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(54) Partition system

(57) The present disclosure describes a constructive solution for non-structural partition walls, tensioned between the elements of floor and ceiling. This solution comprises a structure in tensioned straps that supports the assembly by means of attachment of panels with a core in fibrous material and covering plates on both sides. The core will consist of modules that can be subtracted or added, allowing the incorporation of installations without damaging the panel, which may include a grid, which at the same time serves to reinforce and give rigidity to the panel.

The system exhibits a support structure in tensioned straps; a panel comprised of a core and covering plates on the outer faces. The core features vertical and horizontal grooves in its interior, allowing for the incorporation of networks of water, gas and electricity supply without the need of opening grooves in the site; and preferably includes a fibrous/porous material in order to work simultaneously as thermal and acoustic insulation of the installations.

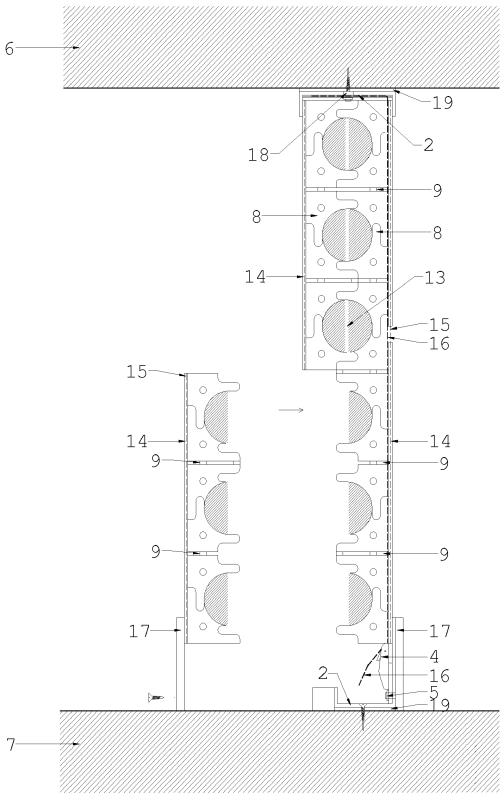

Figure 1

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Description

Technical Field

[0001] The present disclosure describes a constructive system for partition walls intended preferably for housing buildings. More specifically, it consists of a constructive system in panels of easy assembly and disassembly tensioned between the floor and ceiling slabs that can be used for new construction and as a rehabilitation solution. This system is directed to the building industry.

Prior Art

[0002] The constant evolution and change of lifestyles and of households have led to a rethink of the ways of living and the increasing need to propose more evolutionary and adaptable homes. It is found that much of the existing housing does not meet satisfactorily this design, showing constructive solutions of static and heavy interior partitions. This problem becomes important when it comes to rehabilitate existing buildings, but also in the design of new buildings, in the knowledge that in the future the need to rearrange the interior space will represent the same difficulty as today.

[0003] From the research carried out patent documents are presented herewith that have relevant characteristics that can be analysed and compared with the embodiment now disclosed, regarding both the differences and the similarities.

[0004] The solutions of partition walls with greater implementation on the market are the airbrick masonry and the plasterboard solution with substructures in metallic profiles. The present embodiment differentiates itself from the first for being lightweight and dismountable and from the second for being tensioned, for allowing the disassembly, the easy removal of the installations without damaging the covering and for allowing the space reconfiguration using the components in their entirety. In a disassembly scenario, the plasterboard solution only allows the use of the structure but not the covering, therefore the space reconfiguration becomes very limited. The present embodiment shows a dry mounting, with mechanical fixings, such as the plasterboard solution, however it provides for more frequent and easy disassembly scenarios than the latter.

[0005] The patent document JP 2003020752 refers to a system of interior covering with membranes. This system consists of membranes attached to fixing rails mounted in the interior of rigid structures of floor, ceiling and walls. For the application of the membrane covering, said membrane covering is tensioned between the fixing rails in order to form wall or ceiling surfaces. The membrane constitutes the finishing material. This system has no cables or structural reinforcement straps, just fixing rails to the support elements. It does not envisage the passage of installations or the placement of sockets or openings on the covering. Said patent document also does not provide for any insulating solution to increase the thermal or acoustic performance.

[0006] The patent document EP 1818470 (A2) refers to a constructive system and method for a projection screen or interior partition wall comprised of modular panels. The technology refers to a base module with a predominantly rectangular shape. The base module shows protrusions, which allow easy aggregation with other modules by means of tongue-and-groove coupling, forming larger units, for example, an interior partition wall. By the application of modules of different colours or materials, different configurations in the superficial finishing can be achieved. In addition, an interior partition wall according to said technology can be used for the acoustic conditioning of a partition through an appropriate choice of materials with acoustic properties. The modules comprise a core in polyethylene (PE) foam, with a varying thickness of 10 to 20 millimetres, lined with fabric on both sides. To mount an interior partition wall, the modules have openings through which passes a support structure or support that can consist of, for example, wires, cables, rods or straps so as to be able to confer stability to the partition.

[0007] Similar to the present embodiment, this potential evidence for acoustic insulation and the mode of aggregation is done through a tongue-and-groove coupling on a support structure in wires, cables, rods or straps. However, unlike the present embodiment, said technology does not provide for the incorporation of electrical installations, communications or water supply and it is built of modules with reduced thickness and dimension, between 10 to 20 mm. In the case of the present embodiment the aggregation is done by means of mechanical attachment or by coupling of the tongue-and-groove type, the fixation being fully concealed. The present embodiment includes a structural network of straps that serves as support to the panels, showing rigidity and possessing a greater thickness than that of said technology.

[0008] The patent document FR 2574100 (A1) refers to a removable or collapsible partition. This partition consists of a core and a covering. The core is made up of two panels of insulating material connected by a rail along the ceiling, and a plinth along the floor. The applied covering is flexible, covers the whole of the two sides of the partition and is fixed and tensioned between the rod and the tube of circular cross-section, which is secured to the plinth/ skirting board. Subsequently, mounting tabs are placed, equipped with claws, mounted on the edge of the skirting board in order to hold the fabric or keep it under tension. This partition comprises a simple system of assembly and disassembly, however it only envisages the passage of electrical installations located in the skirting board. In this solution only the outer covering is tensioned, the stability being ensured by elements that are anchored by compression.

[0009] The patent document PCT/IB2011/051105 refers to a constructive system of blocks for partition walls. These blocks consist of two halves with concave and

convex shape geometry linked by mortar and that allow the incorporation of piping. The present embodiment differentiates itself from the latter in that it can include a reinforcement grid, is able to include a fibrous material, is lighter and has a frontal and side union by means of coupling. The present embodiment is connected to a structural system of tensioned straps, unlike said technology, which works with compression. On the other hand, the present embodiment features profiles/fixing rails for the ceiling and reinforcement floor and finishing for tops, corners and spaces, which is not the case with said embodiment.

[0010] The patent document US 7,198,388 B2 refers to a flexible grid with a rigid ring that allows curves of luminosity control inside buildings, in partition walls and ceilings. This grid is made up of strips of fabric and is supported by a rigid and modular ring that keeps the grid tensioned. The connection to the ring is ensured by incorporating a number of connectors to the ring. In turn, this ring makes the connection of the grid to the rigid structure of the building.

[0011] It resembles the present embodiment in that it has a grid and connectors that make the connection to rigid profiles, which, in turn, make the connection to structural elements of the building. Its application is intended for use inside buildings, including as partition walls. However, the present embodiment differentiates itself from this by: having vertical and horizontal drillings in the grid that allow the incorporation of installations; having attached covering and reinforcement elements that minimize the impact acting on the plane of the partition wall.

[0012] The product currently available on the market called CUBSORB is an acoustic absorbent blanket for application in internal lining of ceilings and walls. The geometry of the panel has grooves in both horizontal and vertical directions, however, these, by their geometry and dimensions were not designed for the incorporation of installations. This product only resembles the present embodiment in that it has vertical and horizontal grooves in a regular modulation, in this case of 100 mm x 100 mm. The metrics of the modulation of the present embodiment is smaller than this and can be defined either by the grid of the core or by the fibrous material. Said technology called CURSORB has no structural function and was not designed as a solution for partition walls, being just a lining material. To ensure verticality and good mechanical performance of the partition wall, it would be necessary to strengthen the structure of the absorbent blanket, which is not provided for.

[0013] From the analysis of patents and products presented it is possible to assert that the present embodiment is an innovative product to the extent that it allows the incorporation of installations in its core eliminating the need of the acoustic and thermal insulation of the installations as well as any accessory elements, glue or mortar. This solution is comprised of a structure in tensioned straps that serve as a support for the assembly by coupling of rigid panels comprised of a core in fibrous material and a covering on both sides. The core can be reinforced with a structural grid, when the fibrous material itself does not ensure sufficient rigidity. Unlike conventional walls wherein the structural elements generally work with compression, in the proposed solution the straps tensioned between the floor and the ceiling ensure the stability of the partition wall.

[0014] The present embodiment provides a solution comprised of light modular panels, with dimensions between 30 mm to 300 mm, allowing for easy transport to the site of work and a dry assembly without the use of water or glue at the site; stability is ensured by the tensioned straps, requiring only rigid elements for attachment to the ceiling and floor, reinforcement in the perimeter of the opening of interior gaps and finishing of tops and corners/links between panels.

[0015] Due to the fact that it is a flexible solution and easily adjustable, the present invention allows the rearrangement and adjustment of the space of a dwelling according to the evolution of the household or the change of use.

Summary

[0016] The present embodiment describes a constructive solution of a non-structural partition wall, tensioned between the pre-existing rigid elements of floor and ceiling. This solution is comprised of a structure of tensioned straps serving as support for the stepwise assembly of panels composed of a core in fibrous material and covering on both sides. It is envisaged the inclusion of a structural grid in the panels, in order to reinforce them to flexion, as well as a blade of outer covering on both sides. It is equally envisaged the option of including a topcoat, as depicted in Figure 4, to cover the joints of the panels.

[0017] The support structure is comprised of vertical straps with buckle type tensors or ratchets that allow to ensure an initial tension between the horizontal support elements, the ceiling and the floor. To these, horizontal straps can also be fixed, forming a network where the panels are fixed that follows a modular metric. The core consists of a malleable or rigid fibrous material - in the latter case having a rigid reinforcement grid - with grooves whose geometry allows the incorporation of water supply networks and electric installations with diameters up to 40 mm without the need of opening grooves.

[0018] The present embodiment includes a technology for building partition walls in light, adaptable, modular panels portable and easy to handle. The present technique allows for easy assembly and disassembly, by the use of dry mounting technology, with reversible mechanical fixation systems, without the use of adhesives and mortars, with unlimited usages.

[0019] This embodiment also applies to interior plans of constructive solutions of wall and fagade and it presuposes that the fastening system should be applied in places where elements such as the floor, the ceiling and the walls that are located at its border are mandatorily

from the rigid type, that are practically indeformable and provide a good mechanical attachment by means of, for example, screws.

[0020] In summary, the partition system of adaptable panels comprises:

- a support structure comprising straps fixed to the ceiling by means of a rail and to the floor by means of tightening buckles, ratchets or tensors;
- a grid comprising at least two modules with a tongue-and-groove connection, wherein each inner side of the module features a central circular opening;
- a core of fibrous material which is inside of the modules of the grid;
- an outer covering on each side.

[0021] Also in summary, its assembly process comprises the following steps:

- Fixing the support straps to a higher profile/rail, to the ceiling and to a lower profile/rail to the floor, pulling them through the tensor comprised of a set of racket/buckle near the floor;
- Attaching one side of the covering;
- Adding the core to the respective modules for construction of the grid;
- Closing the panel in two parts through the tongue-and-groove attachment;
- Placing the covering, skirting board and cornice.

General Description

[0022] The present disclosure consists of a construction system of partition walls tensioned between the floor and ceiling elements. So that they can be portable, the present technique comprises a solution of reduced weight, with greater ease of handling and assembly compared to the conventional solutions of brick masonry or partition walls in plasterboard. The construction technology is dry, i.e., without requiring the use of water/mortars, not requiring labour or specialized equipment. The dry mounting and using reversible mechanical fixings allow for subsequent disassembly and assembly with different configurations of space, facilitating flexibility of use.

[0023] The present embodiment consists of a non-structural system of partition walls comprised of a support structure in straps, a panel comprised of a fibrous and/or porous core (13) with a grid of structural reinforcement and a covering.

[0024] Like the non-structural partition walls, the present embodiment is applied to interior panels of constructive solutions of double wall of façade and it presuposes that the fixation system should be applied at locations where the elements, floor and ceiling, located in its border will be mandatorily of the rigid type, for example concrete, metal or wood, that is, practically indeformable and provide a good fixation of the resistant elements of the partition.

[0025] The basic structure of assembly of the partition is comprised of straps with sufficient tensile strength to give rigidity to the solution when tensed through manual tightening buckles, rackets or tensors fixed to one of the peripheral rails of the floor or ceiling.

[0026] The panels are fixed to the basic structure of the partition - which panels are divided into modules (31), which, in turn can be separated to enable fitting in various directions. These modules include necessarily in the solution with malleable core, a reinforcement grid, with a thickness of between 1 and 4 mm and 60 mm to 100 mm deep, spaced apart at a minimum of 65 mm to each axis. The modules that make up this grid can be divided in the longitudinal and transversal direction to the partition, by means of tongue-and-groove couplings preferably filled with a core of fibrous material, and having grooves that allow the incorporation of water supply networks and electrical/communication installations with diameters of up to 40 mm without the need of opening grooves.

[0027] The material that forms the fibrous/porous core may be, for example, foam, blanket, textile, malleable or rigid as illustrated in Figures 3 a) and 3 b).

[0028] The panel has access to incorporation of installations through the front, in relation to the installer, in the simple solution, that is, between 60 and 100 mm thick; or access for the incorporation of installations on both sides in the double solution, between 120 and 250 mm thick. The panel shows a particularity in its geometry that has vertical and horizontal grooves distributed in a modular metric. The material that makes up the core also forms the thermal and acoustic insulation of the installations in response to the regulatory requirement of insulation of hot water supply networks when they do not have it, such as for example the metal pipes. Thus, the incorporation of installations is facilitated by the geometry of the core and by the characteristics of the flexible material.

[0029] The panel has a rigid outer coating (14) on both visible sides, as shown in Figure 1. The panel coating may comprise a polymer, a textile material, a metallic plate or a composite material with reinforcing fibres, or other types of panels, or rigid films, such as for example, fibres, polymers or composites.

[0030] In another embodiment, the core is rigid and optionally uses a reinforcement grid.

[0031] In another embodiment, a topcoat (23) is included to conceal the joints of the panels, as shown in Figure 4. The topcoating to be applied in the work may be: fabrics or films. A PVC membrane may also be applied, tensioned by means of a frame-type system located on the outer perimeter of the partition and with specific profiles that make the adjustment of the membrane. The membranes are available on the market, the most common being membranes of polyvinyl chloride (PVC), polytetrafluoroethylene (PTFE), silicone and vinyl with or without reinforcement structure, generally polyester or fiberglass. Panels of particleboard and oriented strand board (OSB), medium density fibreboard (MDF), ply-

wood, etc., may also be added, mechanically fixed by "Velcro" or other quick release fastening system, that does not compromise the disassembly. In spite of not being a solution that allows the desired easy disassembly, the possibility of using more conventional topcoats such as plaster is admissible, namely mortars with synthetic linkers (e.g., acrylics).

[0032] It is intended that the final product comprises a viable and competitive alternative in terms of performance, flexibility and eco-efficiency compared to existing solutions of partition walls.

Brief description of the drawings

[0033] Figures are attached for an easier understanding of the technique, which represent preferred embodiments that, however, are not intended to limit the scope of the present disclosure.

[0034] **Figure 1** illustrates a cross-section of the Adaptable Partition, where reference numbers represent:

2 - fixation of tensioned strap to ceiling and floor;
4 - tensor;
5 - mechanical fixation of tensor by means of quick release coupling, rivet, screw or threaded nut;
6 - roof slab;
7 - floor slab;
8 - grid made up of modules;
9 - Spacing between modules to allow the cut in order to subtract or add modules made of low density, malleable or rigid insulating fibrous material;
13 - insulating fibrous material;
14 - covering side made of rigid material;
15 - reinforcement;
16 - strap;
17 - skirting board for connection;
18 - mechanical fixation of tensor by means of quick release coupling, rivet, screw or threaded nut;
19 - resilient material.

[0035] **Figure 2** shows a longitudinal section showing the junction between two panels of a wall, where the reference numbers represent:

3 - vertical plumb line for top finishing and crossings between panels;
5 - grid;
8 - skirting board;
9 - Spacing between modules in the grid;
11 - drillings to enable connection of the grid to each other and to other elements;
12 - fixing springs between panels and between panels and plumb lines;
13 - insulating fibrous material;
14 - covering side made of rigid material;
20 - pipes;
21 - clamp for fastening the tubes to the grid.

[0036] **Figure 3 a)** illustrates a detail of the composition of the panel with reinforcement grid independent of the core - Figure above or embedded in the core - Figure below - showing the placement of installations, where the reference numbers represent:

8 - reinforcement grid;
13 - core.

[0037] **Figure 3 b)** illustrates a detail of the composition of the panel with a core in rigid fibrous/porous material without reinforcement grid, where the reference numbers represent:

8 - reinforcement grid;
13 - core;
14 - covering.

[0038] **Figure 4** illustrates the sequence of assembly of the panel by the installer wherein the reinforcement grid, as well as the profiles allow making connections in "T", "L" and finishing of the adaptable partition, as well as the introduction of spaces. The coupling system between the modules also allows for side and cross connections. There is also an option to put a topcoating to conceal the joints. In this Figure, the reference numbers represent:

2 - profile;
3 - profile;
8 - reinforcement grid;
23 - topcoat.

[0039] **Figure 5 a)** shows a detail of the attachment of the straps to the ceiling and floor and a detail of the attachment of the core to the strap structure, where the reference numbers represent:

8 - grid;
13 - core;
16 - structure of straps;
23 - connector.

[0040] **Figure 5 b)** shows a detail of the attachment of the straps to the ceiling and floor with the option to include built-in straps in the coating material of the back side in relation to the panel installer, where the reference numbers represent:

14 - covering side made of rigid material;
16 - strap.

[0041] **Figure 5 c)** shows a detail of the attachment of the straps to the ceiling and floor with a connector between the piece of connection of the strap and the grid. This connector can be formed by a plate with two rods, which penetrate the drillings in the grid and are finished with adjustable endings, preferably with flat heads, where

the reference numbers represent:

11 - drilling;
24 - connector;
25 - plate;
26 - rod;
27 - ending

[0042] **Figure 5 d)** shows a detail of the attachment of the straps to the ceiling and floor with a covering with the possibility of fitting in the grid via a sliding movement. This covering has couplings in the inner side which allow the attachment of the drillings in the grid, where the reference numbers represent:

8 - grid;
28 - attachments.

[0043] Figure **6** illustrates a detail of the geometry of the panel for incorporation of water supply, electricity and telecommunications installations.

[0044] Figure **7** illustrates a detail of the geometry of the panel for incorporation of light fixture junction boxes and sockets via the module and the grid, where the reference numbers represent:

8 - grid;
22 - light fixture junction box;
29 - socket;
31 - module.

[0045] **Figure 8** illustrates a detail of a lateral and frontal connection between parts of/adaptable panels via modules with couplings of the tongue-and-groove type or screws/bolts, quick release couplings, springs, magnets, velcros, fastening clamps, or others that go through drillings. The modules may have six faces with one hole or just four faces or form a single piece, which does the coupling of the tongue and-groove type or one piece for each attachment. In this Figure, the reference numbers represent:

11 - drillings;
12 - fixation springs between panels and between panels and plumb lines;
31 - coupling of the tongue-and-groove type.

[0046] Figure **9** illustrates a detail of a cut between modules of the adaptable partition through the existing spacing between them by means of a cutting tool. A detail of the vertical and horizontal joints is also illustrated. In this Figure, the reference numbers represent:

9 - spacing between modules and grid;
33 - vertical joint;
34 - horizontal joint;
35 - cutting tool.

Detailed description of an embodiment

[0047] For an easier understanding of the technology, an embodiment of the invention is described below, with reference to the Figures described above, without however that such description implies a limitation to the scope of the present disclosure.

[0048] The present disclosure is presented as a panel composed of two halves, as shown in Figure 1, that are joined frontally and laterally, by means of an attachment system shown in Figure 8. Optionally, the lateral attachment can be accomplished by mechanical fasteners such as screws/bolts, quick release couplings, springs, magnets, "velcro", clamps, as shown in Figure 8, among others, eliminating the need of any type of connection by means of mortar or resins which prevent the reversibility of the system. Each half of the panel is made up of tongue-and-groove type modules which unite to form harves. Each module (31) is comprised of six faces, all with a central circular hole for the passage of the pipes, as shown in Figure 8, and covering attachment, which are united by means of point connections.

[0049] In another embodiment, each module (31) is comprised of six faces with a circular hole and two of which are fully open, being attached to the covering. For the production of these modules, each face corresponds to a connection (31) or, alternatively, each face is comprised of two connecting parts (32) as shown in Figure 8. The placement of installations is carried out through the face accessible for the purpose.

[0050] In another embodiment, the grid can be excluded, when the core itself is made of rigid fibrous material and has grooves, as shown in Figure 3b).

[0051] In another embodiment, the panel may be constituted by the grid, without core, when there are no acoustic requirements. When a translucent partition is intended, the grid can be accomplished with a transparent or translucent material, without insulation or with translucent insulation, allowing for some visual and/or light permeability.

[0052] The rigid material of the grid has a thickness between 1 and 4 mm, and between 60 to 100 mm deep, being the modules (31) spaced apart at a minimum of 65 mm to each axle. This grid has grooves and is filled with a fibrous material, which can be rigid or malleable and allows the incorporation of water supply networks and electric installations with diameters up to 40 mm without the need of opening grooves, which includes a large part of the networks of domestic supplies that predominantly have a diameter of 20 mm, as shown in Figure 6. In spite of the fact that the modular grid of the core has grooves with a circular geometry, the material comprising the fibrous core of the partition wall will be flexible enough to accommodate the piping and still have clearance in case of intersecting paths of plumbing in order to allow their overlapping up to a limit of 40 mm in the sum of the two pipes that need to overlap. In the solution of single panel only pipes for hot water supply and cold water supply are

not possible to cross, for functional reasons, since their insulation cannot thus be ensured. In this case, it is advisable to use a double panel solution.

[0053] The panel comprises modules that can be removed, as shown in Figure 9, or added, as shown in Figure 8, depending on the needs of dimensional adaptation of the space to be partitioned. The wall system can be single or double.

[0054] In another embodiment, the single wall is used when there is no need to have independent access to the installations on both sides of the wall, there are no installations that cross resulting in a diameter greater than 40 mm and a good acoustic insulation is not necessary, for example in the interior division of existing partitions, such as bedrooms or living rooms.

[0055] In another embodiment, the double wall is the most indicated when it is necessary to have independent access to the installations on both sides of the wall, the installations have a crossing resulting in a diameter greater than 40 mm and a good acoustic insulation is an essential requirement. The double panel is used when it is necessary to increase the acoustic insulation between compartments or in the partition of sanitary installations or other wet zones with equipment connected to the partition, which in this case may require structural reinforcement and/or pipes with a diameter greater then 40 mm embedded between partition panels.

CONSTRUCTION PROCESS

[0056] Regarding the construction process of the partitions, which is intended to be simple, said construction process is related to the initial concept of fixing the partition to the rigid elements of the ceiling and floor. This fixation is made by means of straps (19) of resilient material, being fixed to profiles/rails (2 and/or 3), as shown in Figure 4, on the ceiling and/or floor that will serve as guides for the assembly of the wall. The straps (16) will be mechanically attached to the rails via screws, threaded nuts, quick release couplings and tension is imparted to them through a system of tightening buckles (4) fixed to the tabs of the fixation piece/rail to the floor, as shown in Figure 5. These straps may be presented separately as shown in Figure 5 a) when a translucent coating is intended, or may be embedded in the covering of one of the sides as shown in Figure 5 b). The advantage of the first format in relation to the second is that it allows more flexibility during assembly and disassembly, while the second allows for a faster installation and greater solidarity between the components of the panel, but will have to be assembled at the factory for each specific dimension.

[0057] The covering can be comprised of a textile material, a polymeric material, metal plates or other type of panels or films, rigid, comprised of fibres, polymers, metals or other material alone or composites with mixtures thereof. Preferably, the covering (14) is placed *in situ* and can eliminate the topcoat. To this end, it has fitting pieces on its inner surface that allow its fixation to the grid (8), being of easy assembly, disassembly and adjustment. In another preferred embodiment, the covering is applied in the factory through rolling/bonding, on the faces of the covering or panel, on the grid or core, as shown in Figure 3 a).

[0058] The topcoating to be applied *in situ* can be: fabrics, textile based composites or films that may adhere to the covering through a system such as velcro or other type of mechanical fasteners. A flexible polymer membrane, fabric or composite can likewise be applied, tensioned by means of a frame-type system with specific profiles that provide the adjustment of the membrane. Various types of membrane are available on the market, the most common being those of PVC, PTFE, silicone and vynil, in some cases with textile reinforcement, for example, in polyester or fiberglass. Panels of plasterboard, OSB, polymers or others may also be added, mechanically fixed by "Velcro" or other mechanical fastening system, such as quick release coupling, that does not compromise the disassembly. In spite of not being an ideal solution, considering that it makes disassembly difficult, the panel also accepts conventional topcoatings such as mortars with synthetic linkers.

[0059] The assembly of the partition wall should be carried out in the following steps, as illustrated in Figure 4: attach the structural support straps to an upper rail or bracket attached to the ceiling, and to a lower rail attached to the floor, with tightening buckles; tighten the support straps; add the core; incorporate the installations in one of the panel's parts, as shown in Figures 6, 7, 8 and 9; optionally the core (13) can be independent from the grid (8) and, in this case, it will be added in this stage, as shown in Figure 3 a); close the panel in two parts via the tongue-end-groove coupling and, when necessary, put the topcoating, skirting board and cornice.

[0060] In order to promote a faster assembly, a combination of the strap with the panels is also envisaged, as shown in Figure 5 b). This way, the straps are embedded in the covering or in the panel. Therefore, the assembly of the straps, grid, core and coating would be done at the same time.

[0061] The simplification of the construction technology of partition walls can be appreciated by the fact that it only requires mechanical attachments, screws, buckles and quick release couplings, already supplied with the system. And, on the other hand, allows for a modular, simple and clean cut, assisted by the spacing between modules (31) that make up the grid and by the grooves present on the coating side (33 and 34), by means of simple cutting tools (35), as shown in Figure 9.

[0062] Networks supply of water, electricity and communication are embedded within the panel, as shown in Figure 6. The incorporation is made through the frontal side of the interior half of the panel, as shown in Figures 3, 7 and 8, in the vertical and horizontal grooves in the geometry of the grid (8) and/or the core (13), removing part of the modules, as shown in Figure 9, which are

subsequently replaced by the tongue-and-groove coupling therein. The flexible fibrous material that comprises de core (13) insulates the tubing thermally and acoustically, absorbing them and also allowing the crossing/overlapping of installations. The incorporation of installations may also be made by the assembly in two stages of two halves of the panel, if they are placed separately *in situ.*

[0063] For the attachment of the junction boxes (22), switches and of derivation it is necessary to remove one of the modules (31) of the core, as shown in Figure 7. The attachment of the boxes will be made to the elements of the structural grid of the core by means of fastening accessories.

[0064] The covers of wall sockets and switches (29), as well as the taps and other devices, are attached directly to the covering. Reinforcement profiles are envisaged, such as plumb lines (3), shown in Figure 4, which allow the finishing and filling the difference not covered by the modules in the grid of the panels and between the latter and the pre-existing elements of the building such as columns, walls and doorframes and also serve as finishing of the top of the partition wall, as shown in Figure 2. The lateral connection between panels is carried out by placing clamping springs that go through drillings (11) present on the faces of the module, as shown in Figure 8.

[0065] For connection, the following solutions are presented: (a) Attachement of the panel to the ceiling and floor through pieces/rails with built-in tensors, connected to the ceiling and floor, as shown in Figures 1, 4 and 5; (c) these pieces/rails allow the addition of profiles specific for the placement of skirting boards and over-coatings in the panel or plate; (d) the connection in the shape of T and L between panels are carried out by vertical profiles (3) drilled in order to allow the continuity in the passage of installations (20), as shown in Figures 2 and 4.

[0066] In another object of the embodiment, the geometry of the modules that make up the panel allows the side or crossed junction of the panels to each other, shown in Figures 3 and 8, by means of tongue-and-groove couplings or springs or screws (12) that go through the drillings (11) on the faces of the modules.

[0067] In the case of the final covering being the covering of the core, the vertical and horizontal joints may be filled by a weld bead through the grooves (33 and 34) present on the covering (14) of the faces of the panel.

[0068] Naturally, the present embodiment is by no means restricted to the embodiments described in this document and a person with average knowledge of the art will be able to envisage many possibilities for modifying the same without departing from the general idea, such as defined in the claims.

[0069] The preferred embodiments described above can obviously be combined between themselves. The following claims additionally define the preferred embodiments.

Claims

1. The partition system in adaptable panels **characterized in that** it comprises:

   - a support structure comprising straps fixed to the ceiling by means of a rail and to the floor by means of tightening buckles, ratchets or tensors;
   - a grid comprising at least two modules with a tongue-and-groove connection, wherein each inner side of the module features a central circular opening;
   - a core of fibrous material which is inside of the modules of the grid;
   - an outer covering on each side.

2. The system according to claim 1, **characterized in that** the outer covering is made of textile, polymeric, composite or metallic material.

3. The system according to any one of the previous claims, **characterized in that** the fibrous core is made of foam, blanket or textile.

4. The system according to any one of claims 1 to 3, **characterized in that** it comprises a topcoating made up of fabric, or composite with textile base, or polymeric films, or metal plates fixed to a ring in the outer perimeter of the partition.

5. The system according to the previous claim, **characterized in that** the topcoat is glued directly to the grid or to the core by means of a system like velcro or other type of mechanical attachment.

6. The system according to any one of the previous claims, **characterized in that** the straps are incorporated in the covering.

7. The system according to any one of claims 1 to 6, **characterized in that** the modules of the grid are open on two sides.

8. The system according to any one of claims 1 to 7, **characterized in that** the grid with the modules and the core in fibrous material is replaced by a single rigid, fibrous material that has horizontal and vertical grooves allowing to exclude the grid of modules.

9. The system according to any one of the previous claims, **characterized in that** the sockets and switches are fixed to the elements of the grid, by means of fastening accessories.

10. The assembly process of the system described in claims 1 to 9, **characterized in that** it comprises the following steps:

- Fixing the support straps to a higher profile/rail, to the ceiling and to a lower profile/rail to the floor, pulling them through the tensor comprised of a set of racket/buckle near the floor;
- Attaching one side of the covering;
- Adding the core to the respective modules for construction of the grid;
- Closing the panel in two parts through the attachment in tongue-and-groove;
- Placing the covering, skirting board and cornice.

11. The process according to the previous claim, **characterized in that** it further comprises the step of incorporating the installations through the core passing them through the drillings of the modules or removing them through a cutting process through the joints of the modules and replacing these modules by means of tongue-and-groove coupling, before closing the panel.

12. The process according to any one of claims 1 to 7, **characterized in that** the incorporation of the pipes is carried out through the front of the panel.

13. The process according to any one of claims 10 to 12, **characterized in that** the assembly of the sockets and switches is carried out by the removal of modules.

14. The process according to any one of claims 10 to 13, **characterized in that** the side connections, finishing and crossing between panels are made by placing tightening springs, or screws, or magnets, or "velcro", or clamps and in situations of reinforcement being connected by means of profiles.

Lisbon, August 21st, 2013

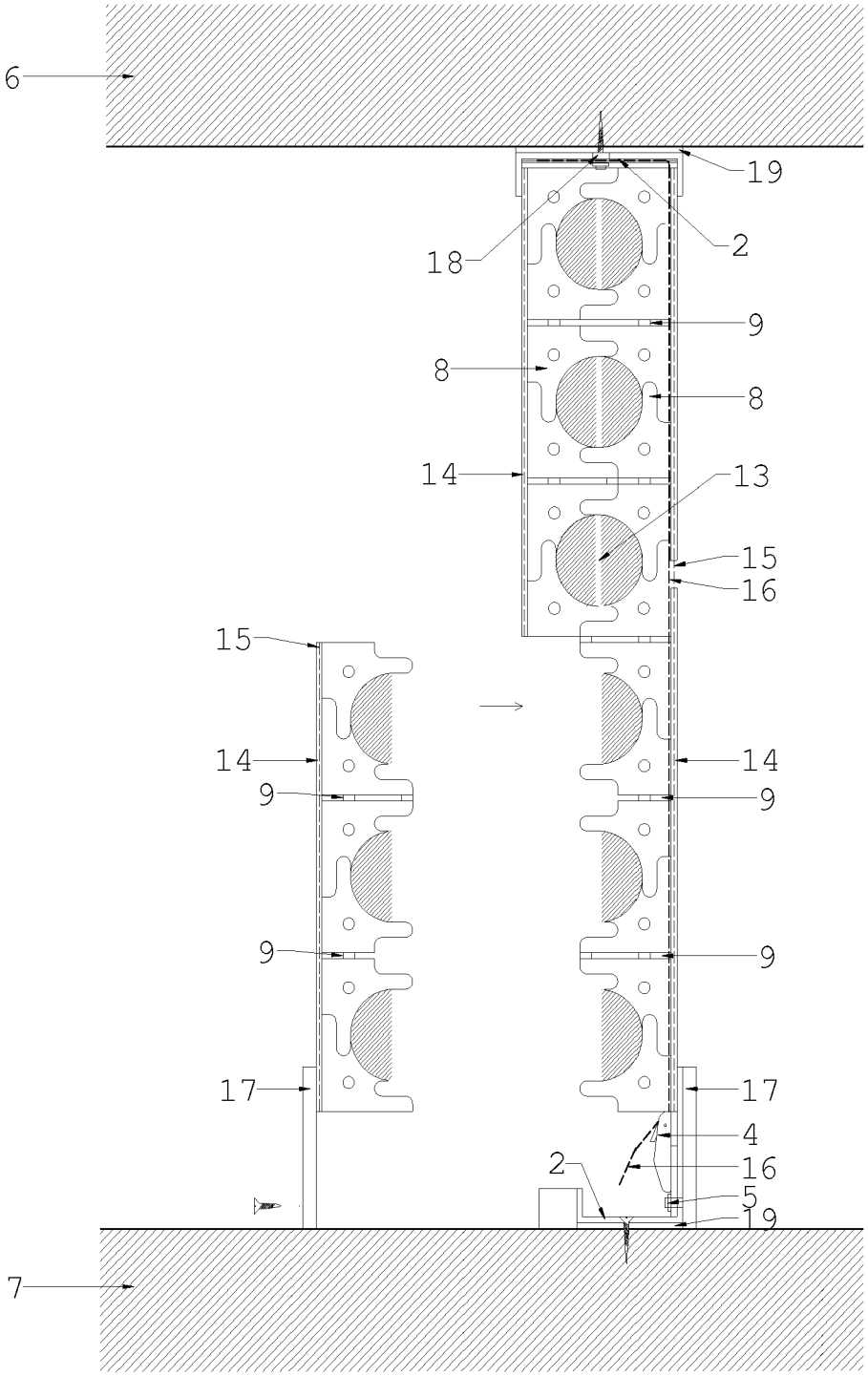


Figure 1

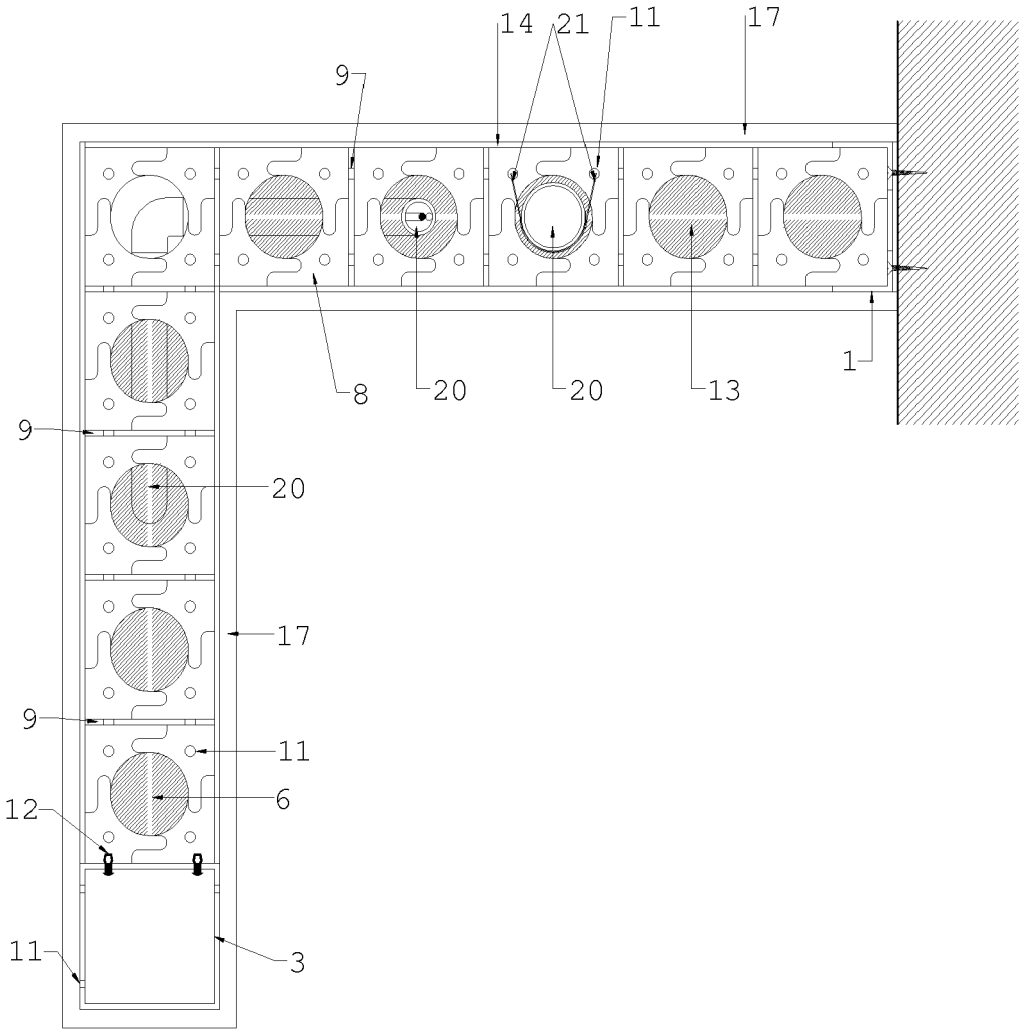


Figure 2

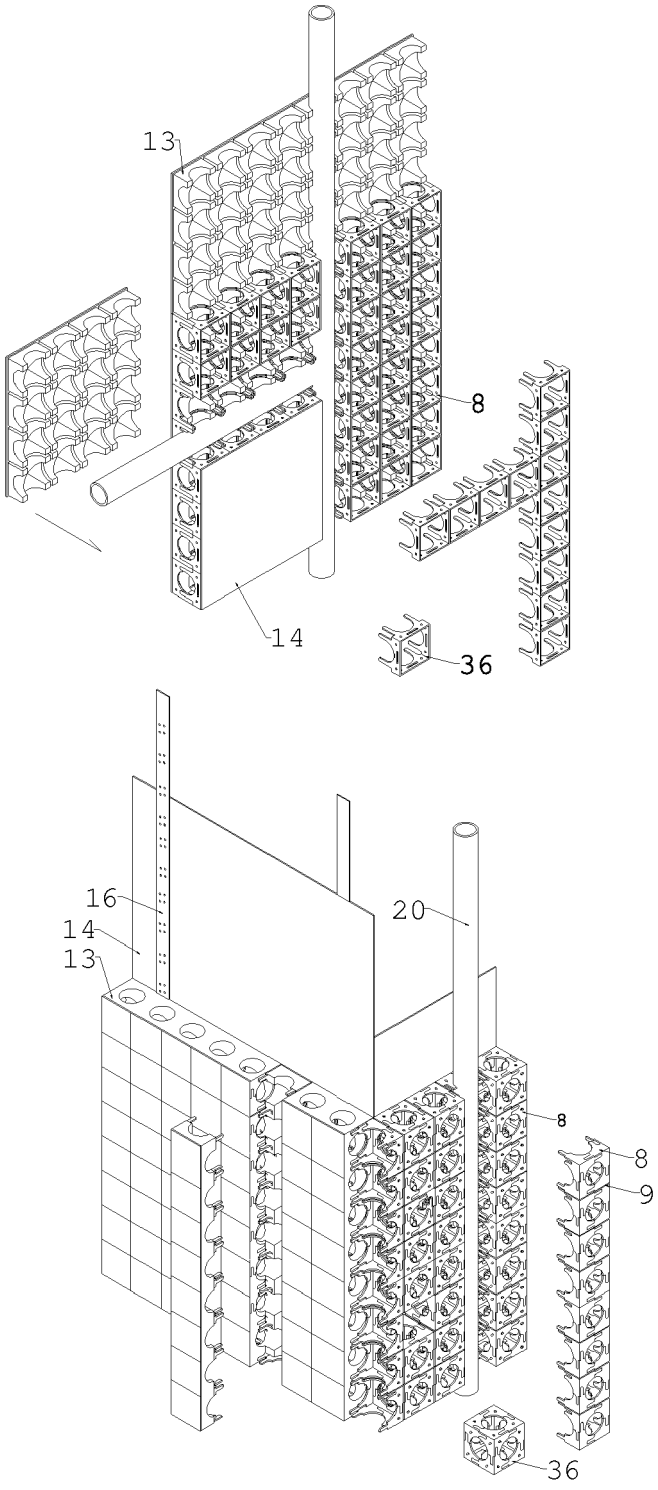


Figure 3 (a)

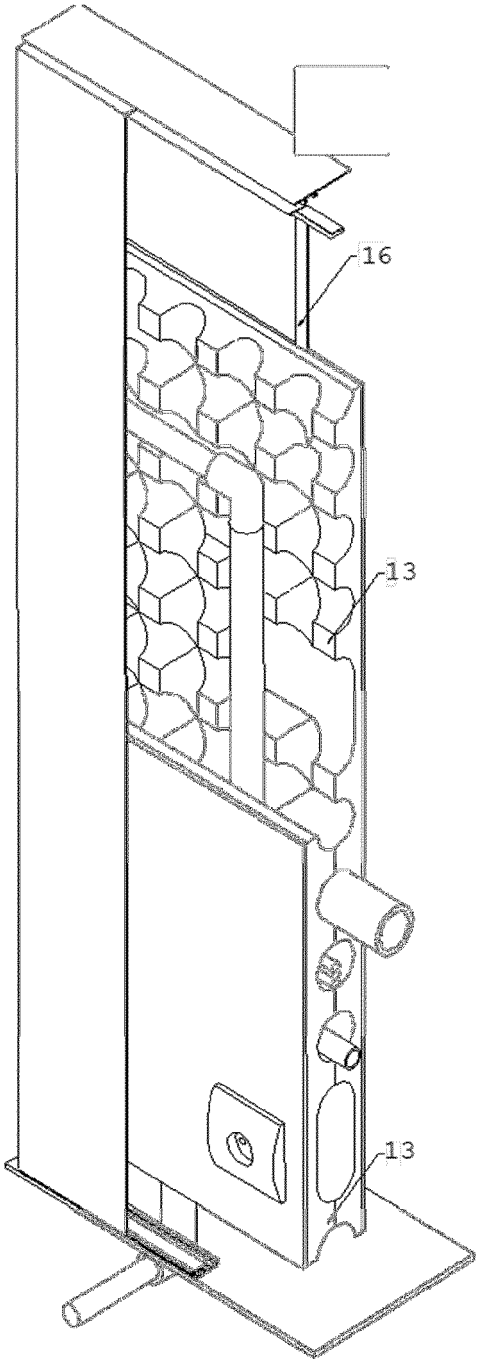
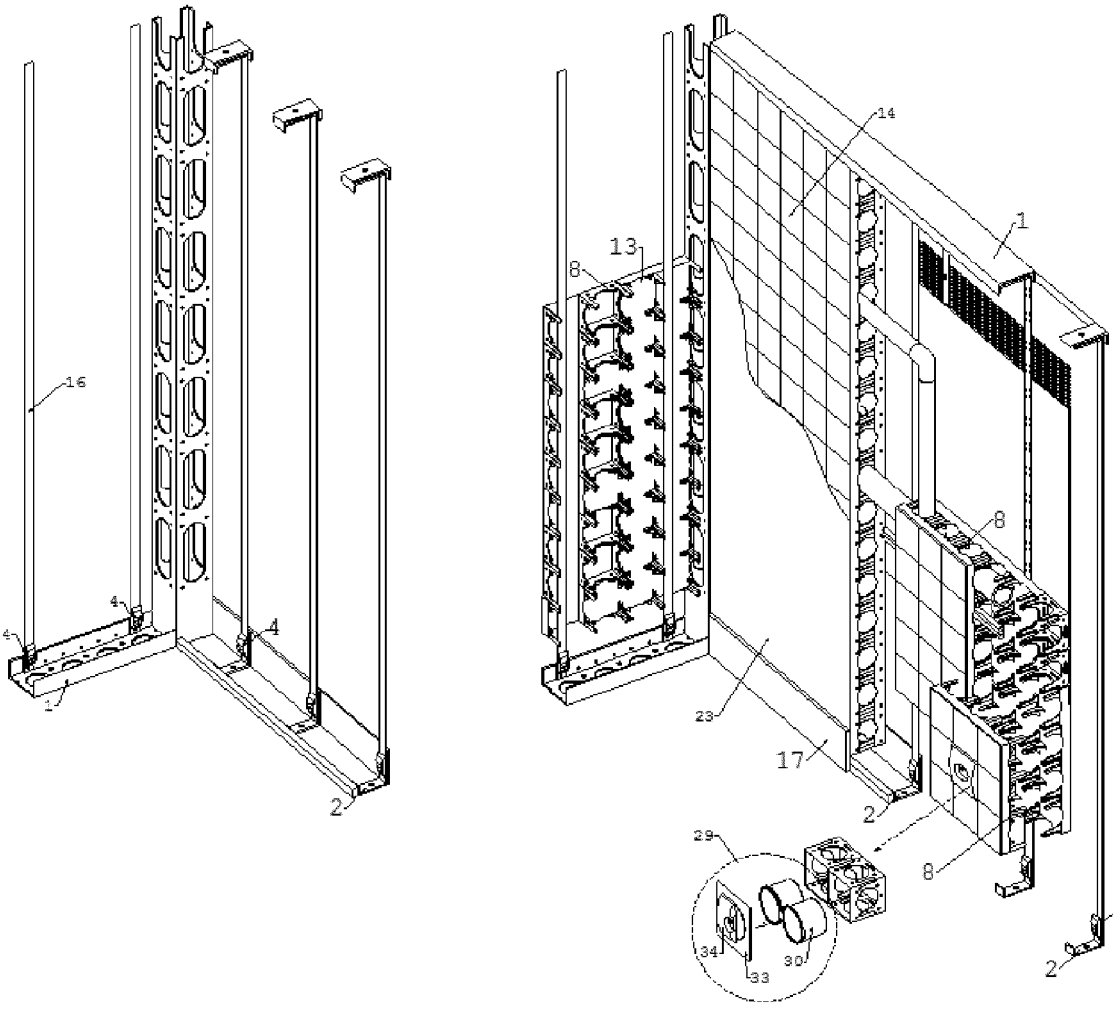


Figure 3 (b)



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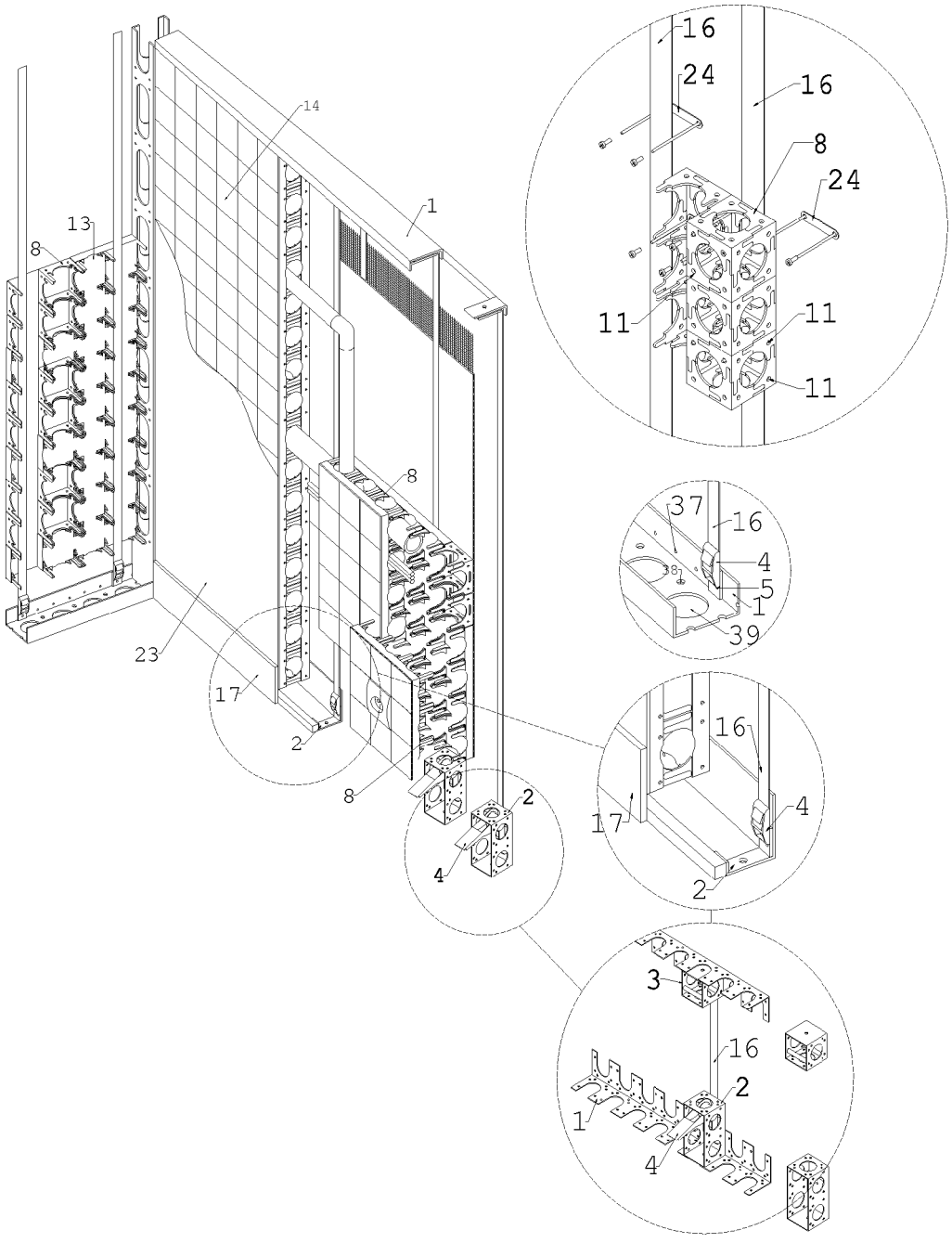
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Figure 5 a)

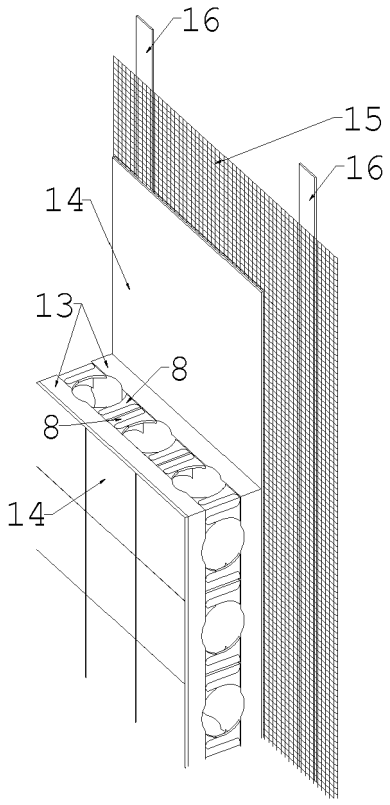

Figure 5b)

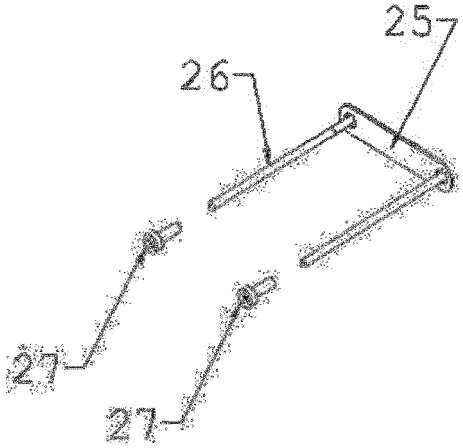

Figure 5c)

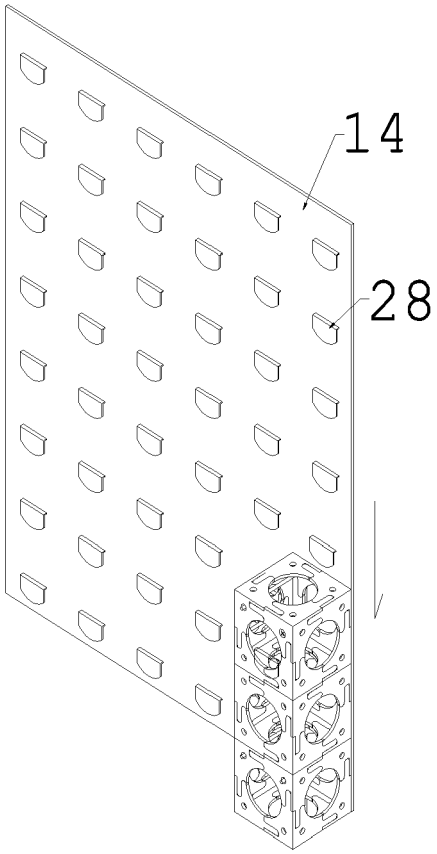

Figure 5d)

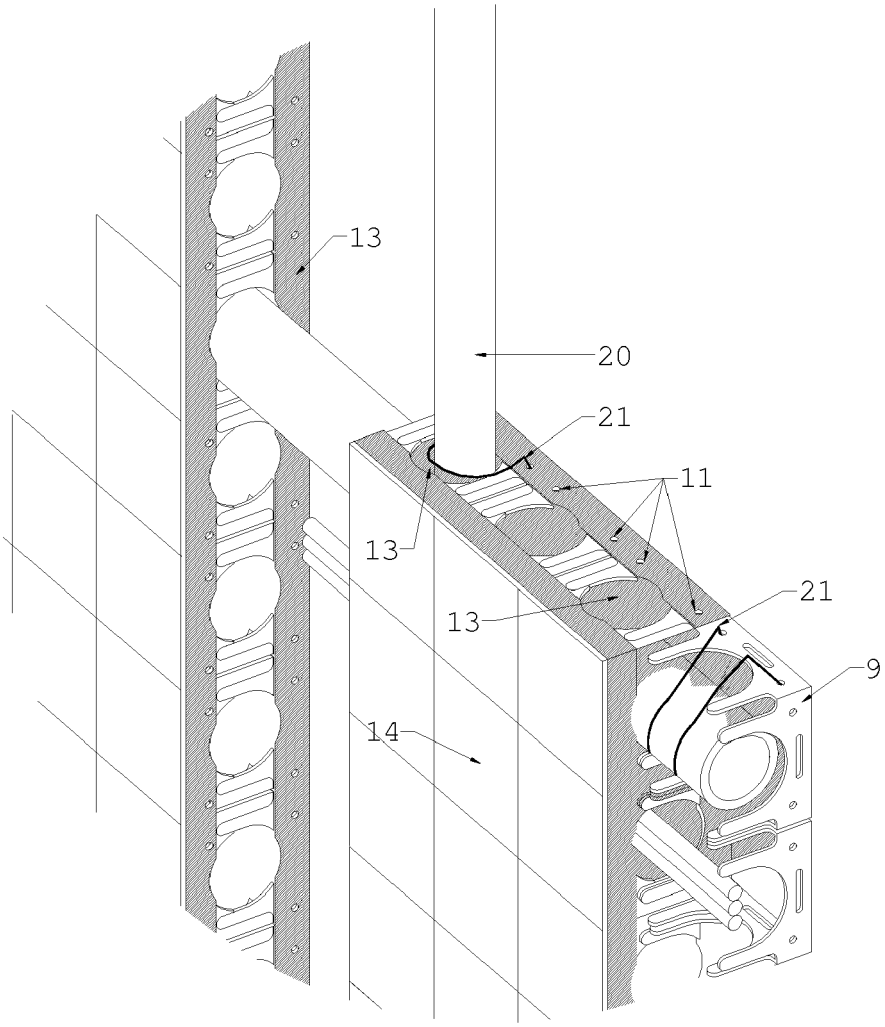

Figure 6

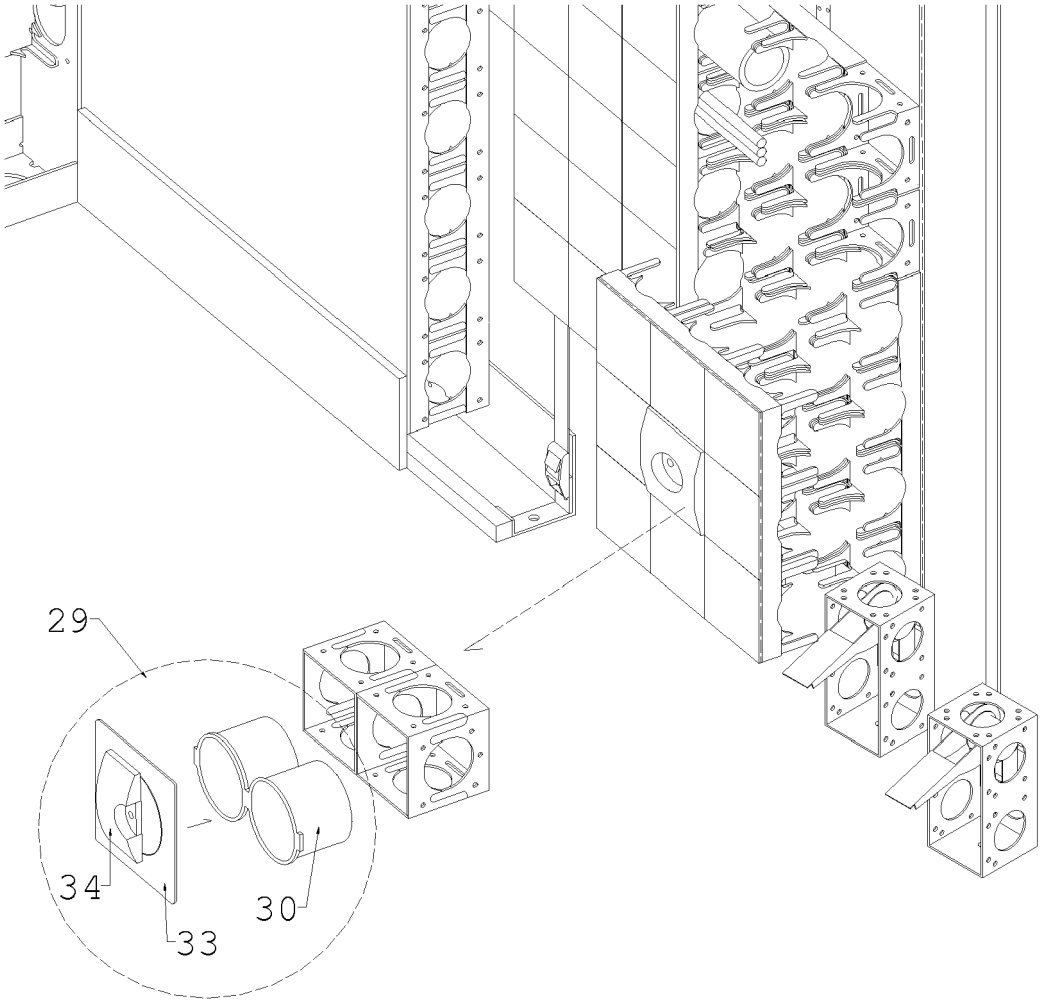

Figure 7

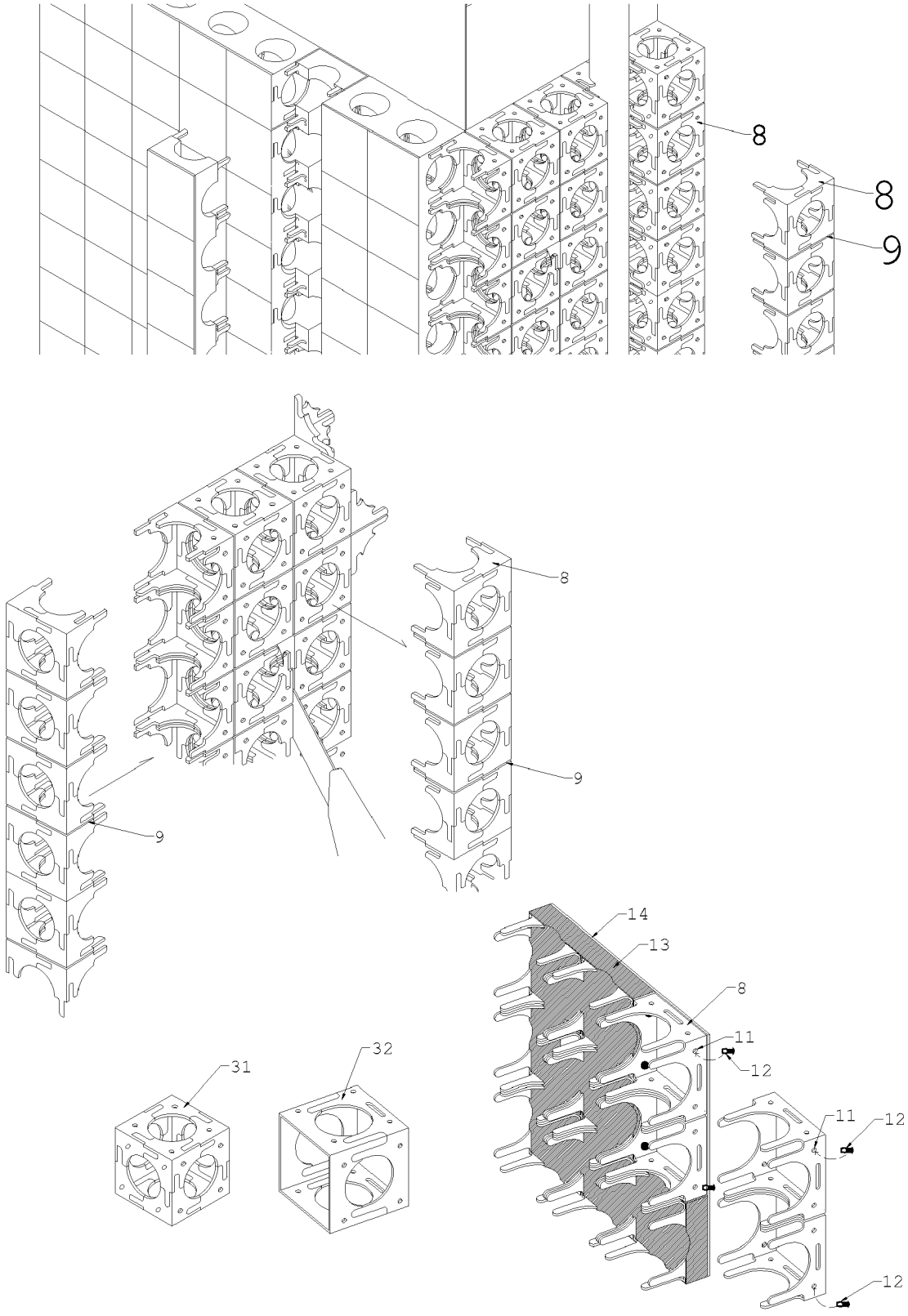

Figure 8

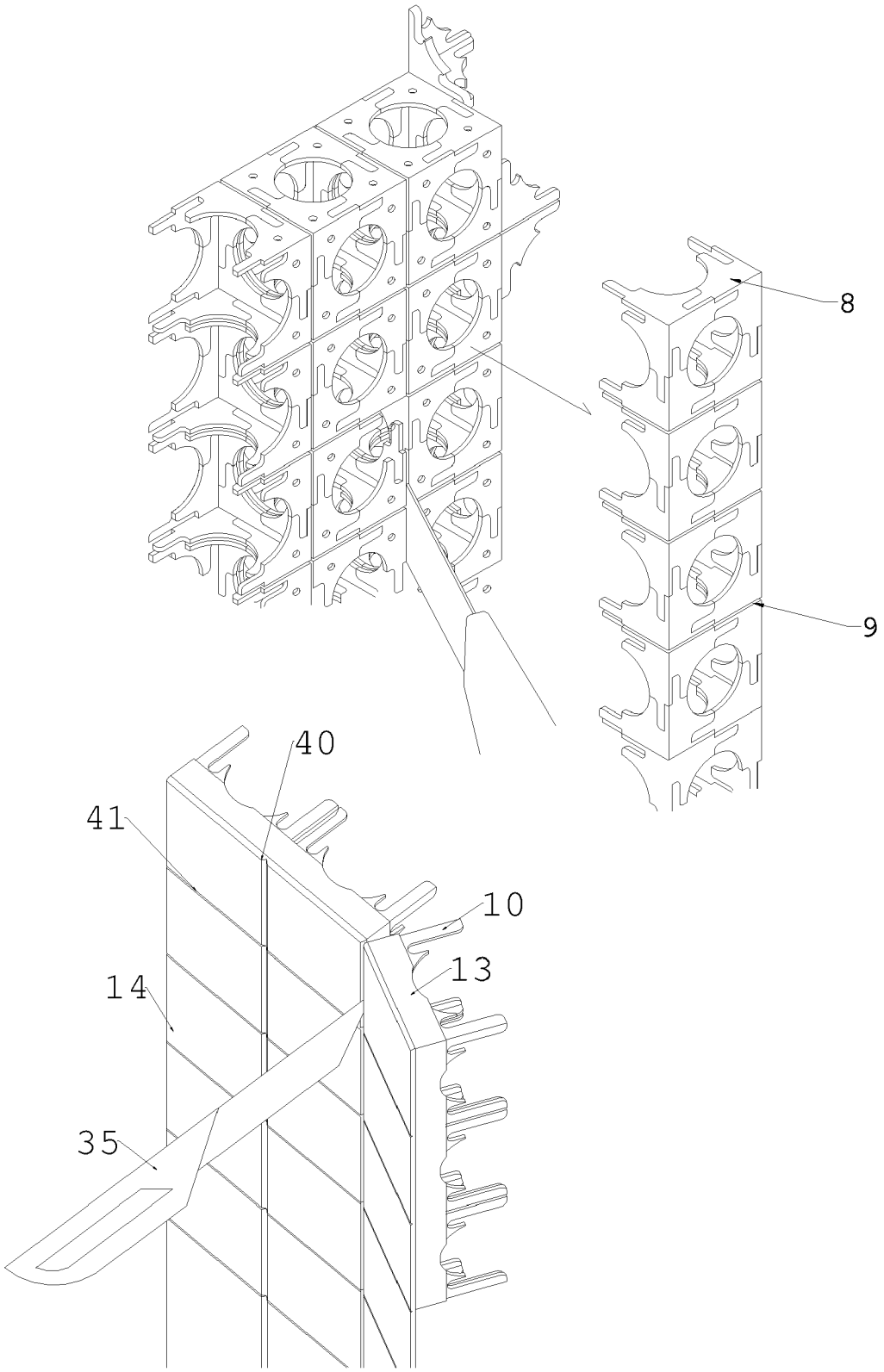

Figure 9

REFERENCES CITED IN THE DESCRIPTION

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