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(54) **PROFILE ELEMENT AS CARRIER STRUCTURE FOR THE CONSTRUCTION OF WALLS**

PROFILELEMENT ALS TRÄGERSTRUKTUR ZUM BAUEN VON WÄNDEN

ÉLÉMENT PROFILÉ SERVANT DE STRUCTURE PORTANTE POUR LA CONSTRUCTION DE MURS

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(73) Proprietor: **Knauf Insaat Ve Yapi Elemanlari Sanayi Ve Ticaret A.S.**
06530 Ankara (TR)

(72) Inventor: **KNAUF, Alfons, Jean**
65189 Wiesbaden (DE)

(74) Representative: **Zech, Stefan Markus et al**
Meissner Bolte Patentanwälte Rechtsanwälte Partnerschaft mbB
Widenmayerstraße 47
80538 München (DE)

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Description

[0001] The present invention relates to a profile element to serve as a carrier structure for the construction of walls, in particular walls consisting of gypsum plaster boards, said profile element comprising at least one bridge region and at least one flange region, such that the at least one flange region additionally comprises fixation means that can be brought into engagement with wall segments, in particular gypsum plaster boards or the like.

[0002] A profile element of this kind is known in principle in the state of the art, for the construction of, e.g., lightweight double partition walls. Such partition walls as a rule consist of two or more gypsum plaster boards that are connected to one another with an insulating layer, preferably made of mineral fibres or the like, disposed between them. To simplify the construction of such partition walls and enable the associated gypsum plaster boards to be connected to one another in the simplest possible but stable manner, in the interior of the partition wall a profile element is provided to serve as the actual carrier structure of the partition wall, by means of which most of the forces imposed on the partition wall are diverted away.

[0003] Such profile elements as a rule are vertically oriented supporting components, which absorb and transmit forces mainly in the direction of their long axis. These profile elements can in principle be made of any of the building materials that are sufficiently resistant to pressure. In the building trade the materials mainly employed are wood or metal, e.g. aluminium. The carrying capacity of a profile element depends in particular on the stability of the chosen material, the cross-sectional dimensions and shape, the length or height of the profile element, and the characteristics of the bearings at their ends (rotation permitted or prevented). Other factors that crucially affect the carrying capacity of a profile element are geometric imperfections, for example slanted positions, distortions, twisting or the like.

[0004] Customarily so-called C or U profiles are used as profile elements, i.e. profile elements that comprise a bridge region to take up transverse forces and two flange regions, which as a rule are disposed at right angles to the bridge region and serve to take up moments of flexion. It is to these flange regions that the wall segments, for instance gypsum plaster boards or the like, are screwed, riveted, nailed or fastened by some other means.

[0005] The conventional profile elements must however be so arranged, in particular with respect to their cross-sectional dimensions, that the planned loading will with adequate reliability not cause the wall construction to fail, i.e. break down or be bent away. For the static calculation, to the load-bearing and material parameters of the profile elements there are customarily also applied partial safety factors to ensure that the profile elements will remain useful even in extreme cases. However, the result of this is that profile elements employed as carrier structure for the construction of in particular high partition walls must be correspondingly strongly dimensioned, which distinctly increases the overall weight of the partition wall and also the costs of such a partition wall.

[0006] WO 97/23694 A1 discloses an elongate structural profile having a base and a pair of sidewalls projecting from the base along its length, the base being provided with formations extending longitudinally of the profile. Moreover, indentations are square in shape or, alternatively have a diamond, circular, rectangular or triangular shape.

[0007] The present invention is directed to the problem that it has not previously been possible for profile elements that are to be used as carrier structure for the construction of walls, in particular lightweight partition walls, to be made with minimal weight, because the static calculation of the forces, tensions and deformations that will be imposed on such a wall construction demands overdimensioning of, in particular, the profile elements.

[0008] Taking this problem as a point of departure, the present invention is directed to the technical objective of disclosing a profile element to serve as carrier structure for the construction of walls, of the kind cited at the outset, which is made light in weight with no negative influence on the static properties, in particular the stiffness and stability of the profile element and hence, in a broader sense, of the wall construction. Thus on one hand the consumption of raw materials can be lowered while on the other hand the overall weight of the wall construction can be reduced. In particular, however, the profile element should still ensure the performance capability determined by static calculation as previously.

[0009] This objective is achieved by a profile element to serve as a carrier structure structure for the construction of walls, in particular walls consisting of gypsum plaster boards, said profile element comprising at least one bridge region and at least one flange region, such that the at least one flange region further comprises fixation means that can be brought into engagement with wall segments, in particular gypsum plaster boards or the like, wherein the bridge region comprises at least two support braces oriented substantially in the long direction of the profile, by way of which the forces acting on the profile element are taken up and transmitted away in the long direction of the profile, and that the bridge region further comprises a plurality of connecting braces that are each disposed between the support braces and mechanically connected to at least two support braces in such a way as to take up torsion forces and transmit them to the associated support braces, wherein the support braces and the connecting braces are provided by material of the bridge region in one plane, and lying in between the support braces and the connecting braces the material of the bridge region is deformed to lie on a different plane, in such a way that indents in the form of triangles are defined by deforming the material of the bridge region between the support braces and connecting braces, wherein the plane of the material lying between the sup-

port braces and the connecting braces is offset to lie below the bridge region and thereby toward the at least one flange region of the profile element, wherein an offset of the two planes is between 0.5 and 1.2 of the thickness of the material been used to make the profile element, wherein

the triangles are in the shape of right-angled isosceles triangles and wherein pairs of the right-angled isosceles triangles are oriented laying adjacent to each other side of the central support brace, with one pair opposing each other with their hypotenuse and the next adjacent pair opposing each other with their right-angle.

The solution according to the invention is thus distinguished by the fact that a profile element such as is used for conventional wall construction is replaced by a specially designed moulded part that, because of structural features, conducts all forces impinging on the profile element directly into the support braces that run in the longitudinal direction of the profile, as a result of which the properties of this component are the same even though the thickness of the wall is less. In detail, it is provided that the bridge region of the profile element comprises at least two support braces that are oriented in the long direction of the profile and serve to transmit forces, so that in the long direction of the profile almost all forces are taken up and transmitted away by the support braces. Expressed differently, this means that in the solution according to the invention the longitudinal stability of the profile element is determined substantially by the dimensioning and the number of the support braces extending on the long direction of the profile. Because in contrast to a conventional profile element, force is no longer transmitted by the entire bridge region, in the solution according to the invention it is no longer necessary for the entire bridge to be dimensioned accordingly, which results in a saving of material. Furthermore, the provision of support braces extending in the long direction of the profile makes it possible for the course followed by the forces that are transmitted away by the profile element to be determined precisely in advance.

[0010] So that furthermore the profile element designed with lightweight construction in accordance with the invention can be endowed with the required transverse stability, despite the saving of material, there are advantageously also provided in the bridge region of the profile element a plurality of connecting braces, each of which is disposed between the support braces and mechanically connected to at least two support braces in such a way as to take up torsion forces and transmit them directly to the associated support braces.

[0011] Accordingly, with the solution in accordance with the invention it is possible to obtain a force guidance, i.e. transmission of forces away by means of the profile element, that is optimally matched to the intended application despite the lightweight construction.

[0012] Advantageous further developments are disclosed in the subordinate claims.

[0013] Thus in an especially preferred implementation of the connecting braces it is provided that at least some of the several connecting braces are set at an acute angle to the support braces. As used here, the term "acute angle" should be understood to include every angle between 0° and (including) 90°. The important thing is that according to this preferred embodiment of the profile element in accordance with the invention, at least a proportion of the connecting braces form such an angle with the support braces. This arrangement ensures optimal force transmission as is known, for example, from trellis technology. Preferably the angle enclosed between the connecting braces and the support braces amounts to approximately 45°. In this case, the profile element exhibits an optimal transverse stability.

[0014] In order to make the profile element such that it has the same static properties throughout its entire length, in a preferred further development it is provided that the plurality of connecting braces is uniformly and regularly disposed along the profile. In particular, this preferred embodiment makes it possible for the length of the profile element to be made shorter, depending on the requirements of the current application, regardless of the pattern of connecting braces provided in the bridge region. The regular arrangement of the connecting braces offers the added advantage that with this profile element a direction-independent transmission of force is always ensured.

[0015] In another preferred further development of the solutions in accordance with the invention described above, it is provided that the multiple connecting braces are arranged symmetrically with respect to the support braces. The result thus achieved is that torsion forces can be uniformly taken up by the profile element and transmitted away by the support braces.

[0016] So that the profile element according to the invention can be manufactured in a particularly economical manner, it is provided that both the connecting braces and the support braces are formed by rolling in the bridge region of the profile element. This "roll forming" of profiles is a continuous bending method in which wall material made of sheet metal is shaped by stepwise passage through a number of paired rollers, until the desired final cross section has been reached. It is an especially economical manufacturing procedure when relatively large lengths or large quantities are to be produced. Of course, however, other manufacturing procedures can also be considered.

[0017] In a particularly preferred implementation of the solution in accordance with the invention, it is provided that the plurality of support braces includes one central support brace disposed in the middle of the bridge region which, being situated in the surface cross section of the bridge region, forms the long axis of the profile. By the provision of such a central support brace, it can be ensured that the transmission of forces is as optimal as possible.

[0018] It would further be conceivable that the support braces and connecting braces have substantially the

same widths, which on the whole simplifies the layout, i.e. design, of the profile element. However it would also be conceivable for the support braces, e.g. altogether, to have a greater width than the connecting braces. It would additionally be conceivable to dimension individual support braces so that they have different widths.

[0019] In order to enable the profile element in accordance with the invention also to be suitable for the construction of walls that have a profile with concave or convex curvature, in one preferred further development it is provided that the flange region comprises a plurality of flange sections adjacent to one another, each of which is mechanically connected to the bridge region. As a result, the profile element has a flexible structure and can in particular be processed by hand and brought into its desired form in a simple and precise manner.

[0020] With regard to a structural means of sound-absorption, it would furthermore be likewise conceivable for the bridge region to comprise at least one preferably V-shaped groove that is oriented in the long direction and, given an appropriate design, serves as a absorbing means. As profile elements so-called C or U profiles, double-T profiles, Z profiles or the like can be considered.

[0021] In the following, a preferred embodiment of the profile element in accordance with the invention is described with reference to the drawings.

[0022] Thereby shows:

Fig. 1 a perspective view of a preferred embodiment of the profile element in accordance with the invention;

Fig. 2a a cross section along the line IIA-IIA in Fig. 1; and

Fig. 2b a cross section along the line IIB-IIB in Fig.

[0023] Fig. 1 shows a perspective view of a preferred embodiment of the profile element 1 in accordance with the invention. Although the illustrated embodiment is a C or U profile, the invention is not limited to a special basic profile shape of this kind.

[0024] The essential aspect is that the profile element 1 consists of a bridge region 2 and at least one flange region 3. In the embodiment according to Fig. 1 - because in this case it is a C profile - a total of two flange regions 3 are provided, each of which projects substantially orthogonally away from the bridge region 2. The flange regions 3 further comprise fixation means 4, for instance fixation holes, which can be brought into engagement with wall segments not explicitly shown in Fig. 1, in particular gypsum plaster boards or the like.

[0025] As shown here, in the bridge region 2 there are provided a total of three support braces oriented substantially in the long direction of the profile, by way of which forces imposed on the profile element 1 can be taken up and transmitted away in the long direction of the profile. In detail, at each of the outer regions 2' of the bridge region 2 there are two support braces 5 with a somewhat greater width, while the support brace 5' disposed in the middle of the bridge region 2, i.e. the central support brace, is correspondingly less wide. The dimensions of each of the support braces 5, 5' depend in particular on the intended use of the profile element 1. In particular, however, the present invention is not limited to the embodiment illustrated in Fig. 1.

[0026] All of the support braces 5, 5' are connected to one another by connecting braces 7 disposed at an angle. It is evident that the connecting braces 7 are disposed uniformly and regularly over the length of the profile, and in particular are symmetrical with respect to the support braces 5, 5'. These connecting braces 7 serve to transmit to the associated support braces 5, 5' transverse forces that act on the profile element 1.

As already indicated, the profile element 1 in accordance with the invention is preferably produced by a roll-forming method. Accordingly, it can be seen that in such a case the support braces 5, the central support brace 5' and the connecting braces 7 each occupy a common plane, whereas the triangular region enclosed by the central support brace 5' and the associated connecting braces 7 lies in another plane. However, other manufacturing procedures can also of course be considered.

As is clear from the above, given that the profile element 1 is fabricated by means of a roll-forming method, the triangles seen in the figure lying between the connecting brace 7, the support brace 5 and the central support brace 5' are not removed from the bridge region 2. Indeed, as can be seen in the figures, these triangular sections are in fact indented from the surface of the bridge region 2 in the direction of the flange regions 3. This could be considered as an embossed pattern. According to the invention, the indent depth is between 0.5 and 1.2 of the thickness of the material being used to make the profile element 1, more preferable approximately in the order of the thickness of the material being used to make the profile element. As such, the plane in which the support brace 5, central support brace 5' and connecting brace 7 lies, is approximately the thickness of the material above the plane in which the triangular indents lie.

It is particularly advantageous to provide a profile element 1 which has the support brace 5, central support brace 5' and connecting brace 7 formed by means of indenting the material of the bridge region 2, rather than removal of sections of the profile element 1. As is discussed above, the braces lead to an increase in the strength of the profile element 1 in general, in particular by directing the stresses along predefined channels. By indenting the material to form these braces 5, 5' and 7, rather than removing material, the overall strength of the profile element 1 is further improved. Clearly, material between the braces 5, 5' and 7 will add to the general strength of the profile element 1, in particular to certain stresses which are not necessarily directed along the lengths of each of the braces 5, 5' and 7.

[0027] During use, and in particular when the profile

element 1 is in place and the wall sections are in being attached thereto, the profile element 1 is likely to be subjected to a twisting motion or moment, which is directed around the longitudinal axis of the profile element 1. That is, according to the figures, and in particular Figure 1, the twisting motion arises if one end of the profile element 1 were to be rotated in the clockwise or anticlockwise direction in relation to the other end, which is maintained in the same position. By leaving the interstitial positions as indented, rather than actually removing material between the braces 5, 5' and 7, an added strength to the profile element 1 to counteract this twisting moment and motion is gained. This is particularly advantageous when the wall pieces are being attached to the flange region 3 of the profile element 1.

[0028] Additional stresses are applied to the profile element 1 when the wall pieces are being attached thereto, which specifically act on the bridge region 2. In particular, when the wall sections are being attached to the flange regions 3, it is possible for the flange regions 3 to be bent either inwardly or outwardly during the fixing process. That is, the lower ends of the flange regions 3, those not attached to the bridge region 2, can be flexed towards each other when the profile element 1 is in use. By maintaining the interstitial triangular sections as see in the figures between the braces 5, 5' and 7, the bridge region 2 has a significantly greater strength to withstand this deformation of the flange regions 3. In particular, the bridge region 2 will respond with a more elastic type deformation to, which will tend to absorb the momentary stress applied by attaching the wall pieces thereto, rather than being bent and permanently deformed. Once again, the indenting of the interstitial regions leads to an increase in the strength of the profile element 1.

[0029] Finally, the compression strength of the bridge region 2 taken in the direction joining the two flange regions 3 is increased by maintaining the triangular sections between the braces 5, 5' and 7. If the sections between the braces 5, 5' and 7 were removed, force applied along the plane of the bridge region 2 in the direction between the flange regions 3, or roughly in such a direction, could lead to deformation of the braces 5, 5' and 7, in particular the connecting braces 7, if the interstitial triangular regions are removed. By maintaining these indented portions, the compression strength is improved, as the braces 5, 5' and 7, in particular the connecting braces 7, are much less likely to be deformed by a compressive force.

With the great improvement to the strength of the profile element 1 as a result of the indent portions rather than specifically removing portions, it is possible to use a thinner material to manufacture the profile element 1. The necessary strength requirements of the profile element 1 can be more readily achieved with a thinner material, by structuring this with the support brace 5, central support brace 5' and connecting braces 7 wherein indented portions of the bridge region 2 remain there-between. Clearly, this reduces the general cost of the profile element 1. Further cost reduction is achieved by means of producing the braces 5, 5' and 7 by the technique of roll pressing, rather than having to actively remove sections of the material to form the brace 5, 5' and 7 pattern. The patterning of the indented triangle regions according to the invention can be seen in the figures. This pattern relates to the use of right-angled isosceles triangles. These right-angled isosceles triangles are positioned either side of the central support brace 5', and alternate in their orientation along the longitudinal direction. As can be seen in the figures, two of the right-angled isosceles triangles are oriented lying adjacent to each other either side of the central support brace 5', with one pair opposing each other with their hypotenuse, and the next adjacent pair opposing each other with the right-angle. This pattern repeats along the whole length of the profile element 1, to form the brace 5, 5' and 7 structure. Additionally, it can be seen that the adjacent pairs of right-angled isosceles triangles along the longitudinal direction, lie such that the end of the hypotenuse on each triangle of one pair is at the same longitudinal position as the start of the hypotenuse in the adjacent pair. This leads to a structure not too dissimilar to an exploded compressed hexagon. Clearly, such a regular design leads to an equalling of all of the forces along the braces 5, 5' and 7, as well as a uniform strength characteristic to the entire profile element 1.

A preferable thickness of the material used for forming the profile element (1) is between 0,3 mm and 0,8 mm, preferably between 0,4 mm and 0,6 mm. The offset between the plane of the indents and the plane of the support braces 5, 5' and the connecting braces 7 can be between 0,2 mm and 0,96 mm, preferably around 0,3 mm to 0,4 mm. The material connecting the main plane of the support braces 5, 5' and the connecting braces 7 and the second plane of the indents is formed as a connecting slope 9, the slope extending over a length between 0,5 mm and 2 mm, preferably of around 1 mm.

[0030] As indicated above, the solution in accordance with the invention is not limited to the especially preferred embodiment shown in Fig. 1. For example, it would of course also be conceivable for the profile element 1 to comprise more than three support braces 5, 5'. It is further conceivable that the support braces 5 provided at the two side edges 2' of the bridge region 2 may be of thinner dimensions than the central support brace 5'. It is also possible to do without the V-shaped groove 6 in one or more of the support braces 5, 5', if sound-absorbing is not required. In addition, it is of course conceivable for at least some of the connecting braces 7 to be disposed at angles other than ca. 45° with respect to the support braces 5, 5', for example under 90°.

LIST OF REFERENCE NUMERALS

[0031]

1 Profile element

2 Bridge region
2' Outer region of the bridge region
3 Flange region
4 Fixation means
5 Support brace
5' Central support brace
6 Sound-absorbing groove
7 Connecting brace
8 Indents
9 Connecting slope

Claims

1. Profile element (1) to serve as a carrier structure for the construction of walls, in particular walls consisting of gypsum plaster boards, said profile element (1) comprising at least one bridge region (2) and at least one flange region (3), such that the at least one flange region (3) further comprises fixation means (4) that can be brought into engagement with wall segments, in particular gypsum plaster boards or the like, wherein the bridge region (2) comprises at least two support braces (5, 5') oriented substantially in the long direction of the profile, by way of which the forces acting on the profile element (1) are taken up and transmitted away in the long direction of the profile, and wherein
the bridge region (2) further comprises a plurality of connecting braces (7) that are each disposed between the support braces (5, 5') and mechanically connected to at least two support braces (5, 5') in such a way as to take up torsion forces and transmit them to the associated support braces (5, 5'), wherein
the support braces (5, 5') and the connecting braces (7) are provided by material of the bridge region (2) in one plane, and lying in between the support braces (5, 5') and the connecting braces (7) the material of the bridge region (2) is deformed to lie on a different plane, in such a way that indents (8) in the form of triangles are defined by deforming the material of the bridge region (2) between the support braces (5, 5') and connecting braces (7),
wherein the plane of the material lying between the support braces (5, 5') and the connecting braces (7) is offset to lie below the bridge region (2) and thereby toward the at least one flange region (3) of the profile element (1),
wherein
an offset of the two planes is between 0.5 and 1.2 of the thickness of the material been used to make the profile element (1),
characterized in that
the triangles are in the shape of right-angled isosceles triangles and
wherein pairs of the right-angled isosceles triangles are oriented laying adjacent to each other side of the central support brace (5'), with one pair opposing each other with their hypotenuse and the next adjacent pair opposing each other with their right-angle.

2. Profile element (1) according to Claim 1,
wherein at least a portion of the plurality of connecting braces (7) encloses an acute angle with the associated support braces (5, 5'), in particular an angle of about 45°.

3. Profile element (1) according to either of Claim 1 or 2,
wherein the plurality of connecting braces (7) is uniformly and regularly disposed over the length of the profile.

4. Profile element (1) according to anyone of the preceding claims,
wherein the plurality of connecting braces (7) is disposed symmetrically with respect to the support braces (5, 5').

5. Profile element (1) according to anyone of the preceding claims,
wherein the connecting braces (7) and the support braces (5, 5') are constructed as roll-formed profiles.

6. Profile element (1) according to anyone of the preceding claims,
wherein the plurality of support braces (5, 5') comprises a central support brace (5') disposed in the middle of the bridge region (2), situated in the center of the surface of the bridge region.

7. Profile element (1) according to anyone of the preceding claims,
wherein the support braces (5, 5') and the connecting braces (7) each have substantially the same width.

8. Profile element (1) according to anyone of the preceding claims,
wherein the profile element (1) is a C or U profile, a double-T profile or a Z profile.

9. Profile element (1) according to anyone of the preceding claims,
wherein the flange region (3) comprises a plurality of flange sections adjacent to one another, each of which is mechanically connected to the bridge region (2).

Patentansprüche

1. Profilelement (1), das als Trägerstruktur für die Errichtung von Wänden dient, insbesondere von Wänden, die aus Gipskartonplatten bestehen, wobei das Profilelement (1) wenigstens einen Brückenbereich (2) und wenigstens einen Schenkelbereich (3) um-

fasst, derart, dass der wenigstens eine Schenkelbereich (3) ferner Befestigungsmittel (4) umfasst, die in Eingriff mit Wandsegmenten, insbesondere Gipskartonplatten oder dergleichen, gebracht werden können, wobei
der Brückenbereich (2) wenigstens zwei Stützstreben (5, 5') umfasst, die im Wesentlichen in Längsrichtung des Profils ausgerichtet sind, wodurch die auf das Profilelement (1) einwirkenden Kräfte aufgenommen und in Längsrichtung des Profils abgeleitet werden, und wobei
der Brückenbereich (2) ferner eine Vielzahl von Verbindungsstreben (7) umfasst, die jeweils zwischen den Stützstreben (5, 5') angeordnet sind und mit wenigstens zwei Stützstreben (5, 5') mechanisch derart verbunden sind, dass sie Torsionskräfte aufnehmen und sie zu den zugehörigen Stützstreben (5, 5') leiten, wobei
die Stützstreben (5, 5') und die Verbindungsstreben (7) durch Material des Brückenbereichs (2) in einer Ebene bereitgestellt werden, und wobei das zwischen den Stützstreben (5, 5') und den Verbindungsstreben (7) liegende Material des Brückenbereichs (2) derart verformt ist, dass es in einer unterschiedlichen Ebene liegt, so dass Vertiefungen (8) in Form von Dreiecken definiert sind, indem das Material des Brückenbereichs (2) zwischen den Stützstreben (5, 5') und den Verbindungsstreben (7) verformt ist,
wobei die Ebene des zwischen den Stützstreben (5, 5') und den Verbindungsstreben (7) liegenden Materials derart versetzt ist, dass es unter dem Brückenbereich (2) liegt und dadurch zu dem wenigstens einen Schenkelbereich (3) des Profilelements (1) hin gerichtet ist,
wobei
ein Versatz der zwei Ebenen zwischen dem 0,5- und dem 1,2-Fachen der Dicke des Materials beträgt, das zur Herstellung des Profilelements (1) verwendet wird,
dadurch gekennzeichnet, dass
die Dreiecke die Form von rechtwinkligen gleichschenkligen Dreiecken aufweisen und
wobei Paare der rechtwinkligen gleichschenkligen Dreiecke derart ausgerichtet sind, dass sie jeweils an beiden Seiten der zentralen Stützstrebe (5') anliegen, wobei sich ein Paar mit seiner Hypotenuse gegenüberliegt und sich das nächste angrenzende Paar mit seinem rechten Winkel gegenüberliegt.

2. Profilelement (1) nach Anspruch 1,
wobei wenigstens ein Teil der Vielzahl von Verbindungsstreben (7) einen spitzen Winkel mit den zugehörigen Stützstreben (5, 5'), insbesondere einen Winkel von etwa 45°, umschließt.

3. Profilelement (1) nach einem der Ansprüche 1 oder 2,
wobei die Vielzahl von Verbindungsstreben (7) gleichförmig und regelmäßig über die Länge des Profils verteilt ist.

4. Profilelement (1) nach einem der vorhergehenden Ansprüche,
wobei die Vielzahl der Verbindungsstreben (7) symmetrisch in Bezug auf die Stützstreben (5, 5') angeordnet ist.

5. Profilelement (1) nach einem der vorhergehenden Ansprüche,
wobei die Verbindungsstreben (7) und die Stützstreben (5, 5') als rollgebogene Profile ausgeführt sind.

6. Profilelement (1) nach einem der vorhergehenden Ansprüche,
wobei die Vielzahl der Stützstreben (5, 5') eine mittig im Brückenbereich (2) angeordnete zentrale Stützstrebe (5') umfasst, die sich in der Mitte der Oberfläche des Brückenbereichs befindet.

7. Profilelement (1) nach einem der vorhergehenden Ansprüche,
wobei die Stützstreben (5, 5') und die Verbindungsstreben (7) jeweils im Wesentlichen die gleiche Breite aufweisen.

8. Profilelement (1) nach einem der vorhergehenden Ansprüche,
wobei das Profilelement (1) ein C- oder U-Profil, ein Doppel-T-Profil oder ein Z-Profil ist.

9. Profilelement (1) nach einem der vorhergehenden Ansprüche,
wobei der Schenkelbereich (3) eine Vielzahl von nebeneinander angeordneten Schenkelabschnitten umfasst, von denen jeder mit dem Brückenbereich (2) mechanisch verbunden ist.

Revendications

1. Un élément de profil (1) pour servir de structure portante pour la construction de murs, en particulier des murs se composant de plaques de plâtre de gypse, ledit élément de profil (1) comprenant au moins une zone de pont (2) et au moins une zone de branche (3), de sorte qu'au moins une zone de branche (3) comprenne de plus un moyen de fixation (4) qui peut être amené en prise avec des segments du mur, en particulier les plaques de plâtre de gypse ou toute autre semblable, où la zone de pont (2) comprend au moins deux bras de support (5, 5') orientés principalement dans le sens de la longueur du profil, au moyen desquels les forces agissant sur l'élément de profil (1) sont reprises et transmises dans le sens de la longueur du profil, et où
la zone de pont (2) comprend de plus une pluralité

de bras de connexion (7) qui sont chacun disposés entre les bras de support (5, 5') et connectés mécaniquement à au moins deux bras de support (5, 5') de façon à reprendre des forces de torsion et les transmettre aux bras de support associés (5, 5'), où les bras de support (5, 5') et les bras de connexion (7) sont réalisés avec du matériau de la zone de pont (2) dans un plan, et une fois placé entre les bras de support (5, 5') et les bras de connexion (7), le matériau de la zone de pont (2) est déformé pour être placé sur un plan différent, de sorte que les creux (8) en forme de triangles sont définis par la déformation du matériau de la région de pont (2) entre les bras de support (5, 5') et les bras de connexion (7), où le plan du matériau se trouvant entre les bras de support (5, 5') et les bras de connexion (7) est compensé pour être placé sous la zone de pont (2) et par conséquent vers au moins une zone de bride (3) de l'élément de profil (1),
où
une compensation des deux plans est entre 0,5 et 1,2 de l'épaisseur du matériau étant utilisé pour fabriquer l'élément de profil (1),
caractérisé en ce que
les triangles sont en forme de triangles isocèles à angle droit et
où des paires des triangles isocèles à angle droit sont orientées de façon adjacente à chaque côté du bras de support central (5'), une paire étant à l'opposé de l'autre avec son hypoténuse et la paire adjacente suivante étant à l'opposé de l'autre avec son angle droit.

2. Un élément de profil (1) selon la revendication 1,
où au moins une partie de la pluralité des bras de connexion (7) forme un angle aigu avec les bras de support associés (5, 5'), en particulier un angle d'environ 45°.

3. Un élément de profil (1) selon l'une des revendications 1 ou 2,
où la pluralité des bras de connexion (7) est uniformément et régulièrement disposée sur la longueur du profil.

4. Un élément de profil (1) selon l'une des revendications précédentes,
où la pluralité des bras de connexion (7) est disposée symétriquement par rapport aux bras de support (5, 5').

5. Un élément de profil (1) selon l'une des revendications précédentes,
où les bras de connexion (7) et les bras de support (5, 5') sont construits comme des profils laminés.

6. Un élément de profil (1) selon l'une des revendications précédentes,
où la pluralité des bras de support (5, 5') comprend un bras de support central (5') disposé au milieu de la zone de pont (2), situé au centre de la surface de la zone de pont.

7. Un élément de profil (1) selon l'une des revendications précédentes,
où les bras de support (5, 5') et les bras de connexion (7) ont chacun substantiellement la même largeur.

8. Un élément de profil (1) selon l'une des revendications précédentes,
où l'élément de profil (1) est un profil en C ou en U, un profil en double T ou un profil en Z.

9. Un élément de profil (1) selon l'une des revendications précédentes,
où la zone de branche (3) comprend une pluralité de sections de branche adjacentes les unes aux autres, chacune étant mécaniquement connectée à la zone de pont (2).

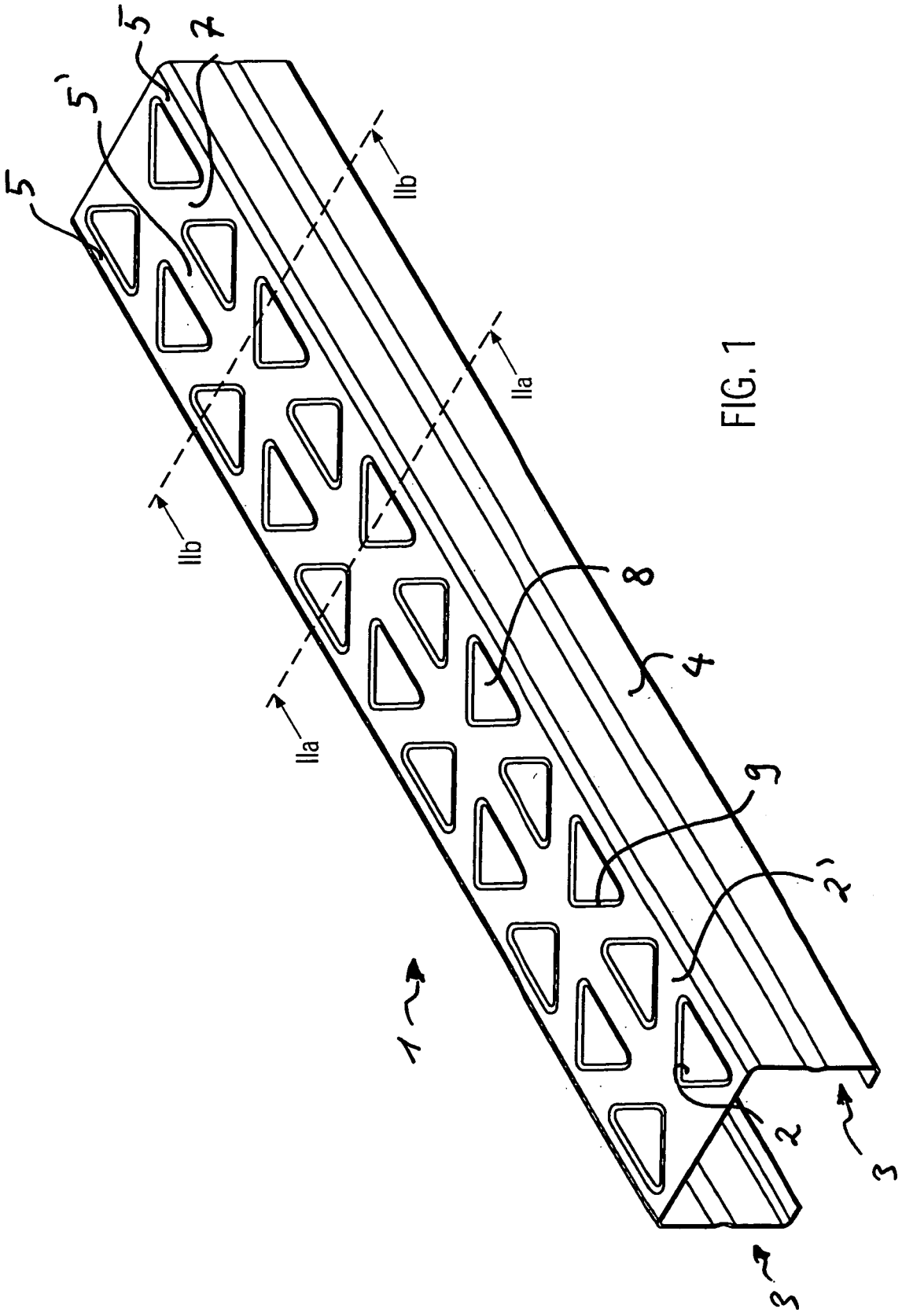


FIG. 1

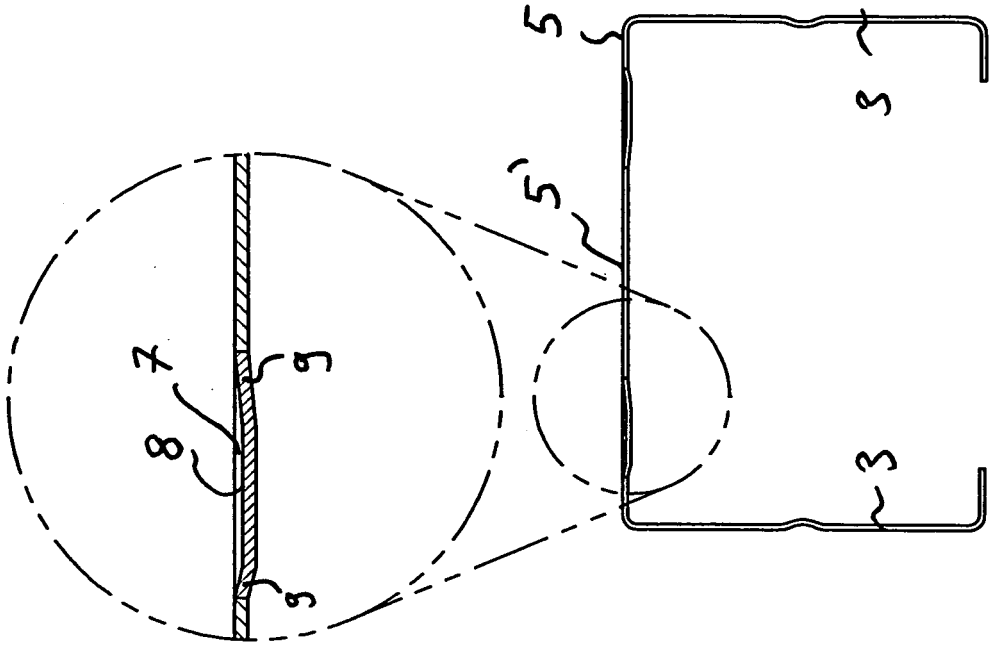


FIG. 2b

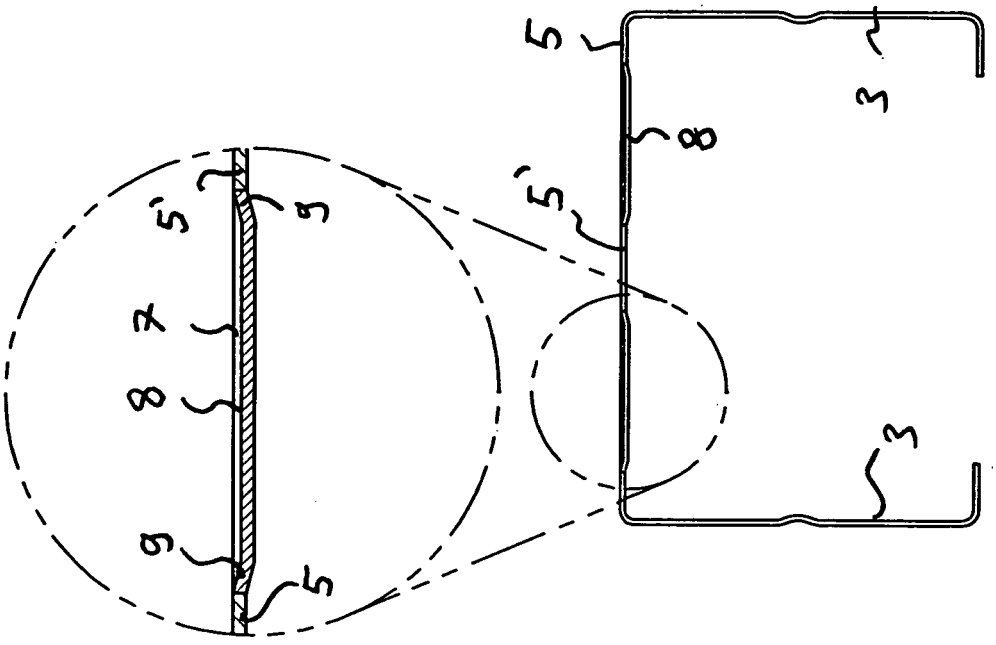


FIG. 2a

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 9723694 A1 **[0006]**