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(54) **Modular structural facade**

Modulare Fassadenkonstruktion

Façade structurelle modulaire

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Description

[0001] The present invention relates to a modular structural facade and an assembly kit of a modular structural facade.

[0002] In particular, it is known in the art to make structural facades from modular panels, called "cells", preassembled in the assembly plant and then installed on site.

[0003] The cells are attached to a load-bearing structure of the building. This means that by means of horizontal and vertical dilation joints, each cell is independent of the others both as regards its own dilation and in relation to settlement or seismic movements of the building itself, thereby preventing breakage of the elements composing it (glass panes, aluminium).

[0004] The cell is normally composed of a perimetral, metal structure and of infill panels. The perimetral structure is usually in aluminium and the infill panels can be visual glazing, blind glazing with insulation panel, in aluminium, marble etc.

[0005] The infill panels of the visual parts may be fixed or openable, according to the user's needs.

[0006] The cells of the prior art have a number of drawbacks and disadvantages.

[0007] For example, while the external aesthetics of the cells maintain the typical appearance of structural facades, the internal appearance of the cells, in other words from the inside of the structure or building, has visible metal portions not always to the user's liking.

[0008] Moreover, the performance in terms of heat and noise insulation of the structural facades of the prior art are not optimal or in line with the increasingly rigid demands of the market as regards international energy parameters.

[0009] Moreover, the structural facades of the prior art are not particularly fire-resistant. An example of these facades with the above cited drawbacks, disclosing all the features of the preamble of claim 1, is known from EP 0 436 868 A2.

[0010] The present invention therefore sets out to resolve the drawbacks mentioned with reference to the prior art.

[0011] Such limitations and drawbacks are resolved by a structural facade according to claim 1.

[0012] Other embodiments of the present invention are described in the further claims.

[0013] Further characteristics and advantages of the present invention will be more clearly comprehensible from the description given below of its preferred and structural facade according to one embodiment of the present invention;

figure 2 shows a cross-section view of the facade in figure 1, along the section plane II-II of figure 1;

figure 3 shows a schematic view of an industrialised production method of a structural facade according to the present invention;

[0014] The element or parts of elements common to the embodiments described below will be indicated using

the same reference numerals.

[0015] With reference to the aforementioned figures, reference numeral 4 globally denotes a structural facade or a portion of a structural facade, for buildings and the like, comprising a plurality of cells 8. The cells 8 are usually attached to the load-bearing structure of the building so as to make the external facade.

[0016] For example, the cells are a quadrangular, rectangular or square shaped and each comprises a pair of uprights 12 and a pair of crossbeams 16. The uprights 12 and the crossbeams 16 are preferably perpendicular to each other. Adjacent cells 8' are positioned alongside each other at adjacent uprights 12', 12" or crossbeams 16', 16".

[0017] The cell 8 comprises a structural frame having a pair of uprights 12 and a pair of crossbeams 16 so as to form a structure closed around the perimeter delimiting a perimetral compartment 20 suitable to be closed by external glazing 24 mechanically associated to the frame on an anterior face 28 of the latter.

[0018] The anterior face 28 of the frame of the cell 8 is destined to be positioned on the outside of the building so as to constitute the facade itself.

[0019] The external glazing 24, depending on the type of cell, may be fixed, openable, visual, blind. For example it may comprise a glass pane or even an opaque panel, in any material.

[0020] Advantageously, the uprights 12 and the crossbeams 16 comprise a load-bearing metallic core 32 which supports and lends structural rigidity to the cell.

[0021] The metallic core 32 comprises means of attachment 36, for the support and attachment of the glazing 24 to the structural frame, the means of attachment 36 being positioned on the side opposite the perimetral compartment 20.

[0022] For example, the means of attachment 36 comprise screws, pins, wall plugs and similar.

[0023] According to one embodiment, the glazing 24 is attached with gluing and structural sealing to a small support frame 40; said small support frame 40 being attached on the anterior face 28 of the metallic core 32 by said means of attachment 36. In other words, the means of attachment block the glazing 24, by means of the small support frame 40, directly onto the metallic core 32 of the cell 8.

[0024] Advantageously, the uprights 12 and the crossbeams 16 each comprise at least one cheek panel 44, directly facing said perimetral compartment 20, on the side opposite the means of attachment 36 of the external glazing 24. The cheek panel 44 is preferably in wood; a non-metallic material may also be envisaged having insulation properties and good fire-resistance so as to protect the metallic core which it covers.

[0025] The cheek panel 44 covers the metallic core 32 on the side of the perimetral compartment 20, at a lateral rim 48 of the perimetral compartment 20, and also covers it from the inner side 52 at the rear face 56 of the frame, opposite the associable glazing 24 and the anterior face

28, so as to increase the resistance to fire, as well as the heat and noise insulation of the cell 8.

[0026] The cheek panel 44 is bound to the metallic core 32 of the crossbeams 16 and of the uprights 12 by means of shaped couplings 60 and/or gluing means 64.

[0027] According to one embodiment, the shaped coupling means 60 comprise joints between at least one protuberance 68 made preferably on the metallic core 32 and at least one groove 72, counter-shaped to the protuberance 68, made preferably on an inner face 76 of the cheek panel 44, directly facing the metallic core 32.

[0028] The protuberance 68 and the groove 72 can also be positioned in an inverted manner, that is the protuberance can be positioned on an inner portion of the cheek panel 44 and the groove 72 can be made on the metallic core 32.

[0029] Preferably, the protuberance 68 and the groove 72 have a main longitudinal extension, in a vertical direction Y-Y for the uprights 12 and in a horizontal direction X-X for the crossbeams 16, so as to bind the metallic cores 32 and cheek panels 44 to each other in a transversal direction Z-Z, perpendicular to the horizontal X-X and vertical Y-Y direction, and so as to enable relative sliding between the metallic cores 32 and the cheek panels 44 parallel to said respective horizontal X-X and vertical Y-Y directions.

[0030] The shaped coupling means 60 enable easy alignment of the profiles of the uprights 12 and of the crossbeams 16, as well as enabling the wood to collaborate structurally with the metal, preferably aluminium, improving the final inertia of the cell 8. Moreover, said shaped coupling means 60 make it possible to prevent the coupling from becoming purely structural as a result of the resulting complexity of identifying a sealing agent which assures tightness, given the complex nature of wood and its behaviour. In other words, said shaped coupling means, as mentioned above, permit relative sliding between the metallic core 32 and the cheek panel 44.

[0031] Preferably, between an inner face 76 of the cheek panel 44, directly facing the metallic core 32 and the metallic core 32 itself, a chamber 80 containing said gluing means 64 able to glue and seal the cheek panel 44 and metallic core 32 to each other is defined.

[0032] According to one embodiment, said chamber 80 has a constant predefined thickness and the gluing means 64 have a higher elasticity modulus than the materials of the cheek panel 44 and the metallic core 32 so as to allow and absorb the different dilations of the two coupled materials.

[0033] According to one possible embodiment, the protuberance 68 has a wider part 84 at the portion of attachment to the metallic core 32 so as to identify a limit stop to the insertion of the protuberance 68 in the groove 72 and guarantee the presence of a chamber 80 for the containment of the gluing means 64.

[0034] Preferably, the gluing means 64 have a temperature resistance of up to 200°, so as to ensure the mechanical connection of the cheek panels 44 and the me-

tallic core 32 of the frame, up to the structural resistance limit of the metallic frame.

[0035] As mentioned above, the cells 8 are positioned alongside each other both in a horizontal direction X-X, by drawing together and joining respective adjacent uprights 12', 12" to each other and in a vertical direction Y-Y by drawing together and joining respective adjacent crossbeams 16', 16" to each other.

[0036] The mechanical connection of the uprights 12', 12" and the crossbeams 16', 16" is performed by means of joints 88 fitted with undercuts in an axial direction Z-Z perpendicular to the associable glazing, and perpendicular to the horizontal direction X-X and the vertical direction Y-Y.

[0037] Preferably, at the connections between the uprights 12 and/or the crossbeams 16 of cells 8 adjacent to each other, intumescent tapes 92 are inserted to improve the resistance to fire of the facade 4. In particular, said intumescent tapes 92 are used to protect the zones most at risk of sparking a flame, such as corners, untreated or more exposed parts of the cell 8.

[0038] According to one embodiment, the cells according to the present invention are supplied in an assembly kit.

[0039] The kit comprises at least one pair of uprights 12 and a pair of crossbeams 16 each comprising a load-bearing metallic core 32, comprising means of attachment 36 of the external glazing 24, and at least one cheek panel 44 in wood, opposite said means of attachment 36. In particular, inside the assembly kit the cheek panel 44 is preassembled to the respective metallic core 32 by means of shaped couplings 60 and/or gluing means 64.

[0040] The shaped coupling means 60 comprise joints between at least one protuberance 68 made on the core and at least one groove 72, counter-shaped to the protuberance 68, made on an inner face 76 of the cheek panel 44, directly facing the metallic core 32.

[0041] Moreover, the preassembly envisages that between an inner face 76 of the cheek panel 44, directly facing the metallic core 32 and the metallic core 32 itself, a chamber 80 containing said gluing means 64 able to glue and seal the cheek panel 44 and metallic core 32 to each other is defined.

[0042] As a result, the kit envisages that the uprights and the crossbeams are preassembled so as to associate each cheek panel 44 to the respective metallic core 32.

[0043] Moreover, the uprights 16 and the crossbeams 12 are shaped so as to form, in an assembled configuration, a structure closed around the perimeter which delimits a perimetral compartment 20 suitable for being closed by the external glazing 24 mechanically associated to the frame on an anterior face 28 of the latter.

[0044] The method of making and installing a cell and a structural facade according to the invention will now be described.

[0045] In particular, The method of making and installing a structural facade 4 composed of cells 8 according

to the invention comprises the initial steps of cutting to size and supplying metallic cores 32 and relative cheek panels 44 for uprights 12 and crossbeams 16 of at least one cell 8 (figure 3, step A).

[0046] Then any surface treatments of the cheek panels, such as for example varnishing, smoothing and surface finishing 8 figure 3, step B) are performed.

[0047] Then the step of preassembling at least one pair of uprights 12 and one pair of crossbeams 16 each comprising a load-bearing metallic core 32, comprising means of attachment 36 of the external glazing 24, and at least one cheek panel 44 in wood, opposite said means of attachment 36 takes place; the cheek panel 44 is pre-assembled to the core 32 by means of shaped couplings 60 and/or gluing means 64.

[0048] In particular, first the gluing or sealing agent is distributed in the chamber between the metallic core 32 and the cheek panel 44 and then the panel and the core are assembled by means of the shaped coupling between the protuberance 68 and the groove 72 (figure 3, step C).

[0049] The method may comprise the creation of an assembly kit comprising the metallic cores of the uprights 12 and of the crossbeams 16 preassembled to the respective cheek panels 44 so as to permit subsequent assembly to each other to form a cell to insert in a structural wall 4 (figure 3, step D).

[0050] The method may rather comprise the step of immediately assembling the crossbeams 16 and the uprights 12 so as to form a structure closed around the perimeter delimiting a perimetral compartment 20 and closing the perimetral compartment 20 by external glazing 24 mechanically associated to the frame on an anterior face 28 of the latter (figure 3, step E).

[0051] For example, the glazing 24 is attached with gluing and structural sealing to a small support frame 40, said small support frame 40 being attached on an anterior face 28 of said metallic core 32 by said means of attachment 36.

[0052] As may be seen from the description, the present invention makes it possible to overcome the drawbacks presented in relation to the prior art.

[0053] In particular, it permits an improvement of the final internal appearance of the facade, while maintaining unaltered the glazed exterior typical of the structural facade, comprising visible external metallic elements.

[0054] Moreover, the present invention permits an improvement of the heat insulation performance for improved comfort of the surroundings.

[0055] Moreover, the present invention permits an improvement of noise reduction, increasing the mass of the joints between adjacent cells.

[0056] Moreover, the presence of the wood cheek permits a considerable improvement of the fire resistance of the cells and therefore of the facade itself.

[0057] The shaped coupling and the gluing of the metallic cores and the cheek panels makes it possible to make the wood collaborate structurally with the alumin-

ium, improving that is to say increasing, the final inertia of the structure. In other words, the coupling of the metallic core and the relative cheek is not of a purely structural type, that is does not guarantee the same rigidity given for example by nuts and bolts which join said elements to each other in a rigid manner. In fact, a structural type connection would create high tension between the two materials having different deformations depending on the environmental conditions of temperature but also of humidity.

[0058] The use of shaped coupling means and gluing means rather allows both different deformations of the elements, without creating excessive tension on the same, and also an increase in the mass and overall inertia of the uprights and the crossbeams, so as to improve the heat and noise insulation of the structure.

[0059] A person skilled in the art may make numerous modifications and variations to the facades described above so as to satisfy contingent and specific requirements, while remaining within the scope of protection of the invention as defined by the following claims.

Claims

1. Structural facade (4) comprising at least two cells (8) for buildings and the like, comprising

- a structural frame having a pair of uprights (12) and a pair of crossbeams (16) so as to form a structure closed around the perimeter delimiting a perimetral compartment (20), the perimetral compartment (20) being suitable to be closed by external glazing (24) mechanically associated to the frame on an anterior face (28) of the latter,

wherein

- said uprights (12) and crossbeams (16) comprise a load-bearing metallic core (32) which supports and lends structural rigidity to the cell (8),

- the metallic core (32) comprises means of attachment (36), such as screws, pins, wall plugs and similar, for the support and attachment of the external glazing (24) to the structural frame, the means of attachment (36) being positioned on the side opposite the perimetral compartment (20),

wherein the cells (8) are placed alongside at their respective uprights (12) and/or crossbeams (16) adjacent to each other and connected to each other by joints (88) fitted with undercuts in an axial direction (Z-Z) perpendicular to the associable glazing (24),

characterised in that

- said uprights (12) and crossbeams (16) each comprising at least one cheek panel (44) in wood, directly facing said perimetral compart-

- ment (20), on the side opposite the means of attachment (36) of the external glazing (24),
- the cheek panel (44) being bound to the metallic core (32) of the crossbeams (16) and of the uprights (12) by means of shaped couplings (60) and gluing means (64),
 - the cheek panel (44) covering the metallic core (32) on the side of the perimetral compartment (20) and on a rear face (56) of the frame, opposite the associable glazing (24), so as to increase the resistance to fire of the system, as well as the heat and noise insulation, wherein the shaped coupling means (60) comprise joints between at least one protuberance (58) made on the metallic core (32) and at least one groove (72), counter-shaped to the protuberance (68), made on an inner face (76) of the cheek panel (44), directly facing the metallic core (32),
- wherein between an inner face (76) of the cheek panel (44), directly facing the metallic core (32) and the metallic core itself, a chamber (80) containing said gluing means (64) able to glue and seal the cheek panel (44) and metallic core (32) to each other is defined,
- wherein said chamber (80) has a constant predefined thickness and the gluing means (64) have a higher elasticity modulus than the materials of the cheek panel (44) and the metallic core (32) so as to allow and absorb the different dilations of the two coupled materials.
2. Structural facade (4) according to claim 1, wherein the protuberance (68) and the groove (72) have a main longitudinal extension, in a vertical direction (Y-Y) for the uprights (12) and in a horizontal direction (X-X) for the crossbeams (16), so as to bind the metallic cores (32) and cheek panels (44) to each other in a transversal direction (Z-Z), perpendicular to the horizontal (X-X) and vertical (Y-Y) direction, and so as to enable relative sliding between the metallic cores (32) and the cheek panels (44) parallel to said respective horizontal (X-X) and vertical (Y-Y) directions.
 3. Structural facade (4) according to any of the claims from 1 to 2, wherein the protuberance (68) has a wider part (84) at the portion of attachment to the metallic core (32) so as to identify a limit stop to the insertion of the protuberance (68) in the groove (72) and guarantee the presence of a chamber (80) for the containment of the gluing means (64).
 4. Structural facade (4) according to any of the previous claims, wherein the gluing means (64) have a temperature resistance of up to 200°, so as to ensure the mechanical connection of the cheek panels (44) and the frame up to the structural resistance limit of

the metallic frame.

5. Structural facade (4) according to any of the previous claims, wherein the glazing (24) is attached with gluing and structural sealing to a small support frame (40), said small support frame (40) being attached on a front face (28) of said metallic core (32) by said means of attachment (36).
6. Structural facade (4) according to claim 5, wherein, at the point of the connections between the uprights (12) and/or the crossbeams (16) of cells (8) adjacent to each other, intumescent tapes (92) are inserted to improve the resistance to fire of the facade.

Patentansprüche

1. Fassadenkonstruktion (4), die wenigstens zwei Elemente (8) für Gebäude oder ähnliches umfasst, die umfasst:
 - eine Rahmenkonstruktion mit einem Paar Pfosten (12) und einem Paar Querbalken (16), um eine Konstruktion zu bilden, die um den Umfang, der ein Umfangsabschnitt (20) begrenzt, geschlossen ist, wobei das Umfangsabschnitt (20) geeignet ist, durch eine äußere Verglasung (24), die mechanisch mit dem Rahmen einer vorderen Fläche (28) des letzteren verbunden ist, geschlossen zu werden, wobei
 - die Pfosten (12) und die Querbalken (16) einen lastragenden Metallkern (32) umfassen, der das Element (8) trägt und ihm bauliche Steifheit bzw. Stabilität verleiht,
 - der Metallkern (32) Befestigungsmittel (36), wie etwa Schrauben, Stifte, Wanddübel und ähnliches, für den Halt und die Befestigung der äußeren Verglasung (24) an der Rahmenkonstruktion umfasst, wobei die Befestigungsmittel (36) auf der Seite entgegengesetzt zu dem Umfangsabschnitt (20) positioniert sind, wobei die Elemente (8) längsseits an ihren jeweiligen Pfosten (12) und/oder Querbalken (16) benachbart zueinander angeordnet sind und durch Verbindungen (88), die mit Unterscheidungen in einer Axialrichtung (Z-Z) senkrecht zu der verbindbaren Verglasung (24) ausgerüstet sind, miteinander verbunden sind,
- dadurch gekennzeichnet, dass**
- die Pfosten (12) und Querbalken (16) jeweils auf der Seite entgegengesetzt zu dem Befestigungsmittel (36) der äußeren Verglasung (24) wenigstens eine Wangenplatte (44) in Holz umfassen, die dem Umfangsabschnitt (20) direkt zugewandt ist,
 - die Wangenplatte (44) mittels von Formkopp-

- lungen (60) und Klebemitteln (64) mit dem Metallkern (32) der Querbalken (16) und der Pfosten (12) verbunden ist,
- die Wangenplatte (44) den Metallkern (32) auf der Seite des Umfangsabteils (20) und auf einer Rückseite (56) des Rahmens entgegengesetzt zu der verbindbaren Verglasung (24) bedeckt, um die Feuerbeständigkeit des Systems ebenso wie die Wärme- und Schallisolierung zu verbessern, wobei die Formkopplungsmittel (60) Verbindungen zwischen wenigstens einem Höcker (58), der auf dem Metallkern (32) hergestellt ist, und wenigstens einer Nut (72) umfassen, die gegenläufig zu dem Höcker (68) ist, die auf einer Innenfläche (76) der Wangenplatte (44) hergestellt ist, die dem Metallkern (32) direkt zugewandt ist, wobei zwischen einer Innenfläche (76) der Wangenplatte (44), die dem Metallkern (32) direkt zugewandt ist, und dem Metallkern selbst eine Kammer (80) definiert ist, die die Klebemittel (64) enthält, die fähig sind, die Wangenplatte (44) und den Metallkern (32) miteinander zu verkleben und abzudichten, wobei die Kammer (80) eine konstante vorgegebene Dicke hat und die Klebemittel (64) einen höheren Elastizitätsmodul als die Materialien der Wangenplatte (44) und des Metallkerns (32) haben, um die verschiedenen Ausdehnungen der zwei gekoppelten Materialien zuzulassen und aufzufangen.
2. Fassadenkonstruktion (4) nach Anspruch 1, wobei der Höcker (68) und die Nut (72) eine Hauptlängsausdehnung in einer Vertikalrichtung (Y-Y) für die Pfosten (12) und in einer Horizontalrichtung (X-X) für die Querbalken (16) haben, um die Metallkerne (32) und die Wangenplatten (44) in einer Transversalrichtung (Z-Z) senkrecht zu der Horizontal- (X-X) und Vertikal- (Y-Y) Richtung miteinander zu verbinden, um die relative Verschiebung zwischen den Metallkernen (32) und den Wangenplatten (44) parallel zu den jeweiligen Horizontal- (X-X) und Vertikal- (Y-Y) Richtungen zu ermöglichen.
 3. Fassadenkonstruktion (4) nach einem der Ansprüche 1 bis 2, wobei der Höcker (68) an dem Befestigungsabschnitt mit dem Metallkern (32) einen breiteren Teil (84) hat, um einen Grenzanschlag für das Einsetzen des Höckers (68) in der Nut (72) zu definieren und das Vorhandensein einer Kammer (80) für das Aufnehmen der Klebemittel (64) sicherzustellen.
 4. Fassadenkonstruktion (4) nach einem der vorhergehenden Ansprüche, wobei die Klebemittel (64) eine Temperaturbeständigkeit von bis zu 200° haben, um

die mechanische Verbindung der Wangenplatten (44) und des Rahmens bis zu der Konstruktionsbeständigkeitsgrenze des Metallrahmens sicherzustellen.

5. Fassadenstruktur (4) nach einem der vorhergehenden Ansprüche, wobei die Verglasung (24) mit Verkleben und konstruktivem Abdichten eines kleinen Trägersrahmens (40) befestigt wird, wobei der kleine Trägersrahmen (40) mittels der Befestigungsmittel (36) auf einer Vorderfläche (28) des Metallkerns (32) befestigt ist.
6. Fassadenkonstruktion (4) nach Anspruch 5, wobei an dem Verbindungspunkt zwischen den Pfosten (12) und/oder den Querbalken (16) der zueinander benachbarten Elemente (8) Brandschutzbänder (92) eingesetzt sind, um die Feuerbeständigkeit der Fassade zu verbessern.

Revendications

1. Façade structurelle (4) comprenant au moins deux cellules (8) pour des bâtiments et similaires, comprenant
 - un cadre structurel présentant une paire de montants (12) et une paire de traverses (16) de sorte à former une structure fermée autour du périmètre délimitant un compartiment périmétral (20), le compartiment périmétral (20) étant adapté pour être fermé par un vitrage externe (24) associé mécaniquement au cadre sur une face antérieure (28) de ce dernier, dans laquelle
 - lesdits montants (12) et traverses (16) comprennent un coeur métallique porteur de charge (32) qui supporte et confère une rigidité structurelle à la cellule (8),
 - le coeur métallique (32) comprend des moyens d'attache (36) tels que des vis, des broches, des prises murales et similaires, pour le support et l'attache du vitrage externe (24) au cadre structurel, les moyens d'attache (36) étant positionnés sur le côté opposé au compartiment périmétral (20), dans lequel les cellules (8) sont placées le long de leurs montants (12) et/ou traverses (16) respectifs de manière adjacente l'une à l'autre et sont reliées l'une à l'autre autres par des joints (88) dotés de contre-dépouilles dans une direction axiale (Z-Z) perpendiculaire au vitrage associable (24),
- caractérisé en ce que**
- lesdits montants (12) et traverses (16) comprenant chacun au moins un panneau de bordure (44) en bois, faisant face directement audit

- compartiment périmétral (20) sur le côté opposé aux moyens d'attache (36) du vitrage externe (24),
- le panneau de bordure (44) étant lié au coeur métallique (32) des traverses (16) et des montants (12) à l'aide de couplages formés (60) et de moyens de collage (64),
 - le panneau de bordure (44) couvrant le coeur métallique (32) sur le côté du compartiment périmétral (20) et sur une face arrière (56) du cadre opposé au vitrage associable (24) de sorte à augmenter la résistance au feu du système ainsi que l'isolation thermique et sonore, dans lequel les moyens de couplage formés (60) comprennent des joints entre au moins une saillie (58) située sur le coeur métallique (32) et au moins une rainure (72), contreformée par rapport à la saillie (68), située sur une face intérieure (76) du panneau de bordure (44), faisant face directement au coeur métallique (32), dans lequel une chambre (80) contenant lesdits moyens de collage (64) capables de coller et sceller le panneau de bordure (44) et le coeur métallique (32) l'un à l'autre est définie entre une face intérieure (76) du panneau de bordure (44), faisant face directement au coeur métallique (32), et le coeur métallique lui-même, dans lequel ladite chambre (80) présente une épaisseur prédéfinie constante et les moyens de collage (64) ont un module d'élasticité plus grand que les matériaux du panneau de bordure (44) et du coeur métallique (32) de sorte à permettre et à absorber les différentes dilatations des deux matériaux couplés.
2. Façade structurelle (4) selon la revendication 1, dans laquelle la saillie (68) et la rainure (72) ont une extension longitudinale principale, dans une direction verticale (Y-Y) pour les montants (12) et dans une direction horizontale (X-X) pour les traverses (16) de sorte à lier les coeurs métalliques (32) et les panneaux de bordure (44) les uns aux autres dans une direction transversale (Z-Z) perpendiculaire à la direction horizontale (X-X) et verticale (Y-Y) et de sorte à permettre le coulisement relatif entre les coeurs métalliques (32) et les panneaux de bordure (44) parallèlement auxdites directions horizontales (X-X) et verticales (Y-Y) respectives.
 3. Façade structurelle (4) selon l'une quelconque des revendications 1 à 2, dans laquelle la saillie (68) présente une partie plus large (84) sur la partie d'attache du coeur métallique (32) de sorte à identifier une butée de limite à l'insertion de la saillie (68) dans la rainure (72) et garantir la présence d'une chambre (80) pour la retenue des moyens de collage (64).
 4. Façade structurelle (4) selon l'une quelconque des

revendications précédentes, dans laquelle les moyens de collage (64) ont une résistance à la température jusqu'à 200° de sorte à assurer la connexion mécanique des panneaux de bordure (44) et du cadre jusqu'à la limite de résistance structurelle du cadre métallique.

5. Façade structurelle (4) selon l'une quelconque des revendications précédentes, dans laquelle le vitrage (24) est attaché par collage et scellage structurel à un petit cadre de support (40), ledit petit cadre de support (40) étant attaché sur une face avant (28) dudit coeur métallique (32) par lesdits moyens d'attache (36).
6. Façade structurelle (4) selon la revendication 5, dans laquelle au point des connexions entre les montants (12) et/ou les traverses (16) des cellules (8) adjacentes les unes aux autres, des bandes intumescents (92) sont insérées pour améliorer la résistance au feu de la façade.

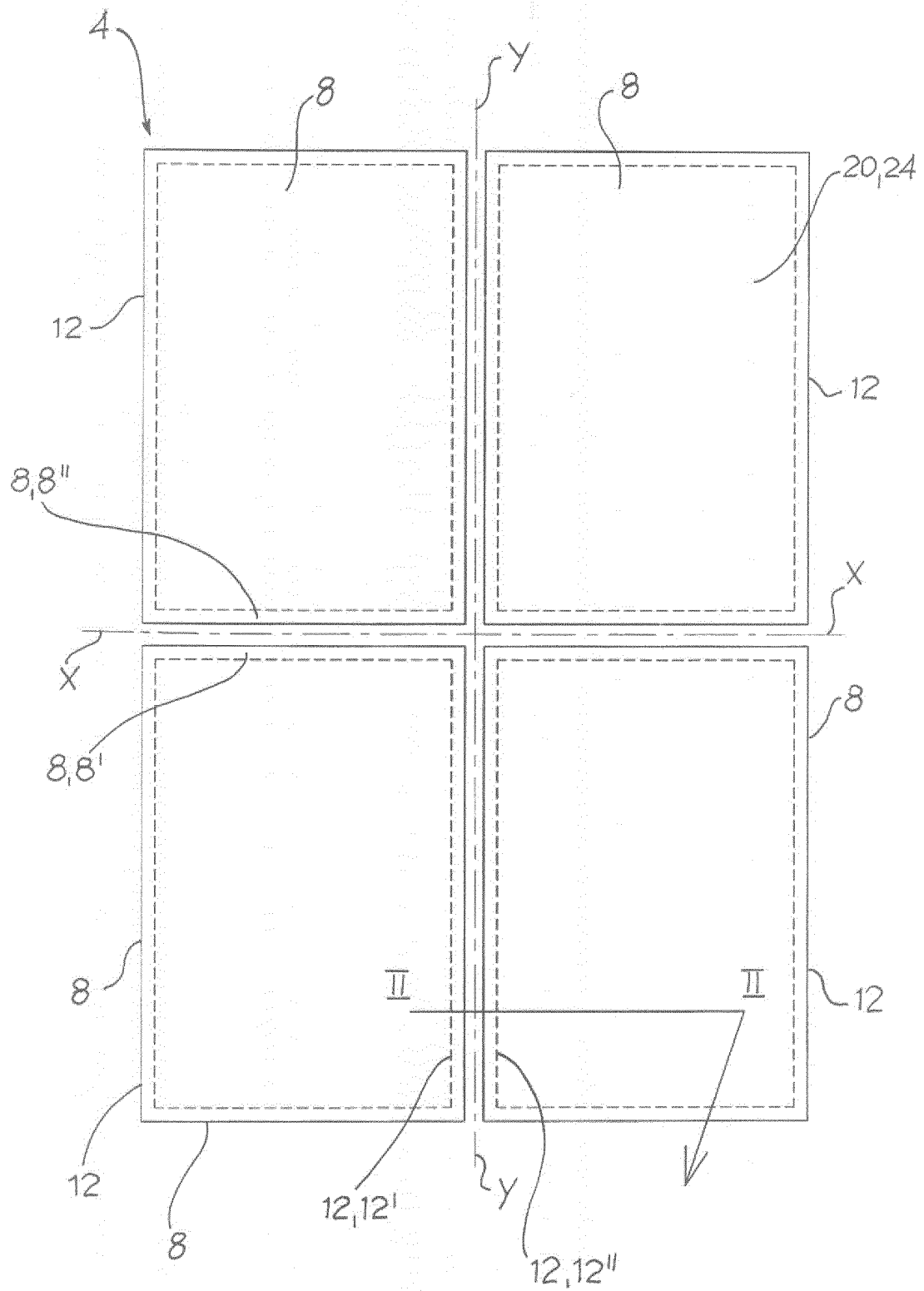


Fig. 1

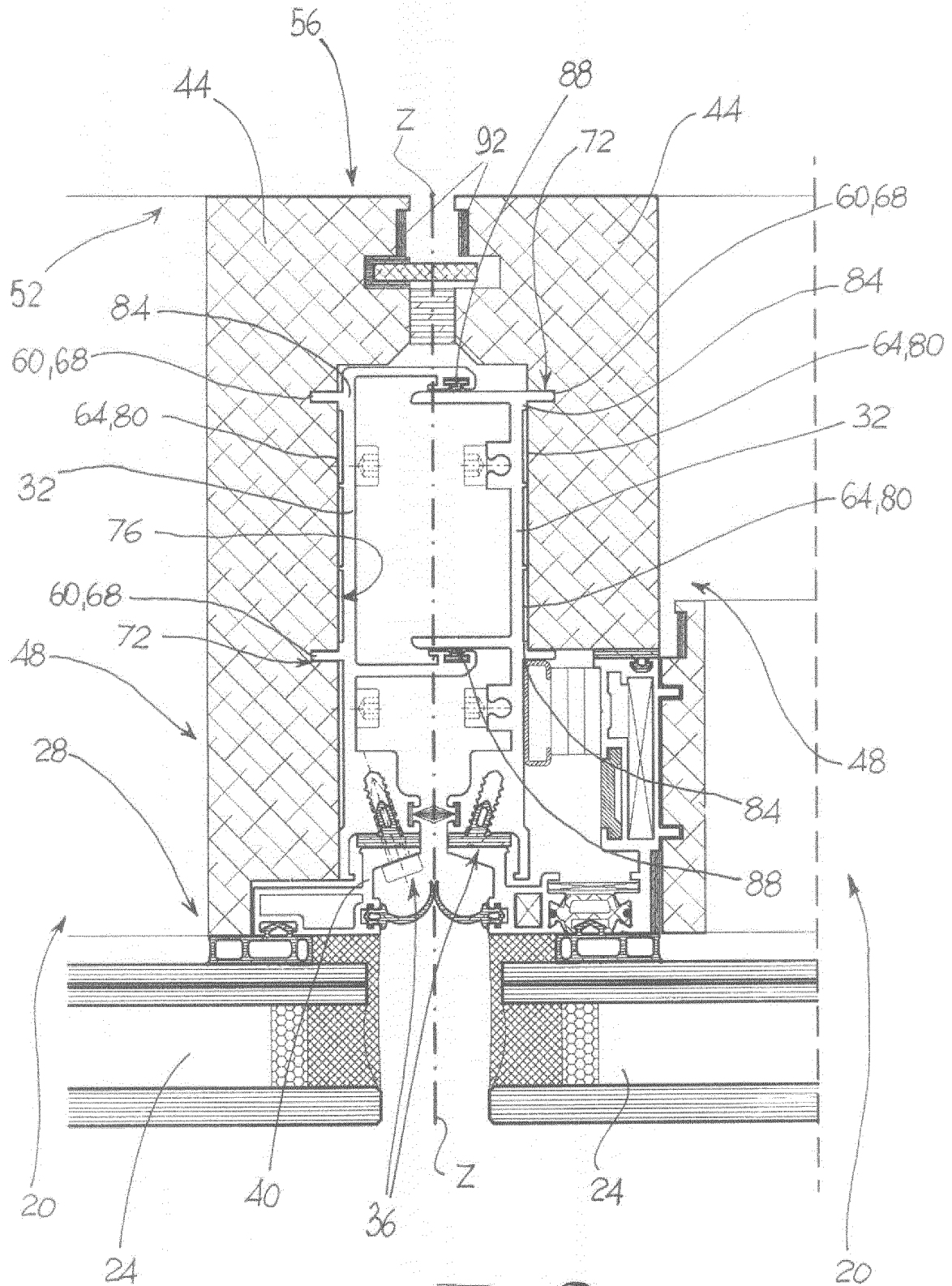


Fig. 2

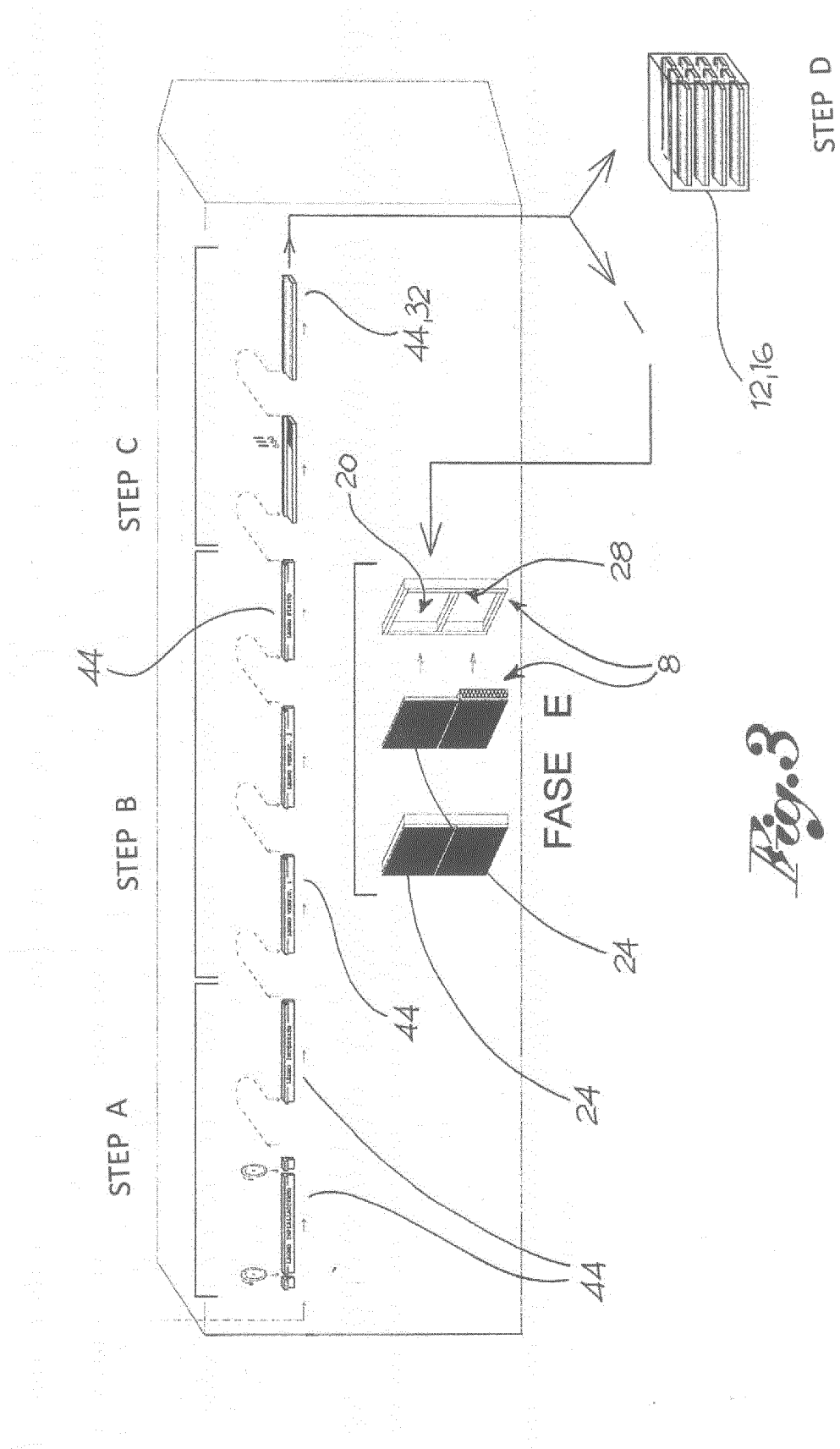


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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