acoustic performance among contiguous buildings.

[0030] The proposed invention can be used in association with other constructive systems of structural masonry as long as focusing on the location of systems within non resistive dividing walls. Even though in this specific case of non-structural walls hole opening does not represent structural implications, it has clear influence in material waste, thus being considered as a non-rational solution for accommodating electrical systems.

[0031] As a solution, a rectangular block is herein presented having two half-parts (Figure 1a and Figure 1b),

which are joined by mortar or preferably a resilient material and form the final block with vertical and horizontal drilling, so as to give way to phase construction and efficient integration of infrastructures. Integration is herein understood as the forecast of the space required for infrastructure placement, causing as few material waste as possible upon installation. The dimensions adopted for each half-part of the block were dependent on the maximum reasonable weight for the appropriate on-site handling and so as to obtain an appropriate working productivity thus leading to a cost-effective solution. In order to obtain a block with a total weight inferior to 16 kg the block was proposed with a 600mm width, 300mm height and a total thickness of 140mm (connection of two half-parts with 70mm). It should be noted that the weight is an important characteristic in terms of ergonomics and it may compromise the working productivity, which means that a clear tendency towards weight reduction of on-site handling material has been observed. Since wall construction is carried out on a segmented basis, by the in-phase laying of each half-part of the block, resulting on a wall, the reasonable weight to be handled by the worker is of 8kg. These dimensions can be varied depending on the material used and on a 150mm metrics, thus giving way to the obtaining of blocks from 450mmx300mmx140mm up to 600mmx600mmx140mm.

[0032] Each half-part of the block consists of an association of two parts with different shapes: an outer rectangular part with constant thickness (Figure 1a) and an inner part of variable thickness consisting of concave and convex curvilinear shapes (3) whose objective is to define the vertical and horizontal drilling for infrastructure accommodation (Figure 1b). The concave parts (3) are also destined to reinforce the connection among the two half-parts and to provide the block with a monolithic behaviour. Further to the concave disks, the connection between the two half-parts of the block is carried out on the border of the inner part (4) consisting of a continuous edge (Figure 1b). The joining between the two half-parts should be carried out with gypsum mortar used for the settlement of the blocks or, alternatively, with a polymeric mortar guaranteeing the appropriate compressive strength of both the block and the block masonry. Supplementary pieces may also be used (see Figure 2) which simplify the connection among panels during the construction of the wall, thus contributing to wall stabilization during the construction thereof.

[0033] The block has along its border bevelled tongue and groove fittings (7, 8), which are continuous on the vertical joint and discontinuous on the horizontal joint. The horizontal discontinuity is based on the intention of infrastructure passage. This type of fitting is destined to simplify the on-site placement of the blocks, thus increasing the efficiency of the constructive process.

[0034] The development of the constructive system of walls leads to the need of creating special pieces in way to comply with all present constructive requirements in the construction of walls. In the case of dividing walls,

these should be drawn away from the structure on the contact edge with the top and bottom flagstones in order to avoid vertical load transfer through the flagstones. However, the joining of the wall with the side elements is proposed so as to guarantee resistance against actions exerted beyond the plane in case of horizontal dynamic loads (earthquake action) and impact actions. The connection herein proposed demands the production of special pieces to guarantee the connection to the side structural elements, such as pillars. Further to the connecting metal pieces, different types of supplementary blocks were also defined, which allow an efficient assembly of the walls, avoiding on-site adjustments and promoting an implementation rigour, as well as significantly decreasing material wastes.

Construction method:

[0035] The constructive process of the present invention comprises three phases, namely: (1) placement and laying the first face (half-part of the block) up to a height considered viable for the placement of the systems. The laying is carried out with a settling material, which may be a mortar or a gypsum adhesive applied onto the horizontal joints and it is further possible to place supplementary pieces with the geometry indicated in Figure 2, so as to simplify wall stabilization during the construction of the 2nd wall face. The use of a dry joint is proposed for the vertical joints, benefiting from the continuous tongue and groove fittings;

- (2) placement of the infrastructures;
- (3) placement and laying of the second face and joining thereof to the first face by applying a bounding material, that can be the settling material placed on the horizontal joints and further by applying the supplementary polymeric pieces (Figure 2).

Brief description of the Figures

[0036]

Figure 1 - Detail of the block geometry wherein (a) it corresponds to the outer face of the block and (b) the inner face of the block wherein the reference numbers represent:

- 1 - external plate of the rectangular block;
- 2 - core composed by the association of the concave and convex shapes;
- 3 - detail of the concave and convex parts;
- 4 - connection border between the two half-parts of the block;
- 5 - discontinuous tongue fittings on the horizontal edge;
- 6 - pre-drilling for the passage of the systems.

Figure 2 - Supplementary piece in polymeric material

for the improvement of the phase construction process.

Figure 3 - Complete block consisting of the half-parts in an assembled state.

Figure 4 - Detail of the geometry of the border of the blocks (a) horizontal edges of the block (plant of half-part of the block); (b) vertical edges (side elevation of half-part of the block) wherein the reference numbers indicate:

- 5 - discontinuous horizontal fittings on the horizontal edge;
- 6 - pre-drilling for system installation;
- 7 - tongue fittings;
- 8 - groove fittings.

Figure 5 - Fitting solutions. Detail of the tongue and groove fitting.

Figure 6 - view of half-part of the block resulting from the association of the pressed plate and moulded part wherein the reference numbers indicate:

- 9 - pressed plate;
- 10 - moulded core.

Figure 7 - Shape and geometry of half block (half-parts)

Figure 8 - Shape and geometry of the corner block

Figure 9 - joining between corner block and current block. Geometry of metal profile for corner reinforcement and application thereof wherein the reference numbers indicate:

- 11 - Detail of the joining by metal sheet.

Figure 10 - Joining of the wall to a structural element by means of metal sheets. Geometry of reinforcement metal profile adjacent to a pillar and application thereof wherein the reference numbers indicate:

- 12 - detail of the joint;
- 13 - drilling on the contact surface between the sheet and the vertical structural element;
- 14 - detail of the groove part of the sheet in contact with the block.

Detailed description of the invention

[0037] A more detailed description of the invention shall be provided in this section.

[0038] The block has rectangular shape and is constituted by two half-parts (with similar shape and geometry) (Figure 1a and Figure 1b) and which are joined to form

the final block with vertical and horizontal drilling (Figure 2), so as to make the phase construction and the efficient integration of the infrastructures possible.

[0039] The inner face presents a geometry consisting of a 20mm-thick border (Figure 1b) and a core (2) consisting of a set of waved concave and convex surfaces (3) alternating according to a 150mm grid (Figure 1b). The dimension of the said grid was defined based on the usual diameters of the electrical and hydraulic systems and it is destined to make the appropriate placement thereof possible. The said border (4) was defined from the definition of the geometry and dimensions of the core (2) of the inner part of the block. The geometry formed by convex surfaces (3) in the inner face of each half-part of the block thus forms channels for infrastructure installation, with modular and flexible design, allowing the modification of layouts and piping overlapping, when required. The shape and geometry of the concave and convex surfaces (3) on the inner part of the block is determined by the diameter, curve radius and layout of the infrastructures meant for integration. The block further comprises a play so as to, in case of piping layout interception, the overlapping of the pipes is made possible. The continuous border (4) aims at the joining of the two half-parts of the block guaranteeing the monolithic operation of the block and assuring the laying stability among blocks, whereas the core (2) allows soothing the piece, in a process similar to drilling. The connection of the two half-parts of the block may be carried out by further applying gypsum mortar or a polymeric mortar (acting as resilient element) onto the concave parts (disk shape) so as to guarantee the stability of the block and walls in terms of its own weight and in terms of possible vertical loads transmitted by the flagstones. Furthermore, joint polymeric pieces may be applied between both half-parts having the shape shown in Figure 2 so as to reinforce the connection and simplify the phase constructive process, thus ensuring a greater stability during the construction of the second wall panel. The contact surfaces among the blocks at the level of the vertical and horizontal joints consist of tongue and groove fittings (7, 8) (t/g) and pre-drillings for infrastructure passage (6). The use of tongue and groove fittings aims at simplifying the assembly of the wall with an increase on the alignment rigour of the blocks, as well as reducing the amount of settling mortar. It is admissible that in some situations no bounding material is required at least on the vertical joints, the joining between blocks being therefore mainly carried out by means of the fitting effect. The fittings on the horizontal edge are discontinuous along the block width so as to promote a more precise laying, which is essential to guarantee the vertical alignment of the space for the infrastructures (see Figure 1a and Figure 4a). The geometry of the tongue and groove fittings (7, 8) of the horizontal joint consists of a shape with trapezoidal section with rounded tops (Figure 1, Figure 4b and Figure 5). The t/g fittings (7, 8) are 13 mm in height, 80 mm in length and have a thickness of 20 mm on its base rising up to 15

mm on the top. These dimensions were defined based on the geometric proportions of each half-part of the block, in order to provide an appropriate laying of the blocks, simplify the removing from the mould of the block and avoid right-angled edges so as to eliminate or reduce possible damages during the transportation of the blocks. The vertical edges similarly present tongue and groove fittings (7, 8) and pre-drillings (6). However, unlike the horizontal edges, the t/g fittings (7, 8) of the vertical edges are continuous along the height of the block, acting as guides and as stabilizers in the assembly of the wall. The trapezoidal shape and geometry of the t/g fittings (7, 8) of the vertical edges is similar to that of the fittings of the horizontal edges and the length is similar to the height of the block (Figure 4a).

[0040] Given that the use of the system in non structural dividing walls is intended, the block may consist of composite material resulting from the combination of materials considered as by-products of tire recycling industry (cloth fibbers), cork industry (black granulated cork) and thermal power stations (gypsum from the desulphurisation), for use in the construction of dividing walls. The composite material will result from the combination of different percentages of gypsum (FGD) or conventional construction gypsum, black granulated cork and cloth fibbers, so as to allow obtaining an appropriate material for use in blocks for non structural purposes. If composite gypsum-based material is used, the block may be the result of a moulding process or a combined process of pressing and moulding. In the first case, the block will be moulded integral with the composite material. In the second case, the block results from blending a pressed gypsum plate with a thickness between 12 and 15 mm to a moulded composite material core (10) forming the inner shape consisting of an association of concave and convex shapes (3) as previously described (Figure 6). In both solutions the external surface is expected to be completely flat and therefore provides a nearly final finishing. However, when necessary, the surface may be finished with a covering gypsum mortar. The mixed block with pressed plate (9) and moulded nucleus (10) has an uniaxial compressive strength interval from 1,5 to 2,5 MPa, while the moulded block has a strength interval from 1,3 to 1,7 at 14 days. These values are compatible with the use foreseen for dividing walls or non-structural insulation and are comparable with the values of non-structural masonry blocks available in the market. After being removed from the mould, the blocks may be cured under room temperature conditions or under drying kiln at a temperature between 30° and 40°.

[0041] The constructive process, intended as a simple process, is in close relationship to the preliminary objective of an efficient application of infrastructures. Therefore, the installation of a slot-rail is requested as a guide for wall implantation, and the laying of half of the wall (laying of one half of the block) benefiting from the fitting solution and the use of a settling mortar for the horizontal joints, up to the level wherein infrastructure installation

is adequate. Subsequently to infrastructure installation, the second wall panel is laid and joined to the first panel already laid by means of mortar on the border (4) and on the concave area by means of the supplementary piece shown in Figure 2. The remaining height of the wall can be formed by the simultaneous laying and connection of both half-parts of the block.

[0042] The wall solution may have different applications. The new wall solution is based on the application of the block consisting of two half-parts, thus forming a total wall thickness of 140mm, in the case of dividing walls. Between both block halves, an insulation may be applied so as to allow a better acoustic and/or thermal performance. The solution for wall rehabilitation is based on the application of mainly one half-part of the block placed with its inner face against the wall intended for rehabilitation. The thickness of this solution is of 70mm, also allowing the integration of infrastructures.

[0043] The different supplementary pieces required for the construction of the wall have the following characteristics:

1. The half block consisting of the adaptation of the original block, reducing it to half width, resulting in 300mm width, 300mm height and 70mm depth (Figure 6). The half block is intended to avoid the cut of the whole block so as to allow beginning or finishing laying a row, in the case of selecting a conventional apparatus (masonry set up in "counter-row" method). When the measurements of the blocks are neglected and the end piece is required to have less than 300mm, this piece allows a significant decrease in waste production, when compared to the whole block.

2. The corner block consists of adapting a whole block and a half block, in a corner situation (Figure 7). It is an L-shaped piece, which has been designed without fittings and without the core (2) comprising concave and convex shapes (3), for compatibility and rationalization purposes. The inexistence of fittings allows a one-piece compatibility with all possible combinations (tongue and groove). On the other hand, during finishing procedures, it also allows using the corners to correct imperfections or flaws in the system's measurements. It is thus guaranteed that the edge, which is a fragile point in nature, is reinforced and provided with execution quality. The joining of this particular block to the current block should be made by means of a metal sheet (9) attached with screws to guarantee the continuity of the wall (Figure 8).

3. In order to contribute for the structural safety of the system, mainly when the walls are subject to seismic action, a metal sheet was developed most likely conceived in galvanized steel (Figure 9). This piece has 100mm in length, 50mm in width, about 1mm to 2mm in thickness, having a "groove" fitting (8) on one end containing drillings on the section contacting

with the structural element so as to undertake the joining with screws. This sheet will be used for joining the corner block to the structural housing elements, namely reinforced concrete porches and steel porches (Figure 9). The foil should be outlined so as to guarantee an "L" shape. Both pieces will be applied onto the area of the joint between blocks, the attachment thereof being carried out by means of screws.

Claims

1. Block for the construction of dividing walls, **comprising** two half-parts having the same geometry, each half-part presenting a core (2) with variable thickness consisting of alternate concave and convex curvilinear shapes (3), bevelled tongue and groove fittings (7, 8) and round drillings for the passage of infrastructures and an outer rectangular part having a constant thickness.
2. Block according to claim 1, **wherein** the joint between the two half-parts is carried out by applying gypsum mortar and/or polymeric mortar in the perimeter of the inner part (4) which is composed of a continuous edge thus the final block with vertical and horizontal drilling being formed.
3. Block according to the previous claims, **wherein** the tongue and groove fittings (7, 8) have a trapezoidal section the outlying points thereof being rounded.
4. Block according to the previous claims, **wherein** the tongue and groove fittings (7, 8) on the vertical edge are continuous and the fittings on the horizontal edge are discontinuous.
5. Block according to the previous claims, **wherein** the contact surfaces between the blocks at the level of the vertical and horizontal joints comprise pre-drillings for the passage of infrastructures.
6. Block according to the previous claims, **comprising** polymeric pieces for the interconnection of both half-parts.
7. Block according to the previous claims, **wherein** an insulation is applied between the two half-parts of the block.
8. Block according to the previous claims, wherein it is manufactured from gypsum composite material, black granulated cork and cloth fibbers or light concrete (with expanded clay or another light material, including black granulated cork).
9. Block according to the previous claims, **wherein** it consists of composite material from the combination

of materials considered as by-products from tire re-cycling industry, from cork industry and from thermal power stations.

10. Block according to the previous claims, **wherein** it is designed with an L shape, without fittings or core (2) consisting of concave and convex shapes (3). 5
11. Block according to the previous claim, **wherein** the joint of the said L-shaped block to a block of conventional shape is carried out by means of a metal sheet with a "groove" fitting (8) having drillings on one end, on the surface contacting with the structural element so as to undertake the joining by screws. 10
12. Process for the application of the block according to claim 1, **comprising** the following steps: 15
- a) placing and laying a half-part of the block so that the flat part consists of the outer surface of the wall up to a height considered as suitable for structure placement procedures making use of a polymeric mortar or gypsum adhesive applied onto the horizontal joints on the concave parts (3); 20
 - b) placing the infrastructures; 25
 - c) placing and laying the second half-part of the block, thus joining it to the first half-part by means of applying a bounding material, which might be setting material applied onto the horizontal joints. 30
13. Process according to the previous claim, **wherein** the interconnection of the blocks is carried out by supplementary polymeric pieces. 35

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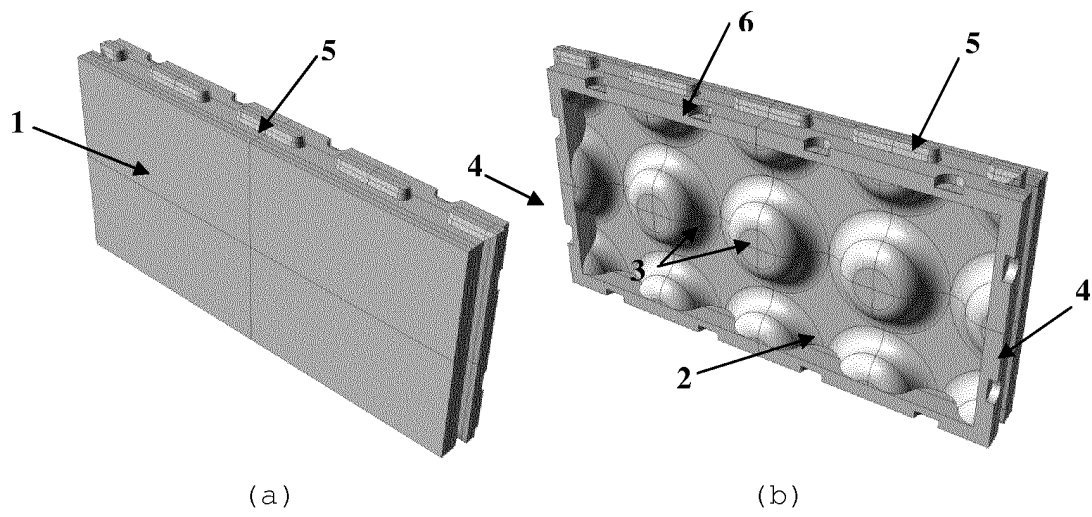


Figure 1

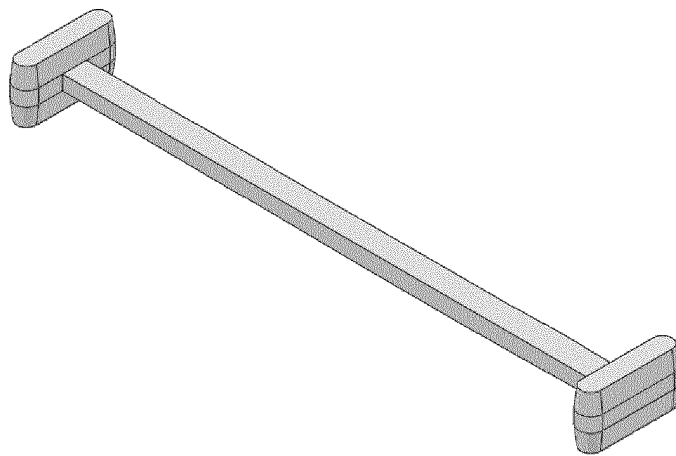


Figure 2

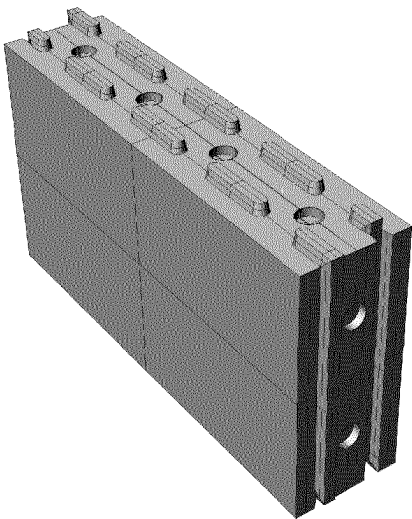


Figure 3

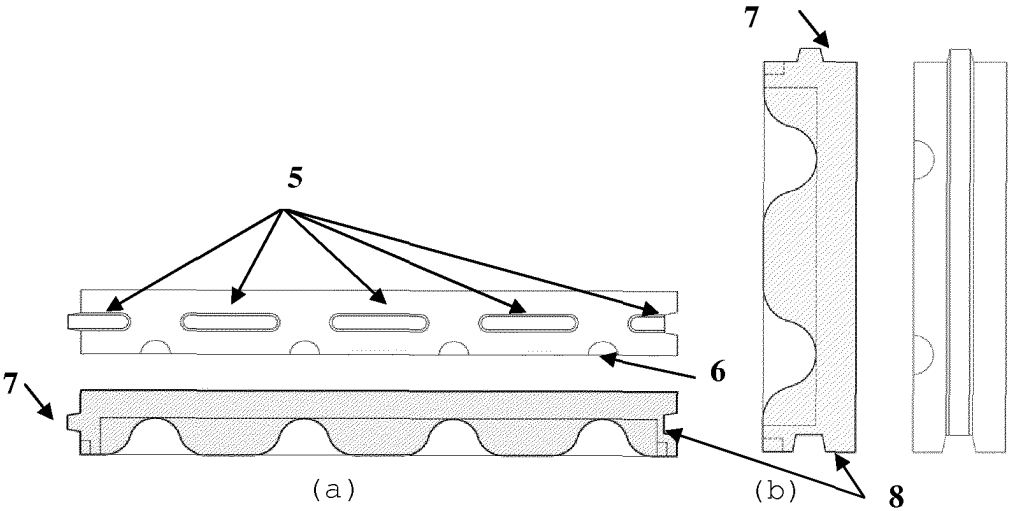


Figure 4

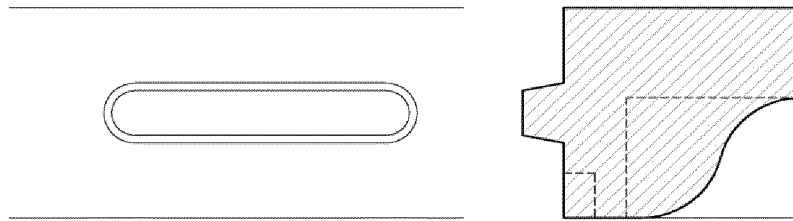


Figure 5

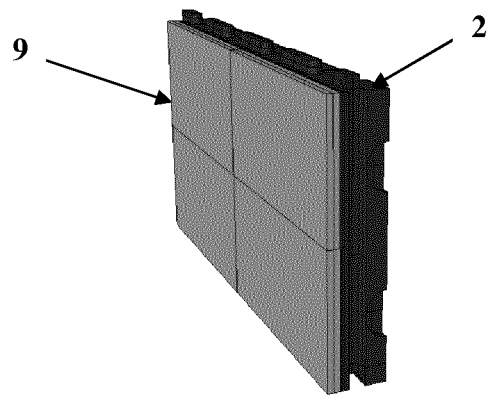


Figure 6

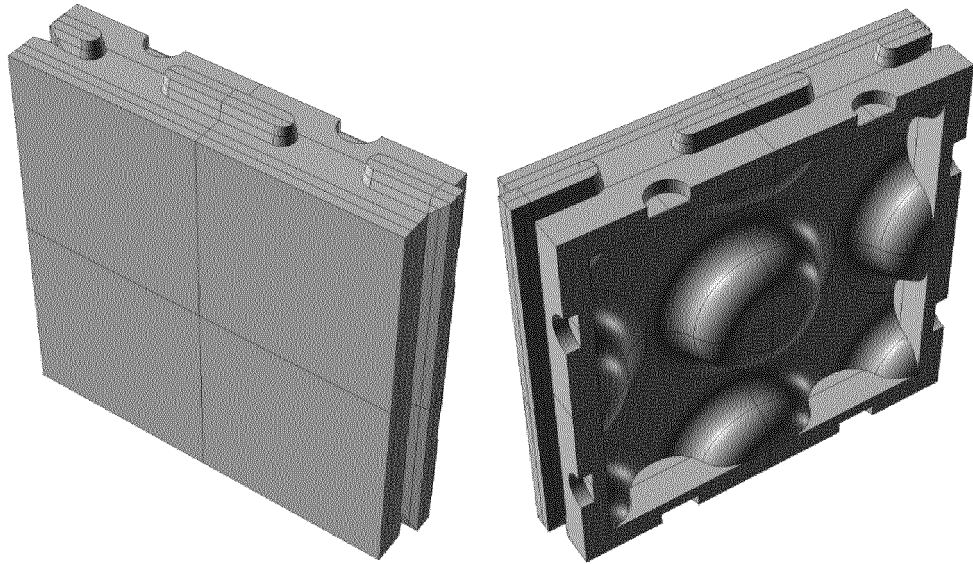


Figure 7

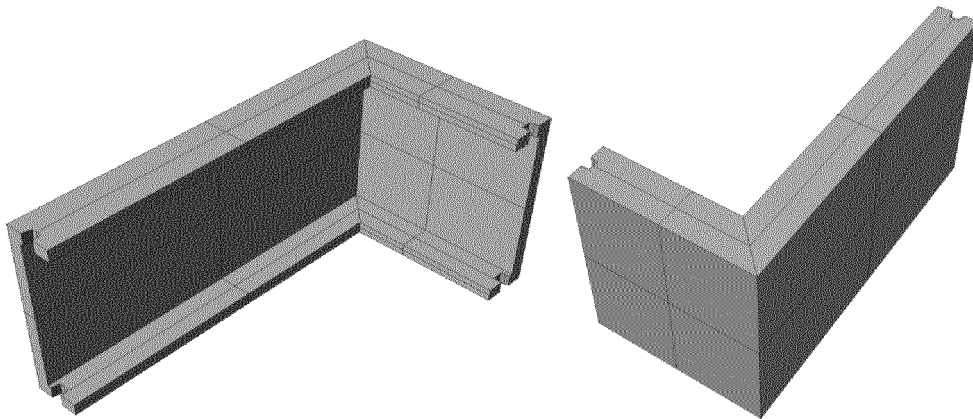


Figure 8

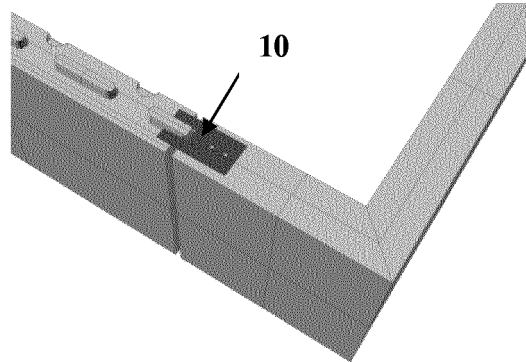


Figure 9

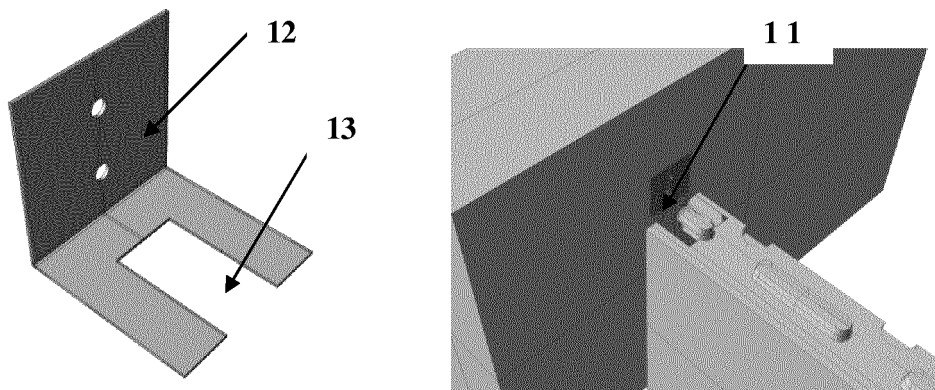


Figure 10

REFERENCES CITED IN THE DESCRIPTION

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