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(54) **Support block for connecting and levelling, frame construction using the support block**

Hilfsblock zur Verbindung und Nivellierung, Rahmenkonstruktion, die den Hilfsblock verwendet

Bloc de support permettant de connecter et de niveler, construction de cadre à l'aide du bloc de support

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(56) References cited:
DE-U1- 20 100 468
DE-U1-202010 003 093
FR-A1- 2 837 861
FR-A5- 2 110 567
US-A1- 2003 110 880

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Description

Technical field

[0001] The present invention relates to a construction supporting and connecting block used for assembling a frame construction to be used for windows or doors and made of metal profiles, preferably from extruded aluminium profiles or fitting between two elements with varying distance and/or levelling other construction elements relative to each other. Each block comprises two interconnecting parts with the interacting surfaces there between. The block is preferably made of a none-metal composite material, e.g. of a plastic by an injection moulding.

Background of the Invention

[0002] It is known in the art that frame constructions used as windows or door metal frames can be manufactured from metal profiles. The frame element or the frame construction consists of a frame inner part made of a metal profile facing the inner building interior and an outer frame part, a profile facing the outside. Those inner and outer profiles shall be interconnected to form a frame construction which is to be formerly fixed by suitable means, such as glue and/or screw, when assembled to the outer frame which is firmly fixed to the surrounding walls.

[0003] A number of different solutions on how to assemble the frame from the hollow extruded profiles have been suggested.

[0004] GB 1 360 790 teaches connecting elements for corners and length interconnection of the frame parts without a metal contact, so called "thermal break". The connecting elements having a ridges and grooves are manufactured by plastic extrusion or moulding and must me exactly dimensioned to the hollow space where those are to be inserted for connection of the two separate profiles in one-piece framing element. This solution requires a precisely dimensioning of the connecting elements to the hollow space into the profiles where those connecting elements are to be inserted for interconnection, which is not always possible to achieve or might be rather costly.

[0005] NL8901757 discloses a connecting block comprising two parts where two inclined interacting surfaces facing each other are provided with saw-like interacting teeth. When these block parts are moved one relative to the other along those inclined surfaces so as to adjust the block vertical dimension or thickness and adopt it to the distance between the metal profiles supported by the blocks in the vertical direction, teeth can snap stepwise and thus adjust and fix the relative to position of one block halve to the other one. This block fits in different gaps but a disadvantage of this adjustment of the block thickness or its vertical dimension defining the distance between the supporting surfaces is that the connecting block parts have been adjusted to the required height or the distance between the supported profiles after their insertion between the profiles. Therefore due to relative to movement of the block parts they are lengthwise shifted one relative to the other so that their edges do not align. This effect makes it impossible to use such blocks for screwing the frame construction as pre-fabricated holes in the both parts made in particular locations will not coaxially align after the adjustment of the block height by the linear displacement of the one block halve relative to the other one. Thus this design will not allow the screw together of the blocks with the profiles in which they are to be fitted and to pass a screw through the both block parts' through holes as required by the assembling the e.g. frames, particularly having the moving parts.

[0006] GB1272869 discloses stackable spacers used for accommodation of a reinforcing bar in one of pair recesses of different depth in order to vary a distance between the reinforcing bar and a shuttering. This stepwise adjustment of the distance defined by the dimensions of the spacers and the pre-fabricated depth of the recesses is not useful for fine adjustment of the spacer size for fitting in the different gaps.

[0007] US 2003/0110880 A1 discloses a construction block according to the preamble of claim 1.

[0008] Therefore, there is a need to manufacture non-expensive supporting and connecting blocks for supporting the frame profiles or levelling of two construction elements relative to each other. The blocks are suitable for inserting in the various gaps with some tolerance and for assembling the frames from the metal profiles. There is a need in having blocks that shall allow an easy vertical adjustment of the block outer dimension prior to its mounting between the profiles so as tightly fit into the frames with the different distances or tolerance between the profiles or in a gap and at the same time having through holes serving as guiding means for mounting screws used for firmly fixing to an outer frame or two frame elements together.

Summary of the Invention

[0009] The invention provides a principle to use standardised supporting and connecting blocks' parts for fitting in different hollow spaces or gaps and/or keeping a distance between two profiles. A block part interacting surface geometry providing a partial and/or complete conforming of the opposite interacting surface while keeping the block parts edges aligned and mounting holes in those parts coaxial. The block edges define the interacting surface area of each block

part and side gables which are preferably perpendicular to the interacting surface.

[0010] A first objective of the invention is providing a construction supporting and connecting block assembled from at least two block parts, the block parts with interacting surfaces of a particular geometry or shape having the different interacting levels on their interacting surfaces.

[0011] According to the present invention, a construction supporting and connecting block according to claim 1 is provided. The both block parts, having the aligned edges for ensuring meeting and coaxial aligning through holes for guiding screws on both parts, can be manufactured of the same or different thicknesses or heights. The construction supporting and connecting block can have at least one block part with a different height than the other block part.

[0012] The second objective of the invention is manufacturing the supporting and connecting block parts of the standard size with the aligning edges such that through holes for guiding mounting screws are meet coaxially when parts having the different individual heights are stacked one onto the other so as to allow the block height variation due to a combination of the block parts with different heights for fitting in the different gaps.

[0013] The preliminary adjustment of the block height can be achieved by the combination of two differently dimensioned (in height) parts as above. This allows a preliminary variation of the supporting and connecting block outer dimension or the height which defines a distance between the block parts supporting surfaces. Thus, the supporting and connecting block of the approximately desired height is assembled, and the block will fit into the particular hollow space where it is to be inserted, e.g. between the metal profiles to be fixed together. The outer dimension of the supporting and connecting block or its height is modified in height prior to its placement between the frame inner and outer profiles, or alternatively, between the outer frame construction fixed to the walls and the window frame, for support. This eliminates the distance adjustment after mounting of the frames which is more convenient and saves labour time.

[0014] The construction supporting and connecting block, when the first block part is stacked on the second block part by their interacting surfaces has a first intermediate level of at least one block part which provides at least two assembling positions of the first block part relative to the second block part so as to vary the distance between the block supporting surfaces defining the block total height between two values. A first assembled position of the block, where the first block part defines a first minimal distance value between the supporting surfaces relative to the second block part or a minimal outer dimension of the assembled block or the block height. The first level of one block part interacts with a second level of the second block part fully conforming to each other at all levels; so that all partial interacting surfaces on all levels of the first block part interacting with all partial interacting surfaces on all levels of the opposite block part. A second assembled position of the block is where the first block part defines a second increased distance or the block height value relative to the second block part. The first intermediate level interacts with one of the first and the second levels and at least the levels is contact free forming a gap between the block parts. One block part partial interacting surface is contact free and does not interact with the opposite interacting surfaces of the second block part. The partial interacting surface of the first intermediate level of the first block part is interacting with the opposite partial interacting surface of the second block part. In the constructions supporting and connecting block the distance between the supporting surfaces of the block can be varied between the first distance value, the second distance value for the rectangular block, the third distance value and the fourth distance value for the quadrate block by turning the first block part relative to the second block part on 0°, 180°, 90° and 270° respectively parallel to their interacting surfaces providing the fine block height adjustment.

[0015] The configuration of the interacting block parts' interacting surfaces shape or their geometry provides either a partial or a complete conforming by one interacting surface of the first block part of the other interacting surface of the second block part. The construction supporting and connecting block according to the invention might have through holes which serve also as a guiding means for the mounting screws used for firmly fixing the frame profiles into the one-piece window frame or fixing e.g. the window frame to the outer frame mounted to the surrounding walls.

[0016] The fine stepwise adjustment of the supporting and connecting block outer dimension or the distance between the block parts supporting surfaces is also conducted prior to insertion of the block in the space between two profiles for a tight fitting. The rotation of the one block part relative to the other parallel to their interacting surfaces can be also used for levelling the different constructions that need to be levelled and then, optionally, firmly fixed together, such as furniture parts or other building constructions.

[0017] The construction supporting and connecting block is assembled from parts having the same size of the supporting surfaces or the identical periphery shape but the same or the different heights and stacked one on the other in different relative to each other positions. When one part is rotated relative to the other and having consequently different gaps between the interacting surfaces, this results in the different height values for fitting in the spaces of varying sizes. The block height is finely adjusted by rotation one part relative to the other one parallel to their interacting surfaces for use as a leveling of two parts relative to each other, supporting and/or connecting of two construction elements, one relative to the other.

[0018] A further object of the invention is a frame element forming a part of a frame construction such as a door frame or a window frame and assembled from two metal profiles, preferably extruded aluminium profiles, with the supporting and connecting blocks according to the invention. The frame element of a construction element such as a fixed window

frame element firmly connected to an outer frame fixed to the surrounding wall, having at least one metal profile further comprises the construction supporting and connecting block according to the invention for mounting to the profile by connecting means through the guiding holes prefabricated in the block parts.

[0019] A further object of the invention is a door or window frame construction manufactured from the metal profiles by use of the construction supporting and connecting blocks according to the invention. The frame construction with the frame element using the block which comprises the two block parts having at least one the pre-fabricated through hole for guiding a mounting screw or a bolt through for fixing the metal profiles together. The distance value between the block supporting surfaces, when the parts are stacked one on the other, can be varied so that the interacting surfaces interact fully or partly with each other and the distance value can be varied stepwise between the first minimal distance value, the second increased distance value by the rotation of the first block part relative to the second block part on 180° parallel to their interacting surfaces, and the third increased distance value and the forth maximum distance value by the rotation of the first quadrate block part relative to the second quadrate block part respectively on 90° and 270° parallel to their interacting surfaces so as to fit the block within the space of the varied dimension.

[0020] A further object of the invention is methods of assembling a frame element with construction supporting connecting blocks according to the invention and/or assembling a stationary and a sliding winding frame construction made of the frame elements according to the invention into the outer frame fixed to the surrounding building wall.

[0021] A method of assembling the frame element or the door or the window frame into the outer frame fixed to the surrounding building walls has the following steps. The profiles are cut in the appropriate length; the standardized block parts of the appropriate height dimensioned corresponding to a distance between the profiles are chosen, the block parts are stacked in the appropriate manner and turned, if necessary, the first block part relative to the second block part for a fine adjustment of the gap value between the block parts so as to achieve the desired block height or thickness equal to the distance between the profiles to be connected. The two profiles are to be fixed to each other by a suitable fixing means such as screw, bolt and nut, etc. guided through the block.

[0022] An advantage of the invention is obtaining much easier and cheaper construction supporting and connecting blocks of the desired dimension, use of the standard pre-fabricated block parts of different height or thickness indicated by the different colours for differently dimensioned frames or spaces to fit in. The blocks make the manufacturing the sliding window or door frames cheaper and easier. The invention will be described in further detail below with reference to the accompanying drawings.

Brief Description of the Drawings:

[0023]

Figures 1A and 1B illustrate two rectangular form supporting and connecting blocks 1, each of those might have a different height or thickness. The interacting surface of each block part has a tooth-like cross section with the teeth of isosceles triangles shape in the cross section having the different heights. The tooth-like interacting surface pattern is asymmetrical relative to the block parts edges so that the higher and lower peaks are situated on the different distances from the shorter edges. The parts are assembled in two different positions with a tight interaction or complete conforming of the interacting contacting surfaces of both block parts with a gap equal to a zero and with a gap of a predetermined distance "b" between the parts, when one block part is turned or rotated relative to the other block part on 180° forming a stable gap due to an asymmetry of the interconnecting surfaces' cross sectional profile or surface geometry of each part relative to this block part edges. The interacting surface of the first block part interacts with the opposite interacting surface of the second part on the different levels corresponding to these triangles heights.

Fig.1C illustrates an alternative embodiment with the different interacting surfaces geometry with one part having two levels of interaction and one part having three levels of interaction.

Figure 2 illustrates eight possible different variations of the block height in different ways: both by a combination of block parts of different heights and by fine adjusting the chosen height by further relative rotation of the block parts relative to each other.

Figure 3A shows a further embodiment of the invention, a quadrate block having three different positions when one halve is turned about the other on 90° or 180° or 270° and thus providing three supplementary distances "b/2", "b" and "3/2b" or four different heights or thickness of the assembled block, where the value of "b" defined by the kind, dimensions and tolerances of the product where the block will be used. Figure 3B illustrates an embodiment of the block not according to the invention, where the interacting block parts surfaces have not tooth-like triangle cross sectional shape but rather a wave-like cross section with three levels of the interacting surfaces on each part. The

wave-like cross section pattern is asymmetrical relative to the block parts edges in the same manner that the tooth-like patters to provide the desired effect of forming the gaps at the relative to rotation of the parts.

Figure 4A further illustrates an isometric 3D view the quadrate shapes block assembly having tooth-like shaped interacting surfaces.

Figure 4B shows a complete conforming position by the first interacting surface of the first block part of the second interacting surface of the second block part seen from one corner.

Figure 4C illustrates a partial conforming by one interacting surface the other opposite interacting surface of the second block part by turning the one part relative to the other on 90 ° and forming a gap of value equal to b/2 and seen from the corner.

Figure 4D illustrates a partial conforming by one interacting surface the other opposite interacting surface of the second block part by turning the one part relative to the other on 180° and forming a gap of value equal to b and seen from the corner.

Figure 4E illustrates a partial conforming by one interacting surface the other opposite interacting surface of the second block part by turning the one part relative to the other on 270° and forming a gap of value equal to 3/2b and seen from the corner.

Figure 5A shows a mounting position of the supporting and connecting block 1, 2 according to the invention. The bottom part is screwed to the profile 8 by a bolt 5 and a nut 6 and afterwards by a long screw 5, and the plastic profile 10 is fixed by the block 1, 2. An arrow A points to a part to be fixed to the outer frame 200 mounted to the surrounding wall.

Figure 5B shows a mounting position of the supporting and connecting block 1,2 according to the invention within the frame 100 consisting of at least two aluminium profiles 7, 8 to be connected into the frame 100; an arrow B points to a part to be fixed to a sliding sashes of the sliding framing construction 100.

Figure 6A is a 3D view of Fig. 5A and shows a part to be fixed to the outer frame 200 mounted on the surrounding wall. The block 1 is in a first position.

Figure 6B is a 3D view of Fig.5B and shows the block in a second finely adjusted height position for assembling the frame element 100 with a thermal break strip 9 in the sliding elements such as sashes.

Figures 7A, 7B provide a further 3D views of Fig. 5A, 5B of the block having on the top two other profiles. Fig.7B illustrates the finely adjusted height of the block in the second height position achieved by the rotation of one part relative to the other part on 180° for achieving a stable gap and increased height of the supporting and connecting block 1 to fill in the space between the profiles 7, 8.

Figures 8A, 8B illustrate the assembling or mounting the stationary (not movable) frame construction 100 onto the outer frame 200 lower part 73 using the connecting and supporting blocks 1, 2 mounted on the both ends 71, 81 and 72, 83 of the frame 100 construction. In Fig. 8A - the block according to the invention is fixed to the frame 200 by the down /bottom end 72, 82 of the frame 100 when mounted into the outer frame 200 frame part 73 and in Fig. 8B - the blocks 1, 2 are fixed both to the top end 71, 81 and the bottom ends 72, 82 of the frame 100 when mounted into the frame 200 part 73. An arrow 1 shows the tilting of the frame 100, an arrow 2 shows lowering of the frame 100 onto the part 73 by the bottom block 1, 2. The top block 1, 2 is adjusted in inserted in height prior to fixing and then inserted between the top ends 71, 81 of the frame 100 and the outer frame 200.

[0024] The movable or sliding frame construction 100 is supported by wheels mounted in the lower part 72,82 of the sash 100 that run on a track mounted in the lower part 83 of the outer frame 200.

Detailed Description of the Invention

[0025] According to the invention, a construction supporting and connecting block 1, 2 is used, for example in building constructions such as a frame element or a frame construction, e.g. a window frame construction, both of stationary and sliding types, in the frames made of metal profiles which are to be interconnected. The frames can be optionally made

of other material. Alternatively the blocks of the invention can be used for assembling furniture or levelling any other construction elements.

[0026] The construction supporting and connecting block 1, 2 is formed by at least two separate block parts 11, 12; 13, 14 and 21, 22 stacked one onto the other so that all their edges align in any position. Alternatively, more than 2 parts could be place one on the top of the others. Each block part 11, 12; 13,14; 21, 22 has a supporting surfaces 15,16 and 23,24 contacting with the construction elements to be supported, levelled or connected and facing away from their interacting surfaces 17, 18 and 25, 26. Each block part 12, 14 has four holes 31 through it. The opposite part 11, 13 has four cylindrical tube-like extensions 30 that fit tightly into the corresponding holes 31 when the block 1 is assembled so as to keep the block as one piece and do not allow the movement of the one part relative to the other one in the assembled state. The block further may have centrally situated mounting holes 32 (Fig. 6, 7) coaxial to the corresponding holes in the profiles 7, 8. The extension 31 has also a through hole coaxial with the hole in the opposite block part serving as a guiding means for the mounting means such as bolts, screws and the like. The block parts shall preferably be of a standard size and a predetermined shape adapted to the product with which are to be used. The block parts have the identical form or shape and the identical fully aligned edges on its periphery, while the height or thickness on the each block part can be of the same value as the other block part in this pair or the different one as illustrated in Fig. 1A, 1B. The standard sized block parts 1, 2 with the identical form and area of the supporting surfaces 17, 18 with all aligning sides or edges allow combining the block parts of different thicknesses (11, 12 and 13, 14) or heights as illustrated in Fig. 2 providing eight different block 1, 2 height variations by means of only two different block parts heights after their assembling into the block 1, 2 and a fine adjustment according to the invention.

[0027] The two lower or thinner parts 11, 12 and the two higher or thicker parts 13, 14 are combined into four totally different heights values. Four block parts or two pair of two different heights are combined into a totally eight usable height combinations with the fine adjustment according to the invention. The flexible height variation for the blocks 1,2 due to those combinations is important as allows achieving the connecting and supporting block of the correct dimension including the thickness or block height prior to the block use or its fitting in a space between the different standard products. This eliminates a necessity to manufacture the individually dimensioned blocks for use in each individual building element or a product such as a frame element, frame construction, and the like or in the same frame for different positions such as the different frame sides: a top or upper side, a bottom or down side and left/right sides, where might be needed of the blocks 1, 2 of different dimensions and tolerance. The combining of the different height block parts allows the preliminary adjustment of the connecting and supporting block height prior to the mounting the blocks into the space to the contrary to the prior art, when the block height was adjusted only after insertion into the space or between the profiles. The block parts 11, 12; 13, 14; 21, 22 of the different thickness are to be made of material in different colors to enable the worker easily distinguish between different parts. Alternatively, the block 1, 2 parts 11, 12; 13, 14; 21, 22 are made from one of a metal, wood, a composite and a plastic. The construction supporting and connecting blocks 1, 2 assembled of the block parts 11, 12; 13, 14; 21, 22 of the different thickness made of the different colors are bicolor block as made of the material in the different colors in order to make easier for a worker to choose the right size of the block part for a required combination (the block height). The construction supporting and connecting block 1, 2 and the block parts 11, 12; 13, 14; 21, 22 are made from one of a metal, a composite, ceramic and a plastic material.

[0028] Each block 1, 2 and the block parts 11, 12; 13, 14; 21, 22 may be provided with an asymmetrical sign on the supporting surface 15, 16; 23, 25 and/or the any butt-end perpendicular to the supporting surface of the block part painted on or formed as an indentation or an extension for identification of the position of the first block part 11, 13, 21 relative to the second block part 12, 14, 22 as the opposite interacting surfaces are asymmetrical relative to the short edges of the rectangular block part.

[0029] Preferably, the block parts according to the inventions manufactured with the different thicknesses or the heights are to be made using different colours as mentioned above so as to make easer distinguishing between the different block parts sizes with the different heights during assembling of the blocks to save a labour time. The connecting and supporting block can be manufactured from a polymer or a plastic material by the moulding, injection moulding and any other suitable known technology, or alternatively from wood, metal, ceramic or any other suitable material.

[0030] The block parts are mutually interchangeable. An interacting surface 17, 18 and 25, 26 between the parts 11, 12; 13, 14; 21, 22 has an irregular saw-tooth profile (as in Fig.1, 2) of the cross section perpendicular to the supporting surfaces 15, 16. Those profiles are defined by the different levels or distance relative to the supporting surfaces 13, 14, 23, 24 and partial interacting surfaces situated between those different levels.

[0031] The level can be either in a form of a line or lines parallel to the supporting surface on the predetermined distance or a surface(s) parallel to the supporting surface and situated on the predetermined distance. The levels of one interacting surface 17, 25 of one part 11, 13, 21 can contact the opposite part interacting surfaces 18, 26 of the part 12, 14, 22 either linearly or along the partial interacting surfaces depending on the each pair interacting surfaces 17, 18; 25, 26 geometry and shape. The each interacting surface 12, 17, 25, 26 comprises a plurality of the partial interacting surfaces contacting the opposite interacting surfaces at the various relative positions of the parts. The interacting surface 17, 18 of each block 1 part 11,12,13,14 is designed in such manner that there are two stable interconnected positions

resulting in at least two different overall block 1 heights due to the different gaps created between these block parts. The block parts supporting surfaces 15, 16; 23, 24 could be flat or have an extension or an indentation in the middle for easier positioning and firmly fixing between the two metal profiles, helping to get mounting centers in outer frame and the sliding sash become aligned. On those supporting or outer surfaces 15, 16 and 23 24 the block parts can additionally have any suitable marking such as an arrow or other symbol (not shown) helping distinguish between the block parts' sides XY, YZ, ZW, XW as illustrated in Fig. 4 and their orientation relative to each other. Alternatively, each block part might have an indentation or an extension on one end or one edge to show clearly the difference between minimal height assembled block position (e.g. a symbol or a direction of the sign, when the indentation signs align on both parts) and maximum height assembled block (e.g. the indentations on both parts become spaced on the opposite sides). The indentation on the end or the edge of the block part also serves as a place to locate a screwdriver to assist separating the parts.

[0032] So using for example a grey color for the thinner block parts 11, 12 and a green color for the thicker block parts 13, 14, the thin set or block 1 (entirely grey) with thickness or height of nominal 14,5mm is used in a lift-slide of the frame 100, in a top position. The thick set or block 1 (entirely green) with thickness or height of nominal 24,5mm is used in lift-slide of the frame 100 at the side and the bottom. The medium set (e.g. bicolor) having the thickness of height of nominal 19,5mm is used in slide all around the frame. So it is easy for a worker to distinguish that a mono-color block is always a lift-slide of the frame 100, a bicolor block is always a slide side for the sliding sashes in the building frames.

[0033] As described above, the block 1 is formed by the two parts 11, 12; 13, 14 with two ways of joining or assembling those together by their interacting surfaces 17, 18. The first way is when the block parts 11, 12, 13, 14 fit most closely together without any gap between their interacting surfaces 17, 18, so that entire none-planar profile or shape of one block part 11, 13 interacting surface 17 comforts tightly the other opposite interacting surface 18 of the second block part 12, 14 so as all partial interacting surfaces of surface 17, 18 interact. Alternatively, the top block part 11, 13 can be rotated 180° relative to the bottom block part 12, 14 parallel to its interacting surface.

[0034] As illustrated in Fig. 1, 2 the interacting surfaces 17, 18 of the rectangular block parts 11, 12; 13, 14 have a saw-like toothed pattern with teeth of a isosceles triangle shape in a cross section made perpendicular to the supporting surface. The teeth are made on each of those interacting surfaces and have the peaks or the extensions of at least two different heights or levels and/or alternatively the depressions of at least two different depths or levels relative to the supporting surfaces on the opposite part. The interacting surface 17 of the first block part 11, 13 faces and interacts with the opposite interacting surface 18 of the second part 12, 14. The surface 17 has peaks or extensions 172 of the same level and the depressions 171 and 173 between the extensions 172 of the different depths, where the depressions 171 are deeper than the depressions 173. The extensions and depressions define a plurality of the partial interacting surfaces 111, 113; 110, 112 there between. The distance between the neighboring depressions is equal to value "a" which value can be freely varied depending on the product and the distance between the depressions of the same depth is equal to value of "2a". On the mirrored interacting surface 18 there are the lower peaks or extensions 182 and the higher peaks or extensions 183 divided by the depressions 181 of the same depth. The difference between the extensions 182, 183 and the depressions 171 and 173 is equal to a value "b", the value of the gap between the block parts, when the block parts 11,12 and 13,14 is not fully conforming one the other. The value of "a" and "b" could be chosen freely depending on the product and the needed dimension range in change the supporting and connecting block height. This or the similar particular cross sectional shape (when the cross section is perpendicular to the supporting surfaces) of the interacting surfaces enables the two positions of the block parts and forming the gap as the extensions /depressions of the same height/depth are situated asymmetrically relative to the block part edges. When one block part 11, 13 is turned or rotated on 180° so as the interacting surfaces 17, 18 remain parallel facing each other, when the block part 11 is stacked on the block part 13, the extensions 183 will interact with depressions 173 and not the deeper depressions 171 thus forming the stable gap equal to the height difference value "b" as illustrated in lower Fig.1A, 1B. Thus, a first fully conforming position is achieved when the partial contact surfaces 113, 111 interact with the opposite partial surface 110 (and optionally with surface 112) of the surface 18 fully. In this position the gap between the parts 11, 13; 12, 14 is equal to a zero. In the second position, when one part is turned on 180° relative to the other, forming the gap between the parts as described above, the partial surface 110 contacts the opposite partial surface 111 instead of the surface 113, and the surfaces 112, 113 are contact free due to the gap. Thus, the block parts 11 and 13 have each the three levels of the parts interaction: the levels 171, 172 and 173; and the levels 181, 182 and 183, which are either interacts completely so as the one surface 17 is fully conforming the second surface 18, or interacts only partially, when the partial surfaces of the surface 17 conform not all the partial surfaces of the surface 18 due the gap. In this embodiment of the interacting surfaces 17, 18 and 25, 26 all extensions and depressions define the different levels of interacting.

[0035] As illustrated in Fig. 1C, the surface 18 has two levels 181, 183 of the interacting with the opposite surface 17, the first lower level is formed by the depressions 181 and the second top highest level is formed by the peaks or extensions 183. The corresponding opposite interacting surface 17 has three different levels 171, 172, 173 of interacting with the surface 18; these levels are formed as deepest depressions 171, as extensions 172 and as depressions 173 which is less deep than depression 171 on a third intermediate level. The depressions 173 define a first intermediate contacting

level relative to the supporting surface 15. Correspondingly, in the first position the partial surface 111 interacts with the partial surface 113, while in the second position - with the partial surface 111. At least one block part 11,12; 13,14; 21, 22 has the low level 171,181;313, 301 situated on the minimal distance from the supporting surface 15, 16, 23, 24; the intermediate level 173,182; 314, 312, 315, 302, 304, 305 situated on the intermediate distance from the supporting surfaces 15, 16, 23, 24 and the top level 172,183; 311, 303 situated on the maximal distance from the supporting surfaces 5,16, 23, 24.

[0036] The supporting surface 15 can be optionally planar or can have a pattern molded in it due to the manufacturing process such as molding. Additionally, the different signs indicating the assembling directions can be done on the supporting surface as indentations or extensions in form of arrow or any other suitable and informative form. The supporting surfaces can have a central extension, alternatively, depression, for easier positioning/centering the block between the two profiles.

[0037] It is necessary to note that the tooth -like patterns on both block parts is asymmetrical relative to their short edges situated perpendicular to the longitudinal direction, so that the peaks 183 of the part 12 and the corresponding receiving depression 171 of the part 11 situated on a different distance from the left and right short edges. This leads to shifting of the interacting surfaces when one part 11 is turned on 180° relative to the second part 12 so that the peaks 183 interact not with the deeper depression 171 but with the intermediate level depressions 173.

[0038] When the highest peaks or extensions 183 are interacting with the deepest depressions 171 of the part 11, the assembled block 1 has a minimal height "**c**" (defined by the thickness or the own height of the both block parts) with a zero gap between the interacting surfaces. When the part 11 is turned on 180° so that the extensions 183 interact with the depressions 173, the second position of the block part 11 is obtained with the gap equal to value "**b**", which is the difference between the depths of the depressions 171 and 173, and the total height of the block will be "**c**"+"**b**".

[0039] The distance between the supporting surfaces 14,15; 24, 25 of the block 1, 2 varies between the first distance value "**c, d**" and the second distance value "**c+b, d+b**" by turning the first block part11, 13, 21 relative to the second block part 12, 14, 22 on 180° parallel to their interacting surfaces17, 18; 25, 26 so as the levels 171,182; 302, 313, 315 of surfaces 17, 18; 25, 26 are contact free and forming the gap "b".

[0040] The interacting surfaces17,18, 25, 26 have the plurality of different levels 171,172, 173; 181, 182, 183 and a plurality of the partial interacting surfaces 221, 223, 225; 220, 222, 224.

[0041] A further embodiment of the block 2 is illustrated in Fig. 3A and Fig 4A-4E. The supporting surface 15, 16; 23, 24 of block 1, 2 might have a rectangular shape. Alternatively, the supporting surface 23, 24 of block 2 has a quadrate shape of the supporting surface 15, 16; 23, 24. This block 2 comprises at least two parts 21, 22 forming two layers having the quadrate form of the support surfaces 23, 24 with corners indicated as X, Y, W, Z. It is to be understood that the each block 1, 2 may comprise three horizontal parts or layers; one side of a third intermediate layer interacts with a top layer and the other side interacts with the opposite bottom layer (not shown). Such design with 3 or more stacked one on the other layers or parts can be used when the height of the block need to be varied and/or adjusted in a broader range that allowed by only two parts. The at least one of the block part 21, 22 interacting surface 25, 26 further has a second intermediate level 304, 314 defining together with the second top level 303 a second intermediate partial interacting surface 212, 221 providing a third assembled position of block part 21 relative to the block part 22 and defining a third distance or the block 2 height/thickness value "**c+b/2**" between the supporting surfaces 24, 25. When at least one block part 21 is turned on 90° relative to the block part 22 parallel to their interacting surfaces 25, 26, the levels 302, 304, 305 of the first block part 21 interact with the levels 311, 313, 315 so as the levels 301, 315 are contact free and forming a gap "b/2" and at least the partial interacting surface 210 is contact free and not interacts with the opposite interacting surfaces 26 of the second block part 22.

[0042] An intersection or inclined partial surfaces between the neighboring peaks or extensions of the each block part 21, 22 forms depressions and vice versa in two orthogonal directions. The interacting surface 25 of part 21 comprises a plurality of the partial inclined interacting surfaces. The top peaks or highest extensions 303 of the same height and the depressions 301, 302 of the different depths, where the depressions 302 are situated on or define a first intermediate level relative to the supporting surface 23, between the deepest depressions 301 on the first level and the highest top peaks 303 on the second level. The first inclined partial interacting surfaces 210 are defined by the extensions 303 and the depressions 301. The second inclined partial interacting surfaces 211 are situated on a first intermediate level and defined by the extensions 303 and the depressions 304 (on the first intermediate level). The third inclined partial interacting surfaces 212 are defined by the extensions 303 and the depressions 302 on the second intermediate level. The fourth inclined partial interacting surfaces 213 of the third level are defined by the top peaks 303 and the third intermediate level depression 305.

[0043] The other block part 22 comprises the top peaks or extensions 311 and 312 of the different heights and the depressions 313 of the same depth therebetween. In the similar way, the first inclined partial interacting surfaces 220 are defined by the top peaks 311 and depressions 313 and the intersection with the surfaces 221 and 223. The second inclined partial interacting surfaces 221 on the first intermediate level are defined by the peaks 314 on a first intermediate level and the neighboring depressions on the first intermediate level except for the intersection with the surfaces 222.

The third inclined partial interacting surfaces 222 on the second intermediate level are defined by the lower peaks 312 on the first intermediate level and the depressions 313 except to the intersections with the surfaces 223. The fourth inclined partial surfaces 223 are defined by the lower extensions 315 on the third intermediate level and the depressions 313 except for the intersections with the surfaces 220. The at least one of the block part 21, 22 further has a third intermediate level 305, 315 defining together with the second top level 303 a third intermediate partial interacting surface 213, 223 and providing a fourth assembled position of block part 21 relative to the block part 22 which defines a third distance or the block 2 height value "**c+3/2b**" between the supporting surfaces 24, 25. When at least one block part 21 is turned on 270° relative to the block part 22 parallel to their interacting surfaces 25, 26, the level 305 of the first block part 21 interacts with the level 311 of the second block part 22 so as the levels 301, 302, 303, 304; 312, 313, 314, 315 are contact free and form a gap "**3/2b**". At least the partial interacting surfaces 210, 211, 212; 221, 222, 223 are contact free and not interact with the opposite interacting partial surfaces of the second block part 22.

[0044] The distance between the extensions 311 of the same height is equal to "**2a**" and the distance between the two neighboring extensions 311 and 313 is equal to value "**a**". The difference in depth of depressions 302 and 301 is equal to "**b**" as well as the difference between the heights of the extensions 311 and 312. The extensions and the depressions formed on the different levels of parts 21, 22 define a plurality of partial interacting surfaces, which contact each other at the different positions and on the different levels of the first block part 21 relative to the second block part 22 as illustrated in Fig. 4B-4E. The first none planar interacting surface 17, 25 of the first block part 11, 13, 21 comprises a plurality of the partial interacting surfaces 113,111; 210, 211, 212, 213 defined by intersections of the partial interacting surfaces situated between the top level 172; 303 , the low level 171; 301 and the intermediate levels 173; 302, 304, 305 and adopted to interact with the opposite second interacting surface 18, 26 of the second block part 12, 14, 22. The second none planar asymmetrical relative to the edges interacting surface 18, 26 comprises a plurality of the partial interacting surfaces 110, 112; 220, 221, 222, 223 defined by intersections of the partial interacting surfaces situated between the top or highest level 183, 311, the low or lowest level 181, 313 and the intermediate levels 182, 314, 312, 315 adopted to interact with the partial interacting surfaces of the first interacting surface 17, 25 of the first block part 12, 14; 22.

[0045] The at least two different block height values defined by either a full or a partial conforming of the partial surfaces defined by the levels 301, 302, 303, 304, 305 of first interacting surface 17, 25 by the opposite partial surfaces defined by the levels 311, 312, 313, 314, 315 of the second interacting surface 18, 26 is provided by an asymmetrical and different location of the first highest top level, the second low or the lowest level and the intermediate levels on the interacting surface 17, 21 of the first block part 11, 13, 21 relative to block part edges compared to the corresponding interacting surfaces of the second low level, the first top level and the intermediate levels of the opposite interacting surface 18, 26 of the second block part 12, 14,22.

[0046] The interacting surfaces 17, 18, 25, 26 have a plurality of the inclined partial interacting surfaces 111, 113; 110, 112; 210 ,211, 212, 213; 220, 221, 222, 223 which are formed by the plurality of their intersections on the three different levels 171, 172, 173; 181, 182, 183; 301, 302, 303,304, 305; 311, 312, 313, 314, 315 and have a teeth shaped cross section in a direction orthogonal to the interacting surface 17, 18, 25, 26. The teeth shaped cross section has a shape of a isosceles triangles.

[0047] The lowest level 171,181; 313, 301 is situated on the minimal distance from the supporting surfaces 15, 16, 23, 24; the intermediate levels 173,182; 314, 312, 315, 302, 304, 305 are situated on the intermediate distance from the supporting surfaces 15, 16, 23, 24 and the higher top level 172,183; 311, 303 is situated on the maximal distance from the supporting surfaces 15,16, 23, 24 .At least two different block height values "**c**", "**d**" are defined by either a full or a partial conforming of the levels 301, 302, 303,304, 305 of first interacting surface 17, 25 by the levels 311, 312, 313, 314, 315 of the second interacting surface 18,26.

[0048] The interacting surfaces 17, 18, 25, 26 have the plurality of different levels 171, 172, 173; 181, 182, 183; 301, 302, 303,304, 305; 311, 312, 313, 314, 315. The each interacting surface 17, 18, 25, 26 has a wave-shape form in the cross section in a direction orthogonal to the interacting surface 17, 18, 25, 26 of the block part 11, 12; 13, 14; 21, 22.

[0049] Due to a quadrate form of the block 2 having all edges of the same size which can align in the different positions, the block 2 provides more possibilities for the fine adjustment of the assembled block height due to rotation of the first part 21 relative to the second block part 22 parallel to their interacting surfaces on 90°, 180° and 270° obtaining the four different assembled block heights varying between the zero gap to the maximum gap of 3/2"**b**" value. The other forms such as e.g. a hexahedron is also possible.

[0050] At the zero gap or "**b**"=0, the entire interacting surface 25 of the block part 21 (or all its partial interacting surfaces) contacts the entire interacting surface 26 (or all its partial interacting surfaces) of the block part 22 as illustrated in Fig.4B as a dashed area. Fig. 4B shows a first position of part 22 relative to the part 21 providing the minimal assembled block 2 height (value "c") defined by the thickness of both parts or the own height of both block parts. When the part 22 turned on 90° relative to the part 21 (which is illustrated by an arrow and shifting WX edge to ZW edge in Fig. 4C), the only partial surfaces 211, 212, 213 of part 21 interact with the opposite block part 22 partial surfaces 220, 221 and 222 (as dashed in Fig.4C) defining a first intermediate level of interaction and the gap of value "**b/2**".

[0051] When the block part 21 is turned or rotated relative to the part 22 on further 90° as shown by arrow in Fig. 4D, which makes 180 degrees from the first relative position as in Fig.4B, the edge ZW is shifted to ZY, and only the partial interacting surfaces 212, 213 of the part 21 and the partial interacting surfaces 220, 221 of the part 22 interact, providing the gap between the parts 21, 22 equal to the value "**b**".

[0052] A further turn of the part 21 relative to the part 22 on further 90°, which makes totally turn on 270° from the first position, when the edge XW is shifted to the edge XY, the only partial interacting surfaces 213 and 220 of the second intermediate level relative to the supporting surface interact with each other and provide the gap of maximum value equal to "**3/2b**".

[0053] As previously mentioned, the each interacting surface not necessarily has geometry having the triangular peaks or extensions and the corresponding triangular shaped depressions receiving those extensions when they interact. The interacting surfaces can have any form of geometry or shape of the cross section perpendicular to the supporting surface (such as e.g. cylindrical extensions conforming with the circular blind hole of the different depths-not shown), but provide at least one intermediate level for interacting on at least one of the two interacting surfaces 17, 18 and 25, 26. As more intermediate levels will be provided so more different gaps could be achieved, and the finer adjustment of the block height can be done stepwise in a plurality of the steps.

[0054] The construction supporting and connecting blocks 1, 2 assembled according to the invention from parts can have the different use: for connecting frame elements to form the framing building construction such as windows, doors or the like or for leveling elements of construction or assembling the furniture etc in one piece.

[0055] When the parts 11, 12; 13, 14 are stacked one onto the other in the either position and their interacting surfaces 17, 18, 25, 26 conforming fully or partly, the holes 30,31 of the both parts are coaxial and align. The parts 11, 12; 13, 14, 21, 22 have at least one through hole 30, 31 for guiding a mounting means such as a screw or a bolt for connecting the parts into the one piece block. The holes 30, 31 of the both parts 11, 12; 13, 14, 21, 22 are coaxial when the parts 11, 12; 13, 14, 21, 22 are stacked one on the other in the either position and when their interacting surfaces 17, 18, 25, 26 conforming fully or partly.

[0056] The block 1, 2 is assembled from the same or different heights or thicknesses of the parts 11, 12; 13, 14; 21, 22 stacked one part 11, 13, 21 on the other part 12, 14, 22. The distance value between the interacting surfaces 17, 18 25, 26 is further adjusted by a rotation of the first block part 11, 13, 21 relative to the second block part 12, 14, 22 parallel to their interacting surfaces so as to firmly fit into a differently dimensioned for different products space 4between the two elements to be interconnected, leveled or supported one relative to the other.

[0057] The use of the block parts 11, 12; 13, 14; 21, 22 of the same or different dimension, when the parts stacked one 11, 13, 21 onto the other 12, 14, 22 and fine adjusting of the distance so that the interacting surfaces 17, 18; 25, 26 interact fully or partly with each other by stepwise rotation of the one first part 11, 13, 21 relative to the other second part 12, 14, 22 parallel to their interacting surfaces. This provides the different distances between the supporting surfaces 15, 16; 23, 24 and /or interacting surfaces 17, 18, 25, 26 so as the block 1,2 fits in the different spaces 4 between the profiles 7, 8 and matches the dimensions of profiles 7, 9, 10.

[0058] The parts 11, 12; 13, 14; 21, 22 stacked one on the other in different relative to each other positions with the different gap values fit in the spaces 4 of varying sizes. The block 1,2 height or thickness is further adjusted by rotation one first part 11, 13, 21 relative to the other second part 12, 13, 22 parallel to their interacting surfaces and is used for one of a leveling, supporting and a connection of two construction elements one relative to the other.

[0059] Alternatively, the diameters of the holes can be chosen so that one hole 30 might be made as a tubular extension on one part that fits into the other corresponding hole 31 of the other part and thus is simplifying the block 1, 2 assembling. The hole 30 has through hole coaxial with the hole 31 for guiding the mounting means 5, 6 such as screw, thread-forming screw or a bolt with a nut. Distances between holes 30, 31 in the blocks' 1, 2 parts 11, 12, 13, 14, 21, 22 correspond with the distance between corresponding mounting holes (not shown) in the profiles 7, 8. Any unoccupied hole in the center plane of the blocks 1, 2 can be used to place a screw going from the sash profile into the outer frame 200 profile. There are used self-drilling and thread-forming screws to connect in one pass or metric screws are used after pre-drilling and screw tap in the holes.

[0060] Figure 5A illustrates the construction supporting and connecting block 1, 2 according to the invention used in mounting the metal profile 7 and the plastic profile 10 to the outer frame 200 (side shown by the arrow A), which is fixed to the surrounding building wall (not shown). The lower block part is fixed to the profile 8 by a screw 5, and then the block parts are connected by the bolt 5 and a nut 6, where the bolts pass through the prefabricated holes 30, 31,32. Figure 5B illustrate the use of block 1, 2 for connection of an extruded metal, preferably aluminum, inner profile 8 facing the inside interior and an extruded metal, preferably aluminum, outside profile 7 facing the outside of the building, which are interconnected also by the thermo insulating strips 9 for providing a so called "thermal break" between the metal profiles 7, 8 for improving the thermo insulation of the frame element.

[0061] On the right position in Fig. 5B the block 1, 2 is shown with the gap equal to a zero while on the left positions in Fig. 5B the block is assembled with the gap adjusted to "**b**" value, where "**b**" is 1, 5 mm. When mounted in this way the assembly is 1,5 mm higher due to the gap between the block parts 11, 13, 21 and 12, 14, 22 and because the

interacting contact surfaces 17, 18, 25, 26 between the two parts 11, 12; 13,14; 21, 22 mate differently. Having the block 1, 2 assembly in the low position (Fig. 5A, 6A) of the frame 100, a nominal spacing is needed minus 0,75mm, the block 1, 2 assembly in a high or top position in the frame 100, the nominal spacing is needed plus 0,75mm. With the windows, where the outer frame 200 and the sash 100 are dimensionally correct, the bottom support block 1, 2, is used in minimum height "**c**", "**d**" and the top block 1, 2 in maximum height or block thickness "**c+b**", "**d+b**". This way the blocks 1, 2 compensate for each other and the both blocks 1, 2 on the top and bottom end of the frame 100 together fill exactly the total nominal spacing between the outer fixed frame 200 and the sash 100.

[0062] When the sash or sliding frame 100 is too small compared to the dimension of the outer frame 200, then the top 11, 13 and bottom 12, 14 blocks parts are set to the maximum height "**c+b**", "**d+b**". The larger intermediate distance is compensated with 0,75 mm of extra height in the supporting and connecting blocks 1, 2. When the sash 100 is too high then the top and the bottom blocks 1, 2 are set to minimum height "**c**", "**d**", thus reducing the spacing by 0,75 mm.

[0063] The variable spacing can also be applied to the horizontal position. Typically this would be done in multi-panel sliders to relieve some of the pressure needed to lock the central meeting sashes of a slide type window. The arrow B shows the side to be mounted to the sliding or movable part of the frame such as vent or sash. In the space 4 between the profiles 7, 8 a middle extension made on the supporting surfaces 14,15, 23, 24 of the block 1,2 fits tightly between the profiles 7, 8. An additional plastic or composite profile 10 can be used for thermo insulation and connection purposes. The frame element is made of two metal profiles 7, 8 connected together. The metal profiles 7, 8 have a hollow space 4 therebetween. The supporting and connecting block 1, 2 is used for inserting into the hollow space 4 so as to support and connect the profiles 7, 8 firmly. The frame element further can comprise an insulation strip 9 for arranging a thermal break between the outer 7 and inner 8 metal profiles. The frame element further may comprise a plastic profile 10 for increasing a thermal insulation.

[0064] Each block 1, 2 has a center hole(s) 32 that will accept special thread-forming screws 5 to pull on the block itself. In this case the block should already be fixed to the outer frame. This typically works for blocks 1, 2 in the side positions in the frame 100. Blocks 1, 2 in the top rail of the outer frame 200 can also be pre-fixed and moved out of the way until final sash assembly.

[0065] The frame construction 100 is assembled from the frame elements connected from the separate single metal profiles 7, 8 of the complicated shape, preferably of extruded aluminum. The frame construction uses the construction supporting and connecting blocks 1, 2 according to the invention assembled from the standard block parts 11, 12; 13, 14; 21, 22 with the same periphery. When the parts are stacked one part 11, 13, 21 onto the other part 12, 14, 22, all their edges aligned forming the block 1, 2 so that any through holes in the one part is and remain been coaxial with the through holes in the other block part. The interacting surfaces 17, 18; 25, 26 of two parts interact fully or partly with each other by stepwise rotation of the one part 11, 13, 21 relative to the other part 12, 14, 22 parallel to their interacting surfaces providing the different distances between the supporting surfaces 15, 16; 23,24. Thus the block 1, 2 fits in the different space 4 dimensions between the profiles 7, 8 or any other elements of construction or leveling parts. The frame construction 100 can be used as a building element such as a door, a window or a glass wall frame, and particularly, suitable for use as a sliding building element such as a sliding door, a sliding window.

[0066] Fig.6 illustrates the use of the block 1, 2 in the different positions between a frame construction 200 and inner constructions 100 (when assembling the window frame 100). The outer frame 200 construction can hold stationary or sliding parts 100 called sashes or vents.

[0067] Fig.6A illustrates a use of the construction supporting and connecting block 1, 2 according to the invention for a frame element, where the block 1, 2, is to be fixed in the down position or at the down end of the framing element facing to an outer frame 200 which is firmly mounted to the surrounding wall, for a none-sliding part of the frame 100 mounted stationary. The block 1, 2 is fixed by a bolt 5 and a nut 6 to the inner profile 8 provided with a plastic profile 10 and an insulation strips 9 for thermo insulation. The block 1, 2, has a pre-fabricated through holes 30, 31, 32 used for guiding the fixing means 5,6 such as the screw, bolt and the like. When the block part 11 is turned about 180° relative to the block part 12, the through holes 30, 31, 32 are also coaxially match in the second relative position of the block parts 11, 12. The block 1, 2 total height or thickness can be adjusted prior to mounting which saves labor time, for this embodiment $\pm$ 0,75 mm. As the similar standard block parts can be used for different needs, different positions and for fitting into the different distances to be filled, this simple block 1, 2 height variation reduces the block 1, 2 and the entire frame construction manufacturing price.

[0068] In Fig.6B the construction supporting and connecting block 1, 2 according to the invention could be used for connecting an outer metal, preferably an extruded aluminum, profile 7 facing outside of the building interior and an inner metal profile 8 which faces inside building interior into a frame element for further assembling a frame 100. The profiles 7, 8 comprise also thermal insulating strips 9 and thermo insulating plastic profiles 10.The block parts 11, 12 are in the second relative position turned one relative to the other on 180° to provide the gap "b" , where "b" is here chosen of 1,5 mm resulting in the increased block 1, 2, height and fixed to the profile by a screw 5 though the pre-fabricated mounting hole 31. The central prefabricated hole or holes 32 are manufactured for receiving the screw(s) for fixing the frame or sash 100 to the outer stationary frame 200. The holes 32 are coaxial with the corresponding mounting holes in the

profiles (not shown). The arrow B indicates the side to be fixed to a vent of the window.

[0069] Figure 6B illustrates use of the construction supporting and connecting block 1, 2 according to the invention for a frame element to be fixed to the sliding wing or the vent. Parts 11, 12 are pre-adjusted in the height forming the gap "**b**" is about 1, 5 mm. The assembled and adjusted block 1 is inserted into the space 4 between the outer 7 and inner 8 aluminum profiles and screwed by the screw 5 through the block pre-fabricated holes 30, 31, 32 as a guiding means and the thermo insulating strips 9.

[0070] Figures 7A and 7B show the mounting of a stationary frame element to the outer frame 200 using the block 1 in two different positions - down end positions and top end position with and without gap "**b**"=1,5 mm between the parts 11, 12, 13, 14, 21, 22 to fit better in the different spaces between the profile constructions.

[0071] Figure 8 illustrates all steps in mounting the supporting and connecting block 1, 2 according to the invention into the frame construction 100 at its upper side or end 71,81 and at a down side or down end 72, 82 of the stationary window frame 100 made of the extruded aluminum profiles 7, 8.

[0072] Fig. 8A illustrates a process of a mounting the stationary window frame 100 in the outer frame 200.

[0073] The frame construction 100 comprises at least one block 1, 2 having the two block parts 11, 12; 13, 14; 21, 22. The bock parts have at least one the pre-fabricated thought hole 30, 31, 32 for guiding through a mounting means such as a mounting screw 5 or a bolt 5 with a nut 6 for fixing the metal profiles 7, 8 together. The distance value between the block 1, 2 supporting surfaces 15, 16; 25, 26 or a gap between the interacting surfaces 17, 18 , 25, 26, when the parts 11, 12; 13, 14; 21, 22 are stacked one on the other, can be varied so as the interacting surfaces 17, 18, 25, 26 interact fully or partly with each other. The distance value can be varied stepwise between the first distance value "**c**", "**d**", the second distance value "**c+b**";"**d+b**" by a rotation of the first block part 11, 13 relative to the second block part 12, 14 on 180° parallel to their interacting surfaces. The third distance value "**c+b/2**", "**d+b/2**" and the forth distance value "**c+3/2b**"; "**d+3/2b**" can be obtained additionally for the quadrate block 2 by the rotation of the block part 21 relative to the block part 22 respectively on 90° and 270° parallel to their interacting surfaces so as to fit the blocks 1, 2 within the space 4 of the varied dimension or between the different profiles, construction elements etc. A method of adjusting a block 1, 2 height comprising block parts 11, 12; 13, 14, 21, 22 is done by turning the first block part 11, 13, 21) relative to the second block part 12, 14, 22) between 0° or its closest position with zero gap on 180° parallel to their interacting surfaces 17, 18 ; 25, 26 so as to vary the distance between the supporting surfaces of the block 1, 2 between the first distance value "**c, d**" and the second distance value "**c+b; d+b**". For the quadrate block 2, the method of adjusting a block 2 height is done by turning one block part 21, 22 relative to the other further on 90° from the first position with the zero gap and 270° respectively parallel to their interacting surfaces 25, 26 so as to vary the distance between the supporting surfaces of the block 2 between the third distance value "**c+b/2; d+b/2**" and the fourth distance value "**c+3/2b**; **d+3/2b**"

[0074] The outer framing element 200 is firmly fixed to the surrounding building walls. A pre-fabricated sliding or stationary frame construction 100 is to be mounted into the frame 200. A method of mounting the pre-fabricated stationary frame construction 100 into the stationary outer frame 200 has the flowing steps. The appropriate block 1, 2 parts 11, 12; 13, 14; 21, 22 of the standard height, possibly of the different heights, for assembling a block 1, 2 are chosen. The assembled block 1, 2 height is adjusted by a rotation of the block parts relative to each other, if necessary, to the profiles 7, 8 dimensions and a space 4 between the frame construction 100 and the wall where the block 1, 2 shall fit. The block 1, 2 is mounted on at least one of the outer framing element 200 and the frame construction 100 between the profiles 7, 8 down ends 72, 82 by fixing means such as a screw or bolt 5 so as the all sides of the frame construction 100 are provided with the supporting and connecting blocks 1, 2 and tightly fitted into the outer framing element 200 for a stationary framing element 100. The prefabricated framing element 100 is lifted and tilted so as to put the down ends 72, 82 of the frame construction 100 onto the outer framing element 200, a left portion 73 as shown in Fig. 8. The upper end 71, 81 of the framing element 100 is put or brought in an upright or a vertical position so as to interconnect the ends 71, 81 with the upper part of the outer framing element 200. After that a previously to the insertion adjusted in height block 1, 2 is inserted between the upper ends 71, 81 of the framing element 100 and outer framing element 200 so as firmly fit between them.

[0075] For the movable or sliding wing called sash or vent or the sliding framing element 100, the method of mounting the frame construction 100 to the building construction outer frame 200 is similar (not shown) and has further the following steps. The rolls/wheels are mounting on the down part of the outer framing element 200 on a right portion 83 of the frame 200. The movable framing element 100 is lifted and tilted so as to put the down ends 72, 82 of the frame construction 100 comprising the rolls/wheels on the outer framing element 200 right portion 83. The upper end 71, 81 of the framing element 100 is put or brought in an upright or vertical position interconnecting with the upper parts 72, 82 of the frame 100 with the upper part of the outer framing element 200.

[0076] It is to be understood that any modification of the block outer shape or the geometry of the mating interacting surfaces can be varied within the scope of the appended claims.

List of reference signs

Supporting and connecting block		1, 2, 3
Block parts		11, 12; 21, 22;
Interacting surfaces		17, 18; 25, 26
Distance between the neighboring tops	a	
Distance between the similar heights tops/extensions		2a
Distance between the similar depth depressions		2a
High difference between neighboring tops/extensions	b	
Depth difference between neighboring depressions	d	
Dimension of two parts of the assembled support block		c
Cylindrical tube-like extension with a through hole	30	
Through hole for guiding the fixing means		31
Central mounting hole(s)	32	
Metal outer /outside profile	7	
Metal inner /inside profile	8	
Frame 100 profiles top ends		71, 81
Frame 100 profiles bottom ends		72, 82
Outer frame 200 Profiles	73, 83	
Frame		100
Outer frame fixed to the walls		200
Hollow space between the profiles		4
1st low(-est) level(s) defined by depressions		171, 181,301, 313
2nd top level (s) defined by tops/extensions		172, 183, 303, 311
1st intermediate level(s) defined by depressions		173,182,302,312 (defining the corresponding surfaces 111, 112)
2nd intermediate level(s) defined by depressions 304,313 and tops/extensions		303, 311 (defining the partial surface 211, 220)
3d intermediate level(s) defined by depressions 305, 313 and tops/extensions		303,311 (defining the partial surface 212,220)
Space		4
Mounting means:		
Screw or bolt	5	
Nut		6
Thermal break web/strip	9	
Plastic profile		10

Claims

1. A construction supporting and connecting block (1, 2) assembled from at least two block parts (11, 12; 13, 14; 21, 22), each block part comprising a first supporting surface (15, 16; 23, 24) facing away from the other block part; and a second interacting surface (17, 18; 25, 26) opposite to the first supporting surface (15, 16; 23, 24); the second interacting surface (17, 25) of the first block part (11, 13, 21) facing the second interacting surface (18, 26) of the second block part (12, 14, 22), wherein each of the interacting surfaces (17, 25; 18, 26) of each block part (11, 12; 13, 14; 21, 22) has a first partial interacting surface (110,113; 210, 220) defined by a first level (171, 181; 301, 313) and a second level (172, 183; 303, 311) on the interacting surfaces (17, 18; 25, 26), wherein the at least one interacting surface (17, 18; 25, 26) of at least one block part (11, 12 , 13,14, 21, 22) has at least one first intermediate level (173, 182; 302,312) defining together with one of the first (171, 181; 301,313) and the second levels (172, 183; 303, 311) a first intermediate partial interacting surface (111; 112; 212, 213; 220, 221) which has a different contact area and is not equal or identical to the first partial interacting surface (110,113; 210, 220) the parts (11, 12; 13, 14; 21, 22) having an identical periphery of the supporting surfaces (15, 16; 23, 24), wherein the parts (11, 12; 13, 14; 21, 22) have all edges aligned when stacked one part (11, 21) on the other (12, 22), and the block final height can be varied by a fine adjustment of the block height or the distance between the block supporting surfaces by turning

one block part stepwise 0° or 90° or 180° or 270° relative to the other block part depending on the block design parallel to its interacting surface so that the gap value varies between the two parts due to the partial interacting of the block parts interacting surfaces,
the construction block **characterized in that** the interacting surface of each block part has a tooth-like cross section with the teeth of isosceles triangles shape in the cross section having different heights.

2. The construction block (1, 2) according to Claim 1, **characterized in that** at least one block part (11, 13, 21) has a different height than the other block part (12, 14, 22).

3. The construction block (1, 2) according to Claims 1-2, comprising a first block part (11, 13, 21) stacked on a second block part (12, 14, 22) by their interacting surfaces (17, 18; 25, 26), **characterized in that** the first intermediate level (173, 182; 302,312) of at least one block part (11, 12; 13, 14; 21, 22) provides at least two assembling positions of the first block part (11, 13, 21) relative to the second block part (12, 14, 22) so as to vary the distance between the block (1,2) supporting surfaces (15, 16; 23, 24) between two values:

- a first assembled position of the block (1, 2), where the first block part (11,13, 21) defines a first distance value (c, d) between the supporting surfaces (15, 16; 23, 24), when the first level (171, 181; 301, 313) of one block part (11, 13, 21) interacts with the second level (172, 183; 303, 311) of the second block part (12, 14, 22) so as all partial interacting surfaces (111, 113; 110,112; 210, 211, 212, 213) on all levels of the first block part (11, 13, 21) interacting with all partial interacting surfaces (110,112; 220, 221, 222, 223) on all levels of the opposite block part (12, 14, 22) and
- a second assembled position of the block (1,2), where the first block part (11, 13, 21) defines a second distance value (c+b; d+b) between the supporting surfaces (15, 16; 23, 24), when the first intermediate level (173, 182; 302, 312) interacts with one of the first (171, 181; 301, 313) and the second (172, 183; 303, 311) levels and at least the levels (301, 304; 313, 315) are contact free forming a gap "b" between the block (1, 2) parts; one block part (11; 13; 21) partial interacting surface (111, 210, 211) are contact free and does not interact with the opposite interacting surfaces (112; 220) of the second block part (12, 14, 22).

4. The construction block (1, 2) according to Claims 1-3, **characterized in that** the distance between the supporting surfaces (14,15; 24, 25) of the block (1, 2) is varied between the first distance value (c, d) and the second distance value (c+b, d+b) by turning the first block part (11, 13, 21) relative to the second block part (12, 14, 22) on 180° parallel to their interacting surfaces (17, 18; 25, 26); at least one of the block part (21, 22) interacting surface (25, 26) further has a second intermediate level (304, 314) providing a third assembled position of the block part (21) relative to the block part (22) defining a third distance value (c+b/2) between the supporting surfaces (24, 25) by turning the block part (21) relative to the block part (22) on 90° parallel to their interacting surfaces.

5. The construction block (2) according to Claims 1-4, **characterized in that** at least one of the block parts (21, 22) further has a third intermediate level (305, 315) providing a fourth assembled position of block part (21) relative to the block part (22) defining a third distance value (c+3/2b) between the supporting surfaces (24, 25) when turning at least one block part (21) on 270° relative to the block part (22) parallel to their interacting surfaces (25, 26), so that the level (305) of the first block part (21) interacts with the level (311) of the second block part (22) so that the levels (301, 302, 303, 304; 312, 313, 314, 315) are contact free.

6. The construction block (1,2) according to Claims 1-5, **characterized in that** at least two different block height values defined by either a full or a partial conforming of the levels (301, 302, 303,304, 305) of first interacting surface (17, 25) by the opposite levels (311, 312, 313, 314, 315) of the second interacting surface (18, 26) provided by an asymmetrical location of the first top level, the second low level and the intermediate levels on the interacting surface (17, 21) of the first block part (11, 13, 21) relative to its edges compared to the corresponding interacting surfaces of the second low level, the first top level and the intermediate levels of the opposite interacting surface (18, 26) of the second block part (12, 14, 22).

7. The construction block (1, 2) according to Claims 1-6, **characterized in that** the interacting surfaces (17, 18) of the rectangular block parts (11, 12; 13, 14) have a saw-like toothed pattern with teeth of a isosceles triangle shape in a cross section made perpendicular to the supporting surface (17, 18, 25, 26).

8. The construction block (1, 2) according to any of the preceding Claims, **characterized in that** the block (1, 2) each part (11, 12; 13, 14; 21, 22) is provided by an asymmetrical sign on one of the supporting surface (15, 16; 23, 25) and a butt-end of the block part for identification of the position of the first block part (11, 13, 21) relative to the

second block part (12, 14, 22).

9. The construction block (1, 2) according to any of the preceding Claims, **characterized in that** the parts (11, 12; 13, 14, 21, 22) have at least one through hole (30, 31) and the holes (30, 31) of the both parts (11, 12; 13, 14, 21, 22) are coaxial when the parts (11, 12; 13, 14, 21, 22) are stacked one on the other in the either position when their interacting surfaces (17, 18, 25, 26) conforming fully or partly.

10. A frame element comprising two metal profiles (7, 8) to be connected together; the metal profiles (7, 8) having a hollow space (4) there between and a supporting block (1, 2) for the inserting into the hollow space (4) so as to support and connect the profiles (7, 8) **characterized in that** the supporting block (1, 2) is a construction supporting and connecting block made according to any of the Claims 1-9 for mounting to the profile (7, 8) by connecting means (5, 6).

11. A frame construction (100) comprising the frame element according to Claim 10, **characterized in that** the frame construction (100) comprises at least one construction supporting and connecting block according to Claims 1-9, wherein the two block parts (11, 12; 13, 14; 21, 22) have at least one the pre-fabricated thought hole (30, 31) for guiding a screw (5) through for fixing together the metal profiles (7, 8) having a hollow space (4) there between and **in that** the distance value between the block (1, 2) supporting surfaces (15, 16; 25, 26), when the parts (11, 12; 13, 14; 21, 22) are stacked one on the other, can be varied so as the interacting surfaces (17, 18, 25, 26) interact fully or partly with each other and the distance value can be varied stepwise for the block (1) between the first distance value (c, d), the second distance value (c+b; d+b) by the rotation of the first block part (11, 13,) relative to the second block part (12, 14) on 180° parallel to their interacting surfaces, and for the block (2) further the third distance value (c+b/2, d+b/2) and the forth distance value (c+3/2b; d+3/2b) by the rotation of the first block part (21) relative to the second block part (22) respectively on 90° and 270° parallel to their interacting surfaces so as to fit the block (1, 2) within the space (4) of the varied dimension.

12. Use of the construction supporting and connecting block (1, 2) according to Claims 1-9 of the parts (11, 12; 13, 14; 21, 22) having the same size of the supporting surfaces (15, 16, 23, 24), the identical periphery and the same or different height, the parts (11, 12; 13, 14; 21, 22) having been stacked one on the other with aligned edges; the block (1,2) height is further adjusted by rotation of one part (11, 13, 21) relative to the other one (12, 13, 22) in different relative to each other positions and parallel to their interacting surfaces for having different distance values (c, d; c+b, d+b; c+b/2, d+b/2; c+3/2b, d+3/2b) between the supporting surfaces (15, 16; 23,24) and fitting the block (1, 2) in the spaces (4) of varying sizes for one of a leveling, supporting and a connection of two construction elements one relative to the other.

13. A method of adjusting the height of a construction supporting and connecting block according to claims 1-9 by turning one block part **by** turning the first block part (11, 13, 21) relative to the second block part (12, 14, 22) between 0° on 180° parallel to their interacting surfaces (17, 18 ; 25, 26) so as to vary the distance between the supporting surfaces of the block (1, 2) between the first distance value (c, d) and the second distance value (c+b; d+b) or by turning the first block part (21) relative to the second block part (22) on 90° and 270° respectively parallel to their interacting surfaces (25, 26) to vary the distance between the supporting surfaces of the block (2) between the third distance value (c+b/2; d+b/2) and the fourth distance value (c+3/2b; d+3/2b), **characterized in that** the parts (11, 12; 13, 14; 21, 22) have all edges aligned when stacked one part (11, 21) on the other (12, 22) without movement of the one part relative to the other one.

14. A method of assembling the frame element according to Claim 10, **characterized by** the following steps:

cutting the profiles (7, 8) of the appropriate length;
choosing the block (1, 2) parts (11, 12, 13, 14, 21, 22) of the height dimensioned appropriately for a space (4) between the profiles (7,8);
stacking the block parts (11, 12; 13,14; 21, 22) in the appropriate manner and turning, if necessary, one block part (11, 13, 21) relative to the other block part (12, 14, 22) for a fine adjustment of the gap value between the block parts so as to achieve the desired block (1, 2) height value equal to the distance between the profiles to be connected;
fixing the block (1, 2) to the at least one profile (7, 8);
fixing two profiles (7, 8) to each other by a suitable fixing means (5) guided through the block (1, 2).

15. A method of mounting the frame construction (100) according to Claim 11 to a building construction having an outer

framing element (200) firmly fixed to the surrounding building walls and a pre-fabricated frame construction (100), by using the following steps:

- choosing the appropriate block (1, 2) parts (11, 12; 13, 14; 21, 22) height from standard parts of the different height for assembling a block (1, 2);
- mounting the blocks (1, 2) on at least one of the outer framing element (200) and the frame construction (100) between the profiles (7, 8) down ends (72, 82) by fixing means (5) so as the all sides of the frame construction (100) are provided with the supporting blocks (1,2) and tightly fitted into the outer framing element (200) for a stationary framing element (100);
- lifting and tilting the framing element (100) so as to put the down ends (72, 82) of the frame construction (100) onto the outer framing element (200);
- putting the upper end (71, 81) of the framing element (100) in an upright position interconnecting with the upper part of the outer framing element (200);
- inserting between the upper ends (71, 81) of the framing element (100) an adjusted in height block (1, 2) according to the Claims 1-9 so as firmly fit between the framing element (100) and outer framing element (200),

characterized by, before mounting of the blocks (1,3) on at least one of the outer framing element (200) and frame construction (100), adjusting the assembled block (1, 2) height to the profiles (7,8) dimensions and a space between the frame construction and the wall where the block (1, 2) shall fit by a rotation of the block parts relative to each other.

Patentansprüche

1. Ein eine Konstruktion unterstützender und verbindender Block (1, 2), der aus mindestens zwei Blockteilen (11, 12; 13, 14; 21, 22) zusammengesetzt ist, wobei jeder Blockteil eine erste Stützfläche (15, 16; 23, 24) umfasst, die dem anderen Blockteil abgewandt ist; und eine zweite interagierende Fläche (17, 18; 25, 26), die der ersten Stützfläche (15, 16; 23, 24) entgegengesetzt ist; wobei die zweite interagierende Fläche (17, 25) des ersten Blockteils (11, 13, 21) der zweiten interagierenden Fläche (18, 26) des zweiten Blockteils (12, 14, 22) zugewandt ist, wobei jede der interagierenden Flächen (17, 25; 18, 26) jedes Blockteils (11, 12; 13, 14; 21, 22) eine erste teilweise interagierende Fläche (110, 113; 210, 220) aufweist, die durch eine erste Ebene (171, 181; 301, 313) und eine zweite Ebene (172, 183; 303, 311) auf den interagierenden Flächen (17, 18; 25, 26) definiert ist, wobei die mindestens eine interagierende Fläche (17, 18; 25, 26) von mindestens einem Blockteil (11, 12, 13, 14, 21, 22) mindestens eine erste Zwischenebene (173, 182; 302, 312) aufweist, die gemeinsam mit einer der ersten (171, 181; 301, 313) und der zweiten Ebene (172, 183; 303, 311) eine erste teilweise interagierende Zwischenebene (111; 112; 212, 213; 220, 221) definiert, die eine unterschiedliche Kontaktfläche aufweist und der ersten teilweise interagierenden Fläche (110, 113; 210, 220) nicht gleich ist oder mit dieser nicht identisch ist, wobei die Teile (11, 12; 13, 14; 21, 22) einen identischen Umfang der Stützflächen (15, 16; 23, 24) aufweisen, wobei die Teile (11, 12, 13, 14, 21, 22) alle Kanten ausgerichtet haben, wenn ein Teil (11, 21) auf dem anderen (12, 22) gestapelt ist, und die endgültige Blockhöhe durch eine Feineinstellung der Blockhöhe oder des Abstandes zwischen den Blockstützflächen durch Drehen eines Blockteils stufenweise um 0° oder 90° oder 180° oder 270° relativ zum anderen Blockteil variiert werden kann, abhängig von der Ausgestaltung des Blocks parallel zu seiner interagierenden Fläche, so dass die Spaltweite zwischen den beiden Teilen infolge der teilweisen Interagierung der interagierenden Blockteilflächen wechselt, wobei der Konstruktionsblock **dadurch gekennzeichnet ist, dass** die interagierende Fläche von jedem Blockteil einen zahnartigen Querschnitt aufweist, wobei die Zähne mit einer gleichschenklig dreieckigen Form in dem Querschnitt verschiedene Höhen aufweisen.

2. Konstruktionsblock (1, 2) nach Anspruch 1, **dadurch gekennzeichnet, dass** mindestens ein Blockteil (11, 13, 21) eine Höhe aufweist, die von dem anderen Blockteil (12, 14, 22) unterschiedlich ist.

3. Konstruktionsblock (1, 2) nach Anspruch 1-2, umfassend einen ersten Blockteil (11, 13, 21), der auf einem zweiten Blockteil (12, 14, 22) mit ihren interagierenden Flächen (17, 18; 25, 26) gestapelt ist, **dadurch gekennzeichnet, dass** die erste Zwischenebene (173, 182; 302, 312) von mindestens einem Blockteil (11, 12; 13, 14; 21, 22) mindestens zwei Montagepositionen des ersten Blockteils (11, 13, 21) relativ zum zweiten Blockteil (12, 14, 22) bereitstellt, um den Abstand zwischen den den Block (1,2) unterstützenden Flächen (15, 16; 23, 24) zwischen den zwei folgenden Werten zu variieren:

- eine erste Montageposition des Blocks (1, 2), wobei der erste Blockteil (11, 13, 21) einen ersten Abstandswert (c, d) zwischen den Stützflächen (15, 16; 23, 24) definiert, wenn die erste Ebene (171, 181; 301, 313) eines

Blockteils (11, 13, 21) mit der zweiten Ebene (172, 183; 303, 311) des zweiten Blockteils (12, 14, 22) interagiert, so dass alle teilweise interagierenden Flächen (111, 113; 110, 112; 210, 211, 212, 213) auf allen Ebenen des ersten Blockteils (11, 13, 21) mit allen teilweise interagierenden Flächen (110, 112; 220, 221, 222, 223) auf allen Ebenen des entgegengesetzten Blockteils (12, 14, 22) interagieren, und

- eine zweite Montageposition des Blocks (1, 2), wobei der erste Blockteil (11, 13, 21) einen zweiten Abstandswert (c+b; d+b) zwischen den Stützflächen (15, 16; 23, 24) definiert, wenn die erste Zwischenebene (173, 182; 302, 312) mit einer der ersten (171, 181; 301, 313) und der zweiten (172, 183; 303, 311) Ebene interagiert, und zumindest die Ebenen (301, 304; 313, 315) kontaktlos sind, indem sie einen Spalt "b" zwischen den Blockteilen (1, 2) bilden; eine teilweise interagierende Fläche (111, 210, 211) eines Blockteils (11; 13; 21) kontaktlos ist und mit den entgegengesetzten interagierenden Flächen (112; 220) des zweiten Blockteils (12, 14, 22) nicht interagiert.

4. Konstruktionsblock (1, 2) nach Anspruch 1-3, **dadurch gekennzeichnet, dass** der Abstand zwischen den Stützflächen (14,15; 24, 25) des Blocks (1, 2) zwischen dem ersten Abstandswert (c, d) und dem zweiten Abstandswert (c+b, d+b) durch Drehen des ersten Blockteils (11, 13, 21) relativ zum zweiten Blockteil (12, 14, 22) auf 180° parallel zu ihren interagierenden Flächen (17, 18; 25, 26) variiert wird; mindestens eine der interagierenden Flächen (25, 26) des Blockteils (21, 22) ferner eine zweite Zwischenebene (304, 314) aufweist, die eine dritte Montageposition des Blockteils (21) relativ zu dem Blockteil (22) bereitstellt, die einen dritten Abstandswert (c+b/2) zwischen den Stützflächen (24, 25) durch Drehen des Blockteils (21) relativ zum Blockteil (22) auf 90° parallel zu ihren interagierenden Flächen definiert.

5. Konstruktionsblock (2) nach Anspruch 1-4, **dadurch gekennzeichnet, dass** zumindest einer der Blockteile (21, 22) ferner eine dritte Zwischenebene (305, 315) aufweist, die eine vierte Montageposition eines Blockteils (21) relativ zu dem Blockteil (22) bereitstellt, die einen dritten Abstandswert (c+3/2b) zwischen den Stützflächen (24, 25) definiert, wenn mindestens ein Blockteil (21) auf 270° relativ zum Blockteil (22) parallel zu ihren interagierenden Flächen (25, 26) gedreht wird, so dass die Ebene (305) des ersten Blockteils (21) mit der Ebene (311) des zweiten Blockteils (22) interagiert, so dass die Ebenen (301, 302, 303, 304; 312, 313, 314, 315) kontaktlos sind.

6. Konstruktionsblock (1, 2) nach Anspruch 1-5, **dadurch gekennzeichnet, dass** mindestens zwei verschiedene Blockhöhenwerte definiert sind durch entweder ein volles oder ein teilweises Übereinstimmen der Ebenen (301, 302, 303, 304, 305) der ersten interagierenden Fläche (17, 25) mit den entgegengesetzten Ebenen (311, 312, 313, 314, 315) der zweiten interagierenden Fläche (18, 26) bereitgestellt durch einer asymmetrischen Anordnung der ersten oberen Ebene, die zweite untere Ebene und die Zwischenebenen auf der interagierenden Fläche (17, 21) des ersten Blockteils (11, 13, 21) relativ zu seinen Kanten verglichen mit den entsprechenden interagierenden Flächen der zweiten unteren Ebene, die erste obere Ebene und die Zwischenebenen der entgegengesetzten interagierenden Fläche (18, 26) des zweiten Blockteils (12, 14, 22).

7. Konstruktionsblock (1, 2) nach Anspruch 1-6, **dadurch gekennzeichnet, dass** die interagierenden Flächen (17, 18) der rechteckigen Blockteile (11, 12; 13, 14) ein sägeähnliches gezahntes Muster mit Zähnen einer gleichschenkelig dreieckigen Form in einem Querschnitt aufweisen, der senkrecht zur Stützfläche (17, 18, 25, 26) gebildet ist.

8. Konstruktionsblock (1, 2) nach einem der vorgehenden Ansprüche, **dadurch gekennzeichnet, dass** jeder Teil (11, 12; 13, 14; 21, 22) des Blocks mit einem asymmetrischen Zeichen auf einer aus der Stützfläche (15, 16; 23, 25) und einem Pfahlkopf des Blockteils zur Identifikation der Position des ersten Blockteils (11, 13, 21) relativ zum zweiten Blockteil (12, 14, 22) versehen ist.

9. Konstruktionsblock (1, 2) nach einem der vorgehenden Ansprüche, **dadurch gekennzeichnet, dass** die Teile (11, 12; 13, 14, 21, 22) mindestens ein Durchgangsloch (30, 31) aufweisen, und die Löcher (30, 31) der beiden Teile (11, 12; 13, 14, 21, 22) koaxial sind, wenn die Teile (11, 12; 13, 14, 21, 22) in der einen oder der anderen Position aufeinander gestapelt sind, wenn ihre interagierenden Flächen (17, 18, 25, 26) sich vollständig oder teilweise übereinstimmen.

10. Rahmenelement umfassend zwei miteinander zu verbindende Metallprofile (7, 8); wobei die Metallprofile (7, 8) einen Hohlraum (4) dazwischen und einen Stützblock (1, 2) zum Einsetzen in den Hohlraum (4) aufweisen, um die Profile (7, 8) zu unterstützen und zu verbinden, **dadurch gekennzeichnet, dass** der Stützblock (1, 2) ein eine Konstruktion unterstützender und verbindender Block ist, der nach einem der Ansprüche 1-9 für das Montieren an dem Profil (7, 8) durch Verbindungsmittel (5, 6) gebildet ist.

11. Rahmenkonstruktion 100 umfassend das Rahmenelement nach Anspruch 10, **dadurch gekennzeichnet, dass** der Rahmenkonstruktion (100) mindestens einen eine Konstruktion unterstützenden und verbindenden Block nach Anspruch 1-9 umfasst, wobei die beiden Blockteile (11, 12; 13, 14; 21, 22) mindestens ein vorgefertigtes Durchgangsloch (30, 31) zum Durchführen einer Schraube (5) aufweisen, um die Metallprofile (7, 8), die einen dazwischen liegenden Hohlraum (4) aufweisen, miteinander zu verbinden, und **dass** der Abstandswert zwischen den den Block (1, 2) unterstützenden Flächen (15, 16; 25, 26), wenn die Teile (11, 12; 13, 14; 21, 22) aufeinander gestapelt sind, variiert werden können, damit die interagierenden Flächen (17, 18, 25, 26) vollständig oder teilweise miteinander interagieren können, und der Abstandswert für den Block (1) zwischen dem ersten Abstandswert (c, d), dem zweiten Abstandswert (c+b; d+b) durch das Drehen des ersten Blockteils (11, 13) relativ zum zweiten Blockteil (12, 14) auf 180° parallel zu ihren interagierenden Flächen, und für den Block (2) ferner dem dritten Abstandswert (c+b/2, d+b/2) und dem vierten Abstandswert (c+3/2b; d+3/2b) durch das Drehen des ersten Blockteils (21) relativ zum zweiten Blockteil (22) jeweils auf 90° und 270° parallel zu ihren interagierenden Flächen stufenweise variiert werden kann, um den Block (1, 2) in den Hohlraum (4) der variierten Größe einzupassen.

12. Verwendung des eine Konstruktion unterstützenden und verbindenden Blocks (1, 2) nach Anspruch 1-9 der Teile (11, 12; 13, 14; 21, 22), die die gleiche Größe der Stützflächen (15, 16, 23, 24), den gleichen Umfang und die gleiche oder eine unterschiedliche Höhe aufweisen, wobei die Teile (11, 12; 13, 14; 21, 22) mit ausgerichteten Kanten aufeinander gestapelt worden sind; wobei die Höhe des Blocks (1,2) durch Drehen von einem Teil (11, 13, 21) relativ zum anderen (12, 13, 22) in relativ zueinander verschiedenen Positionen und parallel zu ihren interagierenden Flächen weiter angepasst wird, um verschiedene Abstandswerte (c, d; c+b, d+b; c+b/2, d+b/2; c+3/2b, d+3/2b) zwischen den Stützflächen (15, 16; 23, 24) zu erhalten und den Block (1, 2) in die Hohlräume (4) verschiedener Größen für eines aus einer Nivellierung, einer Unterstützung und einer Verbindung von zwei Bauelementen relativ zueinander einzupassen.

13. Verfahren zur Einstellung der Höhe eines eine Konstruktion unterstützenden und verbindenden Blocks nach Anspruch 1-9 durch Drehen eines Blockteils **durch** Drehen des ersten Blockteils (11, 13, 21) relativ zum zweiten Blockteil (12, 14, 22) zwischen 0° auf 180° parallel zu ihren interagierenden Flächen (17, 18; 25, 26), um den Abstand zwischen den Stützflächen des Blocks (1, 2) zwischen dem ersten Abstandswert (c, d) und dem zweiten Abstandswert (c+b; d+b) oder durch Drehen des ersten Blockteils (21) relativ zum zweiten Blockteil (22) auf jeweils 90° und 270° parallel zu ihren interagierenden Flächen (25, 26) zu variieren, um den Abstand zwischen den Stützflächen des Blocks (2) zwischen dem dritten Abstandswert (c+b/2; d+b/2) und dem vierten Abstandswert (c+3/2b; d+3/2b) zu variieren, **dadurch gekennzeichnet dass** die Teile (11, 12; 13, 14; 21, 22) alle Kanten ausgerichtet haben, wenn ein Teil (11, 21) auf dem anderen (12, 22) ohne Bewegung des einen Teils relativ zu dem anderen gestapelt ist.

14. Verfahren zur Montage des Rahmenelements nach Anspruch 10, **gekennzeichnet durch** die folgenden Schritte:

Schneiden der Profile (7, 8) in der entsprechenden Länge;
Auswählen der Teile (11, 12, 13, 14, 21, 22) des Blocks (1, 2) mit einer Höhe, die für einen Raum (4) zwischen den Profilen (7, 8) entsprechend abgemessen ist;
Stapeln der Blockteile (11, 12; 13, 14; 21, 22) in angemessener Weise und Drehen, gegebenenfalls, eines Blockteils (11, 13, 21) relativ zu dem anderen Blockteil (12, 14, 22) für eine Feineinstellung der Spaltweite zwischen den Blockteilen, um den erwünschten Blockhöhenwert (1, 2) gleich dem Abstand zwischen den zu verbindenden Profilen zu erhalten;
Fixieren des Blocks (1, 2) an dem mindestens einen Profil (7, 8);
Fixieren von zwei Profilen (7, 8) zueinander durch ein geeignetes Fixiermittel (5), das durch den Block (1, 2) hindurch geführt ist.

15. Verfahren zum Montieren der Rahmenkonstruktion (100) nach Anspruch 11 an einer Gebäudekonstruktion, die ein äußeres Rahmenelement (200), das an den umgebenden Gebäudewänden starr befestigt ist, und eine vorgefertigte Rahmenkonstruktion (100) aufweist, unter Verwendung der folgenden Schritte:

- Auswählen der Höhe der entsprechenden Teile (11, 12; 13, 14; 21, 22) des Blocks (1, 2) aus Standardteilen verschiedener Höhe für das Montieren eines Blocks (1, 2);
- Montieren der Blöcke (1, 2) an mindestens einem des äußeren Rahmenelements (200) und der Rahmenkonstruktion (100) zwischen den unteren Enden (72, 82) der Profile (7, 8) durch Fixiermittel (5), so dass alle die Seiten der Rahmenkonstruktion (100) mit den Stützblöcken (1,2) versehen sind und in das äußere Rahmenelement (200) für ein ortsfestes Rahmenelement (100) fest eingepasst sind;
- Anheben und Schwenken des Rahmenelements (100), um die unteren Enden (72, 82) der Rahmenkonstruktion

(100) auf das äußere Rahmenelement (200) aufzusetzen;
- Platzieren des oberen Endes (71, 81) des Rahmenelements (100) in einer aufrechtstehenden Position, wodurch es mit dem oberen Teil des äußeren Rahmenelements (200) verbunden wird;
- Einsetzen eines in der Höhe verstellten Blocks (1, 2) nach Anspruch 1-9 zwischen die oberen Enden (71, 81) des Rahmenelements (100), so dass er zwischen das Rahmenelement (100) und das äußere Rahmenelement (200) fest einpasst,

gekennzeichnet durch, vor dem Montieren der Blöcke (1, 3) an mindestens einem des äußeren Rahmenelements (200) und der Rahmenkonstruktion (100), Anpassen der Höhe des montierten Blocks (1, 2) an die Abmessungen der Profile (7, 8) und einen Raum zwischen der Rahmenkonstruktion und der Wand, wo der Block (1, 2) durch ein Drehen der Blockteile relativ zueinander einpassen soll.

Revendications

1. Bloc à construction de support et de connexion (1, 2) assemblé d'au moins deux parties de bloc (11, 12; 13, 14; 21, 22), chaque partie de bloc comprenant une première surface de support (15, 16; 23, 24) détournée de l'autre partie de bloc ; une deuxième surface d'interaction (17, 18; 25, 26) opposée à la première surface de support (15, 16; 23, 24) ; la deuxième surface d'interaction (17, 25) de la première partie de bloc (11, 13, 21) faisant face à la deuxième surface d'interaction (18, 26) de la deuxième partie de bloc (12, 14, 22), dans lequel chacune des surfaces d'interaction (17, 25; 18, 26) de chaque partie de bloc (11, 12; 13, 14; 21, 22) présente une première surface d'interaction partielle (110,113; 210, 220) définie par un premier niveau (171, 181; 301, 313) et un deuxième niveau (172, 183; 303, 311) sur les surfaces d'interaction (17, 18; 25, 26), dans lequel l'au moins une surface d'interaction (17, 18; 25, 26) d'au moins une partie de bloc (11, 12, 13, 14, 21, 22) présente au moins un premier niveau intermédiaire (173, 182; 302, 312) définissant ensemble avec l'un des premier (171, 181; 301, 313) et deuxième niveaux (172, 183; 303, 311) une première surface d'interaction partielle intermédiaire (111; 112; 212, 213; 220, 221) qui présente une zone de contact différente et n'est pas égale ou identique à la première surface d'interaction partielle (110,113; 210, 220), les parties (11, 12; 13, 14; 21, 22) présentant une périphérie identique des surfaces de support (15, 16; 23, 24), dans lequel les parties (11, 12, 13, 14, 21, 22) ont tous les bords alignés lorsqu'elles sont empilées l'une partie (11, 21) sur l'autre (12, 22) et la hauteur finale du bloc peut être variée par un ajustement fin de la hauteur du bloc ou de la distance entre les surfaces de support de bloc en tournant l'une partie de bloc par étapes de 0° ou 90° ou 180° ou 270° par rapport à l'autre partie de bloc en fonction de la conception du bloc parallèlement à sa surface d'interaction si bien que la valeur d'écart varie entre les deux parties en raison de l'interaction partielle des surfaces d'interaction des parties de bloc, le bloc à construction étant **caractérisé en ce que** la surface d'interaction de chaque partie de bloc présente une coupe transversale semblant à dent avec les dents d'une forme de triangles isocèles dans la coupe transversale ayant différentes hauteurs.

2. Bloc à construction (1, 2) selon la revendication 1, **caractérisé en ce qu'**au moins une partie de bloc (11, 13, 21) présente une hauteur différente de celle de l'autre partie de bloc (12, 14, 22).

3. Bloc à construction (1, 2) selon les revendications 1 à 2, comprenant une première partie de bloc (11, 13, 21) empilée sur une deuxième partie de bloc (12, 14, 22) par leurs surfaces d'interaction (17, 18; 25, 26), **caractérisé en ce que** le premier niveau intermédiaire (173, 182; 302, 312) d'au moins une partie de bloc (11, 12; 13, 14; 21, 22) fournit au moins deux positions d'assemblage de la première partie de bloc (11, 13, 21) par rapport à la deuxième partie de bloc (12, 14, 22) de manière à faire varier la distance entre les surfaces de support (15, 16; 23, 24) du bloc (1, 2) entre deux valeurs:

- une première position assemblée du bloc (1, 2), dans laquelle la première partie de bloc (11, 13, 21) définit une première valeur de distance (c, d) entre les surfaces de support (15, 16; 23, 24), quand le premier niveau (171, 181; 301, 313) de l'une partie de bloc (11, 13, 21) interagit avec le deuxième niveau (172, 183; 303, 311) de la deuxième partie de bloc (12, 14, 22) si bien que toutes les surfaces d'interaction partielle (111, 113; 110,112; 210, 211, 212, 213) sur tous les niveaux de la première partie de bloc (11, 13, 21) interagissant avec toutes les surfaces d'interaction partielle (110, 112; 220, 221, 222, 223) sur tous les niveaux de la partie de bloc opposée (12, 14, 22), et
- une deuxième position assemblée du bloc (1, 2), dans laquelle la première partie de bloc (11, 13, 21) définit une deuxième valeur de distance (c+b; d+b) entre les surfaces de support (15, 16; 23, 24), lorsque le premier niveau intermédiaire (173, 182; 302, 312) interagit avec l'un des premier (171, 181; 301, 313) et deuxième (172, 183; 303, 311) niveaux, et au moins les niveaux (301, 304; 313, 315) sont sans contact formant un espace "b"

entre les parties de bloc (1, 2); l'une surface d'interaction partielle (111, 210, 211) de la partie de bloc (11; 13; 21) est sans contact et n'interagit pas avec les surfaces d'interaction opposées (112; 220) de la deuxième partie de bloc (12, 14, 22).

4. Bloc à construction (1, 2) selon les revendications 1 à 3, **caractérisé en ce que** la distance entre les surfaces de support (14,15; 24, 25) du bloc (1, 2) est variée entre la première valeur de distance (c, d) et la deuxième valeur de distance (c+b, d+b) en tournant la première partie de bloc (11, 13, 21) par rapport à la deuxième partie de bloc (12, 14, 22) sur 180° parallèlement à leurs surfaces d'interaction (17, 18; 25, 26) ; au moins l'une de la surface d'interaction (25, 26) de la partie de bloc (21, 22) présente en outre un deuxième niveau intermédiaire (304, 314) fournissant une troisième position assemblée de la partie de bloc (21) par rapport à la partie de bloc (22) définissant une troisième valeur de distance (c+b/2) entre les surfaces de support (24, 25) en tournant la partie de bloc (21) par rapport à la partie de bloc (22) sur 90° parallèlement à leurs surfaces d'interaction.

5. Bloc à construction (2) selon les revendications 1 à 4, **caractérisé en ce qu'**au moins l'une des parties de bloc (21, 22) présente en outre un troisième niveau intermédiaire (305, 315) fournissant une quatrième position assemblée de la partie de bloc (21) par rapport à la partie de bloc (22) définissant une troisième valeur de distance (c+3/2b) entre les surfaces de support (24, 25) lors de la rotation d'au moins une partie de bloc (21) sur 270° par rapport à la partie de bloc (22) parallèlement à leurs surfaces d'interaction (25, 26), si bien que le niveau (305) de la première partie de bloc (21) interagit avec le niveau (311) de la deuxième partie de bloc (22) si bien que les niveaux (301, 302, 303, 304; 312, 313, 314, 315) sont sans contact.

6. Bloc à construction (1,2) selon les revendications 1 à 5, **caractérisé en ce qu'**au moins deux différentes valeurs de hauteur de bloc définies par une conformité ou totale ou partielle des niveaux (301, 302, 303, 304, 305) de la première surface d'interaction (17, 25) par les niveaux opposés (311, 312, 313, 314, 315) de la deuxième surface d'interaction (18, 26) fournie par un emplacement asymétrique du premier niveau supérieur, du deuxième niveau bas et des niveaux intermédiaires sur la surface d'interaction (17, 21) de la première partie de bloc (11, 13, 21) par rapport à ses bords par rapport aux surfaces d'interaction correspondantes du deuxième niveau bas, du premier niveau supérieur et des niveaux intermédiaires de la surface opposée (18, 26) de la deuxième partie de bloc (12, 14, 22).

7. Bloc à construction (1, 2) selon les revendications 1 à 6, **caractérisé en ce que** les surfaces d'interaction (17, 18) des parties de bloc rectangulaires (11, 12; 13, 14) présentent un motif à dents semblant à scie avec les dents d'une forme de triangles isocèles dans une coupe transversale rendue perpendiculaire à la surface de support (17, 18, 25, 26).

8. Bloc à construction (1, 2) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** chaque partie (11, 12; 13, 14; 21, 22) du bloc (1, 2) est pourvue d'un signe asymétrique sur l'une de la surface de support (15, 16; 23, 25) et d'une extrémité de butée de la partie de bloc pour l'identification de la position de la première partie de bloc (11, 13, 21) par rapport à la deuxième partie de bloc (12, 14, 22).

9. Bloc à construction (1, 2) selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les parties (11, 12; 13, 14, 21, 22) comportent au moins un trou traversant (30, 31) et les trous (30, 31) des deux parties (11, 12; 13, 14, 21, 22) sont coaxiales lorsque les parties (11, 12; 13, 14, 21, 22) sont empilées l'une sur l'autre dans l'une ou l'autre position, leurs surfaces d'interaction (17, 18, 25, 26) étant conformes l'une à l'autre partiellement ou totalement.

10. Elément de cadre comprenant deux profilés métalliques (7, 8) à raccorder l'un à l'autre; les profilés métalliques (7, 8) ayant un espace creux (4) entre eux et un bloc de support (1, 2) pour l'insertion dans l'espace creux (4) de manière à supporter et à relier les profilés (7, 8) **caractérisé en ce que** le bloc de support (1, 2) est un bloc à construction de support et de connexion réalisé selon l'une quelconque des revendications 1 à 9 pour le montage sur le profilé (7, 8) par des moyens de raccord (5, 6).

11. Construction de cadre (100) comprenant l'élément de cadre selon la revendication 10, **caractérisé en ce que** la construction de cadre (100) comprend au moins un bloc à construction de support et de connexion selon les revendications 1 à 9, dans laquelle les deux parties de bloc (11, 12; 13, 14; 21, 22) présentent au moins un trou traversant préfabriqué (30, 31) pour faire passer une vis (5) pour la fixer avec les profilés de métal (7, 8) ayant un espace creux (4) entre eux, et **en ce que** la valeur de distance entre les surfaces de support (15, 16; 25, 26) du bloc (1, 2), lorsque les parties (11, 12; 13, 14; 21, 22) sont empilées l'une sur l'autre, peut être variée si bien que

les surfaces d'interaction (17, 18, 25, 26) interagissent totalement ou partiellement l'une avec l'autre et la valeur de distance peut être variée par étapes pour le bloc (1) entre la première valeur de distance (c, d), la deuxième valeur de distance (c+b; d+b) par la rotation de la première partie de bloc (11, 13,) par rapport à la deuxième partie de bloc (12, 14) sur 180° parallèlement à leur surfaces d'interaction, et pour le bloc (2) en outre la troisième valeur de distance (c+b/2, d+b/2) et la quatrième valeur de distance (c+3/2b; d+3/2b) par la rotation de la première partie de bloc (21) par rapport à la deuxième partie de bloc (22) respectivement sur 90° et 270° parallèlement à leur surfaces d'interaction de manière à adapter la forme du bloc (1, 2) dans l'espace (4) de la dimension variée.

12. Utilisation du bloc à construction de support et de connexion (1, 2) selon les revendications 1 à 9 des parties (11, 12; 13, 14; 21, 22) ayant la même taille des surfaces de support (15, 16, 23, 24), la périphérie identique et la même hauteur ou différente, les parties (11, 12; 13, 14; 21, 22) ont été empilées l'une sur l'autre avec les bords alignés ; la hauteur du bloc (1,2) est encore ajustée par rotation d'une partie (11, 13, 21) par rapport à l'autre (12, 13, 22) dans des positions l'une différente par rapport à l'autre et parallèlement à leurs surfaces interagissant pour avoir de différentes valeurs de distance (c, d; c+b, d+b; c+b/2, d+b/2; c+3/2b, d+3/2b) entre les surfaces de support (15, 16; 23,24) et adapter le bloc (1, 2) dans les espaces (4) de différentes tailles pour l'un d'un nivellement, d'un support et d'une connexion de deux éléments de construction l'un par rapport à l'autre.

13. Procédé d'ajustement de la hauteur d'un bloc à construction de support et de connexion selon les revendications 1 à 9 par la rotation de l'une partie de bloc **par** rotation de la première partie de bloc (11, 13, 21) par rapport à la deuxième partie de bloc (12, 14, 22) entre 0° sur 180° parallèlement à leurs surfaces d'interaction (17, 18; 25, 26) de manière à varier la distance entre les surfaces de support du bloc (1, 2) entre la première valeur de distance (c, d) et la deuxième valeur de distance (c+b; d+b) ou par la rotation de la première partie de bloc (21) par rapport à la deuxième partie de bloc (22) sur respectivement 90° et 270° parallèlement à leurs surfaces d'interaction (25, 26) pour varier la distance entre les surfaces de support du bloc (2) entre la troisième valeur de distance (c+b/2; d+b/2) et la quatrième valeur de distance (c+3/2b; d+3/2b), **caractérisé en ce que** les parties (11, 12; 13, 14; 21, 22) ont tous les bords alignés lorsqu'elles sont empilées l'une partie (11, 21) sur l'autre (12, 22) sans déplacement de l'une partie par rapport à l'autre.

14. Procédé d'assemblage de l'élément de cadre selon la revendication 10, **caractérisé par** les étapes consistant à :

découper les profilés (7, 8) de la longueur appropriée ;
choisir les parties (11, 12, 13, 14, 21, 22) de bloc (1, 2) de la hauteur dimensionnée de manière appropriée pour un espace (4) entre les profilés (7,8) ;
empiler les parties de bloc (11, 12; 13, 14; 21, 22) de manière appropriée et en tournant, le cas échéant, une partie de bloc (11, 13, 21) par rapport à l'autre partie de bloc (12, 14, 22) pour un ajustement fin de la valeur d'écart entre les parties de bloc afin d'atteindre la valeur de hauteur souhaitée du bloc (1, 2) égale à la distance entre les profiles à connecter ;
fixer le bloc (1, 2) à l'au moins un profilé (7, 8) ;
fixer les deux profilés (7, 8) l'un à l'autre par un moyen de fixation approprié (5) guidé à travers le bloc (1, 2).

15. Procédé de montage de la construction de cadre (100) selon la revendication 11 à la construction de bâtiment comportant un élément de cadre extérieur (200) solidement fixé aux parois de construction environnantes et à une construction de cadre préfabriquée (100), **caractérisé par** l'usage des étapes consistant à :

- choisir la hauteur des parties appropriées (11, 12; 13, 14; 21, 22) du bloc (1, 2) à partir de pièces standard de la hauteur différente pour assembler un bloc (1, 2) ;
- monter les blocs (1, 2) sur au moins l'un de l'élément de cadre extérieur (200) et de la construction de cadre (100) entre les extrémités inférieures (72, 82) des profilés (7, 8) par des moyens de fixation (5) si bien que tous les côtés de la construction de cadre (100) sont pourvus de blocs de support (1, 2) et adaptés de manière serrée dans l'élément de cadre extérieur (200) pour un élément de cadre stationnaire (100) ;
- lever et basculer l'élément de cadre (100) de manière à mettre les extrémités inférieures (72, 82) de la construction de cadre (100) sur l'élément de cadre extérieur (200) ;
- mettre l'extrémité supérieure (71, 81) de l'élément de cadre (100) dans une position verticale reliée à la partie supérieure de l'élément de cadre extérieur (200) ;
- insérer entre les extrémités supérieures (71, 81) de l'élément de cadre (100) un bloc de hauteur réglé (1, 2) selon les revendications 1 à 9 de manière à pouvoir s'adapter fermement entre l'élément de cadre (100) et l'élément de cadre extérieur (200),

caractérisé par, avant le montage des blocs (1, 3) sur au moins l'un de l'élément de cadre extérieur (200) et de la construction de cadre (100), l'ajustement de la hauteur du bloc assemblé (1, 2) aux dimensions des profilés (7, 8) et d'un espace entre la construction de cadre et la paroi où le bloc (1, 2) doit s'adapter par une rotation des parties de bloc l'une par rapport à l'autre.

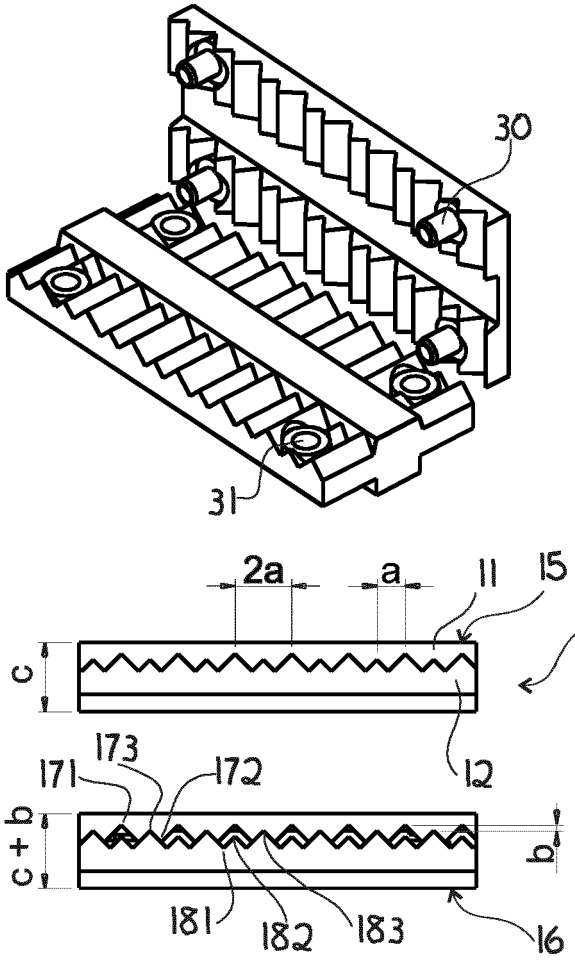


Fig. 1A

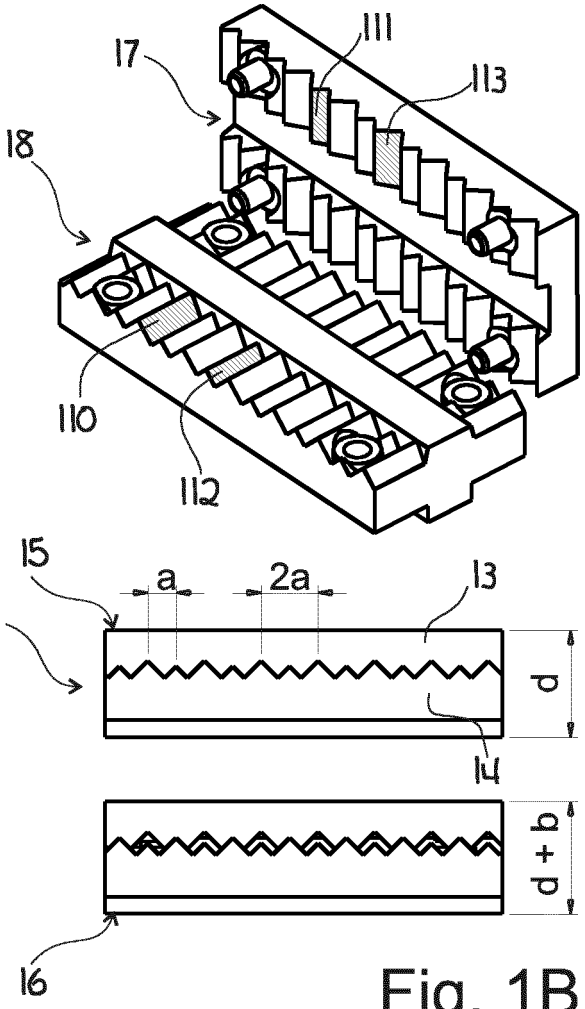


Fig. 1B

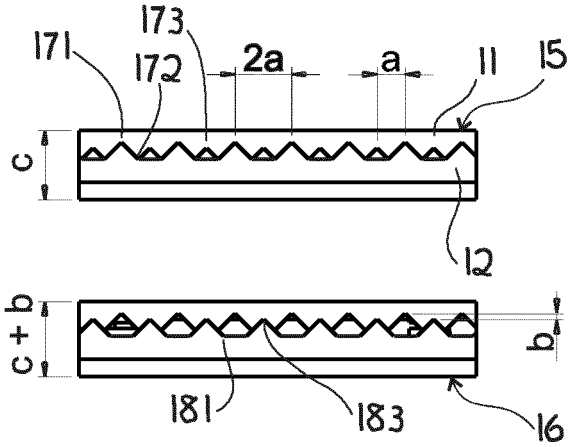
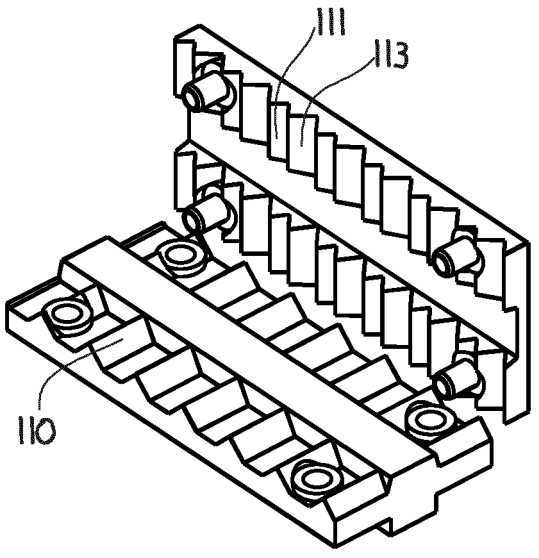


Fig. 1C



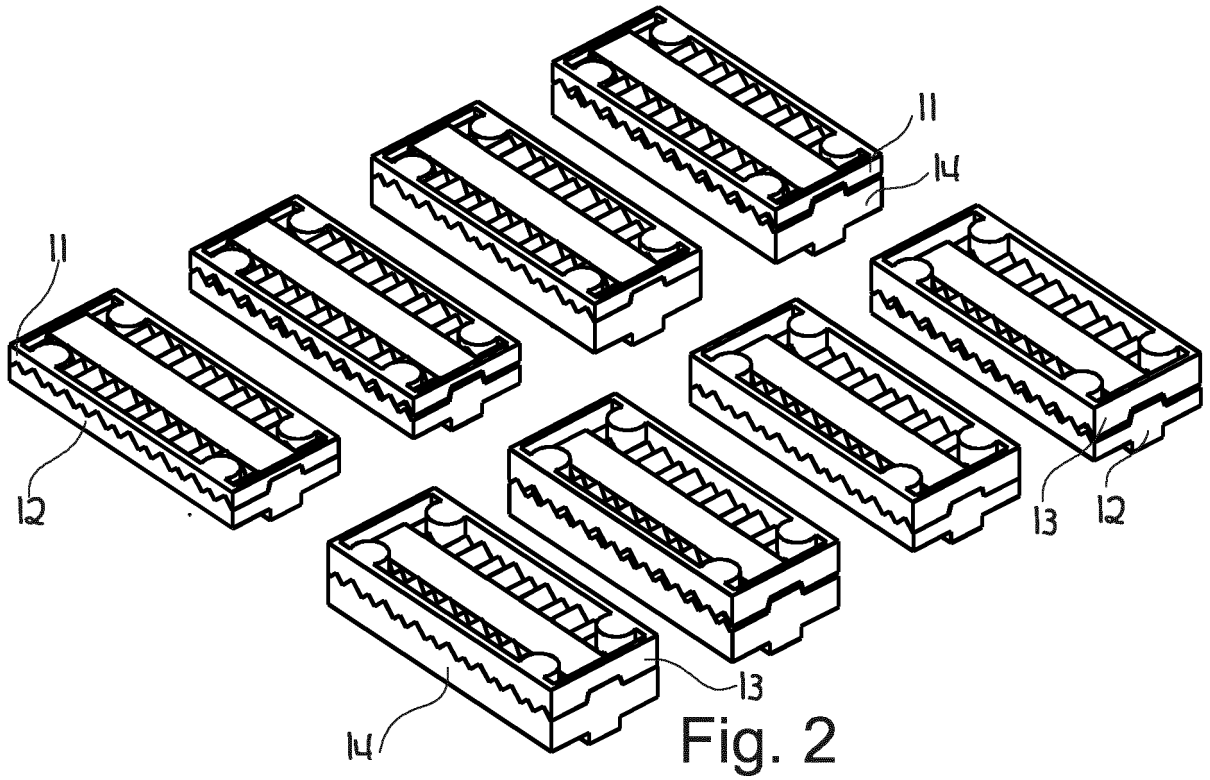


Fig. 2

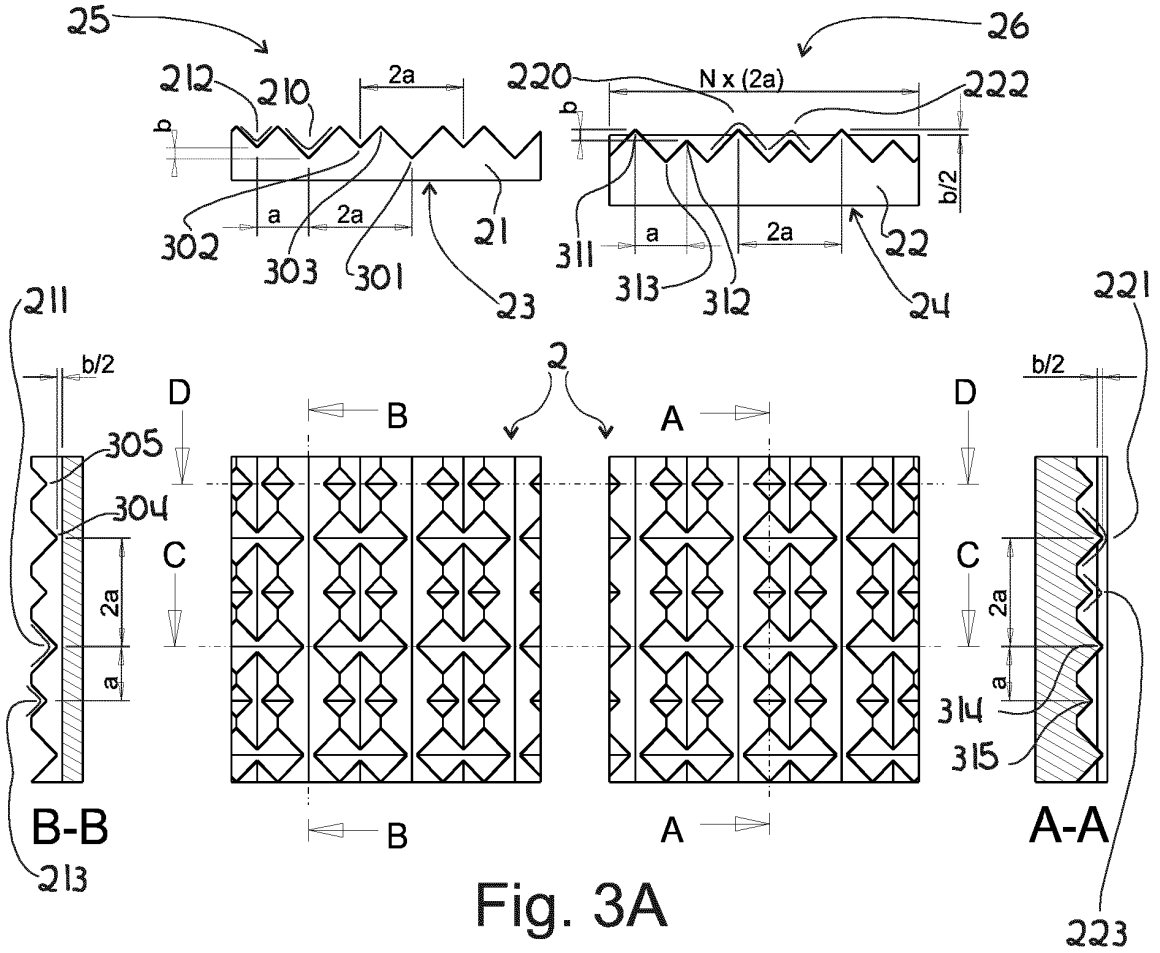
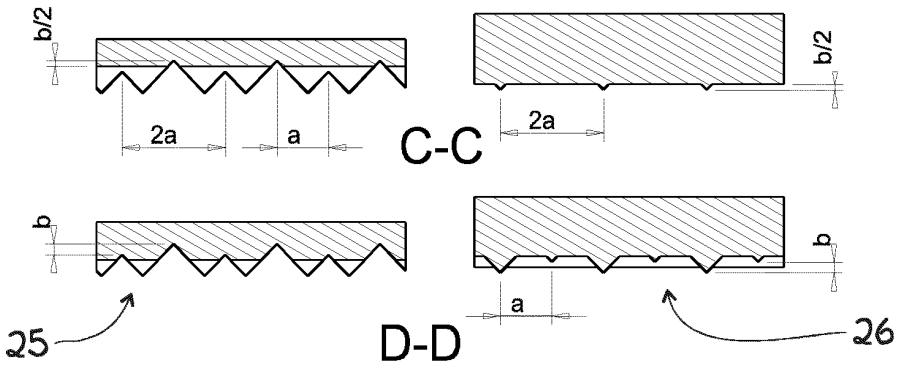

25
26
212
210
2a
220
N x (2a)
222
b
b/2
a
2a
302
303
301
21
23
311
313
312
22
24
211
221
2
D
B
A
305
304
C
2a
a
314
315
B-B
A-A
213
223

Fig. 3A


b/2
2a
a
C-C
25
26
D-D

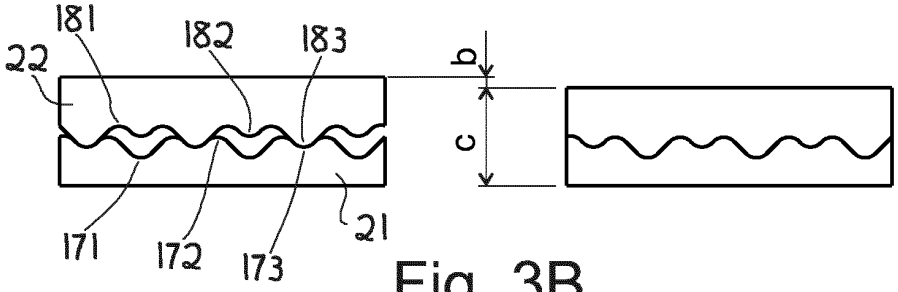

181
182
183
22
b
c
171
172
173
21

Fig. 3B

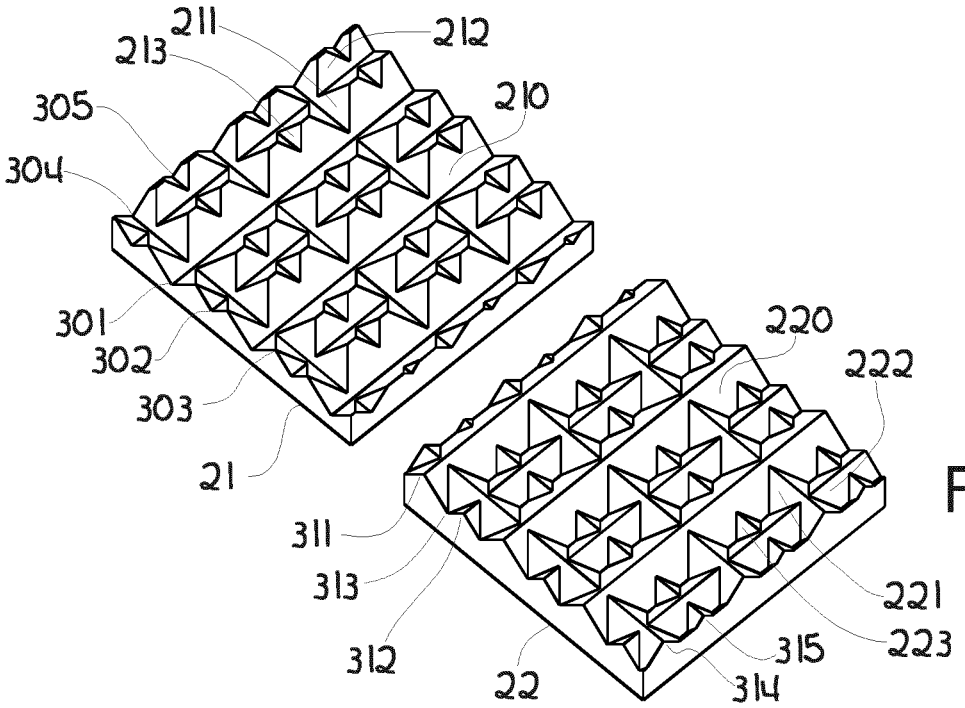
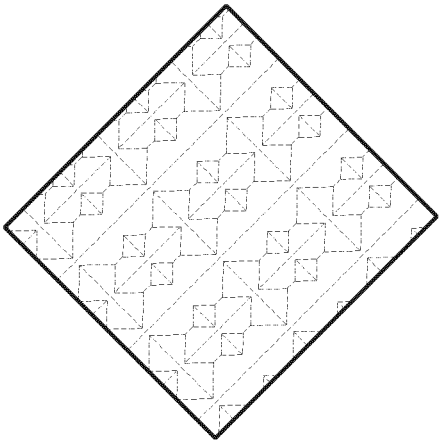


Fig. 4A



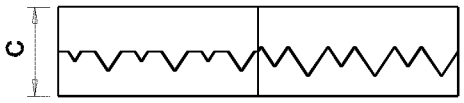


Fig. 4B

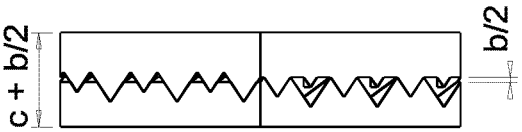


Fig. 4C

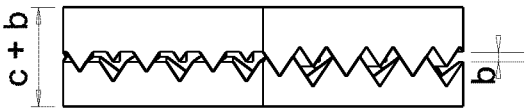


Fig. 4D

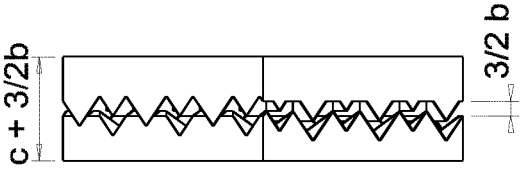


Fig. 4E

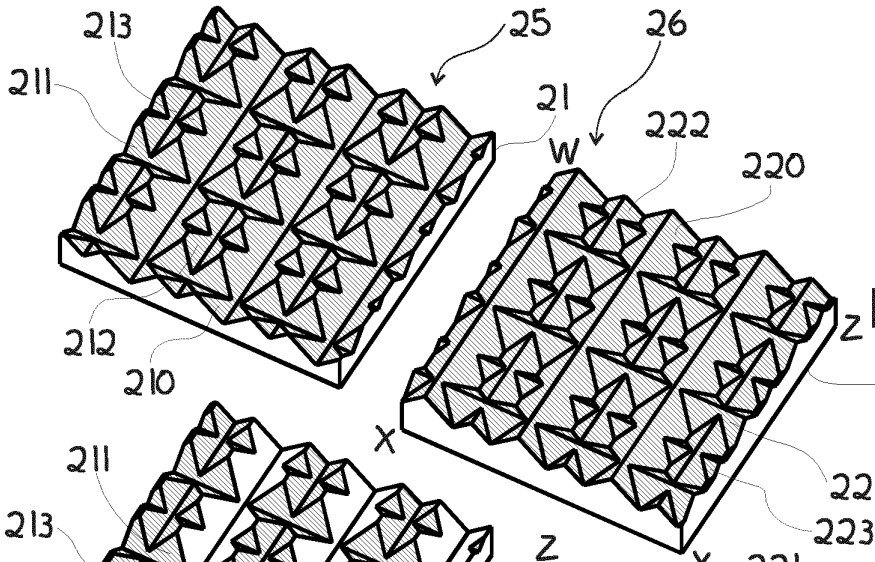


Fig. 4B

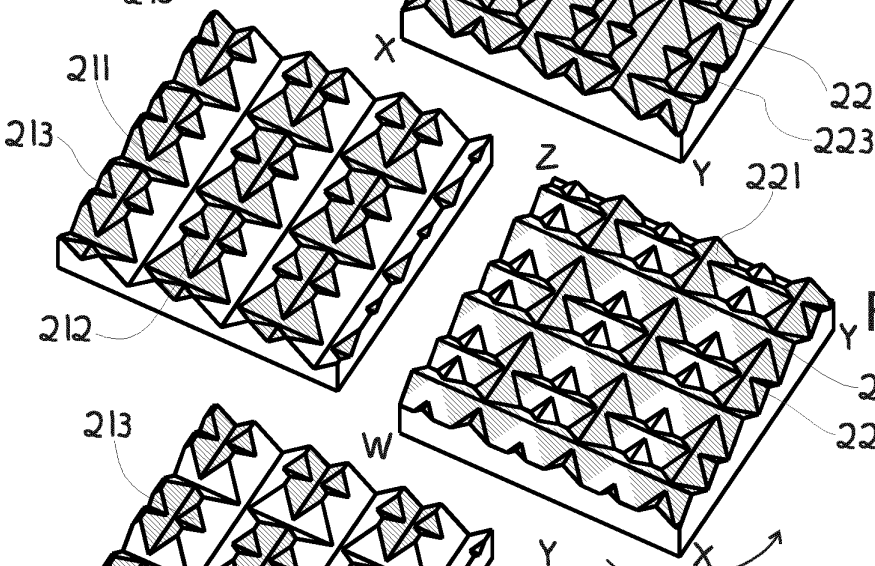


Fig. 4C

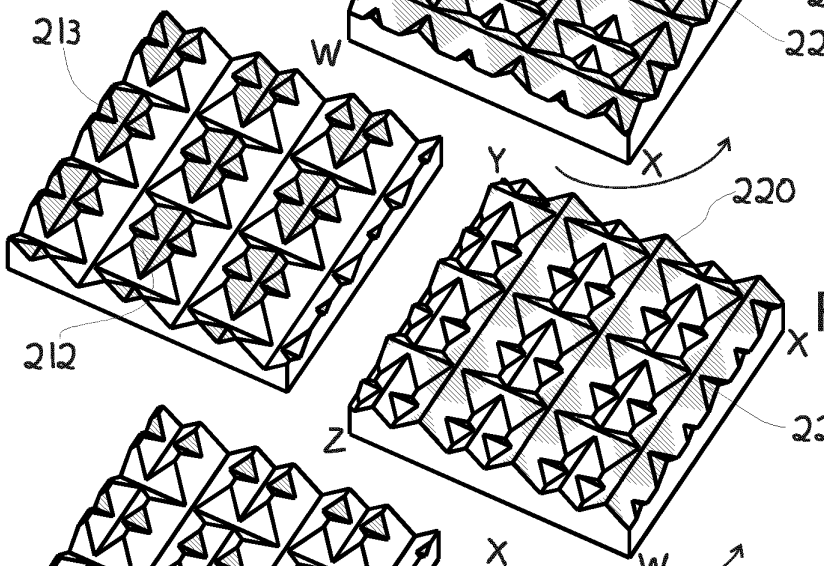


Fig. 4D

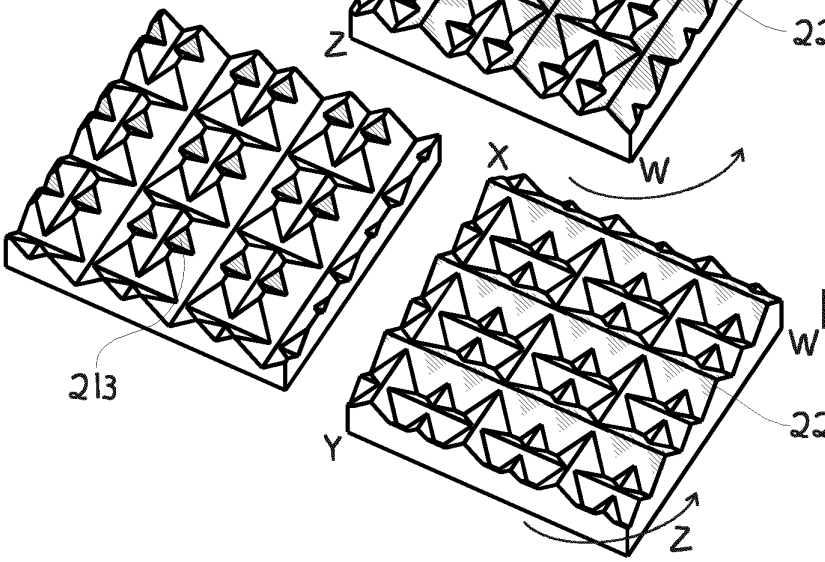


Fig. 4E

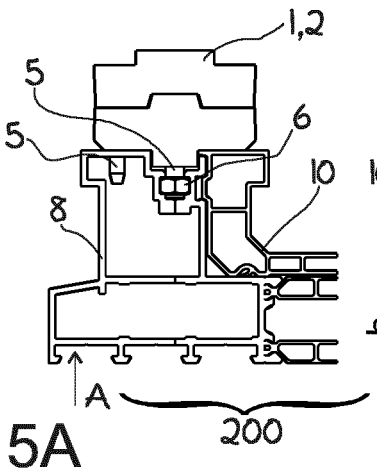


Fig. 5A

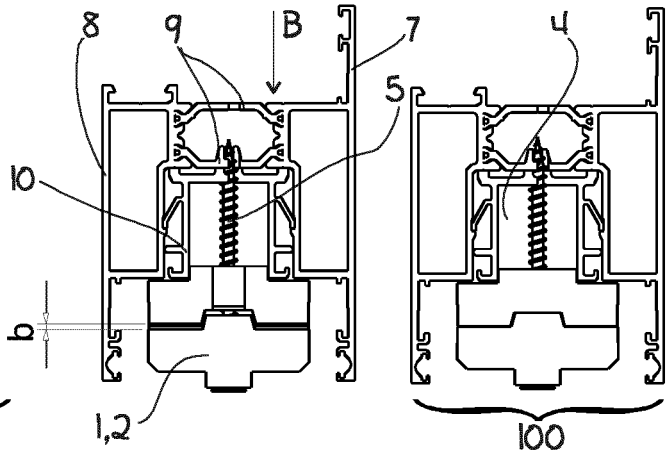


Fig. 5B

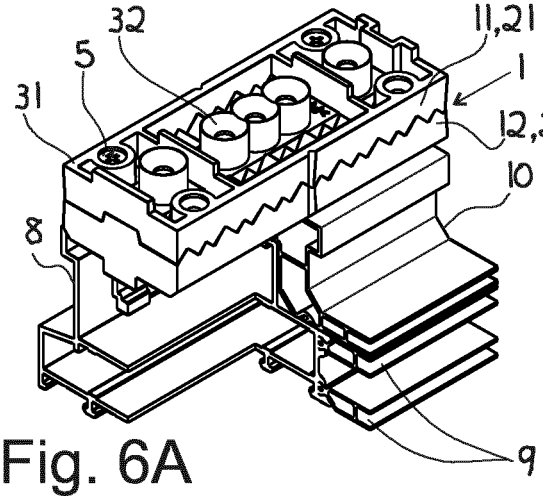


Fig. 6A

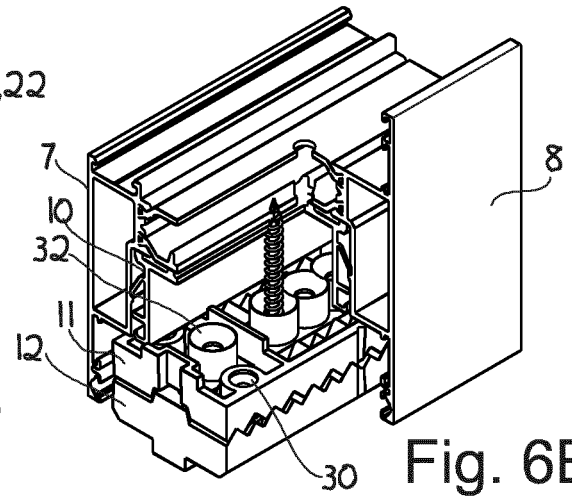


Fig. 6B

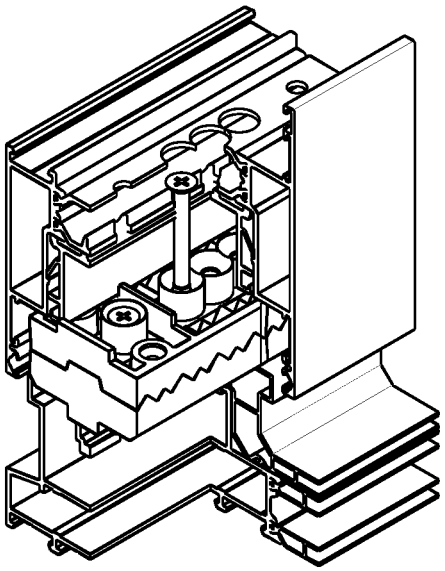


Fig. 7A

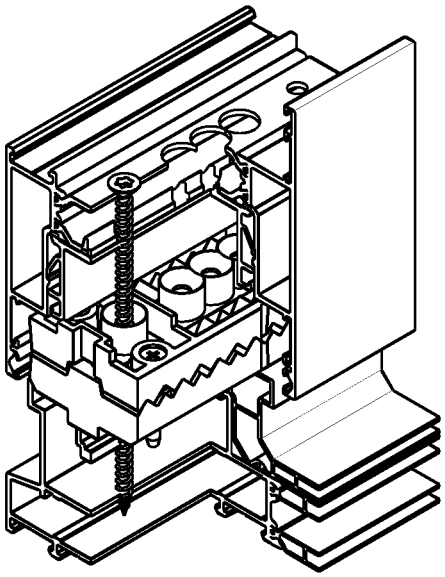


Fig. 7B

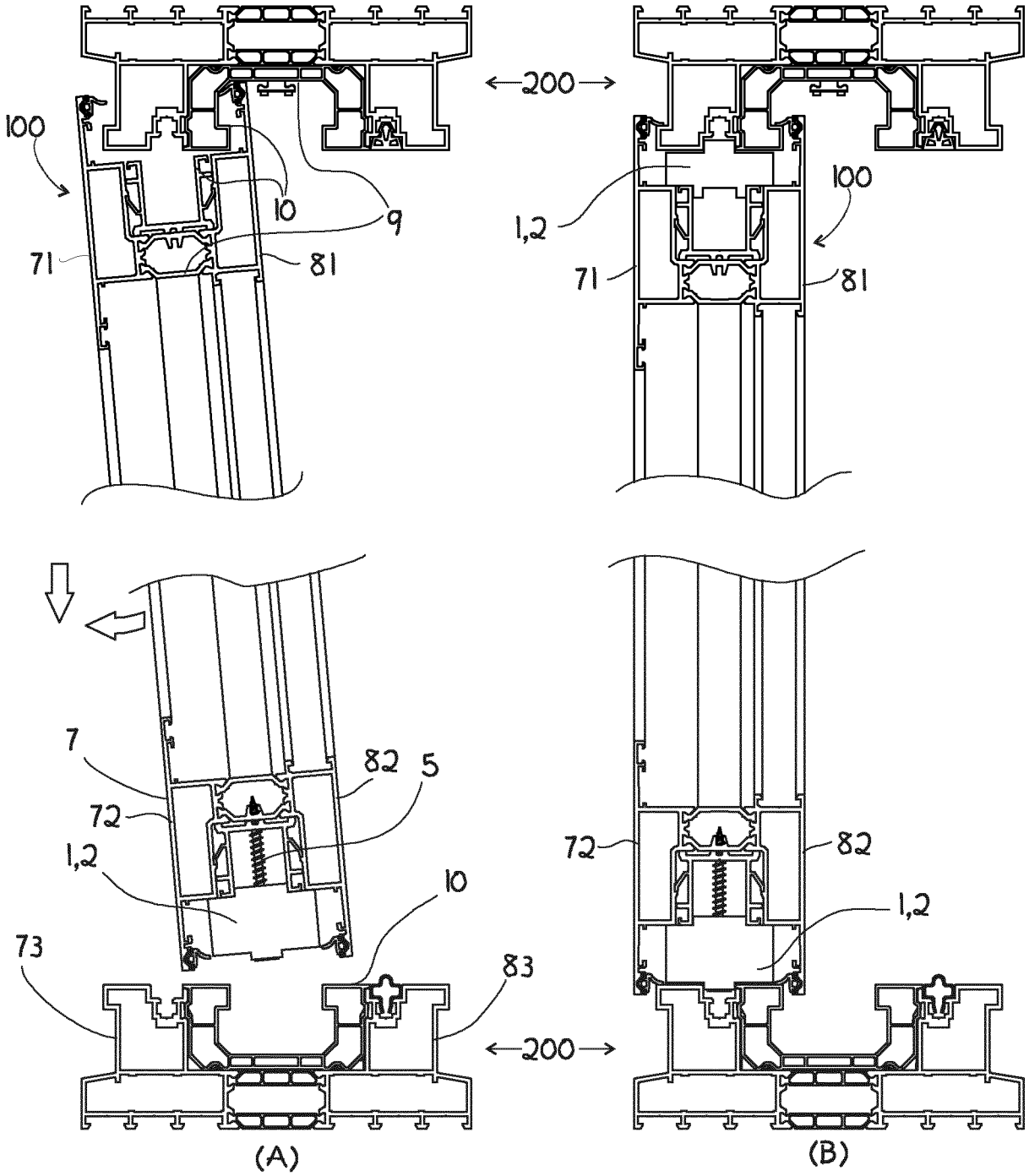


Fig. 8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- GB 1360790 A **[0004]**
- NL 8901757 **[0005]**
- GB 1272869 A **[0006]**
- US 20030110880 A1 **[0007]**