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⑤④ **Wall.**

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⑤⑩ References cited:
AU-A- 514 614
DE-A-2 201 629
GB-A-1 332 297
US-A-3 936 987

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Description

The invention relates to a wall consisting of a number of building blocks or elements which are laid in successive courses next to and on one another and which are provided, at least at their horizontal contact faces with connection means, which connection means for each block or element are formed by a longitudinal groove in one of the two horizontal faces and by two recesses each having a vertical center line disposed in the vertical central plane of the groove and leading out into the opposite horizontal face, as well as by connecting elements which fit into the longitudinal groove and in the recesses.

Such a wall is known e.g. from GB-A-1 332 297.

The building blocks or elements of said known wall are provided in the top horizontal face with a longitudinally extending groove with a small opening and a broader lower section. This undercut profile is difficult to manufacture and can easily be damaged. At the end faces recesses are formed of the same cross sectional shape as the cross section of the longitudinal groove.

The interconnection of the elements takes place by means of connecting elements, which can be made from plastic, and which in general have a double T-shaped profile which with one half fits into the longitudinal groove and should be shiftable through said groove whilst the other half fits into a recess of an end face of a block. These connecting elements prevent separation of the blocks in vertical direction. The blocks are centered with respect to each other by providing top and bottom face with bevelled side edges which are inclined downwardly. This means that each block with its profiled lower face is held in alignment upon the complementary profiled top face of a lower element.

Said known blocks and connecting elements are difficult to assemble. The connecting elements have to be shiftable through the groove but the surface structure of building blocks is rough. Mortar cannot be used because mortar would block the grooves and prevent shifting of the connecting elements. The edges of the grooves easily can be damaged.

Purpose of the invention is to provide a wall which can be easily be manufactured from elements which are easy and cheap to manufacture and which easily can be assembled into a wall.

According to the invention this aim is achieved in that the horizontal faces, apart from the said groove and recesses respectively are completely flat, that the groove has an outwardly opening trapezium shaped cross section in a plane perpendicular to the axis of the groove, that each recess is a bore, that the connecting elements are pins, each pin having a tapering end that fits between the tapering side walls of the groove whilst the opposite end of each pin fits within the said bore, said blocks or elements in addition to the connecting means being joined together by mortar.

An outwardly flaring groove is easy to manu-

facture during the manufacturing of the element. It hardly can be damaged and if damage happens it does not destroy the function of the groove. The recesses also easily can be made during the manufacturing of the elements. The two sided tapering connecting elements easily can be placed into the recesses and can fit inside the groove thereby ensuring alignment of the blocks or elements. Mortar can be used to connect the elements. The connecting elements are placed vertically into the recesses. No shifting is necessary. If mortar is applied it will and may fill the groove. It is advantageous if according to the invention the groove is disposed in the bottom face of the block or element, because then mortar can be applied upon the top face with the pins inserted in the recesses and after placing the next element on top of an element provided with pins and mortar the mortar will penetrate into the groove. It is preferred in this respect that at the point where the bores lead out into the horizontal face of the block or element each bore has a bevelled edge on its periphery. The mortar then also blocks the connecting elements or pins.

The complicated elements according to GB-A-1 332 297 cannot be handled with mechanical block layer equipment because placing and positioning of the connecting elements has to be done by hand.

Due to the shape of groove, recesses and connecting elements, according to the invention mechanical block layer equipment can be easily used.

According to another embodiment of the invention the recesses for the pins are formed by grooves in the end faces of the blocks or elements. This embodiment is of advantageous when for technical reasons of manufacture it is difficult to make openings in the blocks or elements, e.g. with a block made from a massive stone. It, however, is easy to machine longitudinal grooves in the end surfaces and in such a case two longitudinal grooves lying one opposite the other together form a cylindrical recess within which the cylindrical part of a connecting pin can be placed.

It is observed that from AU-A-514 614 a building block is known which can have a tapering groove in its lower face. This groove has to cooperate with a tapering ridge of a lower element which ridge in combination with the mortar to be applied due to the presence of the mortar does not guarantee proper positioning of the elements with respect to each other.

Preferred embodiments of the wall with connection means will be described below, as examples, with reference to the drawings, in which:

Figure 1 is a side view of the built-up wall, in which the pins disposed in the blocks are indicated diagrammatically,

Figure 2 is a cross-section of a block in the built-up wall shown in Figure 1, taken at the point where a pin is disposed,

Figure 3 is a cross-section of the parts, lying at

the interface of two blocks, taken at the point where a centering means is disposed,

Figure 4 shows diagrammatically the positioning of the pins in the grooves in a wall of the kind shown in Figure 1, built up of blocks, in which however the grooves in which the pins are engaged are provided on upper face of the blocks,

Figure 5 is a side view of a built-up wall in section, in which the openings for the pins are formed by providing matching slots in the end faces of the blocks,

Figure 6 is a top view of the wall shown in Figure 5,

Figure 7 is a side view of the end face of a block provided with a slot, with, in section, a block disposed thereabove and having a groove for receiving pin, and

Figure 8 is a top view of a stacked course of blocks at the point where a tongue-and-groove joint is provided in the end faces.

In Figure 1, the wall 1 is constructed of blocks 2, which are laid in courses staggered relative to one another in order to obtain a bond. Figure 2 shows the cross-section of a block 2. In the bottom face of the block is formed a through groove 3, which in this example lies in the middle relative to the longitudinal direction of the block and extends over all the blocks of a course. In the upper face of the block 2 an recess 4, bevelled at the top, is shown in section, and in it a pin 5 is disposed. As can be seen in Figure 1, each block is provided with two recesses 4 and pins 5, each pin engaging in a different block disposed above it. The relation between the groove 3, the recess 4 and the pin 5 is shown more clearly, at the site of a joint, in Figure 3, which shows the engagement of the pin 5. In addition, adhesive mortar 6 is shown between two blocks. This adhesive mortar also penetrates into the bevelled part of the recess 4 at the mouth of the latter on the horizontal surface of the block. In Figure 4 is shown a wall in which, in contrast to the wall shown in Figures 1 to 3, the groove is situated in the upper face of an underlying block.

Figures 5, 6 and 7 show in various views a special way of forming the opening for the pin 5. In this case two adjoining blocks are provided on each end face with a slot 7. When the end faces are laid one against the other, the pairing of the slots forms a recess to receive the pins 5. This construction is above all advantageous when for technical reasons of manufacture it is difficult to form an opening in the blocks, whereas the provision of a slot is substantially simpler. This is, for example, the case in the production of so-called chine blocks, i.e. blocks used in conjunction with calcareous sandstone elements to achieve suitability for high walls.

Figure 8 shows a top view of a special embodiment of the blocks. Here each block is provided on a vertical side face, adjoining the side of an adjacent block, with a groove 9 and, on the opposite side face, with a tongue 8 of complementary shape. By interengaging the groove 9 of one block and the tongue 8 on the other block, a centering effect in the vertical direction is

achieved. In addition, this arrangement provides the advantage of a sound insulating effect through the tongue-and-groove joint.

It should be realised that what is shown in the drawings will serve only as an example. Thus, for example, a plurality of grooves may be provided on one or more sides of the blocks, or a groove may be disposed eccentrically.

The invention is obviously not restricted solely to the use of blocks of e.g. calcareous sandstone or other material such as concrete, but larger elements may also be made of suitable material such as for example concrete and cellular concrete.

Claims

1. Wall consisting of a number of building blocks or elements (2) which are laid in successive courses next to and on one another and which are provided, at least at their horizontal contact faces with connection means, which connection means for each block or element are formed by a longitudinal groove (3) in one of the two horizontal faces and by two recesses (4) each having a vertical center line disposed in the vertical central plane of the groove (3) and leading out into the opposite horizontal face, as well as by connecting elements which fit into the longitudinal groove (3) and in the recesses, characterized in that the horizontal faces, apart from the said groove (3) and recesses (4) respectively are completely flat, that the groove (3) has an outwardly opening trapezium shaped cross section in a plane perpendicular to the axis of the groove, that each recess is a bore (4), that the connecting elements (5) are pins, each pin having a tapering end that fits between the tapering side walls of the groove whilst the opposite end of each pin fits within the said bore, said blocks or elements in addition to the connecting means being joined together by mortar (6).

2. Wall as claimed in claim 1, characterized in that the groove (3) is disposed in the bottom face of the blocks or elements (2).

3. Wall as claimed in claim 1 or 2, characterized in that the bores have inwardly tapering side walls.

4. Wall as claimed in claim 3, characterized in that at the point where the bore (4) leads out into the horizontal face of the block or element, each bore has a bevelled edge on its periphery.

5. Wall as claimed in claim 1, characterized in that the recesses are formed by grooves (7) in the end faces of the blocks or elements (2).

Patentansprüche

1. Wand bestehend aus einer Anzahl von Bausteinen oder Elementen (2), die in aufeinanderfolgenden Lagen dicht bei und aufeinander gelegt sind und die zumindest an ihren horizontalen Kontaktflächen mit Verbindungsmitteln versehen sind, welche Verbindungsmittel für jeden Baustein oder Element durch eine Längsnut (3) in

einer der beiden horizontalen Seiten ausgebildet sind, und durch zwei Ausnehmungen (4) je mit einer in der vertikalen Zentralebene der Nut (3) angeordnete vertikale Zentrallinie und die in die andere horizontale Seite herausführen, zusammen mit Verbindungselementen die in die Längsnut (3) und in die Ausnehmungen passen, dadurch gekennzeichnet, dass die horizontalen Seiten mit Ausnahme der genannten Nut (3) und der Ausnehmungen (4) völlig flach sind, dass die Nut (3) einen sich nach aussen öffnenden trapezförmigen Querschnitt hat in einer Ebene senkrecht zur Mittellinie der Nut, dass jede Ausnehmung eine Bohrung (4) ist, dass die Verbindungselementen (5) Stifte sind, wobei jeder Stift ein kegelförmiges Ende hat welches zwischen die aufeinander zu laufenden Seitenwände der Nut passt während das entgegengesetzte Ende jedes Stiftes in die genannte Bohrung hineinpasst, welche Bausteine oder Elemente zusätzlich zu den Verbindungsmitteln durch Mörtel (6) zusammengefügt sind.

2. Wand nach Anspruch 1, dadurch gekennzeichnet, dass die Nut (3) in der Unterseite des Bausteines oder Elementes (2) angeordnet ist.

3. Wand nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass die Bohrungen sich nach innen verjüngende Seitenwände besitzen.

4. Wand nach Anspruch 3, dadurch gekennzeichnet, dass die Bohrung (4) an dem Punkt, an dem sie in die horizontale Seite des Bausteins oder Elements herausführt, auf ihrer Peripherie einen abgeschrägten Rand besitzt.

5. Wand nach Anspruch 1, dadurch gekennzeichnet, dass die Ausnehmungen durch Nuten in den Stirnflächen der Bausteine oder Elemente ausgebildet sind.

Revendications

1. Paroi constituée d'un certain nombre de blocs ou éléments (2) de construction posés en

couches successives les uns à côté des autres et les uns sur les autres et qui, au moins en leurs faces de contact horizontales, sont pourvus de moyens de connexion, lesquels moyens de connexion sont, pour chaque bloc ou élément, formés par une gorge longitudinale (3) pratiquée dans l'une des deux faces horizontales et par deux renforcements (4) dont chacun comporte une ligne centrale verticale disposée dans le plan central vertical de la gorge (3) et débouche dans la face horizontale opposée, ainsi que par des éléments de connexion qui s'adaptent dans la gorge longitudinale (3) et dans les renforcements, caractérisée en ce que les faces horizontales sont complètement planes à l'exception respective de cette gorge longitudinale (3) et des renforcements, la gorge (3) présente dans un plan perpendiculaire à l'axe de la gorge une section transversale en forme de trapèze ouvert vers l'extérieur, chaque renforcement est un alésage (4), les éléments de connexion (5) sont des goujons, chaque goujon comportant une extrémité rétrécie qui s'adapte entre les parois latérales en diminution de la gorge, tandis que l'extrémité opposée de chaque goujon s'adapte dans l'alésage, les blocs ou éléments étant, outre leurs moyens de connexion, joints ensemble par du mortier (6).

2. Paroi selon la revendication 1, caractérisée en ce que la gorge (3) est disposée dans la face inférieure des blocs ou éléments (2).

3. Paroi selon la revendication 1 ou 2, caractérisée en ce que les alésages comportent des parois latérales en diminution vers l'intérieur.

4. Paroi selon la revendication 3, caractérisée en ce qu'à l'endroit où l'alésage (4) débouche dans la face horizontale de chaque bloc ou élément, chaque alésage présente en sa périphérie un bord en biseau.

5. Paroi selon la revendication 1, caractérisée en ce que les renforcements sont formés par des gorges (7) pratiquées dans les faces terminales des blocs ou éléments (2).

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fig-1

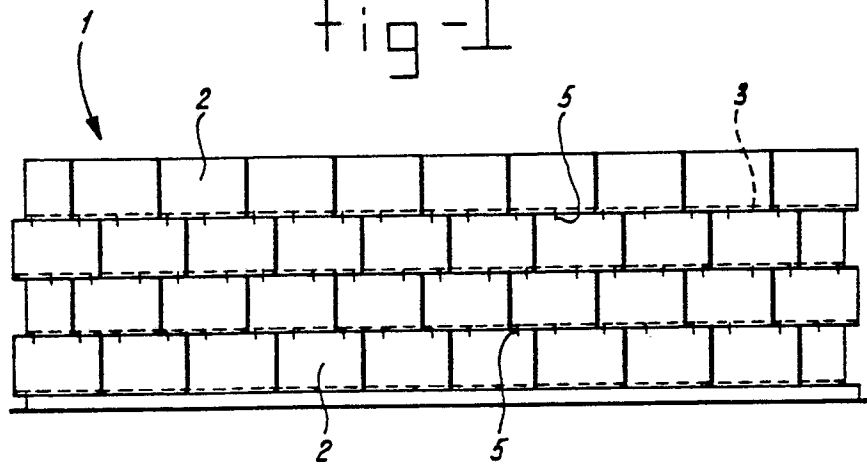


fig-2

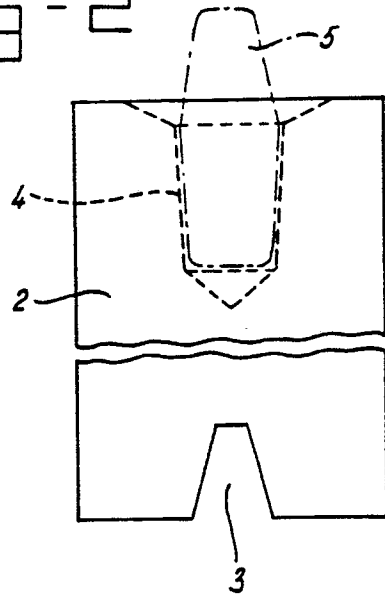


fig-3

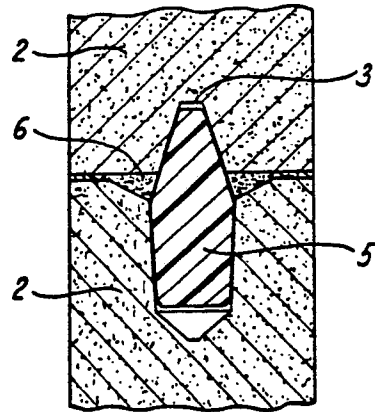


fig-4

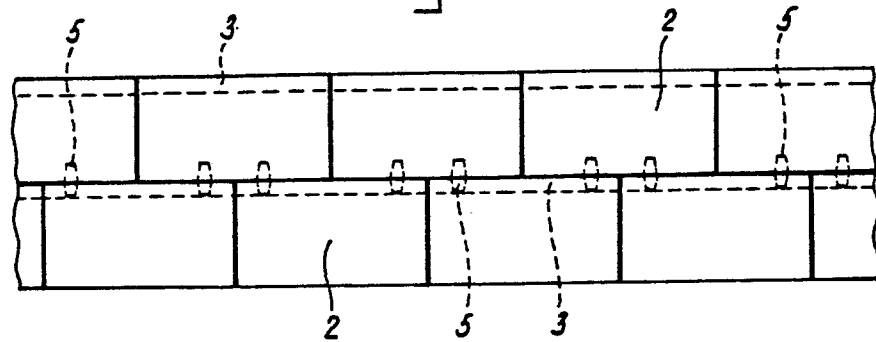


fig-5

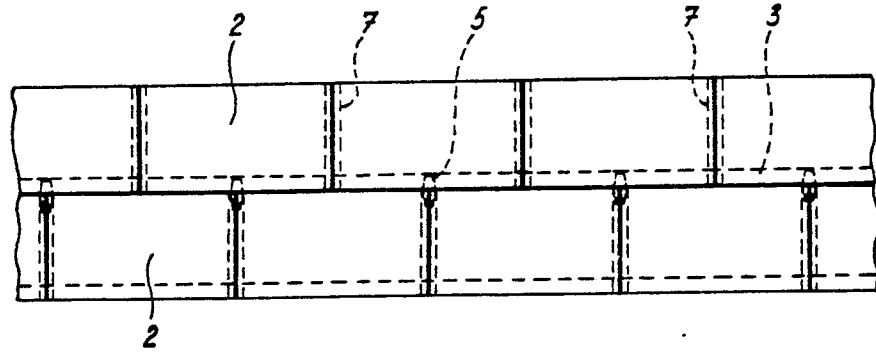


fig-6

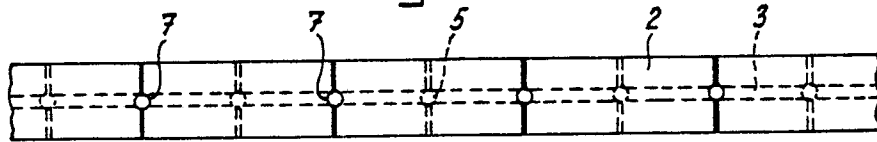


fig-7

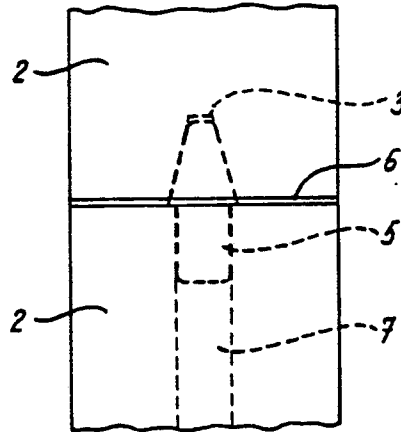


fig-8

