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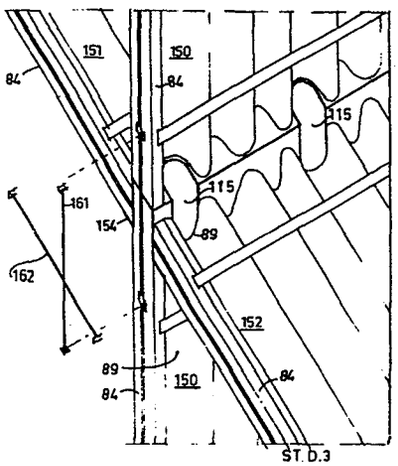
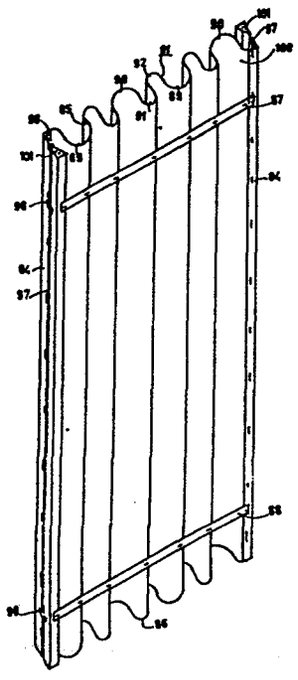
(54) Bearer element suitable for use in system building, bearer erected using the bearer element, and mounting piece to be used in the bearer.

(57) The bearer element (Fig. 6) according to the invention comprises a repeatedly creased metal plate (81), gutter-shaped metal profiles (84) running in the length direction of the creases (89, 90, 91, 92) and enclosing the creased plate (81) at two edges, and alongside the remaining edges (85, 86), on either side of the creased plate (81) metal strips (87, 88).

The bearer element can be used as wall element (150) (Fig. 10) and as floor element (151, 152) to erect a bearer. A metal mounting piece (154) having a U-shaped cross-section, the legs of which extend squarely outwards near their free ends, is used to mount floor elements (151, 152) to wall elements (150). The mounting piece (154) has openings (115) to lead through pipes and leads accommodated in creases (89) of a bearer element (152) into other bearer elements (150).





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"Bearer element suitable for use in system building, bearer erected using the bearer element, and mounting piece to be used in the bearer"

The invention relates to a bearer element suitable for use in system building, especially in house building, the element having a metal plate which is repeatedly creased between two substantially parallel faces, and gutter-shaped metal profiles enclosing the creased plate at opposite edges over their entire lengths.

Such a bearer element is known from the Dutch patent application 7713062. The known bearer element is intended to be used as a girder, but the said application also indicates that the element may be constructed as a self-supporting wall, in which case a flat supporting-plate may have been mounted to one or both faces of the creased metal plate. With this known element the gutter-shaped profiles run in a direction perpendicular to the length direction of the creases, so that each profile keeps each of the creases enclosed at one of their extremities. The gutter-shaped profiles have a cross-section in an 'open-box'-shape: a bottom with two upright walls, which have inwards overhanging edges having upright extremities. Between those upright extremities the creased metal plate is located, so that the element is considerably thicker than the distance between the parallel faces between which the metal plate is creased.

The great housing-shortage is due partly to the high cost of construction and partly to the fact that existing houses cannot be divided anew in a simple manner in order to make them suitable for more but smaller families. Furthermore it is not possible with the present housing constructions to transplant houses at least for a great part from a place with a surplus of housing to a place with a shortage of housing.

It is the object of the invention to procure a bearer element with which these disadvantages of current building constructions are obviated, particularly a bearer element with which, if available in a small number of sizes, a bearer can be constructed with a small number of different auxiliary materials. It is also the object of the invention to provide a bearer element suitable for more universal use than the support element of the Dutch patent application referred

to.

According to the invention this object is achieved with a bearer element of the kind indicated in the opening paragraph characterized in that the metal profiles run in the length direction of the creases and in that along the remaining edges of the creased plate there are metal strips in both parallel faces which fix the distance between the profiles.

The bearer element, having its profiles in the length direction of the creases, is suitable for universal use, for it can be used as a wall element and as a floor element. As a wall element the bearer element is used with the creases in vertical direction, as a floor element it is used with the creases running from support to support. In the creases various pipes and leads can be accommodated which may easily be lead through to a second bearer element, as, because of the fact that the profiles run in the length direction of the creases, the extremities of the creases are open. This is possible when that second element is mounted as a wall element on a first wall element, and also when that second element is connected as a floor element to a wall element.

The positioning of the metal profiles makes these perform a very important function: they stiffen the edges of the extreme creases of the bearer element. This results in several essential functions: they introduce support reactions into the creased metal plate; they support trimming-joints near stairways; they offer the possibility to realize or to demount easily and quickly couplings between elements which lie or stand one beside another, and also between elements lying or standing in line and level. They also serve as a member for the fixation of front studs and of stabilization plates.

The metal strips, too, have various functions, i.e. fixation of the distance between the metal profiles, thus guaranteeing the dimensional stability of the element;
stiffening of the element in directions transverse to the length direction of the creases. Whereas the weight of the element is increased in only a slight measure, the rigidity, and thereby the manoeuvrability, of the element is considerably increased thanks to the sandwich structure obtained.

In a favourable embodiment the metal strips are fixed to the tops of the creases. This gives the element a greater resistance

to sliding forces.

The metal strips may be fixed to the extremities of the creases, along the edges of the creased plate. However, it may be an advantage when they are placed at some distance therefrom. It will appear that this leads to savings in material and facilitates the mounting of pipes and leads.

In that case a distance between a strip and the extremities of the creases of 20 to 30 cm has, in general, proved to be favourable. In a special embodiment the metal strips are placed in one parallel face at the extremities of the creases,in the other parallel face at some distance therefrom. This embodiment is especially suitable for use as a floor element, in which case the face having the strips at the extremities of the creases is on the bottom side. Those strips then introduce the support reactions into the element.

In another favourable embodiment the metal profiles are fixed to the extreme creases. In a very favourable embodiment fixations have been realized on the bottom of the gutter-shaped metal profiles as well as on a wall thereof. This results in a tube of great rigidity. The fixations may be realized with usual means, amongst other things with rivets, by soldering, by glueing or by welding, especially by resistance-welding.

In cross-section the metal profiles can be substantially U-shaped. Their width may, either externally or internally, correspond to the distance between two opposite metal strips. In a very favourable embodiment the bottom of the substantially U-shaped profile has an inwards directed crease. The advantage of this embodiment is the possibility of inserting means into the crease to couple elements in their length direction without thereby changing the external shape and dimensions of the elements.

In a special embodiment the metal profiles are provided at their ends with a cross-bulkhead in order to offer an additional possibility of their being fastened when a bearer is built up.

There is a large variety of patterns which are considered to be used for the creasing of the metal plate.

The metal plate can be creased while forming corners having a very small radius of curvature, so that the plate contains bends. The plate contains plane parts then which are situated in the parallel faces of the elements. In a favourable embodiment the plane parts of

the creases between the parallel faces are provided with dimples. A great mechanical strength can be realized if the creases have been shaped according to a greater radius of curvature. As a rule the creases have a radius of curvature amounting to at least 10 times the plate thickness, particularly 50 to 100 times the plate thickness. In a section transverse to the creases, the plate is shaped then according to a smoothly curved line. In many cases, in that cross section, pieces of a straight line, if any, will occur only midway between both parallel faces of the element.

The metal plate can be creased in such a way that each crease has the same shape as its neighbouring creases. Preferably, however there are wider and narrower creases, such creases occurring more particularly on each of both parallel faces.

In a preferred embodiment the wider creases are dimensioned in such a manner, that they can contain a pipe having a socket diameter of 120 mm.

Several metals are considered for use in the bearer element, such as steel and aluminium. It has appeared that with steel plate having a thickness of 0.5 to 1 mm mechanical strengths are realized which conform amply to the requirements. A bearer element having a steel plate of 0.75 mm thickness, creased according to a suitable pattern, gives a moment of resistance which is more than twice the required one when applied as a floor element bridging 3.75 m. The material of the strips and the profiles is chosen as a rule twice as thick as that of the plate material.

In house building it is known to use bearer elements of concrete to construct bearing walls, the greater faces of which elements have recesses for the insertion of pipes (De Dura DIP-methodiek, Handleiding bij het ontwerp, samengesteld door de SAR, Dura en Van Hezik Partners, november 1979). These wall elements are constructed according to the principles of the modular coordination, according to which it is possible to insert pipes and leads (for gas, water, electricity, severage, flue gas, ventilation, etc.) in zones of 20 cm in width, which zones are separated by zones of 10 cm in width.

The disadvantages of this known bearer element are that it is applicable for walls only, that it is very heavy, involving high costs of transport and installing, and heavy foundations. Furthermore special provisions must be made to make it possible to couple the

elements one to another.

The bearer element according to the invention has the advantage that it is possible to build up the bearer (the bearing structure) of houses entirely with that bearer element, without making use of supporting columns. Using the bearer element according to the invention more than a skeleton is constructed: a bearing structure of walls and floors, which structure is closed by means of non-bearing fronts.

Accordingly, the invention also relates to a bearer, particularly for livings, characterized in that the bearer is built up with the bearer elements according to the invention, in which wall elements are mounted with the creases vertically, the floor elements with the creases running from support to support.

The bearer according to the invention has most essential advantages with regard to other known bearers, which are shaped and constructed on the spot from raw materials.

Except for the accessories in a small variety, the bearer according to the invention is composed of bearer elements which are of the same kind and are consequently prefabricated in big numbers, which are in proportion to their dimensions extremely light and in proportion to their weight extremely strong. On account of their slight weight they are cheap in transport and easy to handle by two men. The bearer elements, and with them the bearers, lend themselves exquisitely to being shaped according to the principles of modular coordination, for which purpose in general a length of the corrugation pattern amounting to 60 cm and a width of the element amounting to 120 cm are chosen, although also a length of the corrugation pattern of 30 cm is applicable.

Furthermore the bearer according to the invention has the advantage that one and the same bearer structure can, dependent on the requirements, be arranged at low costs anew in housing units. Living units can be arranged within this bearer, largely almost completely independent of the bearer, of the required system of pipes and leads, and of the assembly kit. By "assembly kit" (set of detachable units) is meant herein the entirety of walls separating living units and not belonging to the bearer, prepositioned panels placed before walls that separate living units, lowered ceilings hanging from the floor elements and floating floors placed on said elements. Moreover

removal of walls which also belong to the assembly kit and are not supporting, make it easy to rearrange the space within a living unit anew, such rearrangement being made possible too by the fact that the course of the pipes and leads can be changed by demounting a pre-positioned panel, a lowered ceiling part or floating floor part.

As the bearer itself consists of disconnectable bearer elements, the bearer can be dismantled and with the bearer elements a new bearer can be built up elsewhere.

For mounting floor elements a metal mounting piece having a U-shaped cross-section can be used in the bearer, in which mounting piece the legs of the U extend sidewards squarely near their free extremities and in which the bottom of the U contains openings which each continu in a leg of the U to at a distance from the relative sidewards extending extremity thereof.

The mounting piece can be put onto wall elements arranged in a row, its legs extending downwards and enclosing those elements. In that case it is favourable when the metal strips are placed at a distance from the edge of the creased plate of the elements, so that those strips are not enclosed as well by the mounting piece and consequently the mounting piece is slenderer. Of at least some of the wall elements cavities of creases correspond then on the upper side as well as on one or both parallel faces to openings in the mounting piece. Floor elements may thereupon be deposited on the squarely sidewards extending extremities of the legs of the U, cavities between creases in at least some of the floor elements corresponding either on the upper side, or on the bottom side to openings in the mounting piece. As a consequence, pipes and leads can be continued from wall elements into floor (ceiling) elements, but also into wall elements mounted above the afore said wall elements. A similar mounting piece can, when installed in a predetermined height on a foundation, be used for mounting wall elements and floor elements of the lowest floor of the building.

However, it may be recommendable to install bearer elements of a short length on the foundation and to install a mounting piece on them in order to mount on the mounting piece the wall elements and floor elements of the lowest floor. A bearer of this embodiment has the advantage that there is no need to create cavities in the foundation in order to make it possible to deviate pipes and leads, leaving wall elements, below the lowest floor of the building. When using such

bearer elements of a small length (50 cm for instance), it is possible to deviate pipes and leads from those short elements.

In a favourable embodiment the mounting piece is compiled of two Z-shaped parts, which are coupled, except for the openings, in counterpart. The coupling can be realized in various manners, for instance by means of a hinge or by means of a hook on one part which grips into an opening in the other part. A mounting piece of this embodiment has the advantage that it may be stacked in a more compact manner during transport and, what is more, the manufacture of this mounting piece is easier.

In a modified embodiment the mounting piece has a face provided with protrusions which can cooperate with creases of a bearer element. The protrusions may be present at the outside of the legs of the U-shaped mounting piece, at the outside of the bottom of the U, at the inside of the bottom of the U.

Protrusions at the outside of the bottom facilitate the accurate positioning of wall elements when a bearer is erected. Additionally, theyoffer resistance to horizontal sliding forces exerted on the wall elements. Protrusions at the inside of the bottom of the U position the mounting piece with respect to the wall elements onto which it is mounted and, moreover, theyoffer resistance to sliding forces in the length direction of the mounting piece.

Protrusions at the outside of the legs of the U cooperate with wall elements. They facilitate the accurate positioning of those elements and offer resistance to sliding forces in the length direction of the mounting piece. In a very favourable embodiment floor elements placed on that mounting piece rest on those protrusions with the concave surface of creases, those protrusions at their contact face being shaped complementary to the creases. In this embodiment support reactions are transmitted evenly.

The protrusions may cooperate with wider and/or, if present, with narrower creases. Protrusions that cooperate with narrower creases may be preferred, as they do not inhibit pipes and leads to be led through. Protrusions may be obtained by securing shaped members to the mounting piece e.g. by welding or by forming them from the material of the mounting piece itself e.g. as bulges or as stamped out tongues or lips.

It is to be noted that from the Architectural Record of

January 1934 (p. 20) a house having a bearer of creased metal plate is known, however, this bearer is not equipped with couplable elements. The creased metal plate of the walls has a length which is equal to the height of the house. On ceiling height L-shaped profiles are welded on the spot to the walls, on which profiles a creased floor plate is deposited. Plane metal plates are welded against wall plates and floor plates. A quick assembling using standardized elements is not realized; the welded joints make rearrangement of the space inside the support and repeated use of the material impossible.

Embodiments of the invention are shown in the drawings, in which

Figure 1 is a schematical front view of a first embodiment of a bearer element,

Figure 2 is the side view of the element represented in Fig. 1,

Figure 3 is the side view of a second embodiment.

Figure 4 is the side view of a third embodiment.

Figure 5 is the side view of a following embodiment.

Figure 6 is a perspective sketch of another embodiment.

Figure 7 is a perspective sketch of a mounting piece.

Figure 8 is a perspective sketch of mounting pieces in another embodiment.

Figure 9 is a schematical perspective sketch of an embodiment of a bearer according to the invention.

Figure 10 shows a detail of Fig. 9, partially in exploded view.

In the figures 1 and 2 a metal plate 1 is repeatedly creased between the two substantially parallel faces 2 and 3; the metal plate is enclosed over its entire length by gutter-shaped metal profiles 4 at opposite edges. The profiles 4 run in the length direction of the creases 9, 10, 11 and 12. Along the remaining edges 5 and 6 of the creased plate 1 there are metal strips 7 and 8 in both parallel faces 2 and 3; these metal strips fix the distance between the profiles 4 by their being attached (indicated by stripes 13 and 14) to these profiles. At 14 also a connection of the profile 4 to the plate 1 is achieved.

Figure 1 shows that the strip 7 is present at the edge 5 of the plate 1, at the extremity of the creases and the strip 8 at some distance from the edge 6 and at some distance from the extremity

of the creases 9, 10, 11 and 12. The creased plate 1 contains wider creases 9 and 10, and narrower ones 11 and 12. The wider creases 9 as well as the narrower ones 11 create cavities on the parallel face 2, just as the wider creases 10 and the narrower creases 12 do on the face 3. The tops of the wider creases are fixed in this embodiment to the strips 7 and 8 (indicated by the stripes corresponding to 13 and 14). Spotwelds are fixations which are appropriate and which can be made quickly. The plate 1 is creased according to a pattern, which is repeated once in this figure.

In the cavities formed by the creases, especially by the creases 9 and 10, pipes and leads can be inserted.

The metal profiles are substantially U-shaped. Their external width corresponds to the distance between two opposite metal strips 8. In the view of the metal plate represented in figure 2, which corresponds to a section transverse to the length direction of the creases, the plate 1 is smoothly curved. The radii of curvature are all much greater than the thickness of the material.

In another embodiment strip 7 (Figure 1) is present at a distance from the edge 5 (a distance corresponding to the distance between strip 8 and edge 6) and the two strips on the other parallel face (in figure 2) are fixed at the extremity of the creases at the edge 5 and 6 respectively. In this embodiment the elements lends itself especially as floor element, the parallel face 2 being directed downwards.

In the figures 3 up to and including 6 corresponding parts are indicated each time by a reference numeral superior by 20 to those of the preceding figure. Furthermore the reference numerals in figure 6 are superior by 80 to the numerals in figure 1.

In figure 3 the wider creases 29 and 30 and the narrower creases 31 and 32 are obtained by kinking the plate 21 with a very small radius of curvature. This makes that the creases run each for a substantial part in one of the parallel faces 22 and 23 and that also in between those faces there are straight line pieces in cross-sections.

Each of the creases is fixed with its top to one of the strips 22 and 23. The corrugation pattern is, for the rest, equal to that in fig. 2, just as the pattern length.

The difference between the element of fig. 4 and that of

fig. 3 is in the point that in the plate 41 only creases of equal width are shaped. The pattern length is equal to that in fig. 3.

In fig. 5 the plate 61 is also creased by kinking. The wider creases 69 all form a cavity which is open to the parallel face 62, while the narrower creases 71 and 72 form cavities which are open to that same parallel face, resp. to the second parallel face 63. The profiles 64, which are substantially U-shaped, have an internal width which corresponds to the distance between the opposite strips 68.

The strips 68 are attached to the profiles 64 by welds 75. Joints 74 and 76 fix the profiles to the creased plate 61. The pattern length of the plate 61 is half as great as in the preceding figures. The pattern is repeated three times in this figure.

In figure 6 the pattern of the creased plate 81 is equal to that of figure 2. The substantially U-shaped metal profiles 84 have in the middle of the U an inwards directed crease 97, in which means for coupling the elements one to another can be inserted. The same purposes have the recesses 98 in the profiles 84. The metal strips 87 and 88 are all placed near but at a distance from the edges 85 resp. 86 of the creased plate 81.

Welded joints have been made between the tops of the creases 89-92 and the strips 87 and 88 (joints which are indicated by horizontal stripes), but there are also welded joints (indicated by vertical stripes) between the extreme creases 99, 100 and the basis, as well as a leg of a respective profile 84. As a result, the extreme creases 99 and 100 together with the respective profile 84 constitute a shaft which gives the element a substantial stiffening.

Both profiles 84 have a cross bulkhead 101 at their two extremities. This bulkhead consolidates the profile, but, what is more, it offers possibilities to couple the element to other parts.

The mounting piece represented in Fig. 7 has a U-shaped cross-section, with the legs 111 and 112 of the U extending squarely outwards near their free extremities. The outstanding extremities 113 and 114 constitute a supporting surface for floor elements. In the bottom of the U there are openings (115, 116), which each continue themselves into a leg to at some distance from the outwards extending extremities 114 respectively 113. The mounting piece can be positioned on an upright bearer element, in such a manner that the legs 111 and 112 each extend along a respective parallel face of that element.

With otherwise equal dimensions of a bearer element, the width of the U may be smaller if the strips of the bearer element are placed at some distance from the edges of the element and if the assembling piece does not enclose these strips too.

A dotted line indicates in figure 7 the pattern of a creased plate of bearer elements mounted below or on the mounting piece. If a bearer element as represented in fig. 6 is mounted upside down, below or on the assembling piece on the left in Fig. 7, the cavities formed by the creases 89 and 90 correspond to the openings 115 respectively 116. Pipes and leads within those cavities can then be led through in a vertical direction. A bearer element as represented in fig. 6 which is deposited in fig. 7 (on the left side) on the outwards extending extremity 114 corresponds either with its wider creases 89 or with its wider creases 90 with the openings 115. The cavities formed by those creases may be on the upper side or on the bottom side of the element. Vertical pipes and leads can be lead then through the openings 115 in a horizontal direction. The strips 87 and 88, at a distance from the edges 85 and 86 (see fig. 6), facilitate that. The length of the mounting piece represented is 3.5 times the width of the bearer element of fig. 6.

On its outer face the bottom 110 of the U has protrusions 117 in the form of discs welded thereto, which can cooperate with narrower creases of a wall element placed on top of the mounting piece.

The leg 112 has a number of protrusions 118 in the form of stamped out lips and a number of protrusions 119 in the form of stamped out tongues. They are destined to cooperate with narrower creases of a floor element placed on the outwards extending extremity 114. At the upper side they have a shape which is complementary to the concave surface of the narrower creases.

Figure 8 represents two mounting pieces 120 and 130 placed abutting each other, each of the two mounting pieces consisting of two Z-shaped parts 121 and 122, respectively 131 and 132. The parts of a mounting piece can be coupled directly one to the other. The advantages of using two Z-shaped parts constituting together a mounting piece are that the parts have a low weight and are readily piled up, which results in a smaller total volume on transport.

In case the mounting piece 120 is, as for its length, equal to the mounting piece of figure 7, one element will, when the elements of fig. 6 are used for creating a closed wall below or on the mounting piece, be installed half below or on the mounting piece 120, and half below respectively on the mounting piece 130 and, by being coupled to those mounting pieces, couple those mounting pieces to each other.

The bearer represented in figure 9 is built up with bearer elements as represented in fig. 6, as wall elements 150 and also as floor elements 151, 152 and 153 of various lengths. These elements are represented in the figure in a schematical manner. Mounting pieces 154 as shown in figure 7 are used for mounting floor elements 151-153 to wall elements 150. A similar mounting piece 155 has been positioned on the foundation 156 of concrete and coupled with the lowest wall elements 150.

In the foundation 156 recesses must be made in order to make it possible to deflect pipes and leads inserted in a wall element 150 via a mounting piece 155 below a floor element 151 or 152. For this reason the construction represented on the right in the figure, where bearer elements 158 of a small length are placed on a foundation which is situated somewhat deeper, is advantageous. If their corrugation pattern corresponds to that of the wall elements 150 standing above them, pipes and leads coming from those wall elements can be led, via the mounting piece 159, into the bearer elements 158 and from there be deflected below the floor elements 151 without it being necessary to make recesses in the foundation 157.

Between wall elements 150 situated on a row, similar elements 160 are installed for creating a partition wall between two living units. The difference in length of the elements 150 and 160 is equal to the height of the mounting piece 154, in order to make it possible to remove the elements 160 in case the bearer has to be divided anew.

The floor elements 153 and other floor elements which do not link with a bearer element 150 (a wall element with a bearing function) can be removed in order to make it possible to move a stairway or to close or to form a stairway.

In the length direction of the floor elements 151 and 153 similar wall elements can be installed for a fuller subdivision of the

bearer into living units. The bearer is closed with fronts.

The room within a living unit can be divided by means of panels. The living units can be completed with prepositioned panels, lowered ceilings and floating floors.

In fig. 10 the wall elements 150 and the floor elements 151 and 152 are bearer elements as represented in fig. 6. They are mounted by means of a mounting piece 154 as shown in figure 7. The bearer elements 150 are coupled by a tie 161, the bearer elements 151 and 152 by a tie 162.

From figure 10 one can see that the profiles 84 of the bearer elements 150-152 run alongside the front face of the bearer, so that they are usable to fix the front thereto.

Pipes and leads, such as sewer-pipes, can be led from the wider crease 89 in bearer element 152 through the opening 115 in the mounting piece 154, into a corresponding crease in bearer element 150, below bearer element 152.

Example

A bearer element had the shape as indicated in Figure 6. The creased plate was made of a steel plate having a thickness of 0.75 mm. The wider creases had a depth of 15 cm and, on half depth, a width of 15 cm. They were located within zones of 20 cm width, separated by zones of 10 cm width. The creased plate was encased in steel profiles having a thickness of 1.5 mm and fixed to metal strips of the same thickness and a width of 5 cm. The dimensions of the bearer element were:

length 2.80 m
width 1.20 m
thickness 15.3 cm.

Claims:

1. A bearer element suitable for use in system building, especially in house building, the element having a metal plate which is repeatedly creased between two substantially parallel faces, and gutter-shaped metal profiles enclosing the creased plate at opposite edges over their total length, characterized in that the metal profiles run in the length direction of the creases and in that along the remaining edges of the creased plate, there are metal strips in both parallel faces which fix the distance between the profiles.

2. A bearer element as claimed in Claim 1, characterized in that the metal gutter-shaped profiles are fixed to extreme creases.

3. A bearer element as claimed in Claim 1 or 2, characterized in that the metal strips are secured to the tops of creases.

4. A bearer element as claimed in Claim 2, characterized in that the extreme creases are secured to the bottom as well as to a wall of the gutter-shaped profiles.

5. A bearer element as claimed in Claim 1 or 2, characterized in that the gutter-shaped profiles are substantially U-shaped in cross-section.

6. A bearer element as claimed in Claim 5, characterized in that the bottom of the U has an inwardly directed crease.

7. A bearer element as claimed in anyone of the preceding Claims, characterized in that the metal plate, in section transverse to the creases, is smoothly curved.

8. A bearer element as claimed in anyone of the preceding Claims, characterized in that the metal plate has narrower and wider creases in both parallel faces.

9. A bearer element as claimed in Claim 1, characterized in that the metal plate is creased according to a pattern having a length of n x 30 cm, in which n = 1 or 2.

10. A bearer element as claimed in Claim 1, characterized in that at least two of the metal strips are positioned at a distance from the edges of the creased plate.

11. A bearer, especially for housing units, constructed of

bearer elements as claimed in one or more of the preceding Claims, in which wall elements are mounted having the creases running vertically and floor elements having the creases running from support to support.

12. A metal mounting piece suitable for use in a bearer as claimed in Claim 15, characterized by a U-shaped cross-section, the legs of the U extending outwards squarely near their free extremities, and in which the bottom of the U has openings which each continue in a leg of the U to at a distance from the relative sidewards extending extremity thereof.

13. A metal mounting piece as claimed in Claim 12, characterized by being compiled of two Z-shaped and coupled parts.

14. A metal mounting piece as claimed in Claim 12 or 13, characterized in that a face is provided with protrusions which can cooperate with creases of a bearer element.

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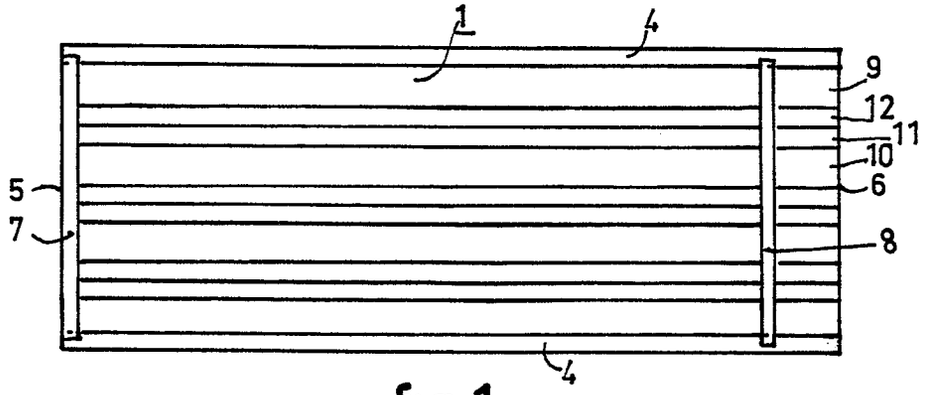

fig.1

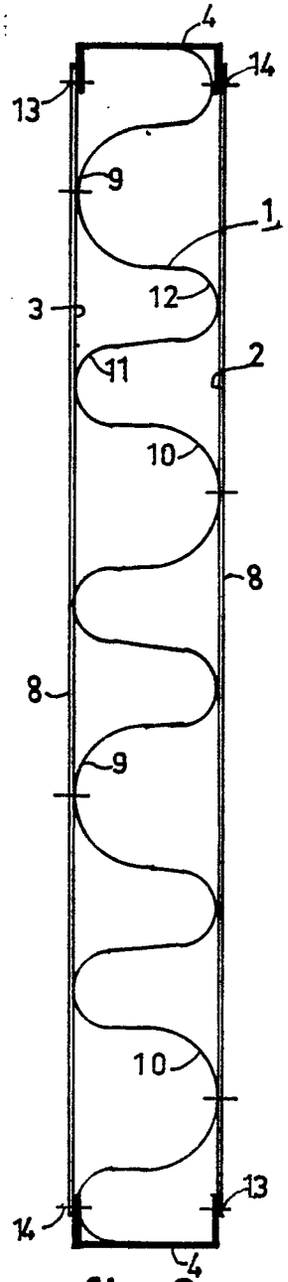

fig.2

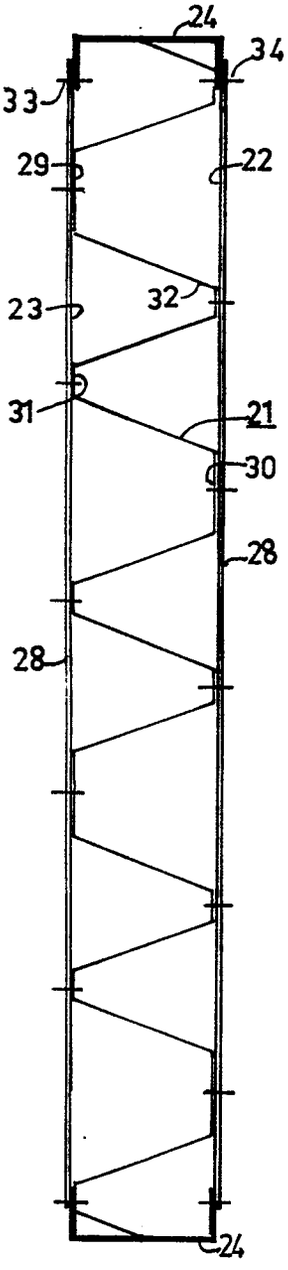

fig.3

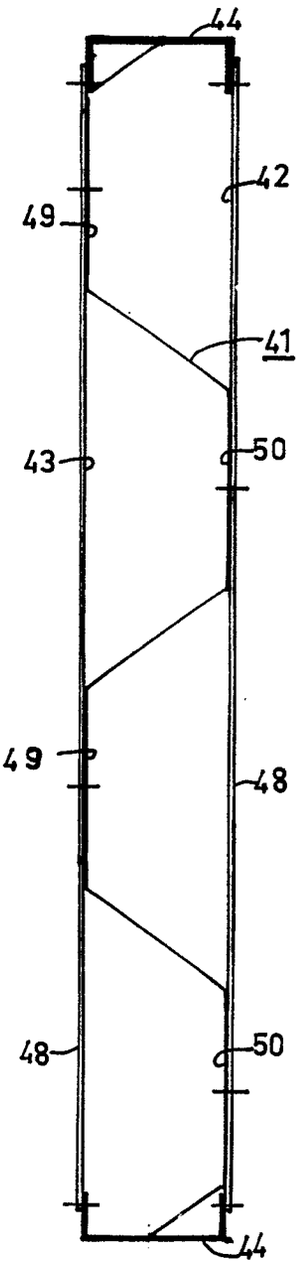

fig.4

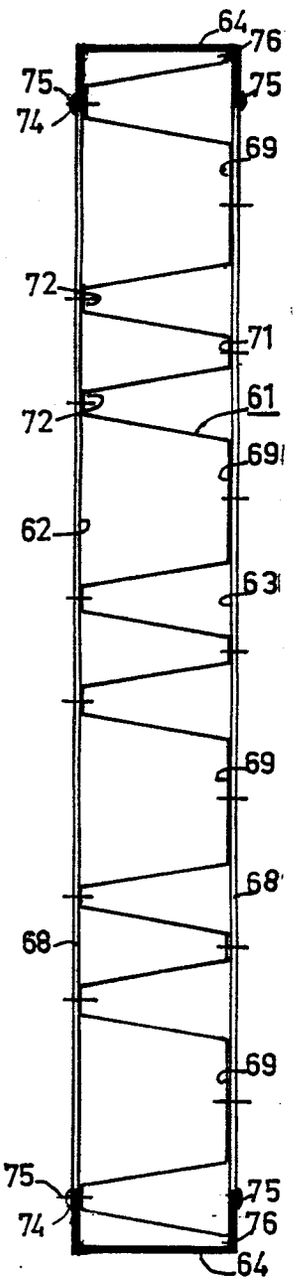

fig.5

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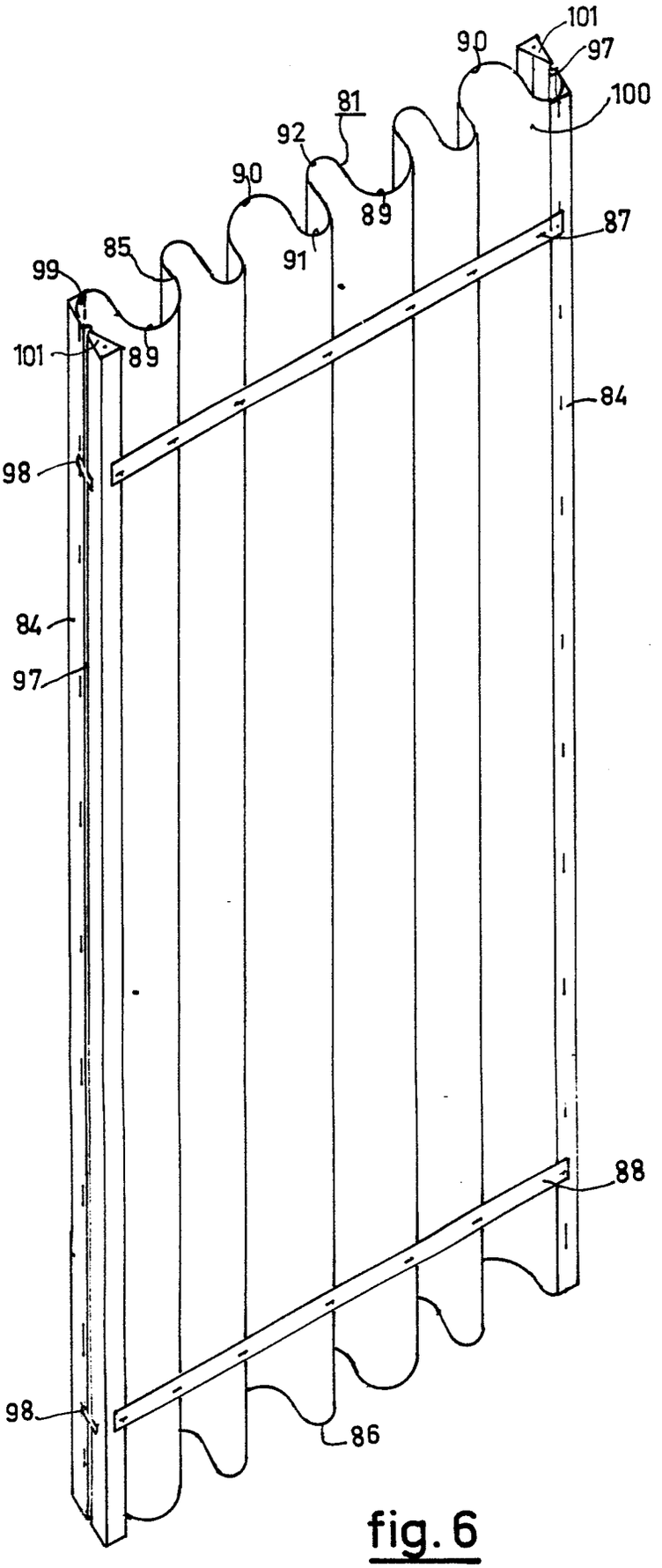

fig. 6

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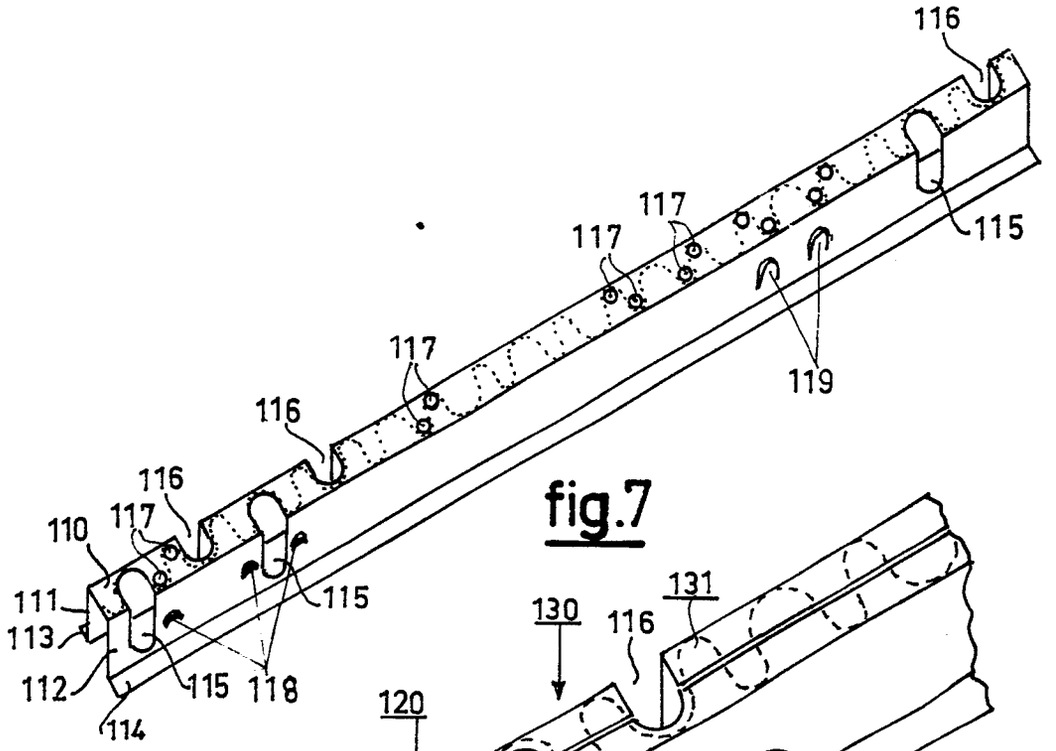

fig.7

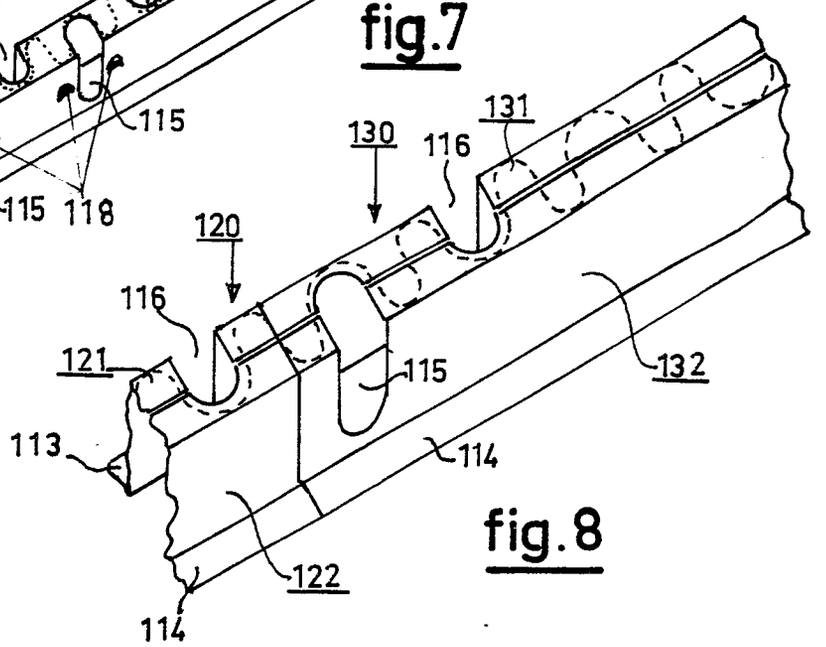

fig.8

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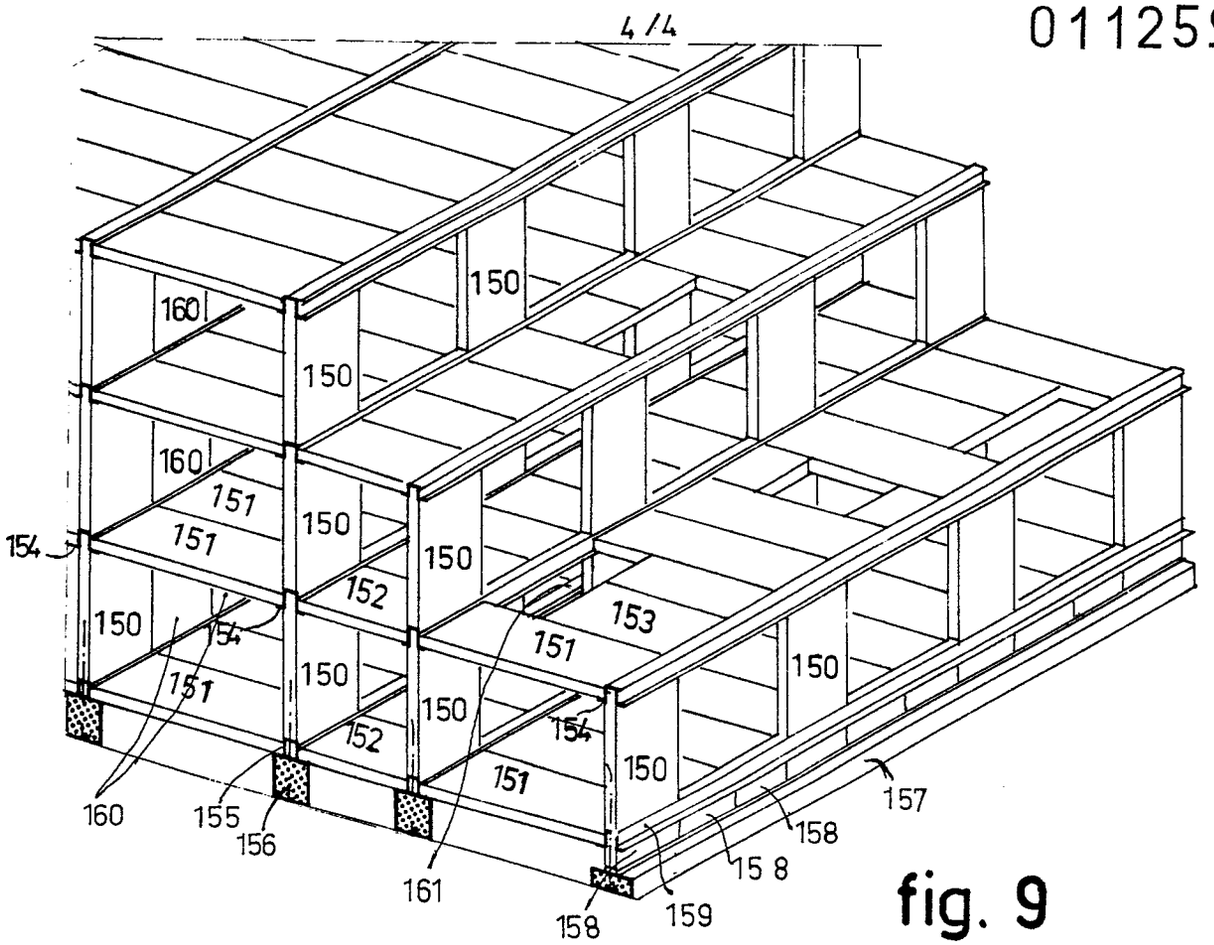

fig. 9

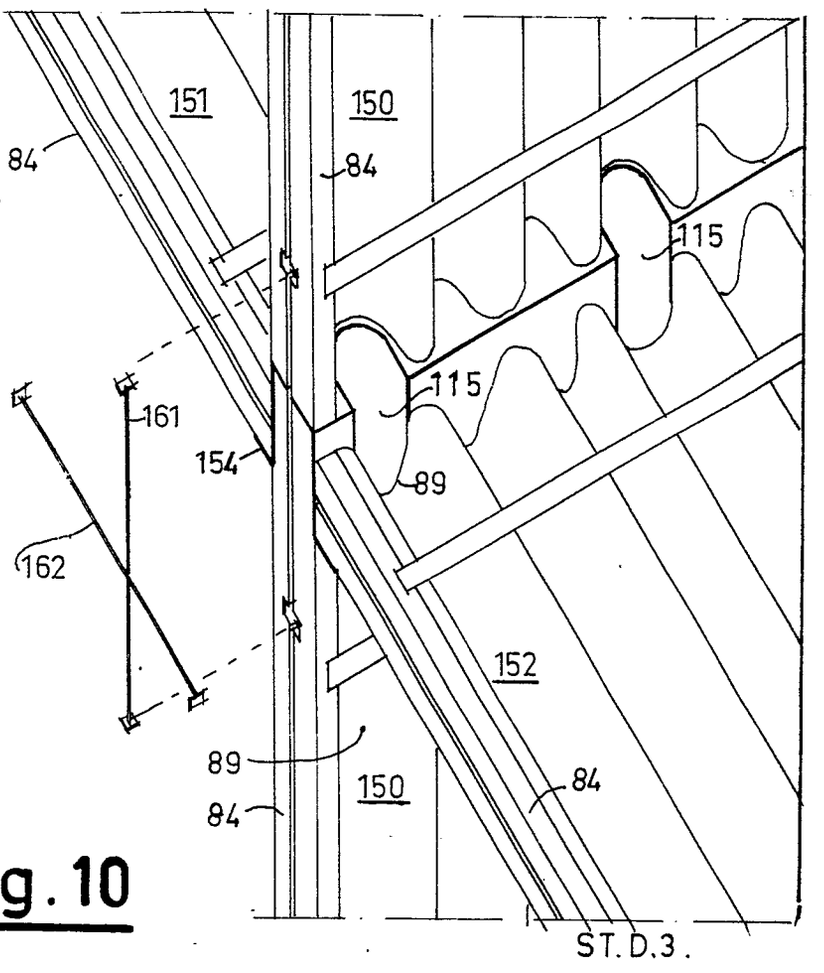

fig. 10

European Patent Office

EUROPEAN SEARCH REPORT

0112598
Application number

EP 83 20 1817

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
A	GB-A- 454 752 (LE RICOLAIS) * Page 1, line 83 - page 2, line 70; figures *	1,2,7	E 04 C 2/32 E 04 C 2/08
A	GB-A- 836 777 (HAMILTON) * Page 1, line 80 - page 2, line 60; page 2, lines 108-115; figures *	1,2,11	
A	US-A-3 606 718 (CURRAN) * Column 3, lines 4-51; column 4, lines 50-57; figures *	1,3,5, 10,11	
A	FR-A-2 266 778 (CHALLIER) * Page 3, lines 17-27; figures *	1,3,10	
			TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
			E 04 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	03-04-1984	VANDEVONDELE J.P.H.

CATEGORY OF CITED DOCUMENTS

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